



**DEPARTMENT OF THE ARMY**  
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**WASHINGTON, DC 20310-0600**

Army Environmental Division – BRAC Ops Branch

SUBJECT: Fourth Five-Year Review Final Report for Tipton Airfield Parcel

Mr. Bob Stroud  
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Dear Mr. Stroud:

Please find enclosed the electronic copy of the *Fourth Five-Year Review Final Report for the Tipton Airfield Parcel; Fort George G. Meade; Anne Arundel County, Maryland for your document repository files.*

This final report is provided only electronically via the DoD SAFE (Safe Access File Exchange) website due to the current Covid-19 crisis. Please request a hardcopy of the final document if you so desire.

My point of contact for this action is Steve Cardon at (301) 677-9178, email: [Steven.C.Cardon.ctr@mail.mil](mailto:Steven.C.Cardon.ctr@mail.mil) or I can be reached at (703) 545-2536, email: [Ian.M.Thomas2.civ@mail.mil](mailto:Ian.M.Thomas2.civ@mail.mil).

Sincerely,

*Ian M Thomas*  
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## LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	Microgram(s) per liter
AFFF	Aqueous Film Forming Foam
bgs	Below ground surface
BRAC	Base Realignment and Closure
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DD	Decision Document
DL	Detection Limit
DoD	Department of Defense
DOI	U.S. Department of the Interior
EA	EA Engineering, Science, and Technology, Inc., PBC
ESD	Explanation of Significant Difference
FGGM	Fort George G. Meade
ft	Foot (feet)
FTA	Fire Training Area
FYR	Five-Year Review
HHA	Helicopter Hangar Area
IAL	Inactive landfill
IAL1	Inactive Landfill 1
IAL2	Inactive Landfill 2
IAL3	Inactive Landfill 3
Kaiser	ICF Kaiser Engineers
LOD	Limit of Detection
LOQ	Limit of Quantitation
LPR	Little Patuxent River
LTGM	Long-Term Groundwater Monitoring
LTM	Long-Term Monitoring
LUC	Land use control
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDE	Maryland Department of the Environment
MEC	Munitions and explosives of concern

### LIST OF ACRONYMS AND ABBREVIATIONS (continued)

mm	Millimeter(s)
MPPEH	Material Potentially Presenting an Explosive Hazard
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NPL	National Priorities List
NSL	Not Screening Level
NTCOE	Non-Time Critical Ordnance and Explosives
O&M	Operation and Maintenance
OE	Ordnance and Explosives
OU	Operable Unit
PAL	Project Action Level
PFAS	Per- and polyfluoroalkyl substances
PFC	Perfluorinated compound
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PRR-NT	Patuxent Research Refuge-North Tract
RAB	Restoration Advisory Board
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
SI	Site Inspection
SVOC	Semivolatile organic compound
TAA	Tipton Airfield Area
TAL	Target Analyte List
TAP	Tipton Airfield Parcel
TCL	Target Compound List
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Command
USEPA	U.S. Environmental Protection Agency
UXO	Unexploded ordnance
VOC	Volatile organic compound

## EXECUTIVE SUMMARY

This is the fourth Five-Year Review (FYR) evaluating the remedy selected for the Tipton Airfield Parcel (TAP) on Fort George G. Meade (FGGM) located in Anne Arundel County, Maryland. The purpose of this review is to determine if the remedies implemented at sites listed in **Table ES-1** are and will continue to be protective of human health and the environment.

The TAP was excessed under the Base Realignment and Closure (BRAC) Act of 1988 to Anne Arundel County Tipton Airport Authority for use as a small municipal airfield for light fixed-wing and rotary-wing aircraft. The TAP consists of three Inactive Landfills (IAL), known as IAL1, IAL2, and IAL3, the Tipton Airfield, the former Helicopter Hangar Area (HHA), the former Fire Training Area (FTA), and the Little Patuxent River (LPR). The airfield infrastructure and adjacent areas cover approximately 346 acres.

A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. §9601 et. seq.) Decision Document (DD) and DD Addendum were finalized in July 1998 (FGGM 1998b) and November 1998 (FGGM 1998c), respectively. The Army completed this work under the authority of the Defense Environmental Restoration Program (10 U.S.C. §2701 et. seq.), prior to the listing of FGGM on the National Priorities List (NPL). The 1998 DD selected a minimum 3-ft-thick earthen cover on areas of IAL1, and it also enacted land use restrictions on the lessee, as the site remedy. The 1998 DD selected restrictions on surface/subsurface excavations; the need for erection of a fence around IAL2; that the Army would retain control of the IAL2 property; and that regular surface sweeps of IAL3 would be conducted. In addition, periodic inspections are required for the IAL2 fence, as well as repair of any damage. The November 1998 DD Addendum selected groundwater Land Use Controls (LUCs).

On 28 July 1998, FGGM was listed on the NPL using U.S. Environmental Protection Agency (USEPA) identification number MD0910020567. Following inclusion on the NPL, two Records of Decision (RODs) were issued by the Army and USEPA, with concurrence from the Maryland Department of the Environment (MDE) to select remedial actions for the evaluation areas at the TAP. One ROD, issued in December 1998, specified No Further Action (NFA) for the FTA, HHA, and IAL3 and was signed on 30 December 1998. A second ROD, issued in July 1999, specified NFA with groundwater monitoring for IAL1, IAL2, and the entire TAP Area Groundwater. The 1998 ROD does not provide soil Remedial Action Objectives, and the 1999 ROD does not provide groundwater Remedial Action Objectives, as both selected remedies were NFA.

In May 2014, the Army and USEPA issued an Explanation of Significant Difference (ESD) to include the 1998 ROD and 1999 ROD. The ESD amended the remedy to add implementation of LUCs to prevent human exposure to munitions and explosives of concern (MEC) and contaminated groundwater. The ESD amends the RODs to clearly document: (1) the need for sweeps for potential MEC; (2) appropriate disposal of MEC if discovered; and (3) LUC requirements.

ESD selected groundwater monitoring, which will continue until contaminant levels are below the Maximum Contaminant Levels (MCLs) or in their absence, USEPA Region 3 Regional Screening Levels, as specified by the TAP Long-Term Groundwater Monitoring program.



The ESD resulted in the submittal of a LUC Remedial Design (RD) in June 2015, which identifies and sets forth procedures to implement, the LUCs described in the 1998 DD and DD Addendum modified by the May 2014 ESD. Through the requirement to perform annual reviews of LUC implementation and enforcement, the LUC RD provides a process apart from the FYR to ensure implemented LUCs continue to adequately protect human health and the environment. Groundwater LUCs include the following:

- Restrictions to prevent the use of TAP area groundwater with the exception for its use in environmental studies until contaminants in groundwater allow for unlimited use and unrestricted exposure
- Prohibition of residential use until such time as an evaluation of residential exposure risks indicates no unacceptable risk to human health
- With the exception of emergency repair on existing utilities, prohibition of excavation or other disturbance of surface or subsurface soils without the written approval of the Army

MEC LUCs include the following:

- With the exception of emergency repair of existing utilities, prohibition of excavation or other disturbance of surface or subsurface soils without written approval of the Army
- Maintenance of site security around IAL2 including periodic inspections and repair of fence damage
- Surface sweeps for MEC at IAL3 every 5 years
- Inform airfield personnel of subsurface dig restrictions and provide technical advice as needed.

The Army remains responsible for implementing, maintaining, reporting, and enforcing the LUCs at the TAP. Despite Anne Arundel County Tipton Airport Authority's ownership of TAP property, the Army remains responsible for any contamination, which was generated as a result of historical Army use of the property, and all associated decontamination, cleanup, and remedial action that may be required.

This Fourth FYR evaluates the remedy selected by the Army and USEPA for the TAP. The USEPA Operable Units (OUs) at the TAP are as follows:

1. Tipton Airfield Area (TAA) USEPA OU-17 consisting of the FTA, HHA, and IAL3, as established via the December 1998 ROD and modified by the May 2014 ESD;
2. TAP USEPA OU-08 consisting of IAL1, IAL2, and the entire TAP area groundwater as established via June 1999 ROD and modified by the May 2014 ESD;

3. LPR MEC USEPA OU-35, consisting of the LPR MEC sweeps established via the May 2014 ESD.

The effective implementation of LUCs has prevented extraction of groundwater except for its allowable use for environmental sampling. There is no residential development at TAP. There has been no excavation at the site without proper receipt of permission from the Army. There have been no activities that would interfere with the site remedy.

The TAA USEPA OU-17 remedy is protective of human health and the environment. The TAP USEPA OU-08 remedy is protective of human health and the environment. The LPR MEC USEPA OU-35 remedy is protective of human health and the environment. Because the remedial actions at all OUs are protective, the site is protective of human health and the environment. The elements of the remedy—(1) LUCs, (2) groundwater long-term monitoring, and (3) periodic MEC inspections—protect the public from exposure to contaminated groundwater and MEC.

**Table ES-1 OU and Protectiveness Statement**

<b>USEPA OU</b>	<b>OU Name</b>	<b>Site(s)</b>	<b>Protectiveness Determination</b>
17	TAA	FTA, HHA, and IAL3	Protective of human health and the environment
08	TAP	IAL1, IAL2, and entire TAP area groundwater	Protective of human health and the environment
35	LPR MEC	LPR	Protective of human health and the environment

**FIVE-YEAR REVIEW SUMMARY FORM**

<b>SITE IDENTIFICATION</b>		
<b>Site Name:</b> Tipton Airfield Parcel (TAP)		
<b>EPA ID:</b> MD0910020567		
<b>Region:</b> 3	<b>State:</b> MD	<b>City/County:</b> Odenton/Anne Arundel County
<b>SITE STATUS</b>		
<b>NPL Status:</b> Deleted		
<b>Multiple OUs?</b> Yes	<b>Has the site achieved construction completion?</b> No	
<b>REVIEW STATUS</b>		
<b>Lead agency:</b> U.S. Army		
<b>Author name:</b> U.S. Army Corps of Engineers		
<b>Author affiliation:</b> Baltimore District Office		
<b>Review period:</b> September 2016 – March 2021		
<b>Date of site inspection:</b> 25 January 2021		
<b>Type of review:</b> Statutory		
<b>Review number:</b> 4		
<b>Triggering action date:</b> 9/23/2016		
<b>Due date:</b> 9/23/2021		

<b>Issues/Recommendations</b>		
<b>OU(s) without Issues/Recommendations Identified in the Five-Year Review:</b>		
Tipton Airfield Area USEPA OU-17 (IAL3, HHA, FTA), Tipton Airfield Parcel USEPA OU-08 (IAL1, IAL2, TAP area groundwater), LPR USEPA OU		
<b>Protectiveness Statement(s)</b>		
<i>Operable Unit:</i> Tipton Airfield Area USEPA OU-17 (HHA, FTA, IAL3)	<i>Protectiveness Determination:</i> Protective	<i>Addendum Due Date:</i> NA
<i>Protectiveness Statement:</i> The remedy at Tipton Airfield Area OU-17 is protective of human health and the environment.		
<i>Operable Unit:</i> Tipton Airfield Parcel USEPA OU-08 (IAL1, IAL2, TAP area groundwater)	<i>Protectiveness Determination:</i> Protective	<i>Addendum Due Date:</i> NA
<i>Protectiveness Statement:</i> The remedy at Tipton Airfield Parcel OU-08 is protective of human health and the environment.		
<i>Operable Unit:</i> Little Patuxent River MEC USEPA OU-35	<i>Protectiveness Determination:</i> Protective	<i>Addendum Due Date:</i> NA
<i>Protectiveness Statement:</i> The remedy at Little Patuxent River MEC OU-35 is protective of human health and the environment.		
<b>Sitewide Protectiveness Statement</b>		
<i>Protectiveness Determination:</i> Protectiveness Deferred		<i>Addendum Due Date (if applicable):</i> N/A
<i>Protectiveness Statement:</i> PFOA/PFOS has been detected above screening criteria within the TAP OU. A Remedial Investigation will be conducted to evaluate PFAS in the TAP.		

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## 1. INTRODUCTION

This Five-Year Review (FYR) evaluates the remedy for the Tipton Airfield Parcel (TAP) located on property formerly part of Fort George G. Meade (FGGM). FGGM formerly occupied 13,596 acres of land in the northwest corner of Anne Arundel County, Maryland, approximately halfway between Washington, D.C., and Baltimore, Maryland (**Figure 1-1**). The TAP covers approximately 346 acres, and with respect to this FYR, includes three inactive landfills (IALs) (Inactive Landfill 1 [IAL1], Inactive Landfill 2 [IAL2], and Inactive Landfill 3 [IAL3]), the Helicopter Hangar Area (HHA), the Fire Training Area (FTA), the entire TAP area groundwater, and an approximately 1-mile stretch of the Little Patuxent River (LPR).

The purpose of an FYR is to determine whether the remedy at a site is protective of human health and the environment. For the TAP, the FYR is required because Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. §9601 et. seq.), requires that remedial actions that result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that all for Unlimited Use or Unrestricted Exposure (UU/UE) no less often than every five years. This is the fourth FYR for the TAP. Previous FYRs were conducted in 2006, 2011, and 2016. The Army, as the Lead Agency, is preparing this FYR pursuant to CERCLA §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR Part 300). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The U.S. Environmental Protection Agency (USEPA) interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii):

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

This FYR follows the Comprehensive Five-Year Review Guidance (USEPA 2001) and its updates. EA Engineering, Science, and Technology, Inc., PBC (EA) performed this FYR to evaluate the implementation and performance of the site remedy to determine if it remains protective of human health and the environment. EA reviewed pertinent documents, conducted interviews with individuals knowledgeable of the site, and conducted a site visit. The methods, findings, and conclusions of the review are documented in this report, along with any issues or concerns

identified and recommendations to address these issues or concerns. This FYR is due for completion by 23 September 2021, based on the signature date of the first FYR.

This FYR consists of an evaluation of three Operable Units (OUs), described below.

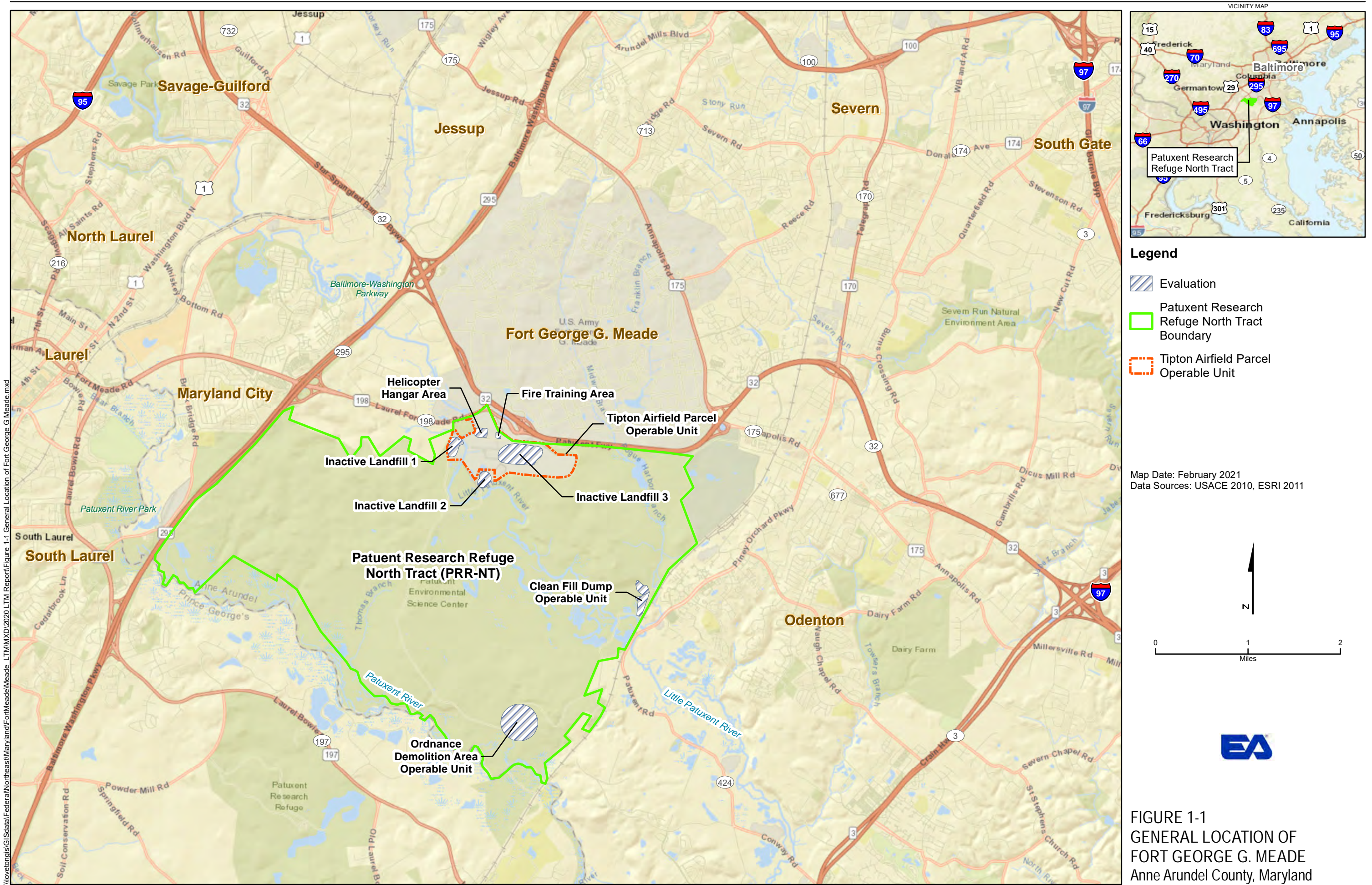
1. Tipton Airfield Area (TAA) USEPA OU-17 – FTA, HHA, and IAL3 – Periodic munitions and explosives of concern (MEC) surface sweeps are required for IAL3, currently every 5 years<sup>1</sup> as well as annual inspections of the condition of IAL3. The most recent inspection was completed in 2020. Land use controls (LUCs) restrict excavation or other disturbance of surface or subsurface soils and prohibit the use of groundwater except for environmental studies.
2. Tipton Airfield Parcel (TAP) USEPA OU-08 – IAL1, IAL2, and the entire TAP groundwater – Periodic inspections of IAL1 and IAL2 are required, which for IAL2 includes the requirement to inspect and maintain security measures (fencing) restricting unauthorized access. The most recent inspections were completed in 2020. LUCs restrict excavation or other disturbance of surface or subsurface soil and prohibit the use of groundwater except for environmental studies.
3. LPR MEC USEPA OU-35 – Periodic (annual<sup>2</sup>) MEC sweeps of about 1-mile of the Little Patuxent River between the Old Forge Bridge to a point 400 feet (ft) south of Maryland Highway 198, incorporating approximately 8 acres of the river and riverbanks. This includes appropriate disposal of MEC, if discovered. The most recent inspection was completed in 2020.

In addition to these three OUs on the TAP, the remainder of the approximately 346 acres is an active municipal airfield for light fixed-wing and rotary wing aircraft. The Tipton Airport is operated by the Tipton Airport Authority, a state-chartered public corporation.

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<sup>1</sup> The 2020 LTM Report for LPR and IAL3 MEC Survey recommended discontinuing visual surveys for MEC or MD at IAL3 (EA 2021a). The recommendation was subsequently approved by EPA and MDE.

<sup>2</sup> The 2018 LTM Report for LPR and IAL3 MEC Survey recommended reducing the survey frequency from annual to every 5 years (EA 2019b), which was ultimately accepted by regulators.



I:\projects\GIS\State\Federal\Northeast\Maryland\FortMeade\FortMeade\_LTM\XD\2020\_LTM\_Report\Figure 1-1 General Location of Fort George G. Meade.mxd

FIGURE 1-1  
 GENERAL LOCATION OF  
 FORT GEORGE G. MEADE  
 Anne Arundel County, Maryland



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## 2. SITE CHRONOLOGY

Table 2-1 provides a history of key site events that have occurred at the TAP.

**Table 2-1 Chronology of Site Events**

<b>Active Site Use</b>	<b>Date</b>
<b>TAP as active range/training area</b>	Early 1920s to 1950s
<b>TAP Evaluation Areas</b>	<b>Periods of Operation</b>
Inactive Landfill 1 (unlined sanitary landfill)	1950 to 1964
Inactive Landfill 2 (soil borrow area and unlined rubble disposal area)	1938 to 1986
Inactive Landfill 3 (soil borrow area and sanitary and leaf-dump landfill)	Late 1940s to 1963
Fire Training Area (fire training area)	1979 to 1998
Helicopter Hangar Area (helicopter maintenance)	Early 1980s to 1996
Little Patuxent River	Impacted by range and training activities
<b>Event</b>	<b>Date</b>
<b>Tipton Airfield Construction Completed</b> , including removal and disposal of much of IAL3 fill material.	1963
<b>Enhanced Preliminary Assessment Report</b> identifies the TAP Evaluation Areas.	October 1989
<b>Site Inspection (SI) Study</b> addressed all 5 Evaluation Areas at the TAP.	October 1992
<b>SI Study Addendum</b> – FTA, HHA, and IAL2 of the TAP were addressed.	1994
<b>Construction Specifications, Fire Training Area Demolition, Landfill Capping Projects</b>	26 January 1996
<b>Final Remedial Investigation (RI) Report</b> for IAL1, IAL2, IAL3, and Clean Fill Dump was completed.	August 1998
<b>Final RI Report</b> for HHA and FTA was completed.	October 1998
<b>Fire Training Area Removal Action Report</b> was issued.	28 October 1998
<b>Final Proposed Plan</b> for the HHA, FTA, and IAL3 was issued.	1 November 1998
<b>Record of Decision (ROD) for Tipton Airfield Area OU</b> which addressed HHA, FTA, and IAL3 issued.	30 December 1998
<b>Helicopter Hangar Area Removal Action Report</b> was issued.	19 March 1999
<b>Proposed Plan</b> for Tipton Airfield Parcel OU; IAL1, IAL2, and Tipton Groundwater was issued.	April 1999
<b>ROD for Tipton Airfield Parcel OU</b> for IAL1, IAL2, and Tipton Groundwater was issued.	20 July 1999
<b>First FYR Report, Final</b>	March 2005
<b>Second FYR Report, Final</b>	23 September 2011
<b>2014 Explanation of Significant Difference Report, Final</b>	8 May 2014
<b>2014 Final Maintenance and Repair Completion Report for IAL1 and IAL3</b>	17 November 2014
<b>2015 Land Use Control Remedial Design (Draft Final)</b>	March 2015
<b>Third FYR Review Report, Final</b>	23 September 2016
<b>Land Use Events</b>	<b>Date</b>
Defense Authorization Amendments and Base Realignment and Closure Act (BRAC) of 1988 mandated the closure of 9,000 acres of the FGGM's original 13,670 acres.	1988
Maryland Department of Natural Resources Evaluation of Surplus Property delineated the natural features and land uses of the 9,000-acre BRAC parcel.	January 1990
1991 Military Construction Appropriations Act directed the transfer of 7,600 acres of the 9,000 acres (BRAC parcel) to the Department of the Interior (DOI) for inclusion in the Patuxent Research Refuge.	16 October 1991
<b>DOI 1992 Transfer Assembly</b> , 498.2 acres transferred to DOI.	17 November 1992
<b>Decision Document, Safety Precautions to be Taken at Tipton Airfield</b> documents the approval of the proposed safety actions taken by the Army for IAL1, IAL2, and IAL3.	9 July 1998

**Table 2-1 Chronology of Site Events**

<b>Active Site Use</b>	<b>Date</b>
FGGM was formally added to USEPA's <b>National Priorities List (NPL)</b> .	28 July 1998
<b>Decision Document Addendum, Safety Precautions to be Taken at Tipton Airfield</b> further clarifies the institutional controls to include the prohibition of the use of groundwater at the TAP.	6 November 1998
USEPA submitted a <b>Notice of Intent</b> to delete Tipton Army Airfield from the NPL and Request for Comments.	1 September 1999
<b>Finding of Suitability to Transfer</b> documented the environmental conditions of the TAP for the land transfer to Anne Arundel County, Maryland.	October 1999
State of Maryland – <b>Quitclaim Deed</b> for Surplus Airfield Property, transferred TAP to Tipton Airport Authority.	July 2001
<b>Long-Term Groundwater Monitoring (LTGM) Events</b>	<b>Date</b>
<b>LTGM Plan</b>	June 2001
Final Combined Groundwater OUs Long-Term Monitoring (LTM) Work Plan	March 2012
Final 2014 Annual Maintenance Inspection Report, IALs 1 and 3	January 2015
Final Combined Groundwater Operable Units 2014 LTM Report	May 2015
Final 2015 Annual Maintenance Inspection Report, IALs 1 and 3	April 2016
Final Combined Groundwater Operable Units 2015 LTM Report	April 2016
Final Combined Groundwater Operable Units 2016 LTM Report	August 2017
Final 2016 Annual Maintenance Inspection Report, IALs 1 and 3	July 2017
Final Combined Groundwater Operable Units 2017 LTM Report	April 2018
Final 2017 Annual Maintenance Inspection Report, IALs 1 and 3	June 2018
Final Combined Groundwater Operable Units 2018 LTM Report	February 2019
Final 2018 Annual Maintenance Inspection Report, IALs 1 and 3	May 2019
Final 2019 Annual Maintenance Inspection Report, IALs 1 and 3	July 2020
Draft 2020 Annual Maintenance Inspection Report, IALs 1 and 3	March 2021
Draft Combined Groundwater Operable Units 2020 LTM Report	March 2021
<b>MEC Events</b>	<b>Date</b>
Ordnance Survey (1,400-Acre Parcel)	February 1992 – June 1993
An Ordnance and Explosives (OE) removal action - Tipton Airfield, Helicopter Hangar Area, and Fire Training Area.	1996
BRAC Parcel, Unexploded Ordnance Survey and Data Analysis	June 1997
A 3-ft-thick earthen MEC Safety Cover was installed at IAL1.	August 1998 – October 1999
Annual Non-Time Critical OE (NTCOE) Removal Action Report for Little Patuxent River and Tipton Airfield, IAL3, Sweep 2001, documents MEC sweep, removal of items and proper disposal of ordnance related items.	January 2002
U.S. Army Corps of Engineers (USACE) performed an Ordnance Sweep at IAL3	30 March 2006
USACE performed an Ordnance Sweep at IAL3 and Ball Field	5–6 May 2011
EA performed an Ordnance Sweep at IAL3	29-31 August 2016 and 9-11 September 2020
<b>Annual NTCOE Removal Action LTM Report, Little Patuxent River Sweeps, 2002–2020<sup>3</sup></b>	2002–2020

<sup>3</sup> No river sweep was conducted in 2019 as per recommendations made and accepted in the Final LTM Report for 2018 Little Patuxent River MEC Survey Report. The next sweep was recommended for 2020 concurrent with the FYR for the TAP MEC OU.

### 3. BACKGROUND

The TAP covers approximately 346 acres and is located southeast of State Route 198 and south of Highway 32 in Anne Arundel County. The Baltimore-Washington Parkway is to the west and the LPR runs through the west portion of the TAP and then to the south. The airfield consists of four hangars, an operations building, a fire station, taxiways and runway, and a helicopter hanger area. A stormwater management system exists under the airfield (EA 2021b).

#### 3.1 PHYSICAL CHARACTERISTICS

The TAP and the LPR are located within the fans of two former military ranges and are considered artillery impact areas. The MEC sweeps for the LPR are summarized in this FYR (U.S. Army Corps of Engineers [USACE] 2017).

##### 3.1.1 Site Geology and Topography

The FGGM-Base Realignment and Closure (BRAC) area (including the Patuxent Research Refuge-North Tract [PRR-NT] and TAP) is located just within the western boundary of the Coastal Plain physiographic province. Coastal Plain geology is characterized by a wedge of unconsolidated Cretaceous and Quaternary alluvial sediments (unconsolidated sands, silts, and clays) that dip and thicken toward the Atlantic Ocean. Underlying the Coastal Plain deposits is Precambrian crystalline bedrock composed predominately of gabbro, gneiss, and schist (ICF Kaiser Engineers [Kaiser] 1998a).

The general topography is characterized by flat land that gently slopes toward a few water bodies throughout the area. The majority of the site topography, which has been modified to accommodate the airfield, slopes gently to the west or south. Surface elevations at the TAP range from approximately 90 to 180 ft, measured using the North American Vertical Datum of 1988. The lowest elevation (90 ft) occurs within the LPR whereas the highest elevation (180 ft) occurs on the northern boundary of the TAP near State Route 32 (USACE 2017).

