New Jersey Department of Environmental Protection
Site Remediation Program

Report Certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites

These certifications are to be used for reports submitted for RCRA GPRA 2020, CERCLA, and Federal Facility Sites. The Department has developed guidance for report certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites under traditional oversight. The "Person Responsible for Conducting the Remediation Information and Certification" is required to be submitted with each report. For those sites that are required or opt to use a Licensed Site Remediation Professional (LSRP) the report must also be certified by the LSRP using the "Licensed Site Remediation Professional Information and Statement". For additional guidance regarding the requirement for LSRPs at RCRA GPRA 2020, CERCLA and Federal Facility Sites see http://www.nj.gov/dep/srp/srra/training/matrix/quick_ref/rcra_cercla_fed_facility_sites.pdf.

Documents:

"Proposed Plan for Landfill Sites FTMM-03, FTMM-04, FTMM-05, FTMM-12, FTMM-14, FTMM-18, and FTMM-25 (February 2017)"

PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: William R. Colvin
Representative First Name: William Representative Last Name: Colvin
Title: Fort Monmouth BRAC Environmental Coordinator (BEC)
Phone Number: (732) 380-7064 Ext: Fax:
Mailing Address: P.O. Box 148
City/Town: Oceanport State: NJ Zip Code: 07757
Email Address: william.r.colvin18.civ@mail.mil

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: William R Colvin Date: 02 February 2017

Name/Title: William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator

U.S. Army Corps of Engineers, New York District and Engineering and Support Center, Huntsville, Alabama, Worldwide Environmental Restoration Services

PROPOSED PLAN FOR LANDFILL SITES FTMM-03, FTMM-04, FTMM-05, FTMM-12, FTMM-14, FTMM-18, AND FTMM-25

Fort Monmouth, Oceanport, Monmouth County, New Jersey **February 2017**

INTRODUCTION

The U.S. Army Engineering and Support Center, Huntsville (USAESCH) and the Corps of Engineers New York District (the Corps) is presenting this **Proposed Plan*** for the public to review and comment regarding the **preferred alternative** proposed for seven former landfills at Fort Monmouth (FTMM) in Oceanport, Monmouth County, New Jersey: FTMM-03, FTMM-04, FTMM-05, FTMM-12, FTMM-14, FTMM-18, and FTMM-25. The U.S. Army (Army) is the lead agency for FTMM in accordance with **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** and Executive Order 12580. New Jersey Department of Environmental Protection (NJDEP) is the state support agency under the **National Contingency Plan (NCP)** for FTMM.

Remedial investigations (**RIs**) performed in 2014 and 2015 concluded that risks to human health and the environment from soil at the landfills are within acceptable ranges for the current and future intended land use which consists of passive open spaces, and therefore, **no further action (NFA)** is required under CERCLA. Although there is no CERCLA risk, and therefore no need for a CERCLA action, a vegetated soil cover will be placed over the landfills to address safety concerns for future non-residential use and the soil cap will be placed consistent with the NJDEP Solid Waste requirements. **Institutional Controls (ICs)** to maintain the soil cap and prevent residential land use will be placed on each landfill.

This Proposed Plan describes the preferred alternative as a vegetated soil cover installed to provide safety protection from future exposure to solid waste at the landfills for future non-residential users, and provides the rationale for this preference.

* Words or phrases shown in **BOLD** are defined in the glossary at the end of this document.

Dates to Remember:
PLEASE MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
February 8, 2017 – March 9, 2017
The Army will accept written comments on the Proposed Plan during the public comment period. Written comments may be postmarked or emailed by **March 9, 2017** and sent to:

BRAC Environmental Coordinator
OACSIM - U.S. Army Fort Monmouth
Attn: Mr. William Colvin
P.O. Box 148
Oceanport, NJ 08641
Email: william.r.colvin18.civ@mail.mil
Phone: (732) 380-7064

PUBLIC MEETING:
March 2 2017
The Army will hold a public meeting to explain the Proposed Plan and the proposed remedial alternative. Oral and written comments will also be accepted at the meeting. The meeting will be held at 7:00 pm at Building 455 at Fort Monmouth, Oceanport Ave, Oceanport, NJ.

More information can be found at http://www.pica.army.mil/ftmonmouth/ or please see the Administrative Record at the following location:

Monmouth County Library, Eastern Branch
1001 Route 35, Shrewsbury, NJ 07702
Phone: (732) 683-8980
Hours: Mon-Thurs, 9am-9pm; Fri-Sat, 9am-5pm; and Sun, 1pm-5pm

In addition, **Land Use Controls (LUCs**) to maintain the vegetated soil cap and prevent residential land use will be implemented at the landfills through a **LUC Implementation Plan (LUCIP)** to document the ICs, location of the engineering control (EC) and identify procedural responsibilities including landfill cover inspections, monitoring and reporting, and long-term management requirements.