##### 3.1.2 Surface Water Hydrology

The TAP and the PRR-NT lie within the 932-square-mile Patuxent River watershed, one of the primary drainage systems in Anne Arundel County. Several surface water bodies are present within the refuge, including the Patuxent River and the LPR, Midway and Franklin Branches, and Lake Allen (formerly known as Soldier Lake). The Patuxent River receives drainage from numerous intermittent streams that emerge from both the TAP and the PRR-NT.

Runoff originating within the perimeter portions of the TAP is conveyed by drainages west or south to tributaries or drainages of the LPR. Runoff from the central portion of the area flows into a stormwater collection and conveyance system beneath the airfield, which discharges via french drains to the LPR or its drainages.

The LPR, north of the Old Forge Bridge, is designated as a State of Maryland waterbody, Use Class I-P, which is suitable for water contact recreation, protection of aquatic life, and as a public water

supply. The surface water intake for the FGGM Water Treatment Plant is located north of Route 198 upstream of the Highway 198 bridge; however, FGGM no longer uses water from the LPR (USACE 2017).

### **3.1.3 Regional Hydrogeology**

Groundwater resources in the Potomac Group sediments include three aquifers: the Upper Patapsco, the Lower Patapsco, and the Patuxent. The Arundel Formation and the middle confining layer of the Patapsco Formation (Middle Patapsco) act as confining layers separating the aquifers. These aquifers are confined on a regional scale, but they act as unconfined aquifers within their respective outcrop areas (USACE 2017).

Within this area, FGGM obtains water from six deep production wells, PW-1 to PW-6. Each of these deep wells is screened between 500 and 800 ft below ground surface (bgs) in the Patuxent Formation. Two of the wells are located on the FGGM Cantonment area north of State Route 32 and four of these wells are to the extreme eastern side of the PRR-NT. These deep wells are screened well below the thick Arundel Clay regional confining layer, which consists of stiff, reddish-brown clays with a thickness of 200 to 250 ft. (Kaiser 1998a)

### **3.1.4 Tipton Airfield Parcel Local Hydrogeology**

At the TAP, the water table is generally present at depths less than 15 ft bgs within the lower Patapsco Formation. The unconfined aquifer has a maximum saturated thickness of approximately 25 ft in this area. Unconfined groundwater flow is controlled by local topography, and flow is generally toward the LPR. The Arundel Clay acts as a regional confining layer below the Patapsco aquifer. However, groundwater is also locally found in confined or semiconfined sand lenses within the upper portions of the Arundel Clay. The Chesapeake Bay drainage controls the southeastward groundwater flow in the Patuxent Formation (USACE 2017).

### **3.1.5 Inactive Landfill 1**

IAL1 covers approximately 8 acres and is located in the western portion of the TAP between the LPR and Bald Eagle Drive. Although it is physically separated from the airfield by the LPR, IAL1 is considered part of the TAP. A small concrete blockhouse, formerly used as a communications building, is present on the northwest corner of the area. Public access to IAL1 is limited by the security fence and gate for the Patuxent Research Refuge.

### **3.1.6 Inactive Landfill 2**

IAL2 encompasses 10 acres north of Wildlife Loop and adjacent to the PRR-NT in the southwestern portion of the TAP. IAL2 was previously part of the TAA but was excised from the legal description of BRAC property and has since been retained by the Army. An estimated 3,500-ft-long perimeter fence encloses a 20-acre area, including the 10-acre landfill and a pond/wetland area along the northern fence boundary. No buildings or structures are present at IAL2.

### **3.1.7 Inactive Landfill 3**

IAL3 covers 78 acres within the eastern portion of the runway area. The TAA is constructed on IAL3 and consists of four hangars, an operations building, a fire station, taxiways and runway, and a helicopter training area. A stormwater management system is located under the airfield. An airfield boundary fence limits access to the airfield and IAL3.

### **3.1.8 Fire Training Area**

The FTA encompasses approximately 2 acres west of Airfield Road, north of General Aviation Drive, and approximately 800 ft east of the HHA. The area is flat and sparsely vegetated with grass. The northern half of the FTA is surrounded by a fence enclosing the former fire training pit and adjacent training area. The fire training pit was constructed of a concrete berm about 1 ft high and 20 ft in diameter, which was surrounded by a concrete apron. An oil/water separator located on the south side of the fire training pit was used in draining the pit. Water from the separator was transported from the site via an underground pipeline to a sanitary sewer. The fire training pit and the oil/water separator were removed during remediation activities in 1998.

### **3.1.9 Helicopter Hangar Area**

The HHA, covering approximately 5 acres, includes Building 90 (the Helicopter Hangar) and adjacent areas located at the northwest corner of the airfield. The HHA is located 800 ft west of the FTA. The HHA is roughly bounded by the LPR to the west, an unnamed tributary of the LPR to the north, Patuxent Freeway to the east, and the former helicopter parking area to the south. The HHA is surrounded by a chain-link fence that secures the site from both the LPR and Patuxent Road.

### **3.1.10 Little Patuxent River**

The LPR is located near the western border of the TAP and flows from northwest to southeast. State-listed endangered species are present in this area. The Patuxent Research Refuge has maintained diverse habitats in this river bottomland; wetlands and marsh areas are present along the river and the tributary streams. A nature trail parallels certain sections of the river. Although the LPR was not identified as a TAP Evaluation Area in the two site Records of Decision (RODs), the Explanation of Significant Difference (ESD) identifies it as a concern for MEC and it requires periodic MEC sweeps, along with appropriate disposal of discovered MEC.

The PRR-NT does not allow swimming, boating, fishing, or other recreational use of the LPR. The Army has constructed a fence along a portion of the river to discourage access, which includes signs warning about potential MEC exposure. The PRR-NT management maintains some of the former military roads for access, but other roads were allowed to return to natural conditions.

## **3.2 LAND AND RESOURCE USE**

The TAP, formerly known as TAA, is located in the north-central portion of the BRAC parcel. The TAP is used as an airfield for light fixed-wing and rotary-wing aircraft; usage is not expected

to change in the future. The 2009 Anne Arundel County General Development Plan, approved on 19 October 2009 by the County Council under Bill No. 64-09, states that over 100 aircraft are based at the TAP; the airport handles approximately 150 aircraft arrivals/ departures daily. In the future, the county hopes to extend the length of the 3,000-ft runway to 4,000 ft and increase the amount of hangar space to accommodate larger turboprop aircraft. Additionally, the county hopes to improve accessibility to the airport (Anne Arundel County 2009). On 2 April 2018, the Anne Arundel County Council approved Resolution No. 7-18: Approving Extension of the Tipton Airport Runway to a Length of 4,200 ft. The runway's extension will allow for larger airplanes to utilize the facility, thereby generating additional economic activity of an undetermined amount. The extended runway is expected to be beneficial to the corporate office parks nearby, so that tenants will have easier access for their corporate air travel needs (Anne Arundel County 2018).

Despite the TAP's transfer of ownership to the Tipton Airport Authority, the Army remains responsible for implementing, maintaining, reporting on, and enforcing the LUCs at the TAP. The Army remains responsible for any contamination generated as a result of their historical use of the property, and all associated decontamination, cleanup, and remedial action that may be required. The Army has authority and control over the management of the property with respect to conducting cleanup and remediation activities relating to the environmental restoration of the property.

The entire area within the TAP has a history of use as a military range dating back to the early 1920s. In Special Military Maps from 1923, the area, which was later designated as Tipton Airfield, was identified as an artillery impact area. A South Cantonment Map from 1941 shows that two ranges, an anti-tank range and anti-aircraft range, were located within the current Tipton area. In Summer 1942, 60-millimeter (mm) and 81-mm mortars were used in this area for target practice. During the same timeframe, live high-explosive shells were fired over the heads of troops for training purposes.

### **3.2.1 Inactive Landfill 1**

The boundary of IAL1 is based on the extent of historical operations, aerial photographs, and subsequent site investigation activities. The earliest known aerial photograph (1938) shows the IAL1 area as a cultivated field. In subsequent aerial photographs from 1943, 1952, and 1957, IAL1 appears as an open clearing or training area, with no evidence of ground scarring or landfill activity. According to the Enhanced Preliminary Assessment report (U.S. Army Environmental Center [USAEC] 1989), IAL1 was used as an unlined sanitary landfill from approximately 1950 to 1964. Landfill activities were first indicated in aerial photographs from 1963, which show barren areas and what appears to be trenches, probable debris, and mounded material presumably associated with landfill activities. Aerial photographs from 1970 on show the area as inactive. The 1963 tree line, which appears to correspond to the maximum extent of man-made activities, persists to the present. Areas of mounded materials located on the north side of IAL1, which were first observed on the 1970 photographs, also persist to the present. Although IAL1 is physically separated from the airfield by the LPR, it is part of the TAP. As with the other areas of the TAP, the land use for IAL1 will not change from its current use as a buffer area adjacent to the municipal airport and the PRR-NT.

### **3.2.2 Inactive Landfill 2**

Historical aerial photographs of IAL2, compiled by USEPA, indicate that IAL2 was initially operated as a soil borrow area (USACE 2001) based on the appearance of large active excavations in aerial photographs from 1938 and 1943. By 1952, the borrow area was mostly overgrown. According to the Enhanced Preliminary Assessment (USAEC 1989), the area was subsequently operated as an unlined rubble disposal area. In 1957 and 1963, mounded materials and probable fill material were apparent at its maximum extent in the southern portion of the area. IAL2 was used sparingly between 1963 and 1970, where aerial photographs indicate an increase in vegetation growth. In 1970, a single north-northwest trending trench was identified along the east side of the access road (USACE 2001). After 1980, continued disposal activity occurred in the northern portion of IAL2, where graded and disturbed areas were visible in 1986. During the 1998 Remedial Investigation (RI) fieldwork, piles of rubble material (brush, concrete, and asphalt debris) of an apparent more recent origin were observed in a marshy area on the north side of IAL2. As with other areas of the TAP, the land use for IAL2 will not change from its current use as a buffer area adjacent to the municipal airport and the PRR-NT (USACE 1998).

### **3.2.3 Inactive Landfill 3**

According to the Enhanced Preliminary Assessment (USAEC 1989), IAL3 was initially used as a sand borrow area. During the late 1940s and 1950s, the area was used as a sanitary and leaf-dump landfill. The TAA was constructed over the fill area in 1963. The airfield consists of four hangars, an operations building, a fire station, taxiways and runway, and a helicopter hangar area. A stormwater management system exists under the airfield (EA 2021b), and it discharges through French drains to the LPR, or its drainages.

The site history indicates that the main disposal area was under what is now the eastern portion of the runway area. According to the Enhanced Preliminary Assessment (USAEC 1989), much of IAL3 was excavated and the materials were disposed of off post during construction of the Tipton Airfield in 1963. The airfield construction plans, which include both pre- and post-construction geotechnical soil boring logs, indicate that landfill materials were removed from beneath all runway construction areas for structural reasons. However, landfilled materials are still present beneath areas adjacent to the runways. As with the other areas of the TAP, the land use for IAL3 will not change from its current use in support of the active municipal airport. The boundary of IAL3 was developed based on the extent of historical operations, aerial photographs, and subsequent site visits.

### **3.2.4 Fire Training Area**

The area was constructed around 1979 for training purposes by the Fort Meade Fire Department. Other emergency response training, such as self-contained breathing apparatus training, and emergency rescues were also performed here. Fire Training Areas at military airfields are likely sources of per- and polyfluoroalkyl substances (PFAS) from aqueous film forming foam (AFFF). PFAS investigations are ongoing and separate from the remediation reviews of this FYR. As with the other areas of the TAP, it is anticipated that the land use for the FTA will not change from its current use as part of the municipal airport.



### 3.2.5 Helicopter Hangar Area

The Helicopter Hangar (Building 90) and associated structures were constructed in the early 1980s. During operations, the Army performed maintenance and storage of helicopters at Hangar 90. Typical activities included washing, disassembly, repair, and painting of aircraft. Hangar 90 was cleared and taken out of service when it was decommissioned in early 1996 (EA 2021b). It is anticipated that the land use at the HHA will continue into the foreseeable future in support of the operations of the Tipton Airport.

### 3.2.6 Little Patuxent River

According to the *Explosives Safety Submission for Ordnance and Explosives Removal and Property Release Tipton Airfield, Fort Meade, Maryland* (USACE 1995), no unexploded ordnance (UXO) clearance was to be conducted in the river; therefore, the river and adjacent property was to be retained by the Department of Defense (DoD). A fence was to be constructed along the river to prevent access with signs posted along the fence warning of UXO.

The Explosives Safety Submission was changed as documented in the *Amendment to Explosives Safety Submission for Tipton Army Airfield, Fort Meade, Maryland* (FGGM 1997). The Amendment states that the presence of potential state-listed threatened species precludes dredging of the river; however, the presence of MEC in the river is a safety hazard. Therefore, the banks along the river were cleared of UXO to a depth of 4 ft or the water table (whichever was less) and the surface of the riverbed was to be cleared annually. The disposition of LPR in that area was changed from being retained by the Army to BRAC disposal/transfer.

The subject stretch of the LPR, from 400 ft south of the Highway 198 Bridge to the Old Forge Bridge, will remain in its current use for the foreseeable future. The Patuxent Research Refuge oversees the use of the LPR in this area, and the policy is to prohibit any recreational activities, including swimming, wading, boating, or fishing. The TAP evaluation areas are displayed on **Figure 3-1**.

## 3.3 HISTORY OF CONTAMINATION

The entire TAP is suspect for potential MEC contamination as a result of the historical use of this area as artillery ranges and for troop training. This area has a history of use as a military range as far back as the early 1920s. In Special Military Maps from 1923, the area, which was later designated as Tipton Airfield, was identified as an artillery impact area. A 1941 South Cantonment Map shows that two ranges were located within the future Tipton area. One was an anti-tank range and the other was an anti-aircraft range. In Summer 1942, 60-mm and 81-mm mortars were used in this area for target practice. During the same timeframe, live high-explosive shells were fired over the heads of troops for training purposes.

**Table 3-1** details the history of chemical and MEC contamination for the TAP.

**Table 3-1 History of Contamination**

Evaluation Areas	History of Contamination	
	Chemical	MEC
IAL1 (FGGM 10)	IAL1 was an unlined sanitary landfill from approximately 1950 to 1964; however, the types of material disposed of at IAL1 are unknown. Site investigations include the 1992 Site Inspection (SI) Study (USAEC 1992) and the August 1998 Remedial Investigation (RI)/Feasibility Study (FS) (Kaiser 1998a).	Historic cantonment maps indicate that the TAP is a potential artillery impact area because of the location of two former military ranges intersecting the property. A 1995–1997 MEC sweep, and removal action was conducted over the entire TAP to remove all ordnance and related scrap to a depth of 4 ft (USACE 1995 and FGGM 1997). No intrusive work was conducted at the landfills or within a 25-ft buffer for safety reasons. Paved areas, buildings, and areas beneath water were not included in the sweep.
IAL2 (FGGM 31)	IAL2 was initially operated as a soil borrows area (1938 to 1942) and then used as an unlined rubble disposal area until 1986. Site investigations include the 1992 SI Study (USAEC 1992) and 1994 SI Study Addendum (addressing data gaps in the previous SI Study) (USAEC 1995), and the August 1998 RI/FS (Kaiser 1998a).	See IAL1 MEC description above. IAL2 could not be cleared of suspected MEC because it contains large amounts of rubble debris and is partially composed of wetlands with a shallow water table. The IAL2 was not included in the TAP BRAC land transfer to Anne Arundel County.
IAL3 (FGGM 31)	IAL3 was initially used as a sand borrows area. It was used as a sanitary and “leaf-dump” landfill in the late 1940s and 1950s. The airfield was constructed over IAL3 in 1963. Much of the IAL3 was excavated and disposed off-post. Materials were removed from beneath all the runway construction areas; however, landfilled materials are still present in areas next to the runways. Site investigations include the 1992 SI Study (USAEC 1992) and the August 1998 RI/FS (Kaiser 1998a).	See IAL1 MEC description above. In 1998, a MEC sweep was conducted in and around the IAL3. A long-term monitoring plan was developed for the IAL3 that provided a sweep schedule (years 3, 7, and then every 5 years) to ensure that no MEC items have migrated to the surface through frost action. Subsequent MEC sweeps were conducted in 2001 and 2006 per the sweep schedule described in the July 1998 Decision Document (FGGM 1998b).
FTA (FGGM 32)	FTA was constructed around 1979 for training purposes by the Fort Meade Fire Department. Fires were typically set using gasoline or aviation fuel inside the fire training pit or in portable burn pans. Site investigations include the 1992 SI Study (USAEC 1992), 1994 SI Study Addendum (USAEC 1994), and the October 1998 RI/FS (Kaiser 1998b). The October 1998 FTA Removal Action Report documented the removal of the fire pit and the oil/water separators from the site (Radian International 1998).	A 1995–1997 MEC sweep and removal action was conducted over the entire TAP to remove all ordnance and related scrap to a depth of 4 ft (USACE 1995 and FGGM 1997). Paved areas, buildings, and areas beneath water were not included in the sweep.

**Table 3-1 History of Contamination**

Evaluation Areas	History of Contamination	
	Chemical	MEC
HHA (FGGM 80)	HHA was used for helicopter maintenance, starting in the early 1980s until it was cleared and taken out of service in early 1996. Fuels, hydraulic and lubricating oils, detergents, and solvents were used there. Site investigations include the 1992 SI Study (USAEC 1992), 1994 SI Study Addendum (USAEC 1994), and the October 1998 RI/FS (Kaiser 1998b). The 1999 HHA Removal Action Report documented the removal of the oil/water separators, gasoline evaporation pits, acid pits, and piping related to the hangar area from the site (Radian International 1999). As confirmed by LTM sampling in 2020, there is a confirmed presence of PFAS contamination within groundwater in the vicinity of the HHA. The source of this PFAS is likely attributed to the use of AFFF, a fire suppressant used to extinguish flammable liquid. PFAS will be addressed in a separate PFAS RI.	A 1995–1997 MEC sweep and removal action was conducted over the entire TAP to remove all ordnance and related scrap to a depth of 4 ft (USACE 1995 and FGGM 1997). Paved areas, buildings, and areas beneath water were not included in the sweep.
Little Patuxent River (FGGM 85)	None known.	The LPR has the same history of MEC contamination as the other areas of the TAP listed in this table. However, there have been no subsurface MEC clearances conducted for the LPR. The ESD in 2014 is where the process to address potential MEC contamination in the LPR was identified. Prior to the ESD, annual MEC sweeps were conducted (beginning in 2001) of the approximately 1-mile stretch of the LPR.

### 3.4 INITIAL RESPONSE

#### 3.4.1 MEC Response

Multiple ordnance sweeps and removals were performed on portions of the TAP (separate from the LPR) beginning in 1994 and continuing through 1999. The most comprehensive sweep and removal began in 1995, with the goal to remove all ordnance and related scrap to a depth of 4 ft on the TAP (FGGM 1998b). No intrusive work was conducted at the landfills or within a 25-ft buffer for safety purposes. Paved areas and buildings were also not included in the sweep.

Smaller, more focused follow-up MEC sweeps, and removals were conducted over the next several years. These additional sweeps addressed items such as ordnance removal in an airfield drainage swale in 1998 that covered an area that had standing water during the initial effort.

A NPL CERCLA Decision Document (DD) and DD Addendum were finalized in July 1998 (FGGM 1998b) and November 1998 (FGGM 1998c), respectively. This 1998 DD selected the minimum 3-ft-thick earthen UXO safety cover on areas of IAL1, and it also selected land use restrictions. The 1998 DD selected appropriate restrictions on surface/subsurface excavations; the need for erection of a fence around IAL2; that the Army would retain control of the IAL2 property; and that regular surface sweeps of IAL3 would be conducted. In addition, periodic inspections are required for the IAL2 fence, as well as repair of any damage. The November 1998 DD Addendum established groundwater LUCs, discussed further below.

As part of the establishment of a 3-ft-thick earthen safety cover on IAL1, an ordnance clearance to a 4-ft depth was conducted. The approximately 5.5-acre area of IAL1 that could not be cleared of ordnance was covered with a 3-ft-thick earthen safety cover. In addition, periodic inspections of IAL1 are required to minimize impacts due to erosion.

Upon transfer of the airport property to the Anne Arundel County Tipton Airport Authority in July 2001, the Quitclaim Deed contained provisions for institutional controls to be in place at TAP. The institutional controls come in the form of deed restrictions and include a prohibition on residential use of the property (without evaluation of residential exposure risk), accessing or using groundwater underlying the TAP for any purpose, except for the purpose of environmental study or as incidental to construction (the 1998 DD Addendum permitted groundwater use only for environmental studies). Additionally, the institutional controls prohibited any surface or subsurface excavations, digging, well drilling or other disturbances of soil, or below paved surfaces, without prior written approval of the government. The written approval is not required for the emergency repair of existing utilities.

Beginning in 2001, annual MEC sweeps<sup>4</sup> were conducted on an approximately 1-mile stretch of the LPR. The sweeps are conducted on the surface of the riverbed and bank, as opposed to subsurface disturbance/dredging due to concerns for state-listed threatened species. Between the years of 2001 and 2020, almost 900 munitions debris items were recovered (the majority of items

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<sup>4</sup> Based on recommendations made and approved in the 2018 MEC sweep report, the frequency of the LPR MEC sweeps was reduced from annual to potentially every five years.

were practice rockets); and only five MEC items have been recovered and disposed of during this time.

### **3.4.2 Chemical Contamination Response**

The DD Addendum in November 1998 prohibited the use of groundwater for any purposes other than for conducting environmental studies, and it also restricted residential use without an evaluation of residential exposure risks.

### **3.5 BASIS FOR TAKING ACTION**

Human health risk assessments conducted as part of the two RIs for the TAP resulted in the conclusion of no unacceptable risk based on current and anticipated future uses of the property for five evaluation areas plus the TAP area groundwater. The TAA OU consists of the FTA, HHA, and IAL3; and the TAP OU consists of IAL1, IAL2, and the entire TAP groundwater. The human health risk assessments evaluated surface soil (site worker and trespasser), subsurface soil (future excavation worker), surface water (trespasser), sediments (trespasser) and groundwater (future site worker).

The ecological risk assessments for the surface soil determined that there were exceedances of toxicity reference values for aluminum, chromium, zinc, vanadium, and low-level pesticides for terrestrial invertebrates (as represented by earthworms) or for plants. However, based on the combination of there also being toxicity reference value exceedances for some of the background metals, as well as the site's current and likely future use remaining as a commercial airfield, it was determined that the site conditions "do not pose an unacceptable risk to... ecological receptors" (FGGM 1999).

The November 1998 DD Addendum, *Safety Precautions to be Taken at Tipton Airfield, Fort George G. Meade, MD*, established LUCs for the groundwater at Tipton. It stated, "In order to further protect the public's health and welfare, the restriction on drilling without prior written approval from the Army is being modified to prohibit the use of groundwater at Tipton for any potable or non-potable purposes except for use in conducting environmental studies; and a restriction to prohibit residential use without evaluation of residential exposure risks is added." Through the 2014 ESD, the LUCs from the 1998 DDs were incorporated into the CERCLA remedy selection documents.

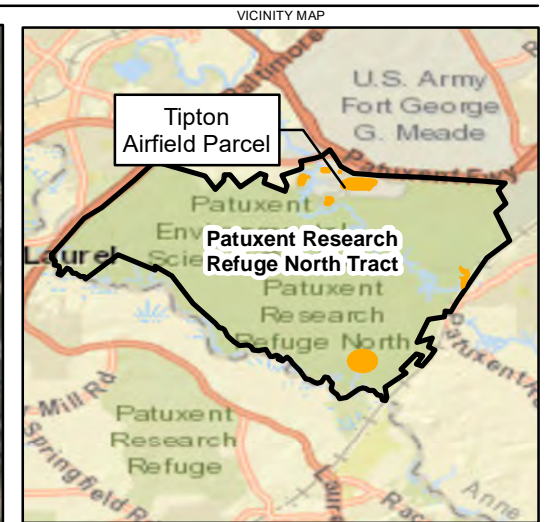
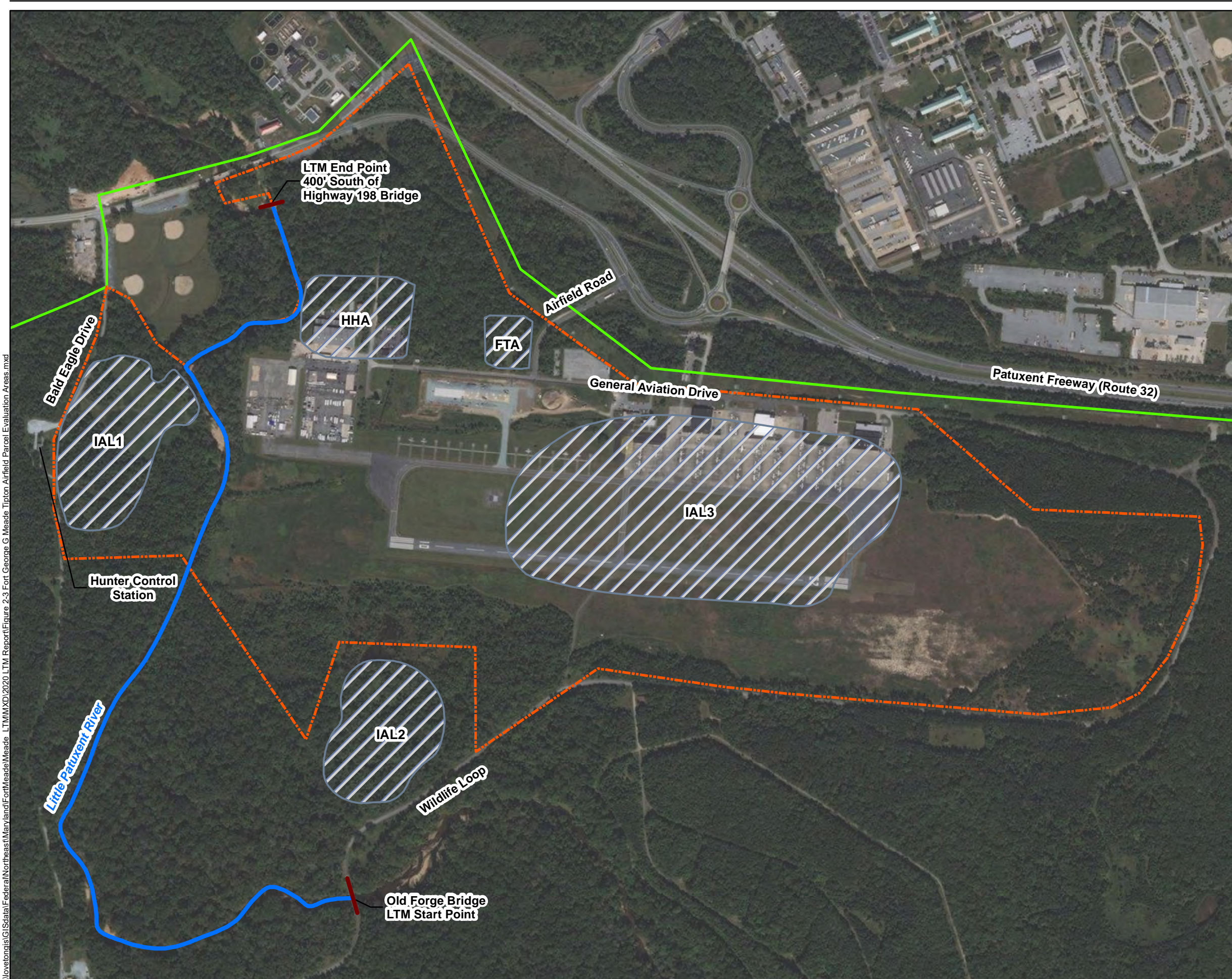
There were several removal actions taken related to MEC on the TAP which focused on removing MEC to 4 ft below the ground surface (FGGM 1998b). These actions did not generally address MEC which may be present in:

- the footprint of the landfills
- within a 25-ft buffer around the landfills
- areas located under paved surfaces and buildings.

Given the lack of evidence of MEC clearance in these three areas listed above, it should be assumed that the potential for encountering MEC exists. Soil disturbance activities in these three areas

should be conducted following “moderate to high” probability protocols for encountering MEC. Compliance with appropriate protocols is based on the requirement to obtain Army approval prior to conducting any soil disturbance activities on the TAP.

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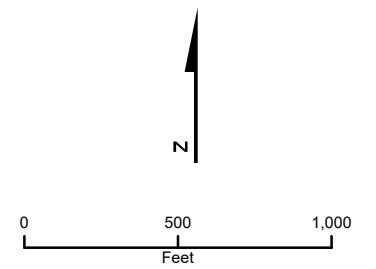


**Legend**

-  River MEC Sweep
-  Evaluation Area
-  Installation Boundary
-  Tipton Airfield Parcel Boundary

Note:  
 HHA = Helicopter Hangar Area  
 FTA = Fire Training Area  
 IAL = Inactive Landfill

Map Date: February 2021  
 Data Sources: USACE 2010, ESRI 2011



**FIGURE 3-1**  
 FORT GEORGE G. MEADE  
 TIPTON AIRFIELD PARCEL  
 EVALUATION AREAS  
 Anne Arundel County, Maryland



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## 4. REMEDIAL ACTIONS

### 4.1 REMEDY SELECTION

The following is a review of the remedies selected at the TAP. **Table 4-1** briefly summarizes the selected remedies for each of the TAP OUs and the affected media. **Table 4-2** summarizes the LUCs that have been implemented and maintained at the TAP.

The 1998 DD and its Addendum established LUCs, which perform the following: prohibit any surface or subsurface disturbance of the soil at the TAP without Army approval; require the Army to retain the IAL2 property and maintain site security (fencing); prohibit drilling of any wells or any other drilling without Army approval; prohibit the use of any groundwater at the TAP for any purpose except environmental studies; and prohibit residential use of the property without a prior residential risk-evaluation. Additionally, the 1998 DD required periodic surface sweeps for MEC for IAL3, the installation of a 3-ft-thick earthen UXO safety cover on IAL1, and periodic monitoring of IAL1 for erosion concerns. These LUCs were in place when the December 1998 and June 1999 RODs were generated, and these land use restrictions allowed for No Further Action (NFA) determination with regards to soils and groundwater at the TAP OU and TAA OU. These LUCs were then formally incorporated into the CERCLA RODs via the May 2014 ESD. The 2014 ESD also states that the Army will continue to conduct annual MEC sweeps<sup>5</sup> of the LPR.

This FYR evaluates the remedies established for the three OUs at the TAP. These three OUs and their respective remedies are:

- 1) **TAA USEPA OU-17 – FTA, HHA, and IAL3 – Established via December 1998 ROD and modified by May 2014 ESD.** NFA with regards to the soils at TAA OU represents a final remedial action determination. Periodic MEC surface sweeps required for IAL3, currently every 5 years<sup>6</sup>, as well as annual inspections of the condition of IAL3. LUCs restrict excavation or other disturbance of surface or subsurface soils and prohibit use of groundwater for any uses other than environmental studies.

It is noted that the ESD refers to the existence of a minimum 3-ft-thick earthen UXO safety cover for IAL3 and describes the average landfill cover thickness to be 37 inches. However, a soil cover for IAL3 was never formally selected as a component of the original remedies; neither the 1998 DD nor the 1998 ROD require that a minimum soil cover be maintained.

- 2) **TAP USEPA OU-08 – IAL1, IAL2, and entire TAP area groundwater– Established via June 1999 ROD and modified by May 2014 ESD.** NFA with regards to the soils, sediment, and surface water at TAP OU represents a final remedial action determination. Periodic inspections of IAL1 (3-ft-thick earthen UXO safety cover) and IAL2 are required;

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<sup>5</sup> Based on recommendations made and approved in the 2018 MEC sweep report, the frequency of the LPR MEC sweeps was reduced from annual to potentially every five years.

<sup>6</sup> Based on the results of the 2020 IAL3 survey event and previous findings, it was recommended that magnetometer-assisted surface visual surveys be discontinued (EA 2021a). This recommendation has been approved by EPA and MDE.

for IAL2 this includes the requirement to inspect and maintain security measures (fencing) restricting unauthorized access. LUCs are in place and they restrict excavation or other disturbance of surface or subsurface soils and prohibit use of the groundwater for any uses other than for environmental studies.

The June 1999 ROD presents the groundwater remedy to be NFA with the following monitoring/reporting activities:

- Every 2 years after the date of the 1999 ROD, the groundwater at the TAP will be sampled from certain wells. These monitoring results will be provided to the Army, USEPA, and (MDE)
- The TAP will be inspected annually to ensure compliance with the land use restrictions.
- A review every 5 years will be conducted to evaluate the frequency and need for continued groundwater monitoring and to ensure that the remedy continues to provide adequate protection for human health and the environment.

The May 2014 ESD (URS 2014) incorporates the groundwater protection LUCs from the 1998 DD and its Addendum (see **Table 4-2**) into the CERCLA remedy and states that under the existing remedy the Army will continue to “monitor the groundwater until contaminant levels are below levels specified in the TAP OU LTGM program.” Additionally, the May 2014 ESD increased the sampling frequency to annual to increase the analytical results database in order to better determine a statistical trend.

These long-term groundwater monitoring (LTGM) contaminant levels were established in the LTGM Work Plan for the TAP (EA 2015a) and these groundwater monitoring criteria are outlined in **Table 4-3**.

- 3) **LPR MEC USEPA OU-35 – Established via May 2014 ESD.** Periodic MEC sweeps of the LPR (along about 1 mile of river between the Old Forge Bridge to a point 400 ft south of Maryland Highway 198, incorporating approximately 8 acres of the river and embankment), with appropriate disposal of ordnance, if discovered.

Additionally, the Army prepared a TAP LUC Remedial Design, which identifies and sets forth procedures to implement the LUCs described in the 1998 DD and DD Addendum as incorporated into the CERCLA remedy via the May 2014 ESD (URS 2014b). The LUC Remedial Design provides a process apart from the FYR for annual reviews of LUC implementation and enforcement to ensure implemented LUCs continue to adequately protect human health and the environment.

1 **Table 4-1 Summary of Affected Media and Selected Remedies for the TAP and LPR**

Evaluation Areas; Operable Unit [Army Evaluation Area]	Affected Media and Selected Remedy				
	Soils	Surface Water	Sediment	Surface and Subsurface MEC	Groundwater (TAP Groundwater OU)
IAL1; TAP OU [FGGM 10]	NFA <sup>(1)</sup>	NFA <sup>(1)</sup>	NFA <sup>(1)</sup>	Between August 1998 and October 1999, a MEC clearance to a 4-ft depth was conducted and a 3-ft-thick earthen MEC safety cover was constructed. IAL1 is monitored to ensure that the cover is not compromised by erosion. Also, LUCs were implemented. <sup>(3)</sup>	LTGM & LUCs <sup>(1)(4)</sup>
IAL2; TAP OU [FGGM 31]	NFA <sup>(1)</sup>	NFA <sup>(1)</sup>	NFA <sup>(1)</sup>	A 3,500-ft-long, 7-ft-high chain-link fence with three-strand barbed wire was installed; it encloses approximately 20 acres, including the 10-acre landfill. The fence ties into an existing fence along Wildlife Loop Road. The fence is to be inspected periodically and any damage repaired. Also, LUCs were implemented. <sup>(9)</sup>	LTGM & LUCs <sup>(1)(4)</sup>
IAL3; TAA OU [FGGM 31]	NFA <sup>(2)</sup>	NA	NA	Periodic MEC sweeps are to be conducted every 5 years at IAL3; the next MEC sweep is scheduled for fiscal year 2016. The ESD indicated a minimum 3-ft-thick earthen UXO safety cover at IAL3 <sup>(8)</sup> . Also, LUCs were implemented. <sup>(3)</sup>	LTGM & LUCs <sup>(1)(4)</sup>
FTA; TAA OU [FGGM 32]	NFA <sup>(2)</sup>	NA	NA	During ordnance removal activities, all paved areas were excluded <sup>(2)</sup> ; thus, there is the potential for the existence of MEC below paved areas at the FTA. Also, LUCs were implemented. <sup>(3)</sup>	LTGM & LUCs <sup>(1)(4)</sup>
HHA; TAA OU [FGGM 80]	NFA <sup>(2)</sup>	NA	NA	During ordnance removal activities, all paved areas were excluded <sup>(2)</sup> ; thus, there is the potential for the existence of MEC below paved areas at the HHA. Also, LUCs were implemented. <sup>(3)</sup>	LTGM & LUCs <sup>(1)(4)</sup>
LPR OU	NA	NA	Annual Sweeps <sup>(5)(6)(7)</sup>	MEC sweeps are to be conducted periodically in the LPR from 400 ft south of the Maryland Route 198 Bridge, downstream to the Old Forge Bridge (near IAL2). <sup>(5)(6)(7)(8)</sup>	NA

NOTES:  
 (1) Final Record of Decision, Tipton Airfield Parcel (TAP) Operable Unit, Fort George G. Meade, Fort Meade, Maryland, July 1999. USEPA/ROD/R03-99/006.  
 (2) Final Record of Decision, Tipton Airfield Area Operable Unit, Fort George G. Meade, Fort Meade, Maryland, USEPA/ROD/R03-99/005.  
 (3) Safety Precautions to be Taken at Tipton Airfield, Fort George G. Meade, Maryland, Decision Document  
 (4) Safety Precautions to be Taken at Tipton Airfield, Fort George G. Meade, Maryland, Decision Document Addendum  
 (5) Work Plan Addendum for Little Patuxent River, Long Term Monitoring, Munitions and Explosives of Concern Survey.  
 (6) Ordnance and Explosives (OE) Removal Action at the Little Patuxent River, Fort George G. Meade, Maryland, Work Plan Addendum 1, Revision 6  
 (7) Final Work Plan Non-Time Critical Ordnance and Explosives (OE) Removal Action at the Little Patuxent River, Fort George G. Meade, Maryland  
 (8) Explanation of Significant Difference Report, Tipton Airfield Parcel, Anne Arundel County, MD. Final.

NA = Not applicable.

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**Table 4-2 Summary of the LUCs Implemented at the TAP**

LUCs Description	LUC Source
<b>Groundwater</b>	
Prohibit drilling of wells at the TAP.	DD Addendum, Safety Precautions to be taken at Tipton Airfield, Fort George G. Meade, Maryland. Dated 6 November 1998 (FGGM 1998c).
The restriction on drilling without prior written approval from the Army is modified to prohibit the use of groundwater at the TAP for any potable or non-potable purposes except for environmental studies.	
Prohibit residential use of the property without evaluation of residential exposure risks.	
<b>MEC</b>	
Prohibit any surface or subsurface excavations, digging, or other disturbances of soil, or below paved surface, without written approval of the Army.	DD, Safety Precautions to be taken at Tipton Airfield, Fort George G. Meade, Maryland. Dated 9 July 1998 (FGGM 1998b).
The Army's approval required for activities in the first 4 ft where there was previous clearance of ordnance items. The exception to this is for emergency repair of existing utilities.	
The Army will retain the IAL2 property and maintain site security. The fence will be inspected periodically, and any damage will be repaired.	
Note: The above LUCs established in the described DDs were formally incorporated into the CERCLA RODs via the May 2014 ESD.	

**Table 4-3 Groundwater Monitoring Criteria for TAP Area Groundwater**

Compound	TAP Groundwater Monitoring Criteria (µg/L)
<b>Volatile Organic Compounds</b>	
1,1,2,2-Tetrachloroethane	0.076†
Benzene	5
Carbon tetrachloride	5
<i>cis</i> -1,2-Dichloroethene	70
Vinyl chloride	2
<b>Polycyclic Aromatic Hydrocarbon Compounds</b>	
Naphthalene	0.17†
<b>Metals</b>	
Arsenic	10
Iron	14,000†
Manganese	430†
NOTE: † = No Maximum Contaminant Level exists; value is the unadjusted tap water USEPA Region 3 Screening Level (RSL) from the USEPA RSL Table, May 2016.	

## 4.2 REMEDY IMPLEMENTATION

The Fort Meade Environmental Partnership, which includes the Army, USEPA Region III, and MDE, selected 15 wells for annual groundwater monitoring at the TAP. The 1999 ROD states that the Army will collect groundwater samples every 2 years at the TAP from certain wells; however, the second FYR report (2011) recommended that the long-term monitoring (LTM) frequency be modified from biennial to annual and that volatile organic compound (VOC) breakdown daughter products be added to the TAP LTM Program (U.S. Army 2011). This was documented more

formally in the 2014 ESD. No groundwater sampling occurred in 2010 and 2011 during the development of the new LTGM work plan.

Per recommendations made and accepted in the Combined Groundwater OU 2016 LTM Report, VOC sampling<sup>7</sup> at all wells was discontinued. No VOCs had been reported above the Maximum Contaminant Level (MCL) or Regional Screening Level (RSL) since 2005. Additionally, as per recommendations made and accepted in the Combined Groundwater OU 2017 LTM Report, naphthalene analysis for wells FTAMW-3 and FTAMW-7 was discontinued. Naphthalene concentrations in both wells had been below the conservative USEPA RSLs for tap water for three consecutive annual events.

As per recommendations made and accepted in the Combined Groundwater OU 2018 LTM Report, annual groundwater sampling in the TAP was reduced to every 5-year sampling as the TAP contains waste managed-in-place and FYRs will continue to be conducted by the Army. During the 2020 sampling event in support of this FYR, the full list of contaminants of concern (Target Compound List [TCL] VOCs, select explosives (2,4,6-Trinitrotoluene, 2-Amino-4,6-dinitrotoluene, 4-Amino-4,6-dinitrotoluene, and RDX), select SVOCs (acetophenone, bis(2-ethylhexyl)phthalate, and naphthalene), and Target Analyte List [TAL] metals) was sampled from the monitoring wells in the IALs, regardless of whether the constituent had been removed from the LTM program to verify that no new releases to groundwater occurred. The full list of contaminants of concern was not sampled from the monitoring wells in the HHA and the FTA; these areas are former source areas and concentrations of organic contaminants of concern have attenuated below the MCLs or RSLs. Additionally, groundwater was evaluated for the presence of PFAS by USEPA Method 537 Modified<sup>8</sup>. The DoD has identified current and former federal facilities for potential release of PFAS into the underlying groundwater that may affect drinking water supply wells. The former FTA site at the TAP was identified as a potential site in the DoD inventory of sites that may have used aqueous fire-fighting foam. PFAS was included in the analytical scope during the 2020 sampling event to evaluate the presence of these chemicals.

Fifteen monitoring wells were sampled during the 2020 sampling event, including one well in the Patuxent Formation, eight wells in porous zones in the Arundel Clay, two wells that are either in permeable zones of the Arundel Clay or in the Lower Patapsco Formation (water table aquifer), and four wells in the Lower Patapsco Formation (**Figure 4-1**). Monitoring well identification numbers and the sites that they are associated with are listed in **Table 4-4**. The analytical scope is provided in **Table 4-5** and **Table 4-6**. The LTGM results are compared to current MCLs or USEPA RSLs when MCLs do not exist as established per the LTGM program, as specified by the ESD. PFAS data were compared to the Resident Risk-Based RSLs for Tapwater using USEPA's Screening Level Calculator, HQ=0.1, November 2020 as referenced in the Memorandum for Assistant Secretary of The Army October 2019.

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<sup>7</sup> 1,1,2,2-Tetrachloroethane, benzene, carbon tetrachloride, *cis*-1,2-dichloroethene, and vinyl chloride.

<sup>8</sup> PFAS by liquid chromatography/tandem MS (LC/MS/MS) compliant with DoD QSM 5.3 Table B-15, and SOPs from the DoD ELAP-approved laboratory.

A review like this one will occur every 5 years to evaluate the frequency and need for continued LTGM. This is to ensure that the remedy continues to provide adequate protection of human health and the environment.

**Table 4-4 TAP Area Groundwater OU LTM Monitoring Well Construction Details**

<b>Well Identification</b>	<b>Well Total Depth (ft bgs)</b>	<b>Screen Interval (ft bgs)</b>	<b>Aquifer</b>
<b>Inactive Landfill 1</b>			
MW1-4	125	115-125	Arundel Clay
MW1-7	12.2	7-12	Arundel Clay
MW-23	20	5-20	Arundel Clay
<b>Inactive Landfill 2</b>			
MW2-1	17	6-16	Arundel Clay
MW2-2	302.5	292-302	Patuxent
MW2-4	177	164.5-174.5	Arundel Clay
MW-29	25	10-25	Arundel Clay
<b>Inactive Landfill 3</b>			
MW3-1	34.00	23.5-33.5	Lower Patapsco
MW3-2	106.5	96-106	Lower Patapsco
MW3-5	92	82-92	Lower Patapsco
MW3-6	25	15.25	Lower Patapsco
<b>Helicopter Hangar Area</b>			
HHAMW-9	14	4-14	Arundel Clay
HHAMW-11	14.1	4.1-14.1	Arundel Clay
<b>Fire Training Area</b>			
FTAMW-3	14.1	3.5-13.5	Lower Patapsco/ Arundel Clay
FTAMW-7	12.1	2.1-12.1	Lower Patapsco/ Arundel Clay

**Table 4-5 Volatile Organic Compounds, Semivolatile Organic Compounds, Explosives, and TAL Metals Analyte List**

Compound	CAS Number	PAL (µg/L) <sup>(a)</sup>	LOD (µg/L)	LOQ (µg/L)	DL (µg/L)
<b>Volatile Organic Compounds</b>					
1,1,1-Trichloroethane	71-55-6	200	1.0	2	0.50
1,1,2,2-Tetrachloroethane	79-34-5	0.076	1.0	2	0.200
1,1,2-Trichloroethane	79-00-5	5	1.0	2	0.25
1,1,2-Trichlorotrifluoroethane	76-13-1	10000	5.0	10	2.50
1,1-Dichloroethane	75-34-3	2.8	1.0	2	0.50
1,1-Dichloroethylene	75-35-4	7	1.0	2	0.50
1,2,3-Trichlorobenzene	87-61-6	7	5.0	10	2.50
1,2,4-Trichlorobenzene	120-82-1	70	5.0	10	2.50
1,2-Dibromo-3-Chloropropane	96-12-8	0.2	5.0	10	2.50
1,2-Dibromoethane (EDB)	106-93-4	0.05	1.0	2	0.25
1,2-Dichlorobenzene	95-50-1	600	1.0	2	0.5
1,2-Dichloroethane	107-06-2	5	1.0	2	0.5
1,2-Dichloropropane	78-87-5	5	1.0	2	0.5
1,3-Dichlorobenzene	541-73-1	600	1.0	2	0.5
1,4-Dichlorobenzene	106-46-7	75	1.0	2	0.5
2-Butanone (MEK)	78-93-3	5600	5.00	10	2.50
2-Hexanone	591-78-6	38	5.0	10	2.50
4-Methyl-2-pentanone (MIBK)	108-10-1	6300	1.0	2	0.50
Acetone	67-64-1	14000	5.0	10	2.50
Benzene	71-43-2	5	1.0	2	0.25
Bromochloromethane	74-97-5	83	1.0	2	0.50
Bromodichloromethane	75-27-4	80	1.0	2	0.50
Bromoform	75-25-2	80	1.0	2	0.50
Bromomethane	74-83-9	7.5	1.0	2	0.50
Carbon Disulfide	75-15-0	810	5.0	10	2.50
Carbon Tetrachloride	56-23-5	5	1.0	2	0.50
Chlorobenzene	108-90-7	100	1.0	2	0.50
Chloroethane	75-00-3	21000	1.0	2	0.50
Chloroform	67-66-3	80	1.0	2	0.50
Chloromethane	74-87-3	190	1.0	2	0.50
cis-1,2-Dichloroethylene	156-59-2	70	1.0	2	0.50
cis-1,3-Dichloropropene	10061-01-5	0.47 <sup>(b)</sup>	1.0	2	0.25
Cyclohexane	110-82-7	13000	5.0	10	2.50
Dibromochloromethane	124-48-1	80	1.0	2	0.250
Dichlorodifluoromethane	75-71-8	200	1.0	2	0.50
Ethylbenzene	100-41-4	700	1.0	2	0.50
Isopropylbenzene	98-82-8	450	1.0	2	0.50
Methyl Acetate*	79-20-9	20000	5.0	10	2.50
Methylcyclohexane	108-87-2	13000	5.0	10	2.50
Methyl tert-butyl Ether (MTBE)	1634-04-4	14	1.0	2	0.50
Methylene Chloride	75-09-2	5	5.0	10	2.50
Styrene	100-42-5	100	1.0	2	0.50
Tetrachloroethylene (PCE)	127-18-4	5	1.0	2	0.50
Toluene	108-88-3	1000	1.0	2	0.25
trans-1,2-Dichloroethylene	156-60-5	100	1.0	2	0.50
trans-1,3-Dichloropropylene	10061-02-6	0.47	1.0	2	0.25
Trichloroethene	79-01-6	5	1.0	2	0.50



**Table 4-5 Volatile Organic Compounds, Semivolatile Organic Compounds, Explosives, and TAL Metals Analyte List**

Compound	CAS Number	PAL (µg/L) <sup>(a)</sup>	LOD (µg/L)	LOQ (µg/L)	DL (µg/L)
Trichlorofluoromethane	75-69-4	5200	1.0	2	0.50
Vinyl Chloride	75-01-4	2	1.0	2	0.25
Xylene (Total)	1330-20-7	10000	3.0	6	1.50
Xylene-mp	1330-20-7 mp	10000	2.0	4	1.00
Xylene-o	95-47-6	190	1.0	2	0.50
<b>Semivolatile Organic Compounds</b>					
Acetophenone	98-86-2	1900	2.50	5	1.25
Bis(2-Ethylhexyl) phthalate	117-81-7	6	2.50	5	1.25
Naphthalene	91-20-3	0.17	0.05	0.1	0.025
<b>TAL Metals</b>					
Mercury	7439-97-6	2	80	160	0.011
Aluminum	7429-90-5	20000	20	40	40.00
Arsenic	7440-38-2	10	2	4	9.00
Barium	7440-39-3	2000	1	2	1.00
Beryllium	7440-41-7	4	40	80	0.50
Boron	7440-42-8	4000	2	4	20.00
Cadmium	7440-43-9	5	200	400	1.00
Calcium	7440-70-2	NSL	4	8	100.00
Chromium	7440-47-3	100	4	8	2.00
Cobalt	7440-48-4	6	8	16	2.00
Copper	7440-50-8	1300	200	400	4.00
Iron	7439-89-6	14000	6	12	100.0
Lead	7439-92-1	15	4	8	3.00
Manganese	7439-96-5	430	200	400	2.00
Magnesium	7439-96-5	430	12	24	100.00
Nickel	7440-02-0	390	500	1000	6.00
Potassium	7440-09-7	NSL	80	160	250.0
Selenium	7782-49-2	50	700	1400	40.00
Sodium	7440-23-5	NSL	20	40	350.0
Silver	7440-22-4	94	2	4	10.00
Vanadium	7440-62-2	86	100	200	1.00
Zinc	7440-66-6	6000	80	160	50.0
<b>Explosives</b>					
2,4,6-Trinitrotoluene	118-96-7	2.5	0.16	0.25	0.08
2-Amino-4,6-dinitrotoluene	35572-78-2	39	0.16	0.25	0.08
4-Amino-2,6-dinitrotoluene	19406-51-0	39	0.16	0.25	0.08
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.97	0.16	0.25	0.08
NOTES:					
(a) The PALs are federal MCLs where they exist. In the absence of an MCL, the unadjusted tap water Regional Screening Level (RSL) from the EPA RSL Table, May 2019 was used.					
µg/L = Microgram(s) per liter.					
CAS = Chemical Abstracts Service.					
DL = Detection Limit.					
LOD = Limit of Detection.					
LOQ = Limit of Quantitation.					
NSL = No Screening Level.					
PAL = Project Action Level.					

**Table 4-6 Perfluorooctanoic Acid (PFOA)/ Per- and Polyfluoroalkyl Substances (PFAS)  
Analyte List**

Analyte	CAS Number	PAL (µg/L) <sup>(a)</sup>	LOD (µg/L)	LOQ (µg/L)	DL (µg/L)
Perfluorooctanesulfonate (PFOS)	1763-23-1	0.07	0.00132	0.002	0.00066
Perfluoroundecanoic acid (PFUdA)	2058-94-8	NSL	0.00132	0.002	0.00066
N-methylperfluoro-1-octanesulfonamidoacetic acid	2355-31-9	NSL	0.00144	0.002	0.00072
Perfluoropentanoic acid (PFPeA)	2706-90-3	NSL	0.00264	0.004	0.00132
Perfluoropentanesulfonate (PFPeS)	2706-91-4	NSL	0.00132	0.002	0.00066
Fluorotelomer sulfonate 6:2 (6:2 FTS)	27619-97-2	NSL	0.00132	0.00188	0.00066
N-ethylperfluoro-1-octanesulfonamidoacetic acid	2991-50-6	NSL	0.00132	0.0019	0.00066
Perfluorohexanoic acid (PFHxA)	307-24-4	NSL	0.00264	0.004	0.00132
Perfluorododecanoic acid (PFDoA)	307-55-1	NSL	0.00132	0.002	0.00066
Perfluorooctanoic acid (PFOA)	335-67-1	0.07	0.00132	0.002	0.00066
Perfluorodecanoic acid (PFDA)	335-76-2	NSL	0.00132	0.002	0.00066
Perfluorodecanesulfonate (PFDS)	335-77-3	NSL	0.00132	0.002	0.00066
Perfluorohexanesulfonate (PFHxS)	355-46-4	NSL	0.00132	0.00194	0.00066
Perfluorobutyric acid (PFBA)	375-22-4	NSL	0.00132	0.00182	0.00066
Perfluorobutanesulfonate (PFBS)	375-73-5	400	0.00164	0.002	0.00082
Perfluoroheptanoic acid (PFHpA)	375-85-9	NSL	0.0016	0.00178	0.0008
Perfluoroheptanesulfonate (PFHpS)	375-92-8	NSL	0.00132	0.002	0.00066
Perfluorononanoic acid (PFNA)	375-95-1	NSL	0.00132	0.0019	0.00066
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	NSL	0.00132	0.002	0.00066
Fluorotelomer sulfonate 8:2 (8:2 FTS)	39108-34-4	NSL	0.00132	0.002	0.00066
Perfluoronananesulfonate (PFNS)	68259-12-1	NSL	0.00264	0.00384	0.00132
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	NSL	0.0014	0.00192	0.0007
Perfluorooctanesulfonamide (PFOSA)	754-91-6	NSL	0.00132	0.002	0.00066
Fluorotelomer sulfonate 4:2 (4:2 FTS)	757124-72-4	NSL	0.00132	0.00186	0.00066

NOTES:  
(a) Resident Risk-Based Regional Screening Levels (RSLs) for Tapwater using EPAs Screening Level Calculator, HQ=0.1, November 2020 as referenced in the Memorandum for Assistant Secretary of The Army October 2019

µg/L = Microgram(s) per liter.  
CAS = Chemical Abstracts Service.  
DL = Detection Limit.  
LOD = Limit of Detection.  
LOQ = Limit of Quantitation.  
NSL = No Screening Level.  
PAL = Project Action Level.

### 4.3 SYSTEM OPERATIONS/OPERATION AND MAINTENANCE (O&M)

The 2014 ESD specifically documents (1) the need for sweeps of ordnance; (2) appropriate disposal of ordnance if discovered; and (3) LUC requirements. All these components were implemented with the original remedy pursuant to the 9 July 1998 DD, as modified in December 1998. The DD lists the requirement for sweeps of IAL3 (starting in 1998) to occur at 3 years,

7 years, and then every 5 years thereafter. Additionally, the 2014 ESD states that the Army will continue to conduct annual MEC sweeps<sup>9</sup> of the LPR.

Current O&M activities include:

- Annual physical inspections of the IALs, to include inspection of the 3-ft-thick earthen MEC cover at IAL1, to ensure that the cover has not been compromised by erosion and to verify that the perimeter fence at IAL2 remains intact and in good condition.
- Once per 5-year sampling of the groundwater LTM wells at the TAP.
- Surface sweeps for MEC at IAL3 every 5 years with a periodic review of the need for continued sweeps; the most recent survey was conducted in 2020 in support of this FYR.
- Instrument-assisted visual inspections for MEC along the LPR MEC OU to include the approximately 1 mile of river and embankments (see **Table 4-7** for LPR MEC sweep results from last 5 years).

In 2011, in response to a recommendation of the second FYR, the Baltimore District Explosive Safety Staff conducted an instrument-assisted visual inspection of the ball fields (in close proximity to the TAP; completed in conjunction with the IAL3 sweep). The area was subjected to a 100 percent inspection and no evidence was observed that would indicate that MEC were migrating to the surface. Results of the inspection indicated that any potential MEC item remains a minimum of 3 ft bgs and presents no hazard (Greene 2011).