PUBLIC INVOLVEMENT PROCESS

As the lead agency for implementing the environmental response program at FTMM, the Army has prepared this Proposed Plan in accordance with CERCLA Section 117(a) and Section 300.430(f)(2) of the NCP to continue its community awareness efforts and to encourage public participation. After the public has the opportunity to review and comment on this Proposed Plan, the Army will summarize and respond to the comments received during the public comment period at a public meeting. Information on the times and places for public comment and the public meeting are shown in the box on Page 1.

Local community members and other interested parties are encouraged to review this Proposed Plan and submit comments. The Army will carefully consider all comments received from the public and provide responses which will be compiled into a Responsiveness Summary. The decision on which action is appropriate for the landfills will be detailed in a **Decision Document**, which will include the **Responsiveness Summary**.

This Proposed Plan summarizes information that can be found in greater detail in the RI Reports for the individual landfill sites and other documents contained in the **Administrative Record** file for FTMM. The Army encourages the public to review these documents to gain a more comprehensive understanding of the landfills and activities conducted at them.

SITE BACKGROUND

FTMM is located in the central-eastern portion of New Jersey in Monmouth County, approximately 45 miles south of New York City, New York, 70 miles northeast of Philadelphia, Pennsylvania, and 40 miles east of Trenton, New Jersey. The Atlantic Ocean is approximately 3 miles to the east. FTMM was comprised of three areas: the Main Post (MP), the Charles Wood Area (CWA), shown on Figure 1, and the Evans Area (EA) (not shown). FTMM's MP and CWA were selected for closure by the Base Realignment and Closure (BRAC) Commission in 2005, and officially closed on September 15, 2011. (The EA was closed under BRAC in 1998 and has since been transferred from FTMM.)

Figure 1: Fort Monmouth Location

Suspected hazardous waste sites were initially identified at FTMM in a report prepared in May 1980 (U.S. Army Toxic and Hazardous Materials Agency [USATHAMA]). Thirty-seven sites at the MP, CWA, and EA were identified as having known or suspected waste material. It was recommended that FTMM perform surface water and **groundwater** sampling at the Installation's landfills.

A study was conducted in 1980 at locations that were considered to be major landfill areas. The locations of the landfills are shown on Figure 2, with the exception of FTMM-25 which is shown on Figure 3. A timeline of significant events including the years of operation since FTMM opened nearly 100 years ago is provided on Figure 4. During the 1980 study, groundwater and surface water samples were collected and analyzed for compliance with National **Primary and Secondary Drinking Water Standards**. The study concluded that the targeted chemicals were not found at high enough concentrations to cause degradation to ground or surface water, but it was recommended that FTMM submit a landfill registration statement to the NJDEP (USATHAMA, 1988).

A follow-up evaluation was completed in 1988 to determine if environmental/hazardous waste disposal conditions at FTMM (including the landfills) had changed since the assessment in 1980. Based on an assessment of available data, it was recommended that USATHAMA not conduct a **site investigation (SI)**, but that surface water and groundwater sampling at the landfills continue (USATHAMA, 1988). Numerous investigations were conducted at FTMM including the landfills over the past 30

years. The most recent RI report for each landfill is a compilation of previous investigations, and an evaluation of a available analytical data collected from each site.

SITE CHARACTERIZATION

Major vegetation zones at FTMM consist of landscaped areas, wetlands, **riparian** areas, upland forests, and **old field habitats**. Much of the upland areas of the MP and CWA consist of extensive areas of regularly mowed lawns and landscaped areas. Detailed vegetation information can be found in the Baseline Ecological Evaluation Report (Shaw, 2012).

FTMM is situated on Coastal Plain deposits which are unconsolidated material that has not been cemented or compacted. Soil encountered at FTMM is comprised of brown, fine to coarse sand with fine gravel and root fragments and green/gray/black sandy silt and clay with varying amounts of sand and gravel.

Groundwater is typically encountered at the MP and in the surrounding areas at shallow depths 2 to 9 feet below ground surface (bgs), and at depths of approximately 7 to 14 feet bgs at the CWA. Groundwater elevations fluctuate with the tidal action in area creeks (AECOM, 2013). New Jersey ***Ground Water Quality Standards (GWQS)*** classify groundwater for FTMM as Class II-A: **potable water** with secondary uses including agricultural and industrial (NJDEP, 2010).