The LTGM monitoring wells are inspected for general condition and structural integrity prior to each LTGM sampling round. This includes the inspection of the following:

- Outer protective casing or flush-mount cover to assess structural integrity
- Well caps and locks to ensure that both are in place and functioning properly
- Concrete pad for the presence of cracks and settlement
- The inner cap and riser pipe to ensure that these items are intact and functioning properly.

Since the previous FYR, four reports have been submitted regarding the LPR MEC sweeps (EA 2017, 2018, 2019b, 2021a). **Table 4-7** summarizes the findings of these MEC sweeps. The most recent sweeps were conducted 9-11 September 2020, which resulted in no recovery of munitions debris. No MEC items were recovered during the 2016, 2017, 2018 annual sweeps, and in the 2020 sweep possibly due to high water conditions.

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<sup>9</sup> Based on recommendations made and approved in the 2018 MEC sweep report, the frequency of the LPR MEC sweeps was reduced from annual to potentially every five years.

**Table 4-7 LTM Results for MEC at the LPR**

Year	LTM Report	Removal Actions	MEC or MPPEH Present?
29-31 August 2016	<i>Long-Term Monitoring Report for 2016 Little Patuxent River and Inactive Landfill 3 Munitions and Explosives of Concern Survey, Final (EA 2017)</i>	(5) 2.36-inch training rockets were recovered during the sweep	No
11-12 September 2017	<i>Long-Term Monitoring Report for 2017 Little Patuxent River Munitions and Explosives of Concern Survey, Final (EA 2018)</i>	(21) 2.36-inch training rockets were recovered during the sweep	No
5-6 September, 2018	<i>Long-Term Monitoring Report for 2018 Little Patuxent River Munitions and Explosives of Concern Survey, Final (EA 2019b)</i>	(21) 2.36-inch training rockets were recovered during the sweep	No
9-11 September 2020	<i>Long-Term Monitoring Report for 2020 Little Patuxent River and Inactive Landfill 3 Munitions and Explosives of Concern Survey, Final, February (EA 2021a)</i>	No MEC or munitions debris identified	No

NOTE:  
MPPEH = Material Potentially Presenting an Explosive Hazard.

The annual monitoring costs for the LTGM program are shown in **Table 4-8**. The annual costs for the Little Patuxent River MEC Sweeps and landfill inspections for the current FYR cycle are presented in **Table 4-9**.

**Table 4-8 LTM Costs for the TAP**

LTGM Year	Total Cost Rounded to Nearest \$1,000
2016	\$14,000
2017	\$14,000
2018	\$14,000
2019	\$0
2020	\$26,000

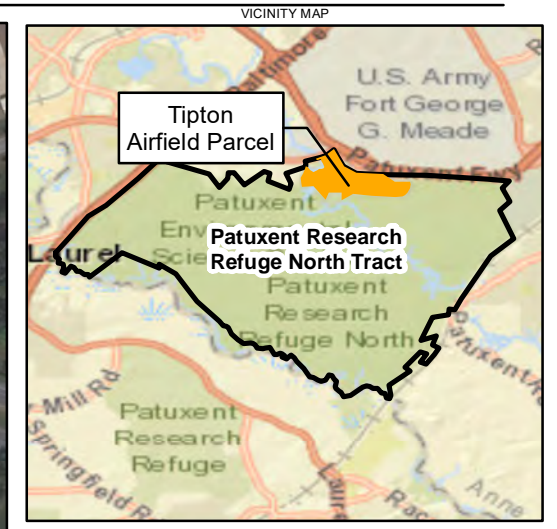
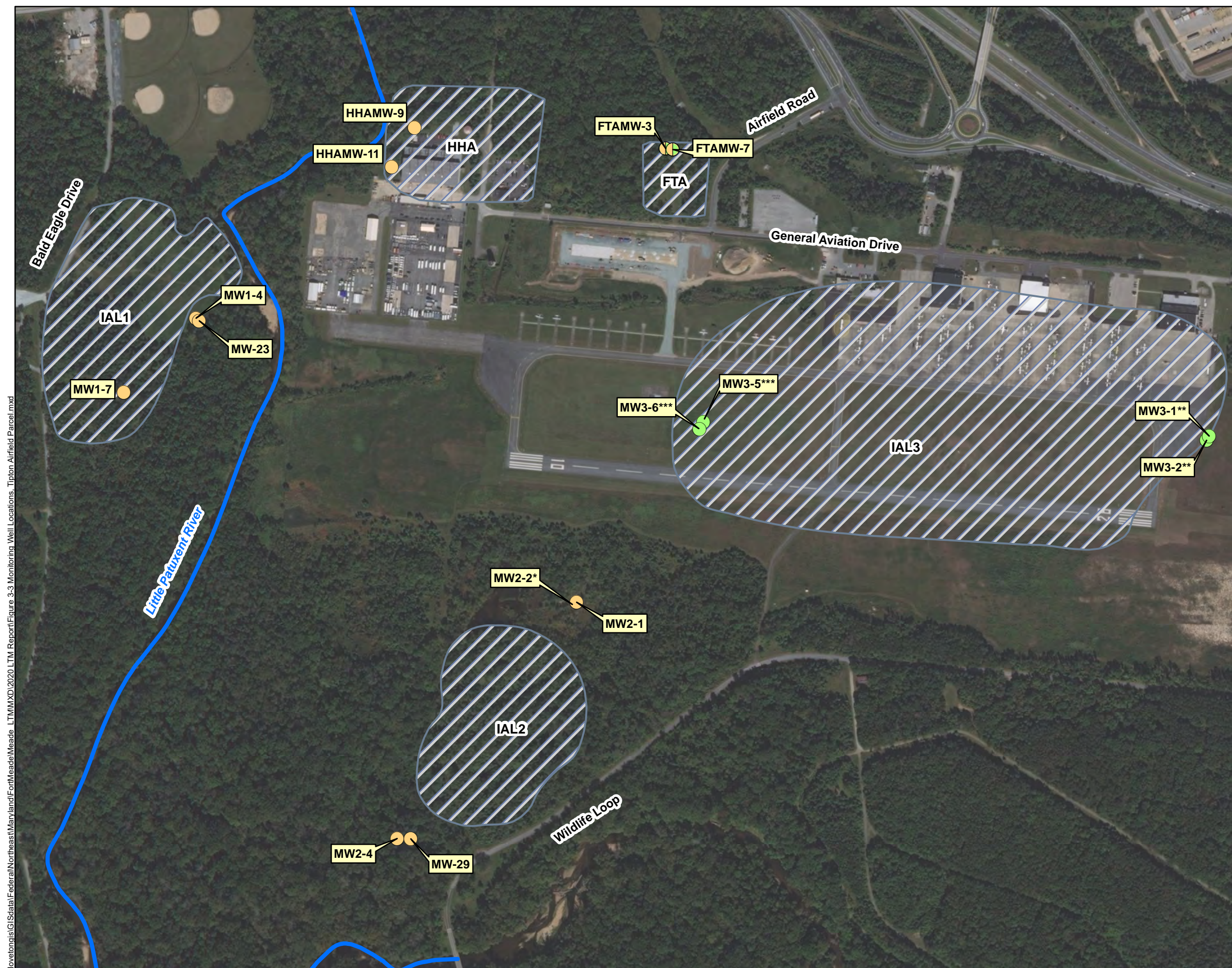
NOTE:  
LTGM was not conducted in 2019 for the TAP.

**Table 4-9 LTM Costs for Annual LPR MEC Sweeps and Landfill Inspections**

LTM Year	Total Cost Rounded to Nearest \$1,000	
	LPR MEC Sweeps	IALs 1, 2, and 3
2016	\$31,000	\$19,520
2017	\$31,000	\$19,520
2018	\$30,000	\$19,520
2019	\$0	\$24,520
2020	\$42,000	\$22,520

NOTE:  
The LPR MEC Sweep was not conducted in 2019.  
LTM costs for the annual inspection of IAL2 were not available.

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**Legend**

**Aquifer**

- Arundel Clay
- Lower Patapsco
- Lower Patapsco or Arundel

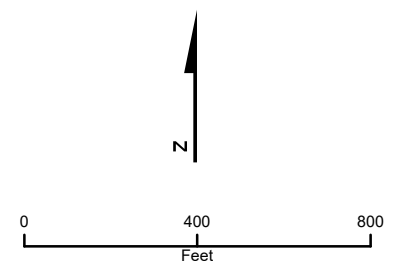
— Waterbody

  Tipton Airfield Parcel Site

\* MW2-2 Eliminated from monitoring per Combined Groundwater OU 2014 LTM Report  
 \*\* MW3-1 and MW 3-2 Eliminated from monitoring per Combined Groundwater OU 2016 Report.  
 \*\*\*MW3-5 and MW3-6 not part of current sampling program since 2009.

Note:  
 HHA = Helicopter Hangar Area  
 FTA = Fire Training Area  
 IAL = Inactive Landfill

Map Date: February 2021  
 Data Sources: USACE 2010, ESRI 2011



**FIGURE 4-1**  
 MONITORING WELL LOCATIONS,  
 TIPTON AIRFIELD PARCEL  
 Anne Arundel County, Maryland

\\lovetongis\GISdata\Federal\Northeast\Maryland\FortMeade\Meade LTMMXD\2020 LTM Report\Figure 3-3 Monitoring Well Locations\_Tipton Airfield Parcel.mxd

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## 5. PROGRESS SINCE LAST REVIEW

### 5.1 PROTECTIVENESS STATEMENT FROM LAST REVIEW

The protectiveness statement from the previous FYR year is as follows:

“The remedy at Tipton Airfield Area OU is protective of human health and the environment. The remedy at Tipton Airfield Parcel OU is protective of human health and the environment. The remedy at Little Patuxent River MEC OU is protective of human health and the environment. Because the remedial actions at all OUs are protective, the site is protective of human health and the environment.

The remedy at the site is protective of human health and the environment. The elements of the remedy, (1) LUCs, (2) groundwater monitoring, and (3) periodic inspections protect the public from exposure to contaminated groundwater and MEC.

The effective implementation of LUCs has prevented extraction of groundwater except for its allowable use for environmental sampling. There is no residential development at TAP. There has been no excavation at the site without proper receipt of permission from the Army. There have been no activities that would interfere with the site remedy.”

### 5.2 STATUS OF RECOMMENDATIONS AND FOLLOW-UP ACTIONS FROM LAST REVIEW

There are no issues at the TAP that affect protectiveness. **Table 5-1** outlines concerns which do not affect protectiveness and discusses any subsequent actions.



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**Table 5-1 Status of the Third (2016) Five-Year Review Report Recommendations**

Issues from Previous Review	Recommendations/Follow-up Actions	Milestone Date	Action Taken and Outcome
<p>At IAL1, a minor erosion scour hole (approximately 2 ft by 1 ft by 0.5 ft deep) was observed along the northern edge of the cover and an approximately 10-ft by 10-ft by 0.5- to 1-ft deep potential depression area was identified within the cover boundary. In addition, 0.5- to 1-ft-deep tire ruts were observed on the soil cover surface; most likely these were created by emergency vehicles responding to the February 2015 plane crash that occurred adjacent to Tipton Airport</p>	<p>The erosion scour hole and the tire ruts should be repaired as soon as practical to limit potential for further erosion damage into the 3-ft-thick UXO safety cover. Additionally, observations should be made of the 10-ft by 10-ft depression/settlement area to determine if additional settlement has occurred and/or if the cover has been compromised and requires repair.</p>	<p>NA</p>	<p>In November 2019, a clearing effort was performed to mow the waist-high grasses and small trees that had established across the entirety of the soil safety cover, which limited the inspection of the cap. As of the 2020 annual inspection, grasses were 2–3 ft tall.</p> <p>The small but largening surface water erosion scour hole/rill was repaired in November 2019 and its integrity was confirmed during the 2020 annual inspection.</p> <p>The 10-ft by 10-ft depression/settlement area was observed to be noticeably improved, and no standing water was observed during the 2020 annual inspection.</p> <p>The tire ruts continue to improve naturally each year.</p>
<p>At IAL2, minor concerns included partial fading of warning signs along the perimeter fence; partial regrowth of vegetation in the interior and exterior 5-ft buffer areas adjacent to the perimeter fence; and minor animal burrows under the fence.</p>	<p>The fence line should continue to be inspected at IAL2 after significant storm events. More frequent routine cutting of the vegetation along the fence line was recommended. Physical cutting and removal was suggested in lieu of additional herbicide applications. The signs should be compliant and present at all gates and along the entire fence. The sun-bleached signage along Wildlife Loop Road should be replaced. The northern section of the fence along the pond/wetland area should continuously be monitored to determine frequency of dry periods.</p>	<p>NA</p>	<p>Based on observations during the November 2016 Vegetation Maintenance and LUC Inspection, a 50-ft section of the IAL2 perimeter fence was repaired on 1 February 2017.</p> <p>Annual maintenance activities including mowing of vegetation within a 5-ft buffer on both sides of the perimeter fence are conducted.</p> <p>Five faded warning signs along the fence were replaced in November 2016 and six additional signs were installed along the perimeter fence and at the gates in February 2017.</p> <p>The 200-ft section of “sagging” fence along the northern side of IAL2 has been continuously monitored. This section of fence was repaired in November 2018 when the fence fabric was lifted using hand tools and affixed to the fence posts using galvanized wire ties. Additionally, galvanized bolts were installed in the upper 1-ft section of all fence posts within this 200-ft section to prevent the fence fabric from sagging. As of the 2019 annual maintenance and inspection, this portion of the fence was discolored, but intact and fully functional.</p>

**Table 5-1 Status of the Third (2016) Five-Year Review Report Recommendations**

Issues from Previous Review	Recommendations/Follow-up Actions	Milestone Date	Action Taken and Outcome
At IAL3, a bare soil area approximately 6 ft by 35 ft by 0.5 ft deep was observed on the south edge of the landfill, south of the runway. Significant stormwater runoff was evident through the presence of glass shards and rounded gravel. Groundhog holes were observed across the landfill cover area.	Erosion area should be stabilized and vegetated as soon as practical. The groundhog holes should be filled as soon as practical.	NA	The bare soil area approximately 6 ft by 35 ft by 0.5 ft deep on the south edge of the landfill, south of the runway, has been annually observed. As of the 2020 inspection, the area has reduced in size. No action to stabilize and vegetate the area has been taken.  No action has been taken regarding the groundhog holes. The groundhogs have moved locations so trapping has not been possible. Furthermore, the Army has not authorized this work.
Risked-based remedial goals for metals and other contaminants in groundwater that do not currently have MCLs such as iron, manganese, and naphthalene would provide a more protective cleanup standard.	Investigate risked-based remedial goals for metals and other contaminants in groundwater that do not currently have MCLs such as iron, manganese, and naphthalene.	NA	No site-specific remedial goals have been developed as the IALs have waste-in-place and will require groundwater monitoring for the foreseeable future based on regulatory requirements. The groundwater monitoring program has been optimized to every five years based on the groundwater sampling results to date. Future optimizations and/or elimination of groundwater monitoring will be discussed with the regulators.
Awareness was raised regarding hazards presented by perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), which fall into the category of PFAS. It is likely the FTA utilized fire-fighting foams containing PFAS.	PFAS sampling was conducted at the TAP and HHA in May and August 2016, respectively. The results should be assessed to determine if the LTM program needs to be altered to include future sampling for PFAS at these locations.	NA	The Army agreed to sample the TAP Groundwater OU for PFAS as part of the FYR process; therefore, PFAS were included in the analytical scope during the 2020 LTGM event. PFAS constituents PFOS and PFOA were detected above the USEPA tap water RSL of 40 nanograms per liter in several monitoring wells. Per DoD guidance, the RSL represents a conservative screening level for PFOS and PFOA in groundwater, that when exceeded, should be considered a contaminant of potential concern that should be further considered in the scoping phase and in the risk assessment process. This is typically completed during an RI, and as such the Army recommended performing an RI to evaluate PFAS in the TAP.
RSLs as groundwater monitoring criteria can be problematic, as there are some RSLs, which are below readily obtainable environmental laboratory method detection limits.	RSLs should not be used as groundwater monitoring criteria. One option proposed was to modify the LTGM Quality Assurance Project Plan such that at a minimum, common laboratory method detection limits are set as monitoring criteria for constituents lacking MCLs.	NA	Where methods with lower detection limits were available, they were used (i.e. Naphthalene). Currently, the groundwater monitoring program is utilizing conservative EPA RSLs for tap water for risk-based screening of reported concentrations when an MCL is not available. There are no planned or anticipated use of the groundwater as a drinking water source at the site. Recent sampling in 2020 revealed cobalt, iron, and manganese were the only analytes where RSLs were exceeded, and there are no issues with sensitivity for these analytes. Additionally, QAPP Table 6-2 is footnoted to state, "In the circumstance where the LOD for non-detection exceeds the PAL, this will be evidence of no contamination."

### **5.2.1 Results of Implemented Follow-Up Actions**

In general, the implemented follow-up actions to the recommendations from the last FYR achieved their intended results. Annual inspections are conducted at IAL1, IAL2, and IAL3 and maintenance activities are conducted, as necessary.

### **5.2.2 Status of Incomplete Recommendations and Follow-Up Actions**

The following recommendations from the previous FYR had incomplete follow-up actions:

- Fill groundhog holes in IAL3.

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## 6. FIVE YEAR REVIEW PROCESS

### 6.1 ADMINISTRATIVE COMPONENTS

This fourth FYR for the TAP was performed by EA Engineering, Science, and Technology, Inc., PBC; stakeholders in this review process include representatives of the DoD, FGGM, USEPA, MDE, Patuxent Research Refuge, U.S. Department of the Interior, and the surrounding community. **Table 6-1** lists the EA review team members. **Table 6-2** presents key stakeholder point-of-contact information.

The Army is the lead agency overseeing the TAP's environmental restoration program. USEPA is the lead regulatory agency in consultation with MDE, and both entities have been notified of the Army's intent to perform the FYR for the TAP. Copies of the document will be provided to USEPA and MDE for their review and comment.

USACE Baltimore District established the review schedule whose components included:

- Community Involvement
- Document Review
- Data Review
- Site Inspection
- Local Interviews
- FYR Development and review.

**Table 6-1 Review Team Members**

Name/E-Mail	Title	Organization	Phone
Michael Hertz, PG <a href="mailto:mhertz@eaest.com">mhertz@eaest.com</a>	Project Manager	EA	410-671-6058
Cynthia Cheatwood <a href="mailto:ccheatwood@easet.com">ccheatwood@easet.com</a>	Risk Assessor	EA	410-329-5154
Katherine Wertz, PG <a href="mailto:kwertz@eaest.com">kwertz@eaest.com</a>	Geologist	EA	410-527-2483

**Table 6-2 Stakeholder Points of Contact**

<b>Name/E-Mail</b>	<b>Title</b>	<b>Organization</b>	<b>Phone</b>
Emily Cline <a href="mailto:emily.j.cline@usace.army.mil">emily.j.cline@usace.army.mil</a>	Baltimore District USACE Project Manager	USACE	410-960-0313
Ian A. Thomas <a href="mailto:ian.m.thomas2.civ@mail.mil">ian.m.thomas2.civ@mail.mil</a>	Program Manager	HQDA BRACD	703-545-2563
Steve Cardon <a href="mailto:steven.C.Cardon.ctr@mail.mil">steven.C.Cardon.ctr@mail.mil</a>	Fort Meade BRAC Environmental Coordinator	Department of the Army	301-677-9178
Michael Wassel <a href="mailto:michael@tiptonairport.org">michael@tiptonairport.org</a>	Tipton Airport Manager	Tipton Airfield	410-222-6815
Robert Stroud <a href="mailto:stroud.Robert@epa.gov">stroud.Robert@epa.gov</a>	Federal Remedial Project Manager	USEPA	410-305-2748
Dr. Elisabeth Green <a href="mailto:elisabeth.green@maryland.gov">elisabeth.green@maryland.gov</a>	Remedial Project Manager	MDE	410-537-3346

## 6.2 COMMUNITY NOTIFICATION AND INVOLVEMENT

Fort Meade has an active Restoration Advisory Board (RAB) that meets periodically to discuss ongoing environmental restoration activities. Notice of this FYR will be provided to the RAB when the document is at the draft stage. Notification of this FYR was published in the appropriate local newspapers (**Appendix A**), including the Bowie Blade and the Maryland Gazette. Additionally, the Public Notice was posted on FGGM's Directorate of Public Works, Environmental webpage.

## 6.3 DOCUMENT REVIEW

This FYR consisted of a review of relevant documents including O&M records and monitoring data. While none of the existing DDs or RODs specifically established quantitative Remediation Goals, cleanup goals, applicable or relevant and appropriate requirements, or remedial action objectives, the May 2014 ESD (URS 2014b) incorporates the 1998 Army DD and its Addendum into the NPL CERCLA RODs and states that under the existing remedy the Army will continue to "monitor the groundwater until contaminant levels are below levels specified in the TAP OU LTGM program." The following documents were reviewed in support of this FYR:

- Final Long-Term Monitoring Report for 2016, Little Patuxent River and Inactive Landfill 3, Munitions and Explosives of Concern Survey. February.
- Final Long-Term Monitoring Report for 2017, Little Patuxent River, Munitions and Explosives of Concern Survey. February.
- Final Combined Groundwater Operable Units 2018 Long-Term Monitoring Report. Fort George G. Meade, Legacy Base Realignment and Closure Program. February.
- Final Long-Term Monitoring Report for 2018, Little Patuxent River, Munitions and Explosives of Concern Survey. February.

- 2019 Work Plan Addendum for Fort George G. Meade Long-Term Monitoring Programs. November.
- Quality Assurance Program Plan 2019 Addendum, Groundwater Sampling Activities, Fort George G. Meade. November.
- Final Long-Term Monitoring Report for 2020, Little Patuxent River and Inactive Landfill 3, Munitions and Explosives of Concern Survey. February.
- Combined Groundwater Operable Units, 2020 Long-Term Monitoring Report. February.
- 1998 Final Record of Decision Tipton Airfield Area Operable Unit.
- Decision Document, Safety Precautions to be taken at Tipton Airfield, Fort George G. Meade, Maryland. July.
- Decision Document Addendum, Safety Precautions to be taken at Tipton Airfield, Fort George G. Meade, Maryland. November.
- Final Record of Decision Tipton Airfield Parcel Operable Unit. July 20.
- Explanation of Significant Difference Report, Tipton Airfield Parcel, Anne Arundel County, MD. Final. 8 May.
- 1999 Final Record of Decision, Tipton Airfield Parcel Operable Unit. 20 July.
- Third Five Year Review, Tipton Airfield Parcel. December
- 2016 Annual Land Use Control Inspection and Maintenance Report, IAL2 (FGGM-007-R)
- 2017 Annual Land Use Control Inspection and Maintenance Report, IAL2 (FGGM-007-R)
- 2018 Annual Land Use Control Inspection and Maintenance Report, IAL2 (FGGM-007-R)
- 2019 Annual Land Use Control Inspection and Maintenance Report, IAL2 (FGGM-007-R)

#### 6.4 DATA REVIEW AND TRENDS

The objective of the groundwater data review is to analyze the data from the selected remedy and ensure that this remedy is meeting the objectives established in the RODs and the 2014 ESD, and to determine whether the response actions remain protective of human health and the environment. Results from the 2016 through 2020 LTGM sampling events can be found in **Appendix B**. No LTGM sampling event occurred 2019. MCL exceedances from the 2020 LTGM event are shown on **Figure 6-1** and **Figure 6-2**. RSL exceedances for PFAS only are shown on **Figure 6-3**.



#### 6.4.1 MCL Exceedances

No MCLs were exceeded in the 2016 and 2017 LTGM events. Arsenic was detected above the MCL of 10 µg/L during the 2018 LTGM event in well MW-29 (10.9 µg/L) and during the 2020 LTGM event in well MW3-2 (13 µg/L). Prior to 2018, the last time arsenic was detected above the MCL was 2014.

#### 6.4.2 RSL Exceedances

Iron and manganese have been consistently detected above their respective RSLs in multiple wells between 2016 and 2020. Cobalt was detected above the RSL of 6 µg/L in well MW1-4 (17 µg/L) during the 2020 LTGM event.

As a result of the expansion of the metals analytical scope for the 2020 LTGM event, groundwater samples were analyzed for lead, which was reported above its RSL (15 µg/L) in well MW2-2 (230 µg/L). It is noted that this is the first groundwater sampling event where lead was included in the metals analytical suite.

Benzene was detected above its RSL (0.46 µg/L) in well MW3-2 (1.5 µg/L) during the 2020 LTGM event.

In the 2020 LTGM sampling event, naphthalene was reported at the RSL (0.12 µg/L) in one upgradient well (MW2-1). It is noted the result was estimated (J-flagged). No other semivolatile organic compounds (SVOCs) were reported.

PFOS and PFOA were both reported at concentrations above the RSLs in several monitoring wells during the 2020 LTGM event.

#### 6.4.3 Groundwater Trends and Recommendations

A majority of the metals concentrations in groundwater have remained consistent over time at the TAP and are likely attributable to natural occurrence. In addition to comparing downgradient groundwater concentrations to upgradient groundwater concentrations in each parcel site, the Army assessed metals concentrations representative of natural groundwater for the BRAC Parcel as part of the 2016 annual LTGM Report development. The Army identified that nine “background” groundwater well locations were sampled during the RI of the Inactive Landfills 1, 2, 3 and Clean Fill Dump (Kaiser 1998a) (**Appendix B**). These nine wells were used to assist in the establishment of background levels for use in the RI and an effort was made to relate stratigraphic units and geologic formations within the areas of investigation (Kaiser 1998a).

While the concentration of cobalt in MW1-4 (17 µg/L) is greater than the concentration in the upgradient well MW1-7 (<0.50 µg/L) for IAL1 and the RSL (6 µg/L), the concentration is below the maximum background concentration for the Lower Patapsco (18.4 µg/L) and for the Arundel Clay (60.6 µg/L).

Manganese concentrations were reported in five of the six background groundwater samples between 45.1 and 3,460 µg/L. The highest reported manganese concentration for the 2020 sampling event was 1,700 µg/L, below the maximum manganese concentration of the background samples. Furthermore, the manganese concentrations reported in two of the five upgradient wells within the TAP were also greater than 45.1 µg/L, the lower bound of detected background concentrations. Therefore, based on this comparison, the manganese detections at the TAP are within the range of manganese concentrations associated with natural groundwater conditions.

Iron concentrations were reported in three of the six background groundwater samples between 264 and 9,600 µg/L. The iron concentrations from two groundwater samples (MW-29 and MW3-2) that exceeded the RSLs were reported at 37,000 µg/L and 40,000 µg/L, respectively. The highest report detection (40,000 µg/L) was from an upgradient well. Detected concentrations of iron during the 2020 sampling event ranged from 1,800 µg/L to 40,000 µg/L. Therefore, based on this comparison, the elevated iron concentrations cannot be attributed to natural groundwater conditions.

While the previous FYR indicated a decline in arsenic concentrations, the exceedance of its MCL during the 2020 LTGM event indicates no observable trend. There has not been a previous arsenic MCL exceedance at well MW3-2. Detections of arsenic above the MCL have been most common at well MW-29; however, detected concentrations were well below the MCL during the 2020 LTGM event.

The detected concentration of lead (230 µg/L) in MW2-2 during the 2020 LTGM event exceeded the RSL (15 µg/L); however, well MW2-2 is located upgradient of IAL2 and the source of lead is likely not related to the landfill. As lead was only included as an analyte in the 2020 LTGM event, no trend can be derived.

As no VOCs (1,1,2,2-tetrachloroethane, benzene, carbon tetrachloride, *cis*-1,2-dichloroethene, and vinyl chloride) had been reported above the MCL since 2005, the 2016 LTM recommended discontinuing VOC analysis from future LTM events. The 2018 LTM recommended resampling of VOCs in future LTM events, as the sampling frequency had been decreased. Consistent with sampling data from 2005 to 2016, no VOCs were detected above their respective MCLs during the 2020 sampling event. Benzene (1.5 µg/L) was detected above the RSL (0.46 µg/L) in one upgradient well (MW2-3) during the 2020 sampling event; however, this result is consistent with the sampling results from 2014 (1.7 µg/L), 2015 (1.5J µg/L), and 2016 (1.34J µg/L). No VOCs were analyzed during the 2017 and 2018 sampling events. Although the concentration of benzene exceeded the RSL, it did not exceed the MCL (5 µg/L).

As naphthalene was continuously detected below the RSL, sampling was discontinued in 2018, as recommended by the 2017 LTM. The 2018 LTM recommended naphthalene be included in the analytical scope, as the sampling frequency had been decreased. Additionally, two other SVOCs, acetophenone and bis(2-ethylhexyl) phthalate, were added to the sampling scope for the 2020 sampling event. With the exception of naphthalene, SVOCs were not reported at the TAP. Naphthalene did not exceed the RSL during the 2020 sampling event. Consistent with the

conclusions of the third FYR, naphthalene continues to decrease in frequency of detection, as well as its detected concentrations.

Explosives sampling was discontinued beginning with the 2016 sampling event as no explosives had been reported above the PRGs since June 2009 based on six annual sampling events. No explosives were reported in TAP wells during the 2020 LTGM sampling event.

Every 5-year groundwater sampling frequency is recommended as the TAP contains waste managed-in-place and FYRs will continue to be conducted by the Army. During the FYR, TCL VOCs, select explosives (2,4,6-Trinitrotoluene, 2-Amino-4,6-dinitrotoluene, 4-Amino-4,6-dinitrotoluene, and RDX), select SVOCs (acetophenone, bis(2-ethylhexyl)phthalate, and naphthalene), and TAL metals will be sampled to verify that no new releases to groundwater occur.

PFAS constituents PFOS and PFOA were detected above the USEPA RSL of 40 nanograms per liter in several monitoring wells. The highest concentrations of PFOS and PFOA were reported in monitoring wells within the FTA. Per DoD guidance, the RSL represents a conservative screening level for PFOS and PFOA in groundwater, that when exceeded, should be considered a contaminant of potential concern that should be further considered in the scoping phase and in the risk assessment process. This is typically completed during an RI, and as such the Army recommends performing an RI to evaluate PFAS in the TAP.

## 6.5 SITE INSPECTION

The TAP Site Inspection was conducted on 25 January 2021 by Emily Cline (USACE), Steven Cardon (FGGM BRAC Environmental Coordinator), Mike Hertz (EA Project Manager), Katie Wertz (EA Deputy Project Manager/Geologist), and Derek Hendricks (EA Geologist). The purpose of the inspection was to assess the protectiveness of the remedy as a part of the FYR of the TAP. No sampling was performed during the site visit. The weather at the time of the site visit was cool (approximately 45 degrees Fahrenheit) and cloudy. **Appendix C** contains the Site Inspection Photographs. **Appendix D** contains the Site Inspection Checklists and Interview Records.

The covers on the landfills are functioning as intended. They continue to serve as effective barriers minimizing potential contact with underlying MEC or other materials. The natural soil cover at IAL1 consists of overgrown grassy fields. Woody shrubs and trees were observed to be growing on the outside perimeter of the IAL1 cover, particularly along the northeast margin and southern sides. No fill material, major depressions, animal burrows, erosion, cracks, seeps, or ponding was observed. Tire ruts created by emergency vehicles in 2015 and more recently by other vehicles (likely hunters) have penetrated 0.5–1 ft into the 3-ft safety cover. No UXO was observed. IAL1 does not have benches or venting.

The entirety of IAL2 was not walked over. The site was observed from the northern fence line, accessed from the airfield, and from Wildlife Loop Road on its southern border. The perimeter of IAL2 contains an approximately 7-ft-high chain-link fence with barbed wire on top and “Environmental Area” warning signs are present along the perimeter fence. There is an approximately 200-ft section of fence along the northern side that remains submerged in water and

a dead tree was observed in close proximity, but outside of the 5-ft buffer, of the fence line along Wildlife Loop Road.

At IAL3, the surface is either asphalt, buildings, or natural soil cover with maintained grass. The natural soil cover is rolling and uneven but has been improved since the cap repair. A bare area (i.e., no grass vegetation/erosion area) approximately 15 ft by 5 ft by 0.25 ft deep was observed on the southern edge of the landfill area, south of the runway. The size of the bare area has decreased in size in comparison to previous site inspections. Weathered glass shards and rounded gravel were observed on the bare area surface. Surface topography indicates the area receives significant runoff from the runway. As a result, the erosion occurring in this area is likely due to stormwater runoff. Additionally, a depression area, previously observed during a 2017 inspection, remains at IAL3 west of the windsock; however, there is no standing water or evidence of long-term ponding in the area. IAL3 does not have benches or venting. No UXO was observed.

Fences enclosing the portions of the HHA are present and restrict access. Both sites contain warning signs, identifying contamination. There were no new wells observed that suggest unauthorized use of groundwater. No new commercial or residential construction has been observed near the TAP that would raise the possibility of offsite groundwater use.

All observed monitoring wells are intact and facilitate groundwater monitoring as intended.

## **6.6 INTERVIEWS**

Interviews were conducted with the following TAP related personnel: Michael Wassel (Tipton Airport Manager), Steve Cardon (FGGM BRAC Environmental Coordinator), Robert Stroud (USEPA Region III), and Elizabeth Green (MDE). All interviewees were asked a series of questions about the status and effectiveness of the response action at the TAP.

Mr. Michael Wassel, the airport manager, was interviewed via teleconference on 19 January 2021. Mr. Wassel indicated there have been no problems or concerns with the ongoing monitoring and maintenance activities at the TAP and that the remedy continues to function as expected.

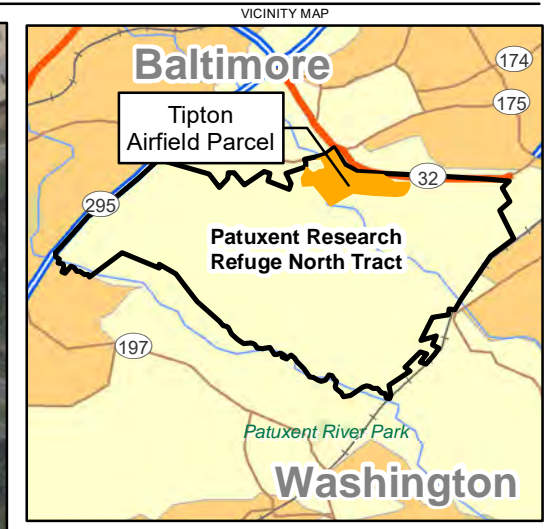
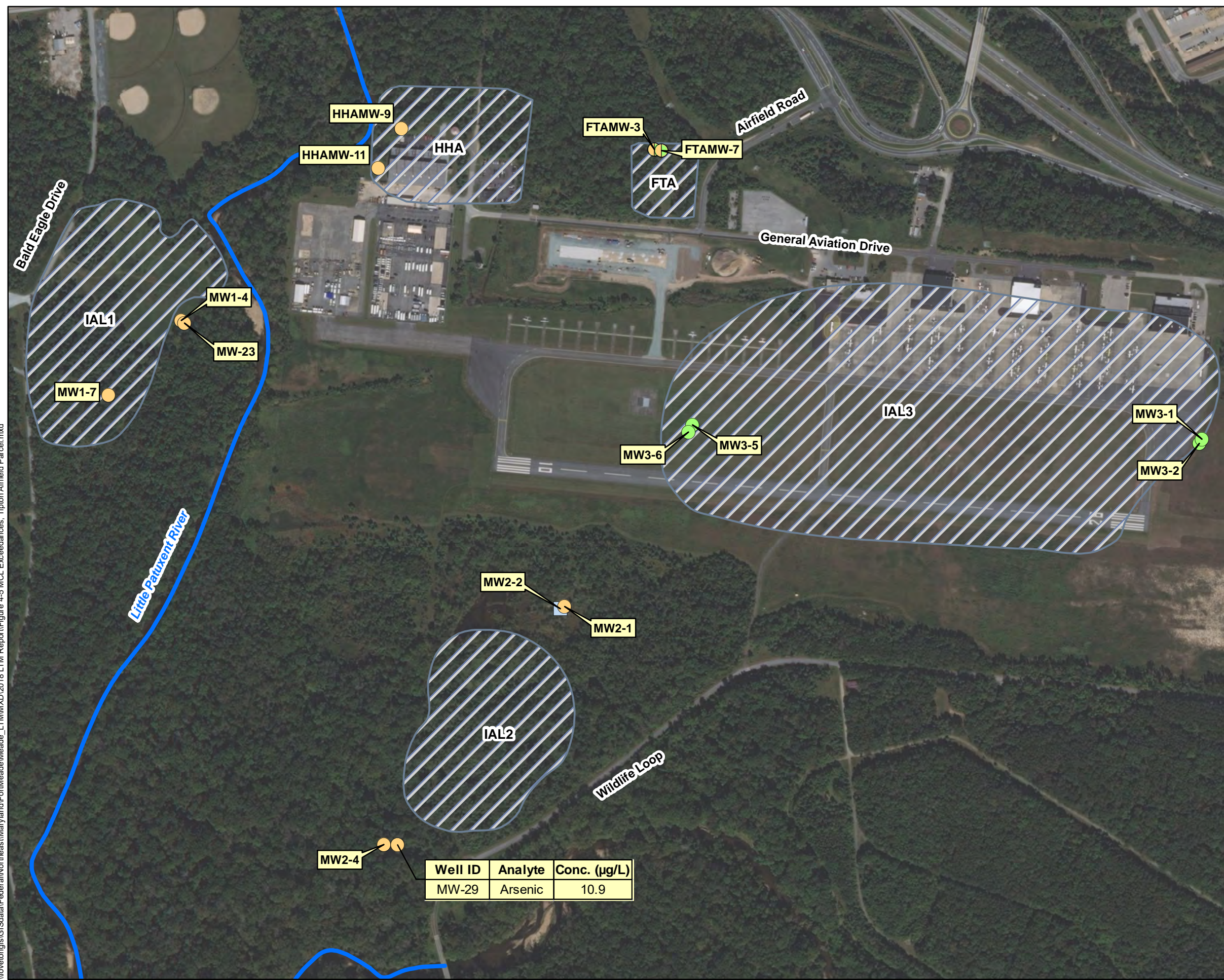
Mr. Steve Cardon, the BRAC Environmental Coordinator for Fort Meade, was interviewed in-person on 25 January 2021. Mr. Cardon indicated the TAP remedy continues to be protective of human health and the environment and that the remedy continues to function as expected.

Mr. Robert Stroud, USEPA Region III, was interviewed via teleconference on 15 January 2021. Mr. Stroud indicated the remedy and LTM continue to work as planned.

Dr. Elisabeth Green, MDE, was interviewed via teleconference on 6 January 2021. Dr. Green's overall impression is that the TAP continues to be protective of human health and the environment and that the remedy continues to function as expected.

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\\lovelongis\GIS\data\Federal\Northeast\FortMeade\Meade\_LTM\XD\2018 LTM Report\Figure 4-5 MCL Exceedances, Tipton Airfield Parcel.mxd



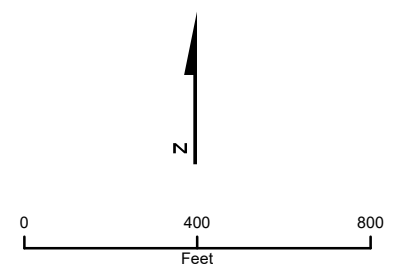
**Legend**

- Aquifer**
- Arundel Clay
  - Lower Patapsco
  - Lower Patapsco or Arundel
  - Patuxent
  - ~ Waterbody
  - Tipton Airfield Parcel Site

Analyte	MCL (µg/L)
Arsenic	10

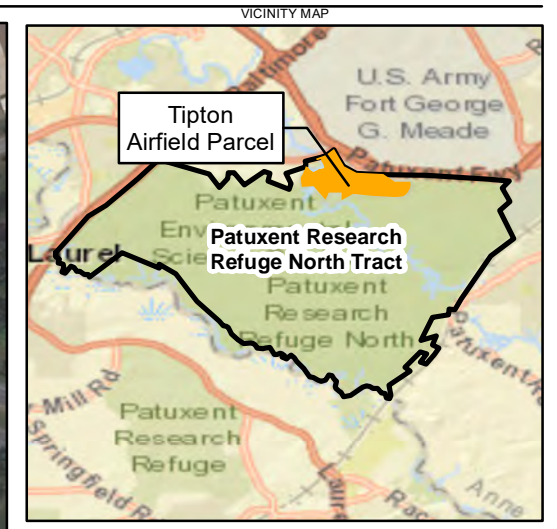
Note:  
 Groundwater sampling conducted on 6/19/18  
 HHA = Helicopter Hangar Area  
 FTA = Fire Training Area  
 IAL = Inactive Landfill

Map Date: October 2018  
 Data Sources: USACE 2010, ESRI 2011



**FIGURE 6-1**  
**2018 MCL EXCEEDANCES,**  
**TIPTON AIRFIELD PARCEL**  
 Anne Arundel County, Maryland

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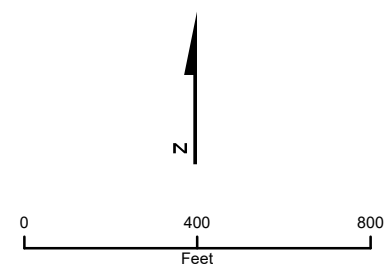
**Legend**

- Aquifer**
- Arundel Clay
  - Lower Patapsco
  - Lower Patapsco or Arundel
  - Patuxent
  - Waterbody
  - Tipton Airfield Parcel Site

Analyte	MCL (µg/L)
Arsenic	10

Note:  
 Groundwater sampling conducted in September 2020  
 HHA = Helicopter Hangar Area  
 FTA = Fire Training Area  
 IAL = Inactive Landfill

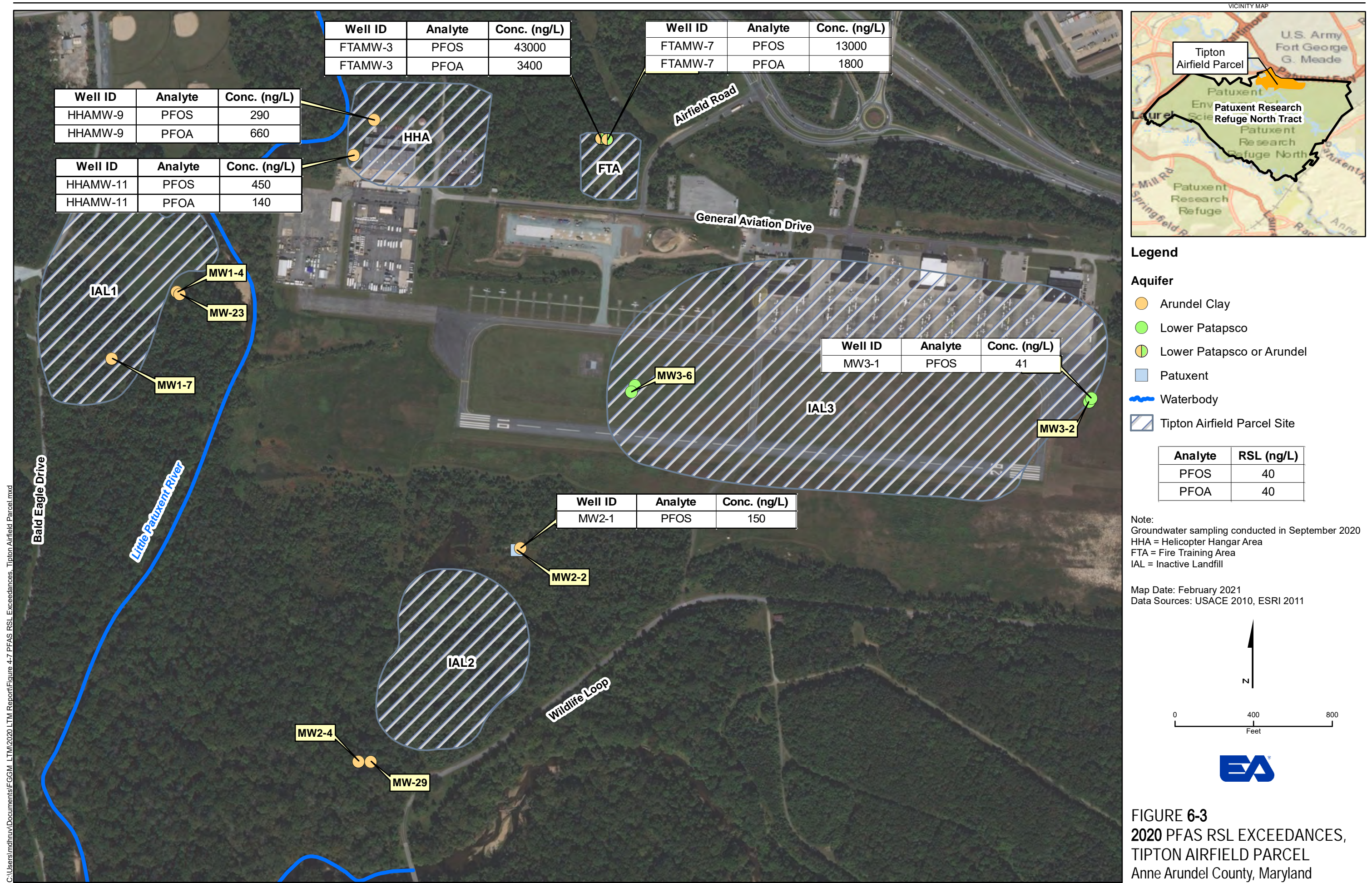
Map Date: February 2021  
 Data Sources: USACE 2010, ESRI 2011



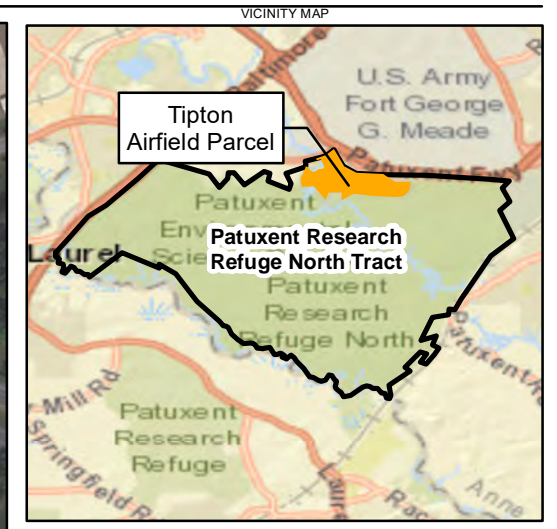
**FIGURE 6-2**  
**2020 MCL EXCEEDANCES,**  
**TIPTON AIRFIELD PARCEL**  
 Anne Arundel County, Maryland



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C:\Users\ndhrv\Documents\FGGM\_LTM2020\_LTM\_Report\Figure 4-7 PFAS RSL Exceedances, Tipton Airfield Parcel.mxd



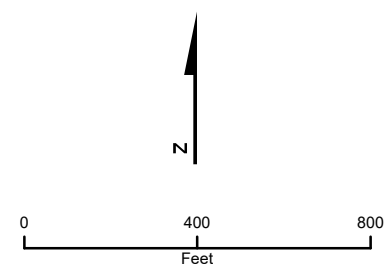
**Legend**

**Aquifer**

- Arundel Clay
- Lower Patapsco
- Lower Patapsco or Arundel
- Patuxent
- Waterbody
- Tipton Airfield Parcel Site

Note:  
 Groundwater sampling conducted in September 2020  
 HHA = Helicopter Hangar Area  
 FTA = Fire Training Area  
 IAL = Inactive Landfill

Map Date: February 2021  
 Data Sources: USACE 2010, ESRI 2011



**FIGURE 6-3**  
**2020 PFAS RSL EXCEEDANCES,**  
**TIPTON AIRFIELD PARCEL**  
 Anne Arundel County, Maryland

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## 7. TECHNICAL ASSESSMENT

### Question A: Is the remedy functioning as intended by the decision documents?

**Yes.** The TAP remedies (groundwater monitoring, LUCs, and MEC sweeps of the LPR) are functioning as intended by the DDs.

As required under the existing remedy, the Army has:

1. Monitored the groundwater contaminant levels as specified in the TAP OU LTGM, Final 2018 Amendment to the Work Plan Addendum for Combined Groundwater Operable Units, Long-Term Monitoring (EA 2018). Groundwater analytes include TCL VOCs, chlorinated VOCs, explosives, TAL metals, and PFAS/PFOA.
  - a. Groundwater migrating from the landfills has been monitored for over a decade and shows little VOC contamination, with the exception of benzene and acetone, which are well below their respective RSLs. All other VOCs are non-detect.
  - b. Arsenic is greater than the MCL (10 µg/L) at a concentration of 13 µg/L in well MW3-2 and less than the MCL at two locations (MW-29 and MW3-5) during the 2020 LTGM sampling event. Lead is greater than the RSL (approximately 15 times the RSL) at well MW2-2 and is not detected in all other locations. The MCL exceedance of arsenic and RSL exceedance of lead were reported in samples collected from wells upgradient of IAL3 and IAL2, respectively. As a result, the source of elevated arsenic and lead is likely not related to the landfills. Furthermore, well MW2-2 is screened between 292 and 302 ft bgs in the Patuxent Formation, which is below the Arundel Clay, a significant confining unit in the region, and the lead result is anomalous.
  - c. Metals detected above the RSLs are cobalt, iron, and manganese, which are common naturally occurring groundwater metals. Cobalt is almost three times greater than the RSL at 1 location and is less than the RSL at 10 locations. Iron is greater than the RSL at 2 locations (less than 3 times) and less than the RSL at 2 locations. Manganese is approximately 3 times greater than the RSL at 1 location and less than the RSL at 11 locations. These exceedances are predominantly associated with the shallow groundwater regime. The highest concentration of cobalt was detected downgradient of IAL1 and the highest concentrations of iron and manganese were detected downgradient of IAL2. These may be associated with site-related conditions enhancing the solubility of the naturally occurring metals. Based on a comparison of the reported cobalt and manganese concentrations to background samples collected during the RI, the variable concentrations are likely attributable to natural groundwater conditions.
  - d. There were no SVOC exceedances of the RSLs. Apart from the estimated concentration of naphthalene detected at the RSL at one location (MW2-1), there is no SVOC contamination present at the TAP.
  - e. No explosives contamination is occurring at the TAP.

- f. PFOS and PFOA exceedances were detected in wells at the FTA and HHA. PFOS detections ranged from concentrations less than 2 times greater to 1,075 times greater than the RSL. PFOA detections ranged from concentrations 3.5 times greater to 85 times greater than the RSL.
2. Controlled exposure to site-related contaminants and hazards by performing inspections of the IALs, restricting excavation activities, prohibiting residential development, and limiting installation of groundwater wells to those required for environmental studies.
3. Conducted MEC sweeps of the LPR and IAL3. Since the last FYR, annual LPR munitions debris (and MEC) removals have been conducted (2016, 2017, 2018, and 2020). No MEC was identified during these sweeps.

Due to the remedy effectiveness and regulatory approved optimization assessments, the O&M costs will be reduced approximately 54 percent from this FYR period to the next FYR period. This includes reducing the frequency of groundwater monitoring (i.e., annual to every five years) and reducing the MEC sweep frequency in the Little Patuxent River (i.e., annual to every five years), and elimination for the MEC surveys at IAL3.

**Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?**

**No.** The TAP continues to be operated by Anne Arundel County as a small municipal airport. The airport land use and onsite airport employee potential exposures remain unchanged. There continue to be no onsite human groundwater receptors, or inactive landfill soil (potential MEC) receptors, or LPR sediment (potential MEC) receptors. The exposure assumptions remain unchanged and are still valid. Additionally, groundwater monitoring ensures potential groundwater contamination is not migrating offsite and affecting offsite receptors.

Changes have occurred in risk assessment methodology and toxicity data for chemicals evaluated since the 1998 RI and 1998 and 1999 ROD. Cleanup levels and remedial action objectives were not determined for the TAP because NFA with groundwater monitoring was the selected remedy. The 2014 ESD incorporated into the NPL CERCLA remedy LUCs that prohibits excavation activities at the TAP without Army approval, prohibits all use of groundwater other than for environmental studies, and prohibits residential use of the site without evaluation of the residential exposure risk (URS 2014). Therefore, the changes in risk assessment methodology and toxicity data do not affect the protectiveness of the selected remedy.

Since the selection of the remedy for the FTA, there has been an increasing awareness of the hazards presented by the emerging contaminants PFOS/PFOA. As per recommendations made in the third FYR, PFAS sampling in groundwater was conducted during the 2020 LTGM event and the results were incorporated into this FYR. The detection of PFAS in groundwater does not affect the protectiveness of the remedy for groundwater because there are no current or future exposure pathways to groundwater, and groundwater use is restricted. PFAS detections in groundwater will be evaluated in a future RI and risk assessment.

**Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

**No.** No new information was identified that could call into question the protectiveness of the TAP remedy. No new complete groundwater exposure pathways or capped landfill soil exposure pathways were identified for ecological receptors. No weather-related events have affected the protectiveness of the remedy. Current and anticipated surrounding future land use will likely remain unchanged. While PFAS contamination has been confirmed, an RI is ongoing. The selected remedy of groundwater use restrictions remains protective for groundwater even with the presence of emerging contaminants.

**7.1 TECHNICAL ASSESSMENT SUMMARY**

The data review, the site inspection, and the interviews indicate that the remedy is functioning as intended. No changes in the physical conditions of the TAP have occurred that would affect the protectiveness of the remedy. No new information calls into question the protectiveness of the remedy.

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## 8. ISSUES

At this time, there are no issues at the TAP which affect protectiveness. Concerns which do not affect protectiveness are:

1. At IAL1, 0.5- to 1-ft-deep tire ruts were observed on the soil cover surface, most likely associated with emergency vehicles responding to the February 2015 plane crash or hunters. Additionally, woody/tree growth was observed on the outside perimeter of IAL1.
2. At IAL 2, during the most recent landfill inspection, the only potential concern identified was a dead tree in close proximity, but outside of the 5-ft buffer, of the fence line along Wildlife Loop Road.
3. At IAL 3, a bare soil area approximately 15 ft by 5 ft by 0.25 ft deep was observed on the south edge of the landfill, south of the runway. Moist patches of soil within this bare area indicate it receives significant stormwater runoff from the runway. A depression area was observed west of the windsock; however, there is no standing water or evidence of long-term ponding in the area.



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## 9. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

For Federal Facility CERCLA sites under the jurisdiction, custody, or control of the DoD, Executive Order 12580 delegates the lead agency responsibilities to the DoD. Therefore, the Army is the lead agency responsible for implementing the following actions at the TAP. USEPA Region 3 is the lead regulatory agency, and MDE is the supporting state regulatory agency.

1. Based on the findings of the previous annual inspections, inspections at IAL1 should be reduced to every 5 years to coincide with the TAP FYR. Any areas of significant depressions should be repaired. The mowing program should continue, as needed, to remove woody/tree growth that could create exposure pathways and to allow for better visual inspections of the cover. Additionally, a vehicle barricade/traffic cones and signage should be emplaced at the entrance of IAL1 to prevent additional tire rutting.
2. The fence line of IAL2 should continue to be inspected following storm events. Continued frequent routine cutting of the vegetation along the fence line is recommended. Removal of the dead tree identified near the fence line is recommended to avoid potential damage to the fence.
3. Continue to monitor the body of standing water along the northern fence of IAL2, especially for low water level periods to determine functionality of the fence is maintained. FGGM should continue to coordinate monitoring for beaver activity and dam removal to work towards lowering the level of standing water within IAL2.
4. At IAL3, annual inspections should be continued. Any groundhog holes should be remedied and filled as soon as practical. The approximately 6ft by 35 ft by 0.5 ft deep eroded surface area on the south edge of the landfill, south of the runway, should continue to be monitored annually as it showed evidence of improvement during the 2020 inspection.
5. Based upon data collected from the FTA and HHA during the 2020 LTGM event, PFAS constituents PFOS and PFOA should be considered a contaminant of potential concern that should be further considered in the scoping phase and in the risk assessment process. An RI should be conducted to evaluate PFAS in the TAP.
6. Groundwater monitoring results show no detections for VOCs above MCLs since 2005. Arsenic was detected at the TAP in the 2020 LTGM event above the MCL. Cobalt, iron, and manganese continue to be detected above their respective RSLs. Sampling should continue to be conducted on a frequency of once every 5 years; the next sampling event should occur in 2025.
7. The background groundwater wells sampled during the RI of IALs 1, 2, and 3, and the Clean Fill Dump should be resampled for metals during the next sampling event associated with the fifth FYR.

8. In instances where the LOD for non-detection exceeds the PAL, steps should be taken to achieve a LOD at or below the PAL.

## 10. PROTECTIVENESS STATEMENT

The remedy at the TAA OU is protective of human health and the environment. The remedy at the LPR MEC OU is protective of human health and the environment. Because the remedial actions at all OUs are protective, the site is protective of human health and the environment.