Since the landfills have been inactive since 1971 (see Figure 4), there has been steady growth and stabilization of vegetation (grass, trees, and bushes) at each site. The anticipated future land use for the seven landfill sites included in this Proposed Plan is passive open space (Edaw, Inc., 2008). Land planned for use as “open space” is expected to remain undeveloped, with only occasional maintenance activities (e.g., grounds keeping), utility work associated with underground or overhead utilities that may be present within the site boundary, and recreational activity (e.g., hiking and biking on established trails).

To determine the nature and extent of contamination at each landfill site, detected chemical concentrations measured during previous landfill SIs were compared to Federal (U.S. Environmental Protection Agency [USEPA]) and State (NJDEP) residential, non-residential, and **Impact to Groundwater (IGW)** screening criteria as well as FTMM-specific background concentrations for metals. NJDEP comparison criteria included:

- Residential Direct Contact Soil Remediation Standards (RDCSRS), Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS), and IGW screening levels (SLs) for soils and sediments;
- GWQS for groundwater; and
- Surface Water Quality Standards (SWQS) for surface water.

USEPA **Regional Screening Levels (RSLs**) for soil and groundwater were used for comparison purposes because the Army is tasked with completing a CERCLA-compliant RI (including **human health risk assessment [HHRA]**). Therefore, RSLs were used to identify those chemicals that are **contaminants of potential concern (COPCs)**. COPCs were then evaluated in an HHRA. No COPCs were determined to be **contaminants of concern (COCs)** at the seven landfills.

The following subsections describe site characterization activities for soil, groundwater, surface water, and sediments for each of the seven landfill sites covered by this Proposed Plan. The results of the HHRAs for each site are presented following site characterization.