The elements of the remedy—(1) LUCs, (2) groundwater monitoring, and (3) periodic inspections—protect the public from exposure to contaminated groundwater and MEC.

The effective implementation of LUCs has prevented extraction of groundwater except for its allowable use for environmental sampling. There is no residential development at the TAP and LUCs restrict residential use without an evaluation. There has been no excavation at the site without proper receipt of permission from the Army. There have been no activities that would interfere with the site remedy.

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## **11. NEXT REVIEW**

The next periodic review is due on 23 September 2026, approximately 5 years from the date of this review. The review may be combined with the next Fort Meade BRAC Ordnance Demolition Area and Clean Fill Dump FYRs.

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# Appendix A

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**Fort George G. Meade  
Base Realignment and Closure  
Property Remedy**

**Notification of Five-Year Review**

This Public Notice is to inform the community of the U.S. Army Corps of Engineers' intent to conduct the 2021 Five-Year Review (5YR) for the Clean Fill Dump (CFD), Ordnance Demolition Area (ODA), Tipton Airfield Parcel (TAP), and Trap and Skeet (T&S) Range 17, all of which are Fort George G. Meade (Fort Meade) 1998 Base Realignment and Closure (BRAC) properties. The CFD, ODA, and T&S Range 17 are located on the Patuxent Research Refuge North Tract, administered by the U.S. Fish and Wildlife Service. TAP is located south of Fort Meade and MD Route 32 and east of MD Route 198. The purpose of the 5YR is to determine if the remedy implemented when the Record of Decision was signed for each site remains protective of human health and the environment.

**Constituents of potential concern (COPCs):** COPCs at the sites include various metals (arsenic, barium, cadmium, cobalt, and lead), volatile organic compounds (benzene, tetrachloroethene, trichloroethene, and cis-1,2-dichloroethane), and munitions and explosives of concern compounds: royal demolition explosive, 2,4,6-trinitrotoluene, 2-amino-4,6-dinitrotoluene (DNT), and 4-amino-2,6-PNT). Some of these COPCs are present in soils and groundwater at the CFD, ODA, and TAP, though no site contains all the COPCs. The COPC groundwater concentrations were slightly above the U.S. Environmental Protection Agency (EPA) safe drinking water maximum contaminant levels. For T&S Range 17, the statistically derived site-wide soil lead concentration was below 260 milligrams per kilogram (mg/kg) and each confirmation sampling location for the post-remediation soil did not exceed a limit of 400 mg/kg (EPA Regional Screening Level for Residential Soil (June 2017)).

**Selected Remedies:** The selected remedies for the CFD and TAP are No Further Action except groundwater monitoring with lead use controls (LUCS). The selected remedy for the ODA is Monitored Natural Attenuation with LUCS. The selected remedy for T&S Range 17 was soil excavation and onsite treatment and disposal, as well as implementation of LUCS. The implemented LUCS prohibit unauthorized extraction or use of the groundwater, unauthorized use of the sites, and soil disturbance without prior Army approval.

The scheduled date of completion of the Final 5YRS is anticipated to be 30 September 2021 and the Final Report will be made available to the public at the local information repositories listed below upon completion. The public is invited to examine the previous 5YRS available at the same local information repositories.

**Fort Meade DPW - Environmental Management**

Division (IMND-MEA-PWE)  
4216 Roberts Avenue (Building 4216)  
Fort George G. Meade, MD 20755  
Phone: 301-677-9648

Hours: 7:30 a.m. to 4:30 p.m., Monday-Friday  
OR

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Reference and other help by phone/email:  
Monday-Thursday 10 a.m. to 6 p.m.  
Friday-Saturday 10 a.m. to 5 p.m.  
Sunday 1 p.m. to 5 p.m.

Questions or concerns should be directed to

Steve Cardon  
Fort Meade BRAC Environmental Coordinator  
Phone: (301) 577-9178  
Email: stovencardon@army.mil

OR

Emily Cline

U.S. Army Corps of Engineers

Phone: (410) 963-7964

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**Fort George G. Meade Base Realignment and Closure Property Remedy Notification of Five-Year Review**

This Public Notice is to inform the community of the U.S. Army Corps of Engineers' intent to conduct the 2021 Five-Year Review (5YR) for the Clean Fill Dump (CFD), Ordinance Demolition Area (ODA), Tipton Airfield Parcel (TAP), and Trap and Skeet (T&S) Range 17, all of which are Fort George G. Meade (Fort Meade) 1998 Base Realignment and Closure (BRAC) properties. The CFD, ODA, and T&S Range 17 are located on the Patuxent Research Refuge North Tract, administered by the U.S. Fish and Wildlife Service. TAP is located south of Fort Meade and MD Route 32 and east of MD Route 198. The purpose of the 5YR is to determine if the remedy implemented when the Record of Decision was signed for each site remains protective of human health and the environment.

**Constituents of Potential Concern (COPCs):** COPCs at the sites include various metals (arsenic, barium, cadmium, cobalt, and lead), volatile organic compounds (benzene, tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene), and munitions and explosives of concern compounds (royal demolition explosive, 2,4,6-trinitrotoluene, 2-amino-4,6-dinitrotoluene [DNT], and 4-amino-2,6-DNT). Some of these COPCs are present in soils and groundwater at the CFD, ODA, and TAP, though no site contains all the COPCs. The COPC groundwater concentrations were slightly above the U.S. Environmental Protection Agency (EPA) safe drinking water maximum contaminant levels. For T&S Range 17, the statistically derived sitewide soil lead concentration was below 260 milligrams per kilogram (mg/kg) and each confirmation sampling location for the post-remediation soil did not exceed a limit of 400 mg/kg (EPA Regional Screening Level for Residential Soil [June 2017]).

**Selected Remedies:** The selected remedies for the CFD and TAP are No Further Action except groundwater monitoring with land use controls (LUCS). The selected remedy for the ODA is Monitored Natural Attenuation with LUCS. The selected remedy for T&S Range 17 was soil excavation and offsite treatment and disposal, as well as implementation of LUCS. The implemented LUCS prohibit unauthorized extraction or use of the groundwater, unauthorized use of the sites, and soil disturbance without prior Army approval.

The scheduled date of completion of the Final 5YRs is anticipated to be 30 September 2021 and the Final Report will be made available to the public at the local information repositories listed below upon completion. The public is invited to examine the previous 5YRs available at the same local information repositories:

**Fort Meade DPW – Environmental Management Division (IMND-MEA-PWE)**  
 4216 Roberts Avenue (Building 4216)  
 Fort George G. Meade, MD 20755  
 Phone: 301-677-9648  
 Hours: 7:30 a.m. to 4:30 p.m., Monday-Friday


OR

**Anne Arundel County Library**  
 2624 Annapolis Road  
 Severn, MD 21144  
 Phone: 410-222-6280  
 Reference and other help by phone/email:  
 Monday-Thursday: 10 a.m. to 6 p.m.  
 Friday-Saturday: 10 a.m. to 5 p.m.  
 Sunday: 1 p.m. to 5 p.m.  
 Questions or concerns should be directed to:  
**Steve Cardon**  
**Fort Meade BRAC Environmental Coordinator**  
 Phone: (301) 677-9178  
 Email: steven.c.cardon.ctr@mail.mil

OR

**Emily Cline**  
**U.S. Army Corps of Engineers**  
 Phone: (410) 962-7966  
 Email: emily.j.cline@usace.army.mil  
 Bowie Blade Feb 4, 2021 6850671

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**Prince George's County Maryland Board of Ethics - Public Hearing**

NOTICE IS HEREBY GIVEN that the Prince George's County Maryland Board of Ethics will hold a public hearing pursuant to Ethics Code 2-292(j) via Microsoft Teams due to the COVID-19 Pandemic (Link: Click here to join the meeting ) on January 28, 2021 at 5:00 P.M. to review the propriety of a transaction involving the acquisition of real property between the County and Green Branch Management Group of which has a member that is required to file a disclosure statement pursuant to Section 2-294 of the Ethics Code. For questions please contact Chelinda Bullock of the Prince George's County Office of Ethics and Accountability at 301-883-3445. 2/4/2021 6871566

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**Bowie Blade-News**  
**Crofton - West County Gazette**  
**410-268-7000**

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Feb 10, 2021

The Baltimore Sun Media Group

By 



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**NOTICE**

OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**KIMBERLY B STIVERS**  
Notice is given that: **BETTY LOU STIVERS**  
whose address is 197 W PASADENA  
ROAD MILLERSVILLE, MD 21108 was on  
December 21st, 2020 appointed personal  
representative(s) of the estate of **KIMBERLY  
B STIVERS** who died on November 1st, 2020  
with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 21st,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**BETTY LOU STIVERS**, Personal  
Representative, ESTATE # 101909  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
MD Gazette 02/03, 02/10, 02/17/21  
02/03, 02/10, 02/17/21 6871409

DANIEL C CONKLING  
2756 BAYSIDE BEACH RD  
PASADENA, MD 21122

**NOTICE**

OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**PATRICIA C WALZ**  
Notice is given that: **HARRY L WALZ JR** whose  
address is 1325 RIPPLING COURT GLEN  
BURNIE, MD 21061 was on December 28th,  
2020 appointed personal representative(s) of  
the estate of **PATRICIA C WALZ** who died on  
March 29th, 2020 with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 28th,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**HARRY L WALZ JR**, Personal Representative,  
ESTATE # 101950  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
MD Gazette 02/03, 02/10, 02/17/21  
02/03, 02/10, 02/17/21 6871416

**Fort George G. Meade  
Base Realignment and Closure  
Property Remedy  
Notification of Five-Year Review**

This Public Notice is to inform the community of the U.S.  
Army Corps of Engineers' intent to conduct the 2021 Five-  
Year Review (5YR) for the Clean Fill Dump (CFD), Or-  
dnance Demolition Area (ODA), Tipton Airfield Parcel (TAP),  
and Trap and Skeet (T&S) Range 17, all of which are Fort  
George G. Meade (Fort Meade) 1998 Base Realignment  
and Closure (BRAC) properties. The CFD, ODA, and T&S  
Range 17 are located on the Patuxent Research Refuge  
North Tract, administered by the U.S. Fish and Wildlife  
Service. TAP is located south of Fort Meade and MD Route  
32 and east of MD Route 198. The purpose of the 5YR is to  
determine if the remedy implemented when the Record of  
Decision was signed for each site remains protective of  
human health and the environment.

**Constituents of Potential Concern (COPCs):**  
COPCs at the sites include various metals (arsenic, bar-  
ium, cadmium, cobalt, and lead), volatile organic com-  
pounds (benzene, tetrachloroethene, trichloroethene, and  
cis-1,2-dichloroethene), and munitions and explosives of  
concern compounds (royal demolition explosive, 2,4,6-  
trinitrotoluene, 2-amino-4,6-dinitrotoluene [DNT], and 4-  
amino-2,6-DNT). Some of these COPCs are present in soils  
and groundwater at the CFD, ODA, and TAP, though no  
site contains all the COPCs. The COPC groundwater  
concentrations were slightly above the U.S. Environmental  
Protection Agency (EPA) safe drinking water maximum  
contaminant levels. For T&S Range 17, the statistically  
derived site-wide soil lead concentration was below 260  
milligrams per kilogram (mg/kg) and each confirmation  
sampling location for the post-remediation soil did not  
exceed a limit of 400 mg/kg (EPA Regional Screening Level  
for Residential Soil (June 2017)).

**Selected Remedies:** The selected remedies for the  
CFD and TAP are No Further Action except groundwater  
monitoring with land use controls (LUCs). The selected  
remedy for the ODA is Monitored Natural Attenuation with  
LUCs. The selected remedy for T&S Range 17 was soil  
excavation and offsite treatment and disposal, as well as  
implementation of LUCs. The implemented LUCs prohibit  
unauthorized extraction or use of the groundwater,  
unauthorized use of the sites, and soil disturbance with-  
out prior Army approval.

The scheduled date of completion of the Final 5YRs is  
anticipated to be 30 September 2021 and the Final Report  
will be made available to the public at the local infor-  
mation repositories listed below upon completion. The  
public is invited to examine the previous 5YRs available at  
the same local information repositories:

**Fort Meade DPW - Environmental Management  
Division (IMND-MEA-PWE)**  
4216 Roberts Avenue (Building 4216)  
Fort George G. Meade, MD 20755  
Phone: 301-677-9648  
Hours: 7:30 a.m. to 4:30 p.m., Monday-Friday  
OR

**Anne Arundel County Library**  
2624 Annapolis Road  
Severn, MD 21144  
Phone: 410-222-6280  
Reference and other help by phone/email:  
Monday-Thursday: 10 a.m. to 6 p.m.  
Friday-Saturday: 10 a.m. to 5 p.m.  
Sunday: 1 p.m. to 5 p.m.  
Questions or concerns should be directed to:

**Steve Cardon**  
**Fort Meade BRAC Environmental Coordinator**  
Phone: (301) 677-9178  
Email: steven.c.cardon.ctr@mail.mil  
OR

**Emily Cline**  
**U.S. Army Corps of Engineers**  
Phone: (410) 962-7966  
Email: emily.j.cline@usace.army.mil  
MD Gazette Feb 10, 2021 6850681

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STE 418  
COLUMBIA, MD 21044

**NOTICE**

OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**OLA LEE ARTIS**  
Notice is given that: **BERNA ARTIS** whose  
address is 5528 HARTFIELD AVENUE CAMP  
SRINGS, MD 20746 was on December 28th,  
2020 appointed personal representative(s) of  
the estate of **OLA LEE ARTIS** who died on  
December 7th, 2020 with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 28th,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**BERNA ARTIS**, Personal Representative,  
ESTATE # 101946  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
MD Gazette 02/03, 02/10, 02/17/21  
02/03, 02/10, 02/17/21 6871415

VICTOR LEMBO  
SINCLAIR PROSSER LAW  
900 BESTGATE ROAD  
SUITE 103  
ANNAPOLIS, MD 21401

**NOTICE**

OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**LEROY E BREEDEN**  
Notice is given that: **BARBARA L KIRK**  
whose address is 335 REDWOOD GROVE  
COURT MILLERSVILLE, MD 21108 was on  
December 21st, 2020 appointed personal  
representative(s) of the estate of **LEROY E  
BREEDEN** who died on January 25th, 2020  
with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 21st,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**BARBARA L KIRK**, Personal Representative,  
ESTATE # 101920  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
MD Gazette 02/03, 02/10, 02/17/21  
02/03, 02/10, 02/17/21 6871412

DAVID B TORCHINSKY  
STEIN SPERLING BENNETT DE JONG  
DRISCOLL PC  
1101 WOOTTON PARKWAY  
SUITE 700  
ROCKVILLE, MD 20852

**NOTICE**

OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**RALPH J ROHNER**  
Notice is given that: **MONICA ANN ROHNER**  
whose address is 1345 CHICORY WAY  
ODENTON, MD 21113 was on December 29,  
2020 appointed personal representative(s) of  
the estate of **RALPH J ROHNER** who died on  
June 11, 2020 with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 29,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**MONICA ANN ROHNER**, Personal  
Representative, ESTATE # 101972  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
Maryland Gazette  
2/3, 2/10, 2/17/2021 6871545

**NOTICE**  
OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**DAWN LORI JUMP**  
Notice is given that: **ROBERT H JUMP JR**  
whose address is P.O. BOX 372 NEAVITT,  
MD 21652 was on December 21st, 2020  
appointed personal representative(s) of the  
estate of **DAWN LORI JUMP** who died on  
November 8th, 2020 with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 21st,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**ROBERT H JUMP JR**, Personal  
Representative, ESTATE # 101914  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
02/03, 02/10, 02/17/21 6871410

**NOTICE**  
OF APPOINTMENT NOTICE TO CREDITORS  
NOTICE TO UNKNOWN HEIRS TO ALL PERSONS  
INTERESTED IN THE ESTATE OF

**DOROTHY L KLOSTERMAN**  
Notice is given that: **DANIEL E KLOSTERMAN  
JR** whose address is 8014 HORICON POINT  
DRIVE MILLERSVILLE, MD 21108 was on  
December 22nd, 2020 appointed personal  
representative(s) of the estate of **DOROTHY  
L KLOSTERMAN** who died on February 25th,  
2020 with a will

Further information can be obtained by  
reviewing the estate file in the office of the  
Register of Wills or by contacting the personal  
representative.

All persons having any objection to the  
appointment shall file their objections with  
the Register of Wills on or before June 22nd,  
2021

All persons having claims against the  
Decedent must serve their claims on the  
undersigned personal representative or file  
them with the Register of Wills with a copy  
to the undersigned on or before the earlier of  
the following dates:

- (1) Six months from the date of the decedent's  
death, except if the decedent died before  
October 1, 1992, nine months from the date  
of the decedent's death; or
- (2) Two months after the personal repre-  
sentative mails or otherwise delivers to the  
creditor a copy of this published notice or  
other written notice, notifying the creditor  
that the claim will be barred unless the  
creditor presents the claims within two  
months from the mailing or other delivery of  
the notice. A claim not presented or filed on  
or before that date, or any extension provided  
by law, is unenforceable thereafter. Claim  
forms may be obtained from the Register of  
Wills.

**DANIEL E KLOSTERMAN JR**, Personal  
Representative, ESTATE # 101872  
True Test Copy  
**LAUREN M. PARKER**, Register of Wills  
for Anne Arundel County Circuit  
Courthouse - Church Circle P.O. Box 2368  
Annapolis, MD 21404-2368  
02/03, 02/10, 02/17/21 6871408

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FORT GEORGE G. MEADE

FORT GEORGE G. MEADE



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/ Garrison (<https://home.army.mil/meade/index.php/about/Garrison>)

/ Directorate of Public Works (DPW) (<https://home.army.mil/meade/index.php/about/Garrison/directorate-public-works>) / Environmental

## ENVIRONMENTAL

Fort Meade's [ENVIRONMENTAL POLICY](http://www.ftmeade.army.mil/directorates/dpw/environment/files/signedemspolicy-jan2012.pdf) ([HTTP://WWW.FTMEADE.ARMY.MIL/DIRECTORATES/DPW/ENVIRONMENT/FILES/SIGNEDEMSPOLICY-JAN2012.PDF](http://www.ftmeade.army.mil/directorates/dpw/environment/files/signedemspolicy-jan2012.pdf)) emphasizes that protection of the environment is a priority and will be enhanced by keeping environmental impacts associated with mission activities to minimum.

It is important that everyone at Fort Meade take the EMS Awareness Training Annually.

### [Hazardous Waste \(https://home.army.mil/meade/index.php/my-fort/all-services/environmental/compliance/hazardous-waste\)](https://home.army.mil/meade/index.php/my-fort/all-services/environmental/compliance/hazardous-waste)

### Public Notices

- [BRAC Property Remedy Notification of Five-Year Review](https://home.army.mil/meade/index.php/download_file/view/1078/549) ([https://home.army.mil/meade/index.php/download\\_file/view/1078/549](https://home.army.mil/meade/index.php/download_file/view/1078/549))
- [Draft Environmental Assessment for Construction of the SOF Operations Facility](https://home.army.mil/meade/index.php/download_file/view/1061/549) ([https://home.army.mil/meade/index.php/download\\_file/view/1061/549](https://home.army.mil/meade/index.php/download_file/view/1061/549))
- [Draft Programmatic Environmental Assessment for Stream Restoration Program](https://home.army.mil/meade/index.php/download_file/view/980/549) ([https://home.army.mil/meade/index.php/download\\_file/view/980/549](https://home.army.mil/meade/index.php/download_file/view/980/549))
- [Engineering Evaluation / Cost Analysis for Cell 3 of the Closed Sanitary Landfill at Fort Meade](https://home.army.mil/meade/index.php/download_file/view/630/549) ([https://home.army.mil/meade/index.php/download\\_file/view/630/549](https://home.army.mil/meade/index.php/download_file/view/630/549))
- [Draft Final Environmental Assessment \(EA\) for the Proposed Road Improvements at Fort Meade](http://www.ftmeade.army.mil/directorates/dpw/environment/RoadImprovementForPublic_CommentsAddressed%2006052017.pdf) ([http://www.ftmeade.army.mil/directorates/dpw/environment/RoadImprovementForPublic\\_CommentsAddressed%2006052017.pdf](http://www.ftmeade.army.mil/directorates/dpw/environment/RoadImprovementForPublic_CommentsAddressed%2006052017.pdf))
- [Draft Final 175th NWS Facility EA Oct2016](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Draft%20Final%20175th%20NWS%20Facility%20EA%20Oct2016.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Draft%20Final%20175th%20NWS%20Facility%20EA%20Oct2016.pdf>)
- [Army 2020 -- 2014 Supplemental PEA for Army 2020 Force Structure Realignment - \*\*Open for public comment until August 25, 2014.\*\*](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Army2020SPEA-FNSI.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Army2020SPEA-FNSI.pdf>)
- [2018 Restoration Advisory Board meetings are scheduled to meet Jan. 18, March 15, May 17, July 19, Sept. 20 \(CANCELLED\), Nov. 15 \(Thursdays\) at 7 p.m. The meetings are at the Courtyard Marriott, 2700 Hercules Rd., Annapolis Junction, MD 20701](http://www.ftmeade.army.mil/directorates/dpw/environment/rab/rab.html) (<http://www.ftmeade.army.mil/directorates/dpw/environment/rab/rab.html>)
- [Draft Environmental Assessment \(EA\) for the Installation Information Infrastructure Modernization Program \(I3MP\) at Fort Meade](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Ft%20Meade%2013MP%20draft%20EA.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Ft%20Meade%2013MP%20draft%20EA.pdf>)
- [Draft Finding of No Significant Impact \(FNSI\) at Fort Meade](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/draft%20FNSI%20for%2013MP%20Project.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/draft%20FNSI%20for%2013MP%20Project.pdf>)
- [Notice of Availability for the draft Environmental Assessment and draft Finding of No Significant Impact for the Installation Information Infrastructure Modernization Program \(I3MP\) at Fort Meade, M](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/final%20NOA.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/final%20NOA.pdf>) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/final%20NOA.pdf>)
- [Environmental Assessment for Water and Wastewater Systems Improvements Projects \(American Water\)](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental_Assessment_for_Water_and_wasterweater_systems_imp) ([http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental\\_Assessment\\_for\\_Water\\_and\\_wasterweater\\_systems\\_imp](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental_Assessment_for_Water_and_wasterweater_systems_imp))
- [Environmental Assessment Fort Meade Reclaimed Water Project](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental_Assessment_Fort_Meade_Reclaimed_Water_Project.pdf) ([http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental\\_Assessment\\_Fort\\_Meade\\_Reclaimed\\_Water\\_Project.pdf](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental_Assessment_Fort_Meade_Reclaimed_Water_Project.pdf))
- [Environmental Assessment for the Implementation of Privatization of Army Lodging Program at Fort George G. Meade](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental%20Assessment%20for%20the%20Implementation%20c) (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental%20Assessment%20for%20the%20Implementation%20c>)
- [Environmental Assessment for BGE Substation - 9500 area, Fort George G. Meade](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental_Assessment_BGE_9500Area.pdf) ([http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental\\_Assessment\\_BGE\\_9500Area.pdf](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/reclaimedWater/Environmental_Assessment_BGE_9500Area.pdf))

- [EBS for Site M](http://www.ftmeade.army.mil/directorates/dpw/environment/Files/EBS-Final-V1.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/Files/EBS-Final-V1.pdf>)



(<http://www.army.mil>)

## Documents

- **[Final Environmental Assessment U.S. Army Cyber Command and Control Facility, October 2013](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Final%20ARCYBER%20FNSI%20and%20EA%20with%20signatures.pdf)** (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Final%20ARCYBER%20FNSI%20and%20EA%20with%20signatures.pdf>) (very large file, right click on the linke to download and "save target as")
- **[Final Traffic Study for Environmental Assessment, U.S. Army Cyber Command and Control Facility, July 2013](http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Appendix%20D%20to%20ARCYBER%20EA,%20Traffic%20Study.pdf)** (<http://www.ftmeade.army.mil/directorates/dpw/environment/publicNotices/Appendix%20D%20to%20ARCYBER%20EA,%20Traffic%20Study.pdf>) (very large file, right click on the linke to download and "save target as")
- [EMS Awareness Training Memorandum, October 2010](http://www.ftmeade.army.mil/directorates/dpw/environment/files/FGGM-EMS-Awareness-Trng-Memo-22Oct2010.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/files/FGGM-EMS-Awareness-Trng-Memo-22Oct2010.pdf>)
- [2011 Green Meade Plan](http://www.ftmeade.army.mil/directorates/dpw/environment/files/2011%20green%20meade%20plan.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/files/2011%20green%20meade%20plan.pdf>)
- [Environmental Quality Control Committee \(EQCC\) Charter, March 2009](http://www.ftmeade.army.mil/directorates/dpw/environment/files/EQCC-Charter-20Mar09.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/files/EQCC-Charter-20Mar09.pdf>)
- [Environmental Officer Appointment Memorandum, March 2009](http://www.ftmeade.army.mil/directorates/dpw/environment/files/EO-appointment-memo-20Mar09.pdf) (<http://www.ftmeade.army.mil/directorates/dpw/environment/files/EO-appointment-memo-20Mar09.pdf>)

## Military Aircraft Noise

Military aircraft comprise a small percentage of air traffic in the National Capital Region. Aircraft from the Army constitutes an even smaller percentage. In order to ensure complaints concerning aircraft noise are properly referred to the right entity, initial complaints should be referred to the [FAA COMPLAINT PORTAL](https://noise.faa.gov/noise/pages/noise.html) ([HTTPS://NOISE.FAA.GOV/NOISE/PAGES/NOISE.HTML](https://noise.faa.gov/noise/pages/noise.html)) to assist in determining the source of the complaint and, if applicable, referral to the appropriate military entity.

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## ENVIRONMENTAL

### Phone:

301-677-9648

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### Location:

4216 Roberts Ave.  
Second Floor  
Fort Meade, MD 20755

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### Hours of Operation:

7 a.m. to 4 p.m.

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## ALL SERVICES

- [ADMINISTRATIVE SERVICES DIVISION \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/DIRECTORATE-HUMAN-RESOURCES/ADMINISTRATIVE-SERVICES\)](https://home.army.mil/meade/index.php/about/garrison/directorate-human-resources/administrative-services)
- [ARMY RETENTION OFFICE \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/DIRECTORATE-HUMAN-RESOURCES/MILITARY-PERSONNEL-DIVISION/EMILPOPAS-OFFICE\)](https://home.army.mil/meade/index.php/about/garrison/directorate-human-resources/military-personnel-division/emilpopas-office)
- [ARMY SUBSTANCE ABUSE PROGRAM \(ASAP\) SERVICES \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/DIRECTORATE-HUMAN-RESOURCES/ASAP-SERVICES\)](https://home.army.mil/meade/index.php/about/garrison/directorate-human-resources/asap-services)
- [CIVILIAN PERSONNEL ADVISORY CENTER \(CPAC\) \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/CIVILIAN-PERSONNEL-ADVISORY-CENTER\)](https://home.army.mil/meade/index.php/about/garrison/civilian-personnel-advisory-center)
- [DEERS/ID CARDS \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/DIRECTORATE-HUMAN-RESOURCES/MILITARY-PERSONNEL-DIVISION/DEERSID-CARDS\)](https://home.army.mil/meade/index.php/about/garrison/directorate-human-resources/military-personnel-division/deersid-cards)
- [DIRECTORATE OF EMERGENCY SERVICES \(DES\) \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/DES\)](https://home.army.mil/meade/index.php/about/garrison/des)
- [DIRECTORATE OF PLANS, TRAINING, MOBILIZATION & SECURITY \(DPTMS\) \(HTTPS://HOME.ARMY.MIL/MEADE/INDEX.PHP/ABOUT/GARRISON/DPTMS\)](https://home.army.mil/meade/index.php/about/garrison/dptms)

# Appendix B

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TAP OU Groundwater Chemical Results for the 2016 Sampling Event and Screening Criteria

Aquifer/Sample Location Well ID Sample Collection Date Screen Interval (ft bgs) Parent Sample Upgradient/Downgradient					FTA (Lower Patapsco/Arundel Clay)			HHA (Arundel Clay)		IAL No. 1 (Arundel Clay)			IAL No. 2 (Arundel Clay)			IAL No. 3 (Lower Patapsco)		
					FTA-MW-3 6/14/2016 3.5-13.5	TAP-DUP-1 6/14/2016 3.5-13.5 FTA-MW-3	FTA-MW-7 6/14/2016 2.1-12.1	HHA-MW-9 6/14/2016 4.1-14.4	HHA-MW-11 6/14/2016 4-14	MW1-4 6/14/2016 115-125	MW1-7 6/14/2016 7-12	MW-23 6/14/2016 6-16	MW2-1 6/14/2016 5-20	MW2-4 6/14/2016 164.5-174.5	MW-29 6/14/2016 10-25	MW3-1 6/14/2016 23.5-33.5	MW3-2 6/14/2016 96-106	
Analyte	MCL	MCLG	EPA Tap Water	Unit														
<b>Dissolved Metals (SW6010C)</b>																		
Arsenic	10	0	0.052	c	µg/L	0.842 J	0.772 J	1.08 J	< 1.5 U	1.22 J	< 1.5 U	< 1.5 U	2.48 J	< 1.5 U	< 1.5 U	7.68	--	--
Iron	-	-	14000	n	µg/L	2430	2480	5840	4950	51000	< 15 U	< 15 U	24700	15.7 J	2720	31900	--	--
Manganese	-	-	430	n	µg/L	505	510	424	1560	1300	< 1.5 U	85.0	2160	38.5	47.0	1300	--	--
<b>Volatile Organic Compounds (SW8260B)</b>																		
1,1,2,2-tetrachloroethane	-	-	0.076	c	µg/L	< 0.4 U	< 0.4 U	< 0.4 U	< 0.4 U	< 0.4 U	--	--	--	< 0.2 U	--	--	< 0.2 U	< 0.4 U
Benzene	5	0	0.46	c*	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	--	--	--	< 0.5 U	--	--	< 0.5 U	1.34 J
Carbon tetrachloride	5	0	0.46	c	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	--	--	--	< 0.5 U	--	--	< 0.5 U	< 1 U
cis-1,2-dichloroethene	70	70	36	n	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	--	--	--	< 0.5 U	--	--	< 0.5 U	< 1 U
Vinyl chloride	2	0	0.019	c	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	--	--	--	< 0.5 U	--	--	< 0.5 U	< 1 U
<b>Polynuclear Aromatic Hydrocarbons(SW8270D)</b>																		
Naphthalene	-	-	0.17	e*	µg/L	< 0.0943 U	< 0.0962 U	< 0.0952 U	--	--	--	--	--	--	--	--	--	--
Notes: Gray shaded results exceed the Tap water RSL in the absence of MCLs - = data not available -- = sample not tested for ft = feet bgs = below ground surface µg/L = micrograms per liter MCL = US EPA Maximum Contaminant Level, May 2016 MCLG = US EPA Maximum Contaminant Level Goal, Jun 2015 EPA Tap = US EPA Regional Screening Levels, May 2016 c = cancer n = non-cancer J = estimated U = not detected * = exceeding quality control criteria																		

TAP OU Groundwater Chemical Results for the 2017 Sampling Event and Screening Criteria

Aquifer/Sample Location					FTA (Lower Patapsco/Arundel Clay)			HHA (Arundel Clay)		IAL No. 1 (Arundel Clay)			IAL No. 2 (Arundel Clay)		
					Well ID	FTAMW-3	TAP-DUP	FTAMW-7	HHAMW-9	HHAMW-11	MW1-4	MW1-7	MW-23	MW2-1	MW2-4
Sample Collection Date					6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017
Screen Interval (ft bgs)					3.5-13.5	3.5-13.5	2.1-12.1	4.1-14.4	4-14	115-125	7-12	6-16	5-20	164.5-174.5	10-25
Parent Sample						FTAMW-3									
Upgradient/Downgradient					D	D	U	D	D	D	U	D	U	D	D
Analyte	MCL	MCLG	EPA Tap Water	Unit											
<b>Dissolved Metals (SW6010C)</b>															
Arsenic	10	0	0.052	c	µg/L	< 1.50 U	< 1.50 U	1.47 J	< 1.50 U	< 15.0 U	< 1.50 U	< 1.50 U	< 1.50 U	< 1.50 U	< 15.0 U
Iron	-	-	14000	n	µg/L	1170 J-	1170 J-	8720 J-	462 J-	79700 J-	< 15.0 UJ	< 15.0 UJ	2590 J-	< 15.0 UJ	2040 J-
Manganese	-	-	430	n	µg/L	727	713	491	1430	2200 D	< 1.50 U	22.1	261	28.1	44.6
<b>Polynuclear Aromatic Hydrocarbons(SW8270D)</b>															
Naphthalene	-	-	0.17	c*	µg/L	< 0.0972 U	< 0.0977 U	0.0505 J	--	--	--	--	--	--	--
Notes:															
Gray shaded results exceed the Tap water RSL in the absence of MCLs															
- = data not available															
-- = sample not tested for															
ft = feet															
bgs = below ground surface															
µg/L = micrograms per liter															
MCL = US EPA Maximum Contaminant Level, June 2017															
MCLG = US EPA Maximum Contaminant Level Goal, June 2017															
EPA Tap Water = US EPA Regional Screening Levels, June 2017															
c = cancer															
n = non-cancer															
J = Estimated															
J- = Estimated, biased low															
D = Dilution															
U = Not detected															
* = exceeding quality control criteria															

TAP OU Groundwater Chemical Results for the 2018 Sampling Event and Screening Criteria

Aquifer/Sample Location					FTA (Lower Patapsco/Arundel Clay)									HHA (Arundel Clay)						
Well ID					FTAMW-3			TAP-DUP			FTAMW-7			HHAMW-9			HHAMW-11			
Sample Collection Date					6/19/2018			6/19/2018			6/19/2018			6/19/2018			6/19/2018			
Screen Interval (ft bgs)					3.5-13.5			3.5-13.5			2.1-12.1			4.1-14.4			4-14			
Parent Sample					FTAMW-3															
Upgradient/Downgradient					D			D			U			D			D			
Analyte	MCL	MCLG	EPA Tap Water	Unit	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	
<b>Dissolved Metals (SW6010C)</b>																				
Arsenic	10	0	0.052	c µg/L	< 1.50	U	UJ	1.27	J	J	< 1.50	U	U	< 1.50	U	U	2.72			
Iron	-	-	14000	n µg/L	17.5	J	J	13.3	J	J	1210	EN	J	991		J	58400			J
Manganese	-	-	430	n µg/L	193		J	188		J	84.8	J	J	831		J	1570			J

Aquifer/Sample Location					IAL No. 1 (Arundel Clay)									IAL No. 2 (Arundel Clay)								
Well ID					MW1-4			MW1-7			MW-23			MW2-1			MW2-4			MW-29		
Sample Collection Date					6/19/2018			6/19/2018			6/19/2018			6/19/2018			6/19/2018			6/19/2018		
Screen Interval (ft bgs)					115-125			7-12			6-16			5-20			164.5-174.5			10-25		
Parent Sample																						
Upgradient/Downgradient					D			U			D			U			D			D		
Analyte	MCL	MCLG	EPA Tap Water	Unit	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual
<b>Dissolved Metals (SW6010C)</b>																						
Arsenic	10	0	0.052	c µg/L	< 1.50	U	U	< 1.50	U	U	3.16			1.2	J	J	1.04	J	J	<b>10.9</b>		
Iron	-	-	14000	n µg/L	< 15.0	U	U	< 15.0	U	U	20000		J	< 15.0	U	U	3280		J	41900		J
Manganese	-	-	430	n µg/L	21.7		J	1.38	J	J	1480		J	27.3		J	47		J	1600		J

Notes:  
**Bolded results exceed the MCL.**  
 Gray shaded results exceed the Tap water RSL in the absence of MCLs  
 - = data not available  
 -- = sample not tested for  
 ft = feet  
 bgs = below ground surface  
 µg/L = micrograms per liter  
 MCL = US EPA Maximum Contaminant Level, May 2018  
 MCLG = US EPA Maximum Contaminant Level Goal, May 2018  
 EPA Tap Water = US EPA Regional Screening Levels, May 2018  
 c = cancer  
 n = non-cancer  
 E = The serial dilution was outside control limits.  
 J = Estimated  
 N = The MS/MSD accuracy and or precision are outside criteria. The Predigested spike recovery is not within control limits for the associated parameter.  
 U = Not detected





TAP OU Groundwater Chemical Results for the 2020 PFAS Sampling Event and Screening Criteria

Aquifer/Sample Location			FTA (Lower Patapsco/Arundel Clay)						HHA (Arundel Clay)						IAL No. 1 (Arundel Clay)					
			FTAMW-3			FTAMW-7			HHAMW-9			HHAMW-11			MW1-4			MW1-7		
Well ID																				
Sample Collection Date			9/14/2020			9/14/2020			9/14/2020			9/14/2020			9/14/2020			9/15/2020		
Screen Interval (ft bgs)			3.5-13.5			2.1-12.1			4.1-14.4			4-14			115-125			7-12		
Parent Sample																				
Upgradient/Downgradient			D			U			D			D			D			U		
Analyte	EPA Tap Water	Unit	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual
<b>PFAS (LC/MS/MS)</b>																				
4:2 Fluorotelomersulfonate	-	ng/L	37			< 17	U	U	< 1.7	U	U	< 36	U	U	< 1.7	U	U	< 1.7	U	U
6:2 Fluorotelomer sulfonate	-	ng/L	3500			180			8.9	J		73			< 1.7	U	U	< 1.7	U	U
8:2 Fluorotelomer sulfonate	-	ng/L	4200			410			< 1.7	U	U	2.3	J		< 1.7	U	U	1.1	J	J
N-ethyl perfluorooctanesulfonamidoacetic acid	-	ng/L	< 1.7	U	U	< 1.7	U	U	< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
N-methyl perfluorooctanesulfonamidoacetic acid	-	ng/L	< 1.7	U	U	< 1.7	U	U	< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluorobutanesulfonic acid (PFBS)	40000	ng/L	270			170			37			32			< 1.7	U	U	< 1.7	U	U
Perfluorobutanoic acid	-	ng/L	700			390			15			30			0.99	J	J	2.2	J	J
Perfluorodecanesulfonic acid	-	ng/L	< 17	U	U	< 17	U	U	< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluorodecanoic acid	-	ng/L	46			50			< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluorododecanoic acid	-	ng/L	< 1.7	U	U	< 1.7	U	U	< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluoroheptanesulfonic acid	-	ng/L	150			59			5.9			9.4			< 1.7	U	U	< 1.7	U	U
Perfluoroheptanoic acid	-	ng/L	2500			1800			17			34			< 1.7	U	U	< 1.7	U	U
Perfluorohexanesulfonic acid	-	ng/L	30000			8000			730			450			2.6	J	J	2.4	J	J
Perfluorohexanoic acid	-	ng/L	3700			1500			91			100			< 1.7	U	U	1.3	J	J
Perfluorononanesulfonic acid	-	ng/L	< 17	U	U	< 17	U	U	< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluorononanoic acid	-	ng/L	940			240			6.2			9.4			< 1.7	U	U	< 1.7	U	U
Perfluorooctanesulfonamide (PFOSA)	-	ng/L	17			15			3.3	J		< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluorooctanesulfonic acid (PFOS)	40	ng/L	<b>43000</b>			<b>13000</b>			<b>290</b>			<b>450</b>			2.8	J	J	7.4		
Perfluorooctanoic acid (PFOA)	40	ng/L	<b>3400</b>			<b>1800</b>			<b>660</b>			<b>140</b>			< 1.7	U	U	2.7	J	J
Perfluoropentanesulfonic acid	-	ng/L	660			280			21			28			< 1.7	U	U	< 1.7	U	U
Perfluoropentanoic acid	-	ng/L	2000			1400			23			81			< 1.7	U	U	1.4	J	J
Perfluorotetradecanoic acid	-	ng/L	< 1.7	U	U	< 1.7	U	U	< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluorotridecanoic acid	-	ng/L	< 1.7	U	U	10			< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U
Perfluoroundecanoic acid	-	ng/L	34			99			< 1.7	U	U	< 1.8	U	U	< 1.7	U	U	< 1.7	U	U

Notes:

**Bolded results exceed the RSL.**

- = data not available

-- = sample not tested for

ft = feet

bgs = below ground surface

ng/L = nanogram(s) per liter.

EPA Tap Water = Resident Risk-Based Regional Screening Levels (RSLs) for Tapwater using EPAs Screening Level Calculator, HQ=0.1, November 2020.

Q = One or more of the quality control criteria failed.

J = Estimated

U = Not detected

TAP OU Groundwater Chemical Results for the 2020 PFAS Sampling Event and Screening Criteria

Aquifer/Sample Location Well ID			IAL No. 1 (Arundel Clay)						IAL No. 2 (Arundel Clay)								
			MW-23			091420-DUP			MW2-1			MW2-4			MW-29		
Sample Collection Date			9/14/2020			9/14/2020			9/15/2020			9/14/2020			9/14/2020		
Screen Interval (ft bgs)			6-16			6-16			5-20			164.5-174.5			10-25		
Parent Sample			MW-23														
Upgradient/Downgradient			D			D			U			D			D		
Analyte	EPA Tap Water	Unit	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual
<b>PFAS (LC/MS/MS)</b>																	
4:2 Fluorotelomersulfonate	-	ng/L	<1.7	U,Q	UJ	<1.7	U,Q	UJ	<1.7	U	U	<1.7	U	U	<1.7	U	U
6:2 Fluorotelomer sulfonate	-	ng/L	2.6	J	J	3.0	J	J	<1.7	U	U	<1.7	U	U	<1.7	U	U
8:2 Fluorotelomer sulfonate	-	ng/L	1.1	J	J	0.92	J	J	<1.7	U	U	<1.7	U	U	<1.7	U	U
N-ethyl perfluorooctanesulfonamidoacetic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
N-methyl perfluorooctanesulfonamidoacetic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluorobutanesulfonic acid (PFBS)	40000	ng/L	1.5	J	J	1.3	J	J	3.5			<1.7	U	U	0.99	J	J
Perfluorobutanoic acid	-	ng/L	4.4			4.2			4.8			<1.7	U	U	3.2	J	J
Perfluorodecanesulfonic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluorodecanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	1.6	J	J	<1.7	U	U	<1.7	U	U
Perfluorododecanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluoroheptanesulfonic acid	-	ng/L	<1.7	U	U	<1.7	U	U	1.1	J	J	<1.7	U	U	<1.7	U	U
Perfluoroheptanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	3.3	J	J	<1.7	U	U	0.96	J	J
Perfluorohexanesulfonic acid	-	ng/L	3.8			2.9	J	J	56			<1.7	U	U	5.3		
Perfluorohexanoic acid	-	ng/L	1.3	J	J	1.0	J	J	9.4			<1.7	U	U	1.2	J	J
Perfluorononanesulfonic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluorononanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	2.0	J	J	<1.7	U	U	<1.7	U	U
Perfluorooctanesulfonamide (PFOSA)	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluorooctanesulfonic acid (PFOS)	40	ng/L	6.7		J	4.1		J	<b>150</b>			<1.7	U	U	6.0		
Perfluorooctanoic acid (PFOA)	40	ng/L	1.6	J	J	1.8	J	J	7.3			<1.7	U	U	2.4	J	J
Perfluoropentanesulfonic acid	-	ng/L	<1.7	U	U	<1.7	U	U	2.5	J	J	<1.7	U	U	<1.7	U	U
Perfluoropentanoic acid	-	ng/L	1.3	J	J	1.4	J	J	6.2			<1.7	U	U	1.1	J	J
Perfluorotetradecanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluorotridecanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U
Perfluoroundecanoic acid	-	ng/L	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U	<1.7	U	U

Notes:  
**Bolded results exceed the RSL.**  
 - = data not available  
 -- = sample not tested for  
 ft = feet  
 bgs = below ground surface  
 ng/L = nanogram(s) per liter.  
 EPA Tap Water = Resident Risk-Based Regional Screening Levels (RSLs) for  
 Q = One or more of the quality control criteria failed.  
 J = Estimated  
 U = Not detected

TAP OU Groundwater Chemical Results for the 2020 PFAS Sampling Event and Screening Criteria

Aquifer/Sample Location			Patuxent			L. Patapsco														
			MW2-2			MW3-1			MW3-2			MW3-5			091520-DUP			MW3-6		
Well ID			9/15/2020			9/15/2020			9/15/2020			9/15/2020			9/15/2020					
Sample Collection Date			292-302			292-302			23.5-33.5			96-106			82-92					
Screen Interval (ft bgs)			U			U			U			D			D					
Parent Sample			U			U			U			D			D					
Upgradient/Downgradient			U			U			U			D			D					
Analyte	EPA Tap Water	Unit	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual	Result	Lab Qual	Val Qual
<b>PFAS (LC/MS/MS)</b>																				
4:2 Fluorotelomersulfonate	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U,Q	UJ	<1.8	U	U
6:2 Fluorotelomer sulfonate	-	ng/L	<1.7	U	U	<1.8	U	U	76	J		<1.7	U	U	<1.7	U	U	<1.8	U	U
8:2 Fluorotelomer sulfonate	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
N-ethyl perfluorooctanesulfonamidoacetic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U,J	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
N-methyl perfluorooctanesulfonamidoacetic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorobutanesulfonic acid (PFBS)	40000	ng/L	<1.7	U	U	1.0	J	J	1.9	J	J	6.6			6.2			<1.8	U	U
Perfluorobutanoic acid	-	ng/L	<100	U	U	3.3	J	J	25	J		4.6			4.2			<1.8	U	U
Perfluorodecanesulfonic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U,J	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorodecanoic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorododecanoic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluoroheptanesulfonic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluoroheptanoic acid	-	ng/L	<1.7	U	U	2.0	J	J	27	J		1.9	J	J	1.7	J	J	<1.8	U	U
Perfluorohexanesulfonic acid	-	ng/L	3.2	J	J	13			19	J		9.1			9.2			2.9	J	J
Perfluorohexanoic acid	-	ng/L	1.1	J	J	3.0	J	J	48	J		19			18			<1.8	U	U
Perfluorononanesulfonic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorononanoic acid	-	ng/L	<1.7	U	U	1.2	J	J	2.9	J	J	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorooctanesulfonamide (PFOSA)	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U,J	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorooctanesulfonic acid (PFOS)	40	ng/L	2.2	J	J	<b>41</b>			20	J		<1.7	U	U	<1.7	U	U	1.9	J	J
Perfluorooctanoic acid (PFOA)	40	ng/L	<1.7	U	U	5.0			16	J		2.6	J	J	2.5	J	J	1.2	J	J
Perfluoropentanesulfonic acid	-	ng/L	<1.7	U	U	<1.8	U	U	1.1	J	J	2.6	J	J	2.5	J	J	<1.8	U	U
Perfluoropentanoic acid	-	ng/L	<1.7	U	U	2.3	J	J	72	J		7.8			6.7			<1.8	U	U
Perfluorotetradecanoic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluorotridecanoic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U
Perfluoroundecanoic acid	-	ng/L	<1.7	U	U	<1.8	U	U	<1.8	U	U	<1.7	U	U	<1.7	U	U	<1.8	U	U

Notes:  
**Bolded results exceed the RSL.**  
 - = data not available  
 -- = sample not tested for  
 ft = feet  
 bgs = below ground surface  
 ng/L = nanogram(s) per liter.  
 EPA Tap Water = Resident Risk-Based Regional Screening Levels (RSLs) fo  
 Q = One or more of the quality control criteria failed.  
 J = Estimated  
 U = Not detected



**US Army Corps  
of Engineers**  
Baltimore District

**Delivery Order No. 0003  
Environmental Services  
Program Support  
Contract Number  
DACA31-94-D-0064**

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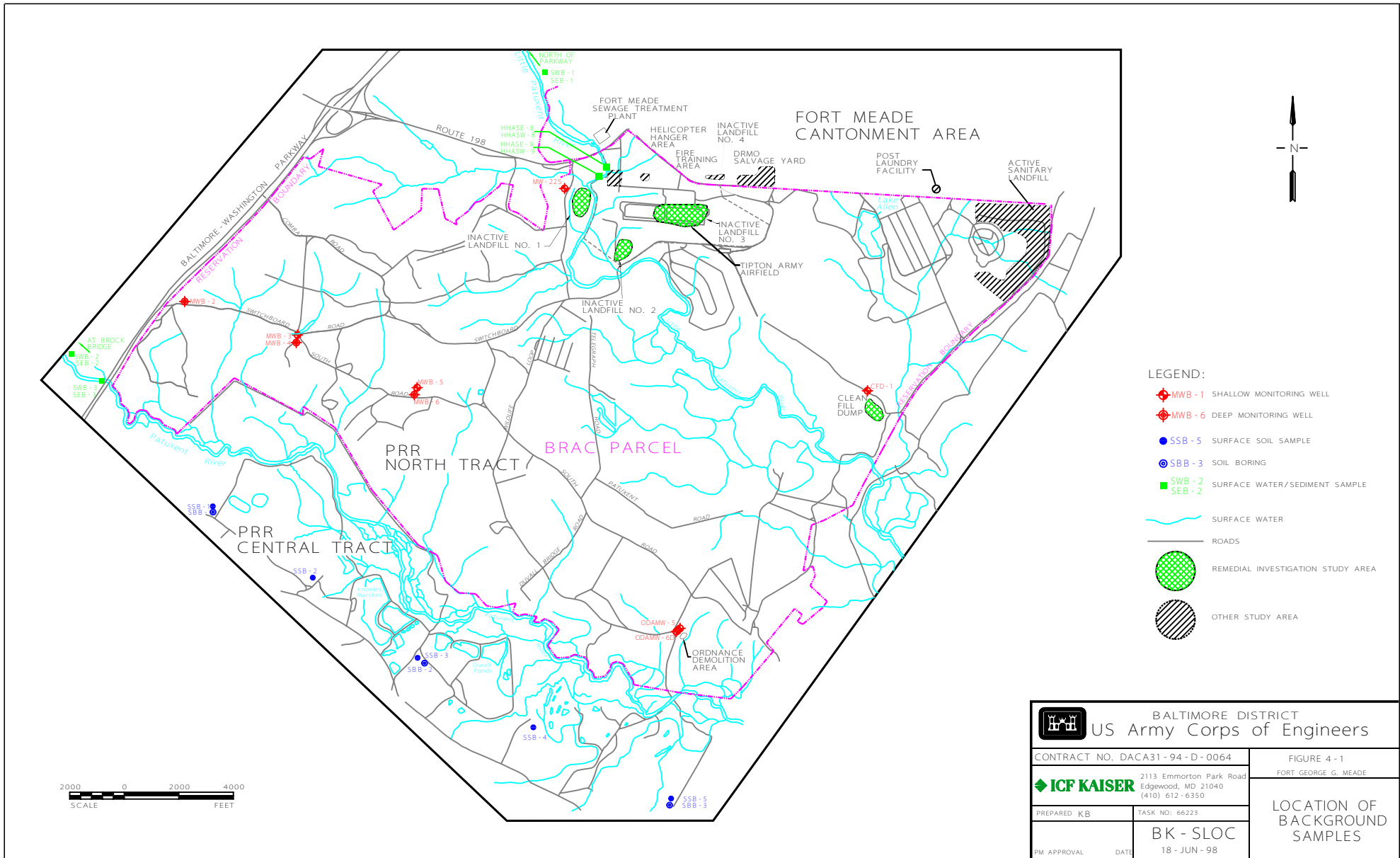
**FORT GEORGE G. MEADE  
REMEDIAL INVESTIGATION/FEASIBILITY STUDY**

**Remedial Investigation Report  
Inactive Landfills 1, 2, 3 and Clean Fill Dump  
Volume I**

**FINAL DOCUMENT**

**August 1998**

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**TABLE 4-10  
SUMMARY OF BACKGROUND GROUNDWATER CHEMISTRY (UPPER PATAPSCO)**

Sample Location Identification Field Sample ID Site Type Start Depth (ft bgs) End Depth (ft bgs) Media Collection Date	Screening Criteria			ODAMW-5 ODAMW-5 WELL 2 12 CGW 5/30/1996	CFD-1 CFD-1 WELL 40 50 CGW 10/14/1996
	Maximum Background (µg/L)	Tap Water RBC (µg/L)	MCL or MWQS (µg/L)		
<u>Field Quality Parameters</u>					
pH				5.4	5.17
Conductivity (umhos/cm2)				0.063	0.029
Temperature (C)				13.3	22.8
Turbidity (NTU)				--	186
<u>Metals (µg/L)</u>					
Aluminum	1260	37000	--	473	1260
Arsenic	35.7	0.045	50	1.5	35.7
Barium	33.8	2600	2000	33.8	27.4
Beryllium	0.529	0.016	4	0.12	0.529
Cadmium	0.111	18	5	--	0.111
Calcium	7890	--	--	7890	1460
Chromium	67	180	50	--	67
Copper	10.4	1500	1300	4.7	10.4
Iron	5840	11000	--	733	5840
Lead	14	--	15	3.8	14
Magnesium	1270	--	--	1270	871 K
Manganese	154	840	--	154	21.3
Nickel	57.1	730	100	--	57.1
Potassium	1570	--	--	1570	1410
Sodium	2460	--	--	2220	2460 K
Vanadium	17.2	260	--	--	17.2
Zinc	51.5	11000	--	36.4	51.5

**NOTES:**

Only detected analytes are included on this table. For full data set, see the appropriate appendix.  
 Background levels are either the CRL for not detected results or the maximum background concentration for positive results.  
 RBC - Risk-Based Concentration  
 MCL - Maximum Contaminant Level  
 MWQS - Maryland Water Quality Standard  
 CRL - Certified Reporting Limit  
 Dashes (-) indicate that no screening level standard (e.g., RBC) exists or that the analyte is present below the detection limits.  
 X - Duplicate Sample  
 CGW - Chemical Groundwater

EPA Region III Data Qualifiers:

B - Not detected substantially above the level reported in the laboratory field blanks.  
 J - Analyte present. Reported value may not be accurate or precise.  
 K - Analyte present. Reported value may be biased high. Actual value expected to be lower.  
 L - Analyte Present. Reported value may be biased low. Actual value expected to be higher.

**TABLE 4-12  
SUMMARY OF BACKGROUND GROUNDWATER CHEMISTRY (LOWER PATAPSCO)**

Sample Location Identification Field sample ID Site Type Start Depth (ft bgs) End Depth (ft bgs) Media Collection Date	Screening Criteria			ODAMW-6D ODAMW6D WELL 80 120 CGW 5/30/1996	MW-22S MW-22S WELL 15 25 CGW 10/29/1996
	Maximum Background (µg/L)	Tap Water RBC (µg/L)	MCL or MWQS (µg/L)		
<u>Field Quality Parameters</u>					
pH				5.9	4.83
Conductivity (umhos/cm)				0.49	0.037
Temperature (C)				11.1	19.72
Turbidity (NTU)				830	7.5
<u>Metals (µg/L)</u>					
Aluminum	759	37000	--	759	--
Arsenic	2	0.045	50	2	--
Barium	19.1	2600	2000	19.1	--
Beryllium	0.1	0.016	4	0.1	--
Calcium	5890	--	--	5430	5890
Chromium	10.1	180	50	10.1	--
Cobalt	18.4	2200	--	18.4	--
Copper	7.8	1500	1300	14.6	7.8
Iron	264	11000	--	264	--
Lead	10.6	--	15	10.6	2.34
Magnesium	1770	--	--	627	1770
Manganese	45.1	840	--	45.1	--
Nickel	16.2	730	100	13.6	16.2
Potassium	3840	--	--	3840	1170
Sodium	4670	--	--	2910	4670 K
Vanadium	7	260	--	7	--
Zinc	66.1	11000	--	66.1	--

**NOTES:**

Only detected analytes are included on this table. For full data set, see the appropriate appendix.  
 Background levels are either the CRL for not detected results or the maximum background concentration for positive results.  
 RBC - Risk-Based Concentration  
 MCL - Maximum Contaminant Level  
 MWQS - Maryland Water Quality Standard  
 CRL - Certified Reporting Limit  
 Dashes (-) indicate that no screening level standard (e.g., RBC) exists or that the analyte is present below the detection limits.  
 X - Duplicate Sample  
 CGW - Chemical Groundwater

EPA Region III Data Qualifiers:

B - Not detected substantially above the level reported in the laboratory or field blanks.  
 J - Analyte present. Reported value may not be accurate or precise.  
 K - Analyte present. Reported value may be biased high. Actual value is expected to be lower.  
 L - Analyte Present. Reported value may be biased low. Actual value is expected to be higher.