Figure 2 - Main Post Landfill Locations

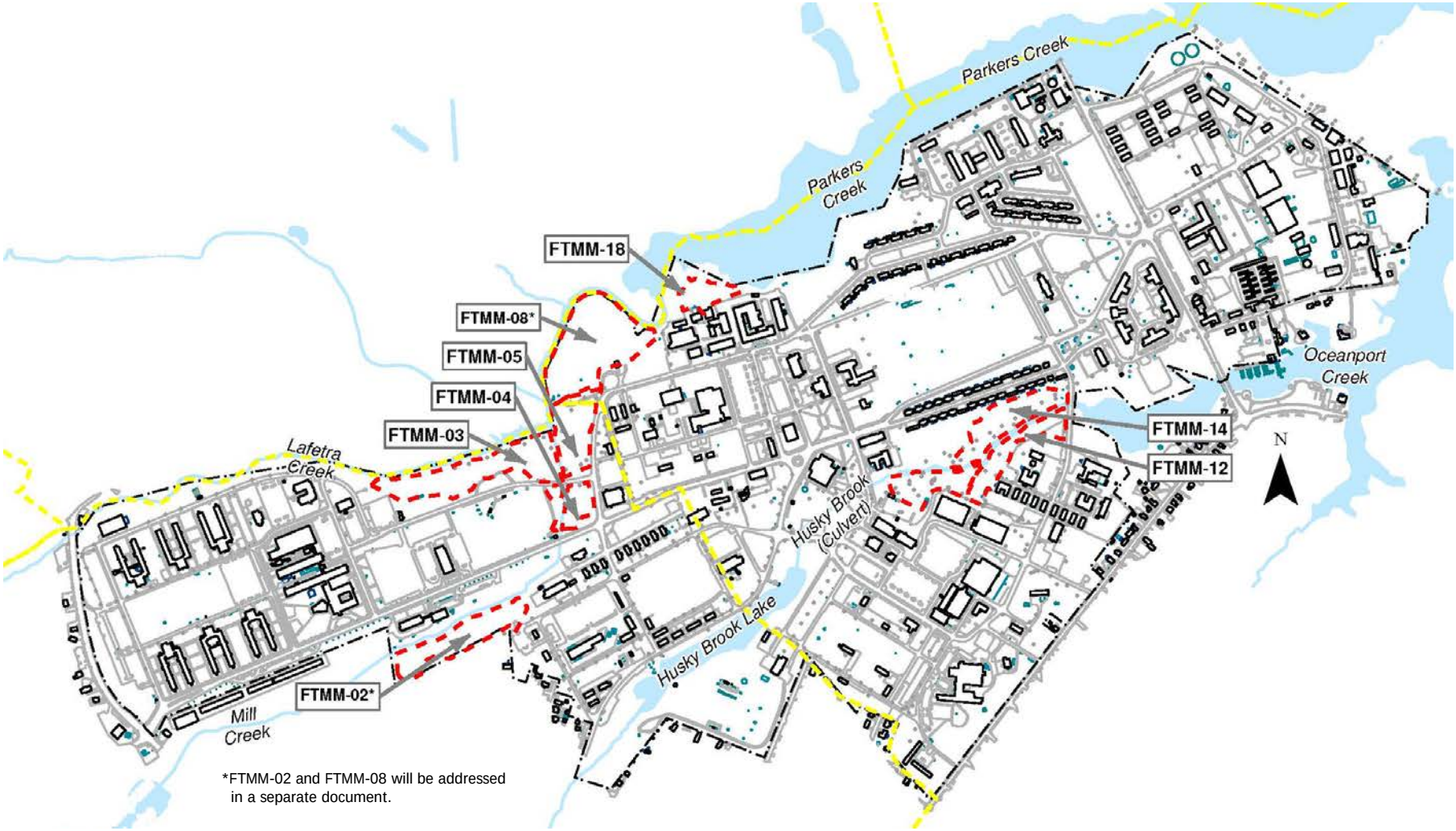


Figure 3 - Charles Wood Area Landfill Location

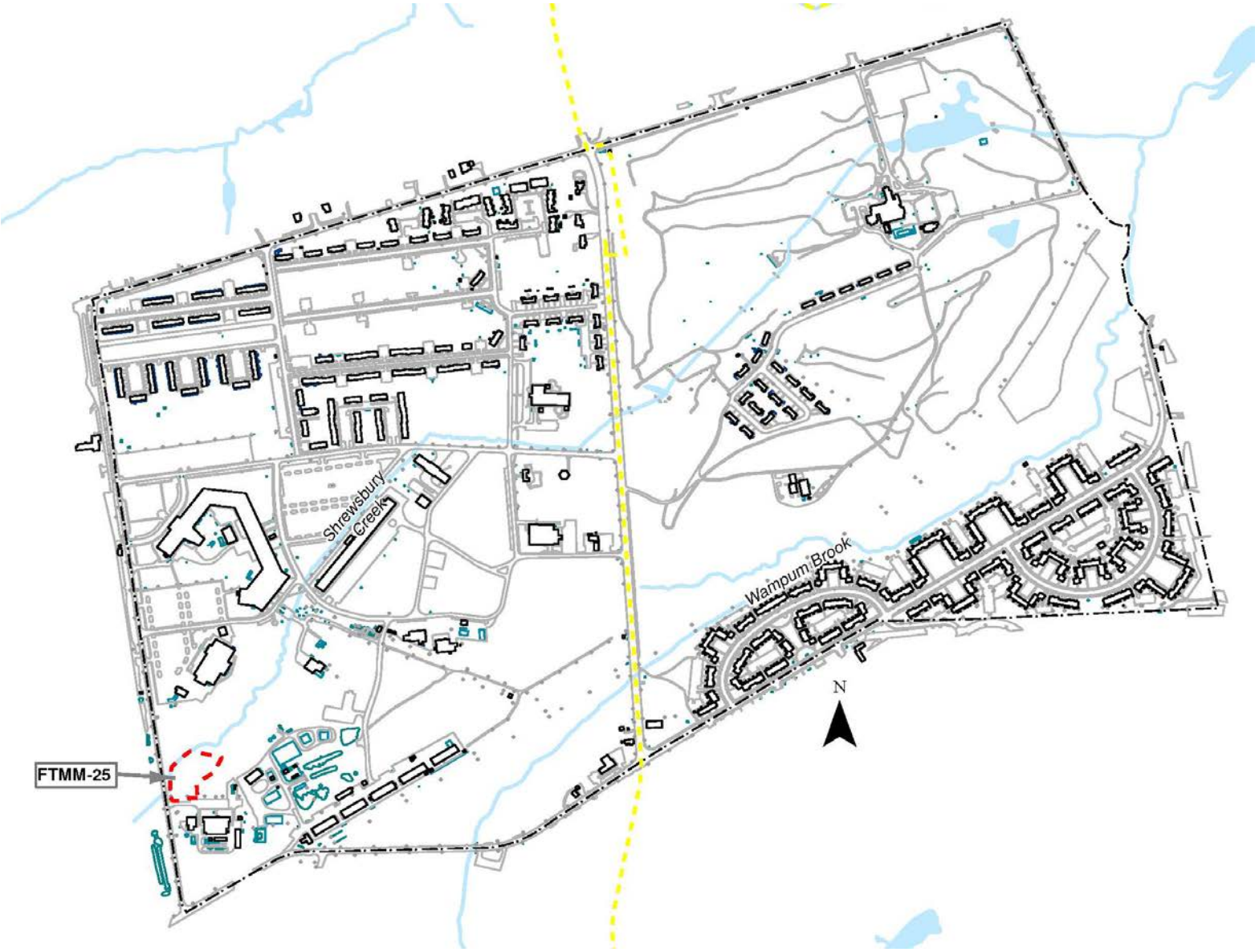
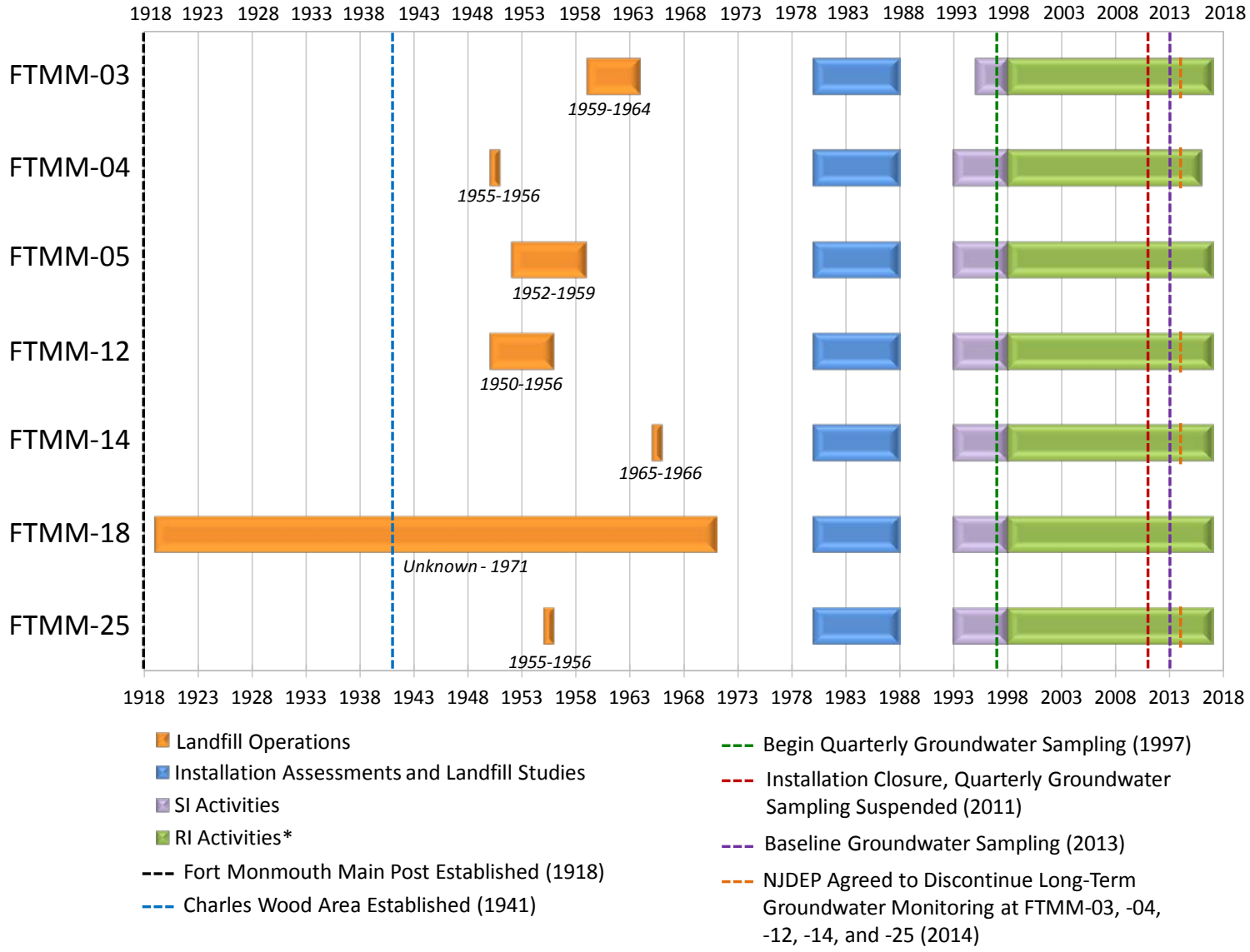


Figure 4 – Timeline of Significant Events



*End date denotes NJDEP acceptance or anticipated acceptance of RI Report.

FTMM-03

FTMM-03 landfill, which is in the western portion of the MP and has an area of approximately 8.0 acres. The site is bordered by Lafetra Creek to the north, Mill Creek to the east, and North Drive to the south and west (Figure 5).

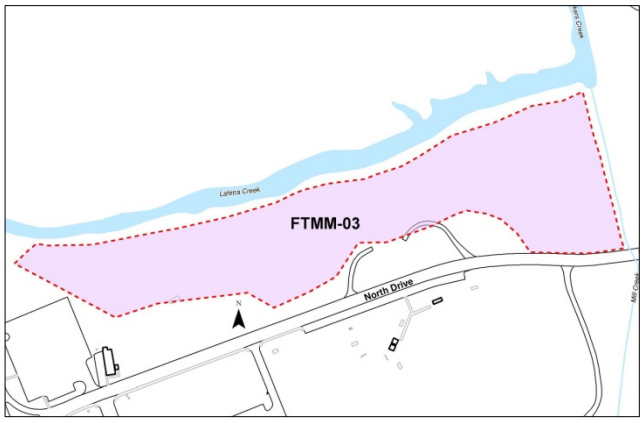


Figure 5 – FTMM-03 Site Boundary and Layout

FTMM-03 was in operation from approximately 1959 to 1964 and was reportedly used for the general disposal of domestic and industrial wastes. The landfill soil cover material ranges in thickness from 0 to 48 inches bgs and averages 20 inches thick. Previous investigations at FTMM-03 are summarized below, and the Final RI Report was submitted to NJDEP in February 2016.

Soils

A total of 425 near-surface soil samples were collected from 205 borings from September to November 1998. The samples were collected between 6 and 12 inches bgs except for the **volatile organic compounds (VOCs)** samples, which were collected at approximately 24 inches bgs. Concentrations of four VOCs, seven **semi-volatile organic compounds (SVOCs)**, six pesticides, one **polychlorinated biphenyl** (**PCB**), and 16 metals exceeded their current NJDEP RDCSRS and/or USEPA RSL in at least one soil sample.

Groundwater

Between 1995 and 2010, 13 groundwater monitoring wells were installed at FTMM-03 to investigate and monitor contaminants in groundwater. From 1997 through 2011, groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Upon approval from the NJDEP, analysis for SVOCs, pesticides, PCBs, and metals was discontinued beginning in 2005 because contaminant concentrations were consistently below NJDEP GWQS. The wells continued to be sampled quarterly for VOCs between 2005 and 2009, then VOCs and metals through 2011. The sampling data from the most recent eight quarters (November 2009 to August 2011), the August 2013 Baseline Sampling Event (BSE), and the 2014 Annual Sampling Event (ASE) were evaluated as being representative of recent conditions. NJDEP subsequently agreed to discontinue the groundwater long-term monitoring (LTM) program (NJDEP letter dated February 5, 2015).

Surface Water

To determine whether site-related contamination had impacted nearby surface waters, quarterly sampling was performed from October 1996 to September 2010. During the most recent eight quarters of surface water sampling (December 2008 to September 2010), tetrachloroethene (PCE) was the only VOC that exceeded NJDEP SWQS. However, it was determined that the PCE concentrations exceeding the SWQS originated from an offsite source and upstream of FTMM-03.

Sediment

Sediment sampling was conducted in April 2000 in Lafetra Creek to evaluate PCB-related impacts to stream sediments associated with FTMM-03. No PCBs were detected in the 25 samples collected.

FTMM-04

FTMM-04 is located on the MP and is bounded by North Drive to the north, Avenue of Memories to the south, and Wilson Avenue to the east (Figure 6). Mill Creek bisects the west-central portion of the landfill.

FTMM-04 was in use as a landfill between 1955 and 1956, and was reportedly used for the disposal of building demolition debris.

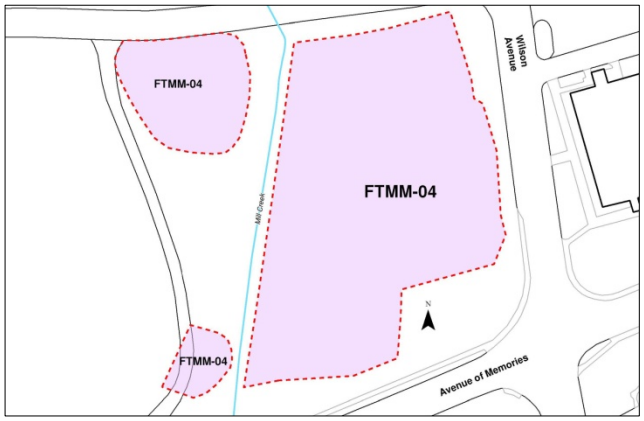


Figure 6 – FTMM-04 Site Boundary and Layout

The landfill soil cover material ranges in thickness from 6 to 46 inches bgs and averages 32 inches thick. Previous investigations at FTMM-04 are summarized below, and the Final RI Report was submitted to NJDEP in July 2014.