**TABLE 4-14  
SUMMARY OF BACKGROUND GROUNDWATER CHEMISTRY  
(ARUNDEL CONFINING)**

Sample Location Identification Field Sample ID Site Type Start Depth (ft bgs) End Depth (ft bgs) Media Collection Date	Screening Criteria			MWB-3 MWB-3 WELL 5 15 CGW 10/11/1996	MWB-5 MWB-5 WELL 14 24 CGW 10/10/1996
	Maximum Background (µg/L)	Tap Water RBC (µg/L)	MCL or MWQS (µg/L)		
<u>Field Parameters</u>					
pH				5.89	4.69
Conductivity (umhos/cm)				0.186	0.042
Temperature (C)				14.6	15
Turbidity (NTU)				66	0
<u>Metals (µg/L)</u>					
Aluminum	4140	37000	--	4140	124 B
Arsenic	1.68	0.045	50	1.68	--
Barium	38	2600	2000	36.7	38
Beryllium	0.707	0.016	4	0.707	0.496
Cadmium	0.136	18	5	0.136	--
Calcium	7060	--	--	7060	1330 B
Chromium	35.2	180	50	35.2	--
Cobalt	60.6	2200	--	60.6	--
Copper	5	1500	1300	5	--
Iron	9600	11000	--	9600	80.4
Lead	9.26	--	15	9.26	4
Magnesium	3390	--	--	3390 K	2540 K
Manganese	3460	840	--	3460	52.8
Nickel	28.6	730	100	28.6	16.4
Potassium	1910	--	--	1910	728
Sodium	26400	--	--	26400 K	1500 B
Thallium	0.103	--	2	0.103	--
Zinc	44.8	11000	--	44.8	27
<u>Semivolatiles (µg/L)</u>					
Bis(2-ethylhexyl)phthalate	2	4.8	6	2.5 B	--

**NOTES:**

Only detected analytes are included on this table. For full data set, see the appropriate appendix.  
Background levels are either the CRL for not detected results or the maximum background concentration for positive results.  
RBC - Risk-Based Concentration  
MCL - Maximum Contaminant Level  
MWQS - Maryland Water Quality Standard  
CRL - Certified Reporting Limit  
Dashes (-) indicate that no screening level standard (e.g., RBC) exists or that the analyte is present below the detection limits.  
Circles (°) indicate that the analyte is present above the RBC screening level and maximum background level.  
Pluses (+) indicate that the analyte is present above the MCL screening level and maximum background level.  
X - Duplicate Sample  
CGW - Chemical Groundwater

**EPA Region III Data Qualifiers:**

B - Not detected substantially above the level reported in the laboratory field blanks.  
J - Analyte present. Reported value may not be accurate or precise.  
K - Analyte present. Reported value may be biased high. Actual value expected to be lower.  
L - Analyte Present. Reported value may be biased low. Actual value expected to be higher.

# Appendix C

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## SITE INSPECTION PHOTOGRAPHS

<b>Photo No.</b> 1	<b>Date:</b> 1/25/21
<b>Direction Photo Taken:</b> West	
<b>Description:</b> Overview of IAL3	



<b>Photo No.</b> 2	<b>Date:</b> 1/25/21
<b>Direction Photo Taken:</b> North	
<b>Description:</b> Depression identified on the south side of IAL3.	





# PHOTOGRAPHIC LOG

<b>Photo No.</b> 3	<b>Date:</b> 1/25/21
<b>Direction Photo Taken:</b> Northeast	
<b>Description:</b> Depression identified on the south side of IAL3.	



<b>Photo No.</b> 4	<b>Date:</b> 1/25/21
<b>Direction Photo Taken:</b> North	
<b>Description:</b> General overview of IAL3	





# PHOTOGRAPHIC LOG

<b>Photo No.</b> 5	<b>Date:</b> 1/25/21
<b>Direction Photo Taken:</b> Northeast	
<b>Description:</b> Drainage identified on IAL3.	



<b>Photo No.</b> 6	<b>Date:</b> 1/25/21
<b>Direction Photo Taken:</b> Northeast	
<b>Description:</b> Riprap around the windsock on IAL3 where ponding periodically occurs.	





# PHOTOGRAPHIC LOG

<b>Photo No.</b> 7	<b>Date:</b> 1/25/21
-----------------------	-------------------------

**Direction Photo Taken:**  
North

**Description:**  
General overview of IAL1.



<b>Photo No.</b> 8	<b>Date:</b> 1/25/21
-----------------------	-------------------------

**Direction Photo Taken:**  
East

**Description:**  
Tire ruts identified on IAL1.





## PHOTOGRAPHIC LOG

<b>Photo No.</b> 9	<b>Date:</b> 1/25/21
-----------------------	-------------------------

**Direction Photo Taken:**  
East

**Description:**  
Tire ruts at the entrance to IAL1  
off Bald Eagle Drive.



<b>Photo No.</b> 10	<b>Date:</b> 1/25/21
------------------------	-------------------------

**Direction Photo Taken:**  
East

**Description:**  
Stabilized erosion area on a  
tributary of the Little Patuxent  
River.







## PHOTOGRAPHIC LOG

<b>Photo No.</b> 11	<b>Date:</b> 1/25/21
------------------------	-------------------------

**Direction Photo Taken:**  
Northeast

**Description:**  
Southern fence line of IAL2 with warning sign.



<b>Photo No.</b> 12	<b>Date:</b> 1/25/21
------------------------	-------------------------

**Direction Photo Taken:**  
Northeast

**Description:**  
Southern fence line of IAL2 showing cleared buffer areas on either side of the fence.



# Appendix D

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## Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

HHA & FTA I. SITE INFORMATION													
Site name: <u>TAP, IAL1, IAL2, IAL3,</u>	Date of inspection: <u>25 Jan 2021</u>												
Location and Region: <u>Odenton, MD</u>	EPA ID: <u>MD0910020567</u>												
Agency, office, or company leading the five-year review: <u>EA</u>	Weather/temperature:												
<b>Remedy Includes:</b> (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Other <u>NFA with groundwater monitoring</u></td> <td></td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other <u>NFA with groundwater monitoring</u>	
<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
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<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input checked="" type="checkbox"/> Other <u>NFA with groundwater monitoring</u>													
<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
Tipton Airport II. INTERVIEWS (Check all that apply)													
1. <del>O&amp;M site manager</del> <u>Michael Wassel</u> <u>manager</u> _____ <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by phone    Phone no. <u>410-222-6815</u> Problems, suggestions; <input type="checkbox"/> Report attached <u>Appendix D</u>													



III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	<b>O&amp;M Documents</b> <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
3.	<b>O&amp;M and OSHA Training Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
4.	<b>Permits and Service Agreements</b> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	<b>Gas Generation Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
6.	<b>Settlement Monument Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
7.	<b>Groundwater Monitoring Records</b> Remarks <u>EA LTM Reports</u>	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A
8.	<b>Leachate Extraction Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
9.	<b>Discharge Compliance Records</b> <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	<b>Daily Access/Security Logs</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A

IV. O&M COSTS			
1.	<b>O&amp;M Organization</b>	<input type="checkbox"/> State in-house <input type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other _____	<input type="checkbox"/> Contractor for State <input type="checkbox"/> Contractor for PRP <input checked="" type="checkbox"/> Contractor for Federal Facility
<div style="text-align: right; margin-right: 100px;"><i>EA</i></div>			
2.	<b>O&amp;M Cost Records</b>	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached	
Total annual cost by year for review period if available			
	From <u>2020</u> To _____	<u>\$42,341.28</u>	<input type="checkbox"/> Breakdown attached <u>LPR Sweep</u>
	Date                      Date	Total cost	
	From <u>2020</u> To _____	<u>\$7,826.38</u>	<input type="checkbox"/> Breakdown attached <u>IAL1+3 Insp. &amp; repairs.</u>
	Date                      Date	Total cost	
	From <u>FY21</u> To <u>FY23</u>	<u>\$42,341.28</u>	<input type="checkbox"/> Breakdown attached <u>LPR Sweep</u>
	Date                      Date	Total cost	
	From <u>FY21</u> To <u>FY23</u>	<u>\$2,383.92</u>	<input type="checkbox"/> Breakdown attached <u>IAL1+3 Inspections</u>
	Date                      Date	Total cost	
	From _____ To _____	Total cost	<input type="checkbox"/> Breakdown attached
	Date                      Date	Total cost	
3.	<b>Unanticipated or Unusually High O&amp;M Costs During Review Period</b> Describe costs and reasons: <u>2020 IAL1+3 Inspection included repairs</u> _____ _____ _____		
V. ACCESS AND INSTITUTIONAL CONTROLS <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Fencing</b>			
1.	<b>Fencing damaged</b>	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A	
Remarks <u>IAL1 - no fence; IAL2 - fenced w/ locked gate; IAL3 - fenced as part of airport, access through building</u> <u>HHA - partial fence; PTA - no fence.</u>			
<b>B. Other Access Restrictions</b>			
1.	<b>Signs and other security measures</b>	<input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A	
Remarks <u>IAL2 has warning signs</u>			

<b>C. Institutional Controls (ICs)</b>				
1.	<b>Implementation and enforcement</b>			
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	<i>properly enforced</i>			
	Type of monitoring (e.g., self-reporting, drive by)	_____		
	Frequency	_____		
	Responsible party/agency	_____		
	Contact	_____		
	Name	Title	Date	Phone no.
	Reporting is up-to-date	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
	Other problems or suggestions:	<input type="checkbox"/> Report attached		
	_____			
	_____			
	_____			
2.	<b>Adequacy</b>	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
	Remarks	_____		
	_____			
<b>D. General</b>				
1.	<b>Vandalism/trespassing</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident	
	Remarks	_____		
2.	<b>Land use changes on site</b>	<input checked="" type="checkbox"/> N/A		
	Remarks	_____		
3.	<b>Land use changes off site</b>	<input checked="" type="checkbox"/> N/A		
	Remarks	_____		
<b>VI. GENERAL SITE CONDITIONS</b>				
<b>A. Roads</b>				
	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A		
1.	<b>Roads damaged</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A	
	Remarks	_____		



<b>B. Other Site Conditions</b>		
Remarks _____ _____ _____ _____		
<b>VII. LANDFILL COVERS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
<b>A. Landfill Surface</b>		
1.	<b>Settlement (Low spots)</b> Areal extent <u>1A, 1, 2, 3</u> Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident
2.	<b>Cracks</b> Lengths _____ Widths _____ Depths _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Cracking not evident
3.	<b>Erosion</b> Areal extent _____ Depth _____ Remarks <u>maps from 2020 Inspection attached</u>	<input checked="" type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident
4.	<b>Holes</b> Areal extent _____ Depth _____ Remarks <u>maps from 2020 Inspection attached</u>	<input checked="" type="checkbox"/> Location shown on site map <input type="checkbox"/> Holes not evident
5.	<b>Vegetative Cover</b> <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks _____	
6.	<b>Alternative Cover (armored rock, concrete, etc.)</b> Remarks _____	<input checked="" type="checkbox"/> N/A
7.	<b>Bulges</b> Areal extent _____ Height _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Bulges not evident

8.	<b>Wet Areas/Water Damage</b>	<input checked="" type="checkbox"/> Wet areas/water damage not evident	
	<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map	Areal extent _____
	<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map	Areal extent _____
	<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map	Areal extent _____
	<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map	Areal extent _____
	Remarks _____		
9.	<b>Slope Instability</b>	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map
	Areal extent _____	<input checked="" type="checkbox"/> No evidence of slope instability	
	Remarks _____		
<b>B. Benches</b>	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A	
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	<b>Flows Bypass Bench</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
	Remarks _____		
2.	<b>Bench Breached</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
	Remarks _____		
3.	<b>Bench Overtopped</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
	Remarks _____		
<b>C. Letdown Channels</b>	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A	
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	<b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of settlement
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Material Degradation</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of degradation
	Material type _____	Areal extent _____	
	Remarks _____		
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of erosion
	Areal extent _____	Depth _____	
	Remarks _____		

4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	<b>Obstructions</b>	Type _____	<input checked="" type="checkbox"/> No obstructions
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	<b>Excessive Vegetative Growth</b>	Type _____	
	<input checked="" type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks _____		
<b>D. Cover Penetrations</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active <input type="checkbox"/> Passive	
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance
	<input checked="" type="checkbox"/> N/A		
	Remarks _____		
2.	<b>Gas Monitoring Probes</b>		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks _____		
3.	<b>Monitoring Wells</b> (within surface area of landfill)		
	<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
	Remarks _____		
4.	<b>Leachate Extraction Wells</b>		
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
	Remarks _____		
5.	<b>Settlement Monuments</b>	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A
	Remarks _____		

<b>E. Gas Collection and Treatment</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Gas Treatment Facilities</b> <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ <u>N/A</u>	
2.	<b>Gas Collection Wells, Manifolds and Piping</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ <u>N/A</u>	
3.	<b>Gas Monitoring Facilities</b> (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ <u>N/A</u>	
<b>F. Cover Drainage Layer</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Outlet Pipes Inspected</b> <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> N/A Remarks _____	
2.	<b>Outlet Rock Inspected</b> <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> N/A Remarks _____	
<b>G. Detention/Sedimentation Ponds</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Siltation</b> Areal extent _____ Depth _____ <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____	
2.	<b>Erosion</b> Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____ <u>N/A</u>	
3.	<b>Outlet Works</b> <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> N/A Remarks _____	
4.	<b>Dam</b> <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> N/A Remarks _____	

<b>H. Retaining Walls</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Deformations</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		N/A
2.	<b>Degradation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks _____		N/A
<b>I. Perimeter Ditches/Off-Site Discharge</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Siltation</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Vegetative Growth</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	<b>Erosion</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	<b>Discharge Structure</b>	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A
	Remarks _____		
<b>VIII. VERTICAL BARRIER WALLS</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Settlement</b>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Performance Monitoring</b>	Type of monitoring _____	
	<input type="checkbox"/> Performance not monitored		
	Frequency _____	<input type="checkbox"/> Evidence of breaching	
	Head differential _____		
	Remarks _____		

<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
<b>A. Groundwater Extraction Wells, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	<b>Pumps, Wellhead Plumbing, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
2.	<b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ <i>N/A</i>
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ <i>N/A</i>
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	<b>Collection Structures, Pumps, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ <i>N/A</i>
2.	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ <i>N/A</i>
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ <i>N/A</i>

<b>C. Treatment System</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Treatment Train</b> (Check components that apply)	<input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____	
2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional)	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
3.	<b>Tanks, Vaults, Storage Vessels</b>	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____	
4.	<b>Discharge Structure and Appurtenances</b>	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____	
5.	<b>Treatment Building(s)</b>	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____	
6.	<b>Monitoring Wells</b> (pump and treatment remedy)	<input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____	
<b>D. Monitoring Data</b>			
1.	Monitoring Data	<input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality	
2.	Monitoring data suggests:	<input type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining	

<b>D. Monitored Natural Attenuation</b>			
1.	<b>Monitoring Wells</b> (natural attenuation remedy)		
	<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled
	<input checked="" type="checkbox"/> All required wells located	<input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> Good condition
	Remarks _____		
<b>X. OTHER REMEDIES</b>			
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
<b>XI. OVERALL OBSERVATIONS</b>			
<b>A. Implementation of the Remedy</b>			
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).			
<p><i>Remedy is NFA w/ groundwater monitoring &amp; LUCs.</i>  <i>LUCs prohibit excavation, groundwater use other than environmental sampling. MEC Sweeps are conducted and visual inspections of IALs 1, 2, &amp; 3.</i></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>			
<b>B. Adequacy of O&amp;M</b>			
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.			
<p><i>Remedy is working and all parties are happy.</i>  <i>No issues identified.</i></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>			



**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

N/A

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

monitoring has been optimized to every 5 years as the TAP contains waste managed in place.

**Mr. Steve Cardon, CHMM**

Building 4216

Fort Meade, MD 20755

301-677-9178 (w)

301-789-7467 (c)

Site Inspection Interview

Date/Time: 25 January 2021; 0800

Participants: Steve Cardon (FGGM BEC), Emily Cline (USACE), Mike Hertz (EA), Katie Wertz (EA), Derek Hendricks (EA)

Ms. Wertz provided an overview of the Tipton Airport Parcel (TAP) and stated the TAP is undergoing its Fourth Five-Year Review (FYR). The TAP consists of five evaluation areas:

- Inactive Landfill (IAL) 1
- IAL 2
- IAL 3
- Fire Training Area (FTA)
- Helicopter Hangar Area (HHA)

Two Record of Decision (RODs) were issued for the Evaluation Areas at the TAP:

- December 1998 ROD addresses the selected remedy of No Further Action (NFA) for soils with groundwater monitoring for the FTA, HHA, and IAL3.
- June 1999 ROD addresses the selected remedy of NFA for soils, surface water, and sediment with groundwater monitoring for IAL1 and IAL2. The groundwater monitoring requirements described in the June 1999 ROD supersede those described in the earlier December 1998 ROD; groundwater samples collected every 2 years at the TAP from certain wells and the data will be provided to EPA and MDE.

The Army prepared Decision Documents that establish and enforce Land Use Controls (LUCs) for the TAP. The LUCs provide protection against exposure to subsurface Munitions and Explosive of Concern (MEC), prohibit groundwater uses except for conducting environmental studies, stipulate biennial groundwater monitoring, and require five-year reviews to be conducted. The Army conducts annual MEC sweeps along the Little Patuxent River that flows along the western boundary of the TAP.

The Second FYR report recommended that the LTM frequency be modified from every 2 years to annual and that VOC breakdown daughter products be added to the TAP LTM Program.

An Explanation of Significant Difference was submitted in April 2014 that formally incorporated the MEC LUCs into the ROD as described in the Federal Facility Agreement.

During this FYR (the 4<sup>th</sup>), the full list of contaminants of concern was sampled (September 2020) regardless of whether the constituent has been removed from the LTM program to verify that no new releases to groundwater occur. The 2020 sampling results for the TAP will be evaluated along with historical data to determine whether 5-year sampling should continue or if sampling should be discontinued.

## Interview Questions

1. What is your overall impression of the remedial action and LTM activities at TAP? *Mr. Cardon stated the remedy is working well.*
2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the TAP? If so, please explain the purpose and results. *Mr. Cardon stated the only routine communication regarding the TAP is sampling coordination and report review.*
3. Are you aware of any problems or concerns associated with on-going monitoring and maintenance activities? Do you feel well informed about activities associated with the remedy for the TAP? *Mr. Cardon stated he is not aware of any problems or concerns associated with on-going monitoring and maintenance activities and confirmed she is well informed about activities associated with the remedy for the TAP.*
4. Have there been any complaints, violations, or other incidents related to the TAP requiring a response by your office? If so, please give details of the events and results of the responses. *No.*
5. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details. *No..*
6. What effects have site operations at the TAP had on the surrounding community? *None.*
7. Are you aware of any community concerns regarding the TAP, its administration, or its remedy? If so, please give details. *No.*
8. Do you feel that the LUCs at the TAP are adequately communicated to the public? *Yes.*
9. Do you feel well informed about TAP site activities and progress? *Yes.*
10. Do you have comments, suggestions, or recommendations regarding the TAP management? *No.*

**Dr. Elisabeth Green**

Remedial Project Manager, Federal Facilities  
Land and Materials Administration  
Maryland Department of the Environment  
1800 Washington Boulevard, Ste. 625  
Baltimore, Maryland 21230  
[elisabeth.green@maryland.gov](mailto:elisabeth.green@maryland.gov)  
410-537-3346 (O)

Teleconference Interview

Date/Time: 6 January 2021; 1400

Participants: Dr. Elisabeth Green (MDE), Mike Hertz (EA), Katie Wertz (EA)

Ms. Wertz provided an overview of the Tipton Airport Parcel (TAP) and stated the TAP is undergoing its Fourth Five-Year Review (FYR). The TAP consists of five evaluation areas:

- Inactive Landfill (IAL) 1
- IAL 2
- IAL 3
- Fire Training Area (FTA)
- Helicopter Hangar Area (HHA)

Two Record of Decision (RODs) were issued for the Evaluation Areas at the TAP:

- December 1998 ROD addresses the selected remedy of No Further Action (NFA) for soils with groundwater monitoring for the FTA, HHA, and IAL3.
- June 1999 ROD addresses the selected remedy of NFA for soils, surface water, and sediment with groundwater monitoring for IAL1 and IAL2. The groundwater monitoring requirements described in the June 1999 ROD supersede those described in the earlier December 1998 ROD; groundwater samples collected every 2 years at the TAP from certain wells and the data will be provided to EPA and MDE.

The Army prepared Decision Documents that establish and enforce Land Use Controls (LUCs) for the TAP. The LUCs provide protection against exposure to subsurface Munitions and Explosive of Concern (MEC), prohibit groundwater uses except for conducting environmental studies, stipulate biennial groundwater monitoring, and require five-year reviews to be conducted. The Army conducts annual MEC sweeps along the Little Patuxent River that flows along the western boundary of the TAP.

The Second FYR report recommended that the LTM frequency be modified from every 2 years to annual and that VOC breakdown daughter products be added to the TAP LTM Program.

An Explanation of Significant Difference was submitted in April 2014 that formally incorporated the MEC LUCs into the ROD as described in the Federal Facility Agreement.

During this FYR (the 4<sup>th</sup>), the full list of contaminants of concern was sampled (September 2020) regardless of whether the constituent has been removed from the LTM program to verify that no new releases to groundwater occur. The 2020 sampling results for the TAP will be evaluated along with historical data to determine whether 5-year sampling should continue or if sampling should be discontinued.

Mike Hertz noted that the full COC list was sampled during the 2020 investigation and stated that the data showed very similar results to previous investigations. Dr. Green confirmed that the LTM sampling will occur every 5 years and will be incorporated into the FYR.

### **Interview Questions**

1. What is your overall impression of the remedial action and LTM activities at TAP? *Dr. Green stated that the TAP remedy is under control and noted that she appreciates the addition of PFAS to the sampling scope.*
2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the TAP? If so, please explain the purpose and results. *Dr. Green stated the only routine communication regarding the TAP is report review.*
3. Are you aware of any problems or concerns associated with on-going monitoring and maintenance activities? Do you feel well informed about activities associated with the remedy for the TAP? *Dr. Green stated she is not aware of any problems or concerns associated with on-going monitoring and maintenance activities and confirmed she is well informed about activities associated with the remedy for the TAP.*
4. Have there been any complaints, violations, or other incidents related to the TAP requiring a response by your office? If so, please give details of the events and results of the responses. *No.*
5. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details. *Dr. Green stated the only incident she is aware of was the plane crash in 2015.*
6. What effects have site operations at the TAP had on the surrounding community? *None.*
7. Are you aware of any community concerns regarding the TAP, its administration, or its remedy? If so, please give details. *No.*
8. Do you feel that the LUCs at the TAP are adequately communicated to the public? *Yes.*
9. Do you feel well informed about TAP site activities and progress? *Yes.*
10. Do you have comments, suggestions, or recommendations regarding the TAP management? *No.*

**Michael A. Wassel**

Manager, Tipton Airport  
7515 General Aviation Drive, Suite 1  
Fort Meade, MD 20755  
410-222-6815 office  
443-716-5096 cell

Teleconference Interview

Date/Time: 19 January 2021; 1400

Participants: Mike Wassel (Tipton Airport), Mike Hertz (EA), Katie Wertz (EA), Derek Hendricks (EA)

Ms. Wertz provided an overview of the Tipton Airport Parcel (TAP) and stated the TAP is undergoing its Fourth Five-Year Review (FYR). The TAP consists of five evaluation areas:

- Inactive Landfill (IAL) 1
- IAL 2
- IAL 3
- Fire Training Area (FTA)
- Helicopter Hangar Area (HHA)

Two Record of Decision (RODs) were issued for the Evaluation Areas at the TAP:

- December 1998 ROD addresses the selected remedy of No Further Action (NFA) for soils with groundwater monitoring for the FTA, HHA, and IAL3.
- June 1999 ROD addresses the selected remedy of NFA for soils, surface water, and sediment with groundwater monitoring for IAL1 and IAL2. The groundwater monitoring requirements described in the June 1999 ROD supersede those described in the earlier December 1998 ROD; groundwater samples collected every 2 years at the TAP from certain wells and the data will be provided to EPA and MDE.

The Army prepared Decision Documents that establish and enforce Land Use Controls (LUCs) for the TAP. The LUCs provide protection against exposure to subsurface Munitions and Explosive of Concern (MEC), prohibit groundwater uses except for conducting environmental studies, stipulate biennial groundwater monitoring, and require five-year reviews to be conducted. The Army conducts annual MEC sweeps along the Little Patuxent River that flows along the western boundary of the TAP.

The Second FYR report recommended that the LTM frequency be modified from every 2 years to annual and that VOC breakdown daughter products be added to the TAP LTM Program.

An Explanation of Significant Difference was submitted in April 2014 that formally incorporated the MEC LUCs into the ROD as described in the Federal Facility Agreement.

During this FYR (the 4<sup>th</sup>), the full list of contaminants of concern was sampled (September 2020) regardless of whether the constituent has been removed from the LTM program to verify that no new releases to groundwater occur. The 2020 sampling results for the TAP will be evaluated along with historical data to determine whether 5-year sampling should continue or if sampling should be discontinued.

## 1.1 Interview Questions

1. What is your overall impression of the remedial action and LTM activities at TAP? *Mr. Wassel stated the remedy is working as planned.*
2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the TAP? If so, please explain the purpose and results. *Mr. Wassel stated he reviews the LTM reports provided.*
3. Are you aware of any problems or concerns associated with on-going monitoring and maintenance activities? *No.* Do you feel well informed about activities associated with the remedy for the TAP? *Yes.*
4. Have there been any complaints, violations, or other incidents related to the TAP requiring a response by your office? If so, please give details of the events and results of the responses. *No.*
5. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details. *No.*
6. What effects have site operations at the TAP had on the surrounding community? *None.*
7. Are you aware of any community concerns regarding the TAP, its administration, or its remedy? If so, please give details. *No.*
8. Do you feel that the LUCs at the TAP are adequately communicated to the public? *Yes.*
9. Do you feel well informed about TAP site activities and progress? *Yes.*
10. Do you have comments, suggestions, or recommendations regarding the TAP management? *No.*

**Mr. Robert Stroud**

USEPA Region III  
Environmental Science Center  
701 Mapes Road  
Fort Meade, MD 20755

Teleconference Interview

Date/Time: 15 January 2021; 1415

Participants: Bob Stroud (USEPA), Mike Hertz (EA), Katie Wertz (EA), Derek Hendricks (EA)

Ms. Wertz provided an overview of the Tipton Airport Parcel (TAP) and stated the TAP is undergoing its Fourth Five-Year Review (FYR). The TAP consists of five evaluation areas:

- Inactive Landfill (IAL) 1
- IAL 2
- IAL 3
- Fire Training Area (FTA)
- Helicopter Hangar Area (HHA)

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The Army prepared Decision Documents that establish and enforce Land Use Controls (LUCs) for the TAP. The LUCs provide protection against exposure to subsurface Munitions and Explosive of Concern (MEC), prohibit groundwater uses except for conducting environmental studies, stipulate biennial groundwater monitoring, and require five-year reviews to be conducted. The Army conducts annual MEC sweeps along the Little Patuxent River that flows along the western boundary of the TAP.

The Second FYR report recommended that the LTM frequency be modified from every 2 years to annual and that VOC breakdown daughter products be added to the TAP LTM Program.

An Explanation of Significant Difference was submitted in April 2014 that formally incorporated the MEC LUCs into the ROD as described in the Federal Facility Agreement.

During this FYR (the 4<sup>th</sup>), the full list of contaminants of concern was sampled (September 2020) regardless of whether the constituent has been removed from the LTM program to verify that no new releases to groundwater occur. The 2020 sampling results for the TAP will be evaluated along with historical data to determine whether 5-year sampling should continue or if sampling should be discontinued.

## **1.1 Interview Questions**



1. What is your overall impression of the remedial action and LTM activities at TAP? *Mr. Stroud stated the remedy is working according to plan.*
2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the TAP? If so, please explain the purpose and results. *No.*
3. Are you aware of any problems or concerns associated with on-going monitoring and maintenance activities? *No.* Do you feel well informed about activities associated with the remedy for the TAP? *Yes.*
4. Have there been any complaints, violations, or other incidents related to the TAP requiring a response by your office? If so, please give details of the events and results of the responses. *No.*
5. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details. *No.*
6. What effects have site operations at the TAP had on the surrounding community? *None.*
7. Are you aware of any community concerns regarding the TAP, its administration, or its remedy? If so, please give details. *No.*
8. Do you feel that the LUCs at the TAP are adequately communicated to the public? *Yes.*
9. Do you feel well informed about TAP site activities and progress? *Yes.*
10. Do you have comments, suggestions, or recommendations regarding the TAP management? *No.*