Soils

A total of 66 near-surface soil samples were collected from 63 borings in March 1998. The samples were collected between 6 and 12 inches bgs except for the VOCs samples, which were collected at approximately 24 inches bgs. No VOCs exceeded NJDEP RDCSRSs or USEPA RSLs. Concentrations of seven SVOCs, nine metals, and two pesticides exceeded their current NJDEP RDCSRS and/or USEPA RSL in at least one soil of 66 soil samples. SVOCs, metals, and pesticides were evaluated as COPCs in soil in the HHRA, and none were identifed as COCs.

Groundwater

Between 1994 and 1999, four groundwater monitoring wells were installed at FTMM-04 to investigate and monitor contaminants in groundwater. From 1997 through 2004, groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Upon approval from the NJDEP, analysis for VOCs, SVOCs, pesticides, and PCBs was discontinued beginning in 2005 because contaminant concentrations were consistently below NJDEP GWQS. The wells continued to be sampled quarterly for metals between 2005 and 2011. The sampling data from the most recent eight quarters (November 2009 to August 2011) and August 2013 BSE supported the conclusion that detected concentrations of metals are representative of background conditions despite exceedances of NJDEP and/or USEPA comparison criteria. Following the recommendations in the August 2013 BSE results (Parsons, 2013), NJDEP subsequently agreed to discontinue the groundwater LTM program (NJDEP letter dated July 3, 2014).

Surface Water

To determine whether site-related contamination had impacted nearby surface waters, quarterly sampling was performed from October 1996 to September 2010. During the most recent eight quarters of surface water sampling (March 2007 to September 2010), tetrachloroethene (PCE) was the only VOC that exceeded NJDEP SWQS. However, it was determined that the PCE concentrations exceeding the SWQS originated from an offsite source and upstream of FTMM-04.

Sediment

Sediment samples collected from Mill Creek, adjacent to FTMM-04 in 2000 and 2010, and analyzed for PCBs and VOCs, SVOCs, pesticides, PCBs, and metals resulted in no detections above the NJDEP RDCSRS.

FTMM-05

FTMM-05 is located in the western portion of the MP, north of FTMM-04 and south of the FTMM-08 landfill site (not included in this Proposed Plan) (Figure 7). FTMM-05 is bounded to the south by North Drive, to the north by an unpaved road, Wilson Avenue to the east and Mill Creek and Parkers Creek to the west. A portion of Mills Creek is adjacent to the bounds of the western side of the site.

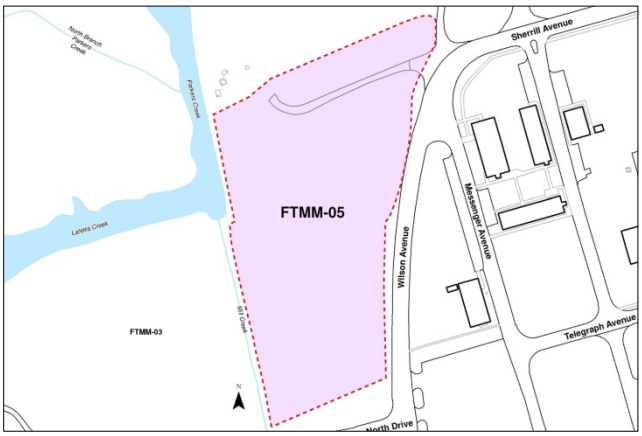


Figure 7 – FTMM-05 Site Boundary and Layout

FTMM-05 was in use as a landfill between 1952 and 1959, and was reportedly used for domestic

and industrial wastes. The landfill soil cover material at FTMM-05 ranges in thickness from 0 to 72 inches bgs and averages 24 inches thick. Previous investigations at FTMM-05 are summarized below, and the Final RI Report was submitted to NJDEP in October 2015.

Soil

Soil investigations were conducted in 1998 and samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and/or metals. Concentrations of two VOCs, eight SVOCs (all of which are **polyaromatic hydrocarbons [PAHs]**), seven pesticides, one PCB, and 15 metals exceeded their current NJDEP RDCSRS and/or USEPA RSL in at least 1 of 183 samples. These COPCs were further evaluated in the HHRA. Concentrations of five PAHs, two pesticides, one PCB, and eight metals exceeded their NJDEP NRDCSRS and/or USEPA Industrial RSL in at least one soil sample, and were evaluated as COPCs in the HHRA. No COPCs were determined to be COCs.

Groundwater

Two groundwater wells were initially installed at FTMM-05 in 1994 as part of a 1995 SI (Weston, 1995). Based on the results of the SI, the Army implemented a groundwater LTM program. Quarterly groundwater monitoring occurred from 1997 to 2011, and in August 2013 and December 2014 using a network of up to 13 monitoring wells. Following the recommendations from the August 2013 BSE results, NJDEP agreed to continue sampling four select wells for VOCs annually at FTMM-05 (NJDEP, 2014). The August 2013 groundwater monitoring results also indicated that one or more sources of PCE groundwater contamination exist to the east of FTMM-05 but the specific location(s) of the PCE source areas are unknown since the source is not FTMM-05. An investigation will be conducted in the future to identify the source of PCE contamination in groundwater east of FTMM-05.

Injections of **Hydrogen Releasing Compound (HRC®)** were performed in seven distinct areas in and around FTMM-05 where elevated concentrations of PCE were detected in shallow groundwater. The purpose of this interim remedial measure was to enhance the degradation of PCE concentrations in groundwater using naturally occurring microorganisms already present in the subsurface. The injections were performed over multiple 3- to 6-month time periods in 2000, 2002, 2003, 2004, and 2005 to facilitate the enhanced anaerobic degradation of PCE in groundwater.

Data from eight quarters of groundwater monitoring (November 2009 to August 2011) and August 2013 and December 2014 sampling events were evaluated during the RI. During this period, concentrations of six VOCs and 17 metals exceeded the NJDEP GWQS and/or USEPA Tapwater RSL in at least one sample. Given the small number of background exceedances, detected concentrations of metals were considered representative of background conditions at FTMM-05 and were not considered to be COPCs. SVOCs, pesticides and PCBs were previously eliminated from the sampling program in 2003 with NJDEP concurrence, and therefore were not COPCs in groundwater for FTMM-05.

Surface Water

Surface water samples were collected from upstream and downstream sampling locations from 1996 to 2010, and analyzed for VOCs, pesticides, PCBs, and metals. Eight quarters of surface water monitoring data (from December 2008 to September 2010) were evaluated during the RI. VOCs and metals detected at an upstream sampling location indicated that they originated from an offsite source (i.e., they did not originate at FTMM-05). No COPCs were identified in surface water.

Sediments

To determine potential PCB-related impacts to sediments in Mill Creek associated with FTMM-05, 16 surface and near-surface sediment samples were collected in Mill Creek in April 2000 at six locations along the creek that borders FTMM-05. The April 2000 sediment sampling resulted in no detections above the NJDEP RDCSRS. No COPCs were identified in sediment.

FTMM-12

FTMM-12 is located on the central portion of the MP, and is bordered by Husky Brook to the north, Murphy Drive to the east, multiple buildings to the south, and Todd Avenue to the west (Figure 8).

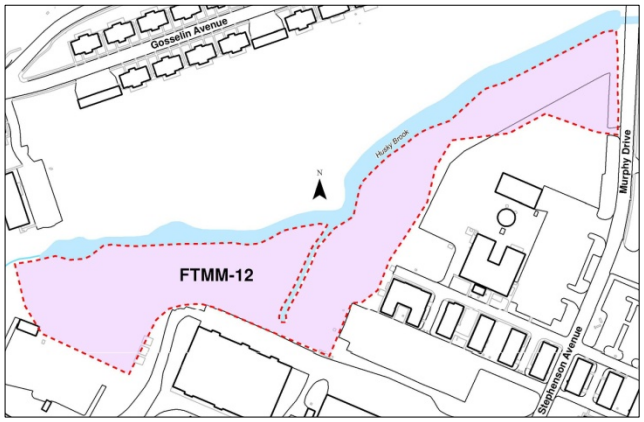


Figure 8 – FTMM-12 Site Boundary and Layout

FTMM-12 was in use as a landfill between 1950 and 1966, and was reportedly used for the disposal of automobiles, domestic and industrial wastes. The landfill soil cover material ranges in thickness from 0 to 48 inches bgs and averages 24 inches thick. Previous investigations at FTMM-12 are summarized below, and the Final RI Report was submitted to NJDEP in August 2015.

Soils

Soil samples collected in 1998 and 1999 were analyzed for VOCs, metals, SVOCs, pesticides, and PCBs. Concentrations of two VOCs, six SVOCs (all of which are PAHs), two pesticides, and 13 metals exceeded their current NJDEP RDCSRS and/or USEPA RSL in at least 1 of 193 soil samples. Concentrations of five PAHs and four metals exceeded their NJDEP NRDCSRS and/or USEPA Industrial RSL in at least one soil sample, and were evaluated in the HHRA. No COPCs were determined to be COCs.

Groundwater

Three groundwater wells were initially installed at FTMM-12 as part of the 1995 SI. Based on the results of the SI, the Army implemented a groundwater LTM program at the site. Quarterly groundwater monitoring occurred from 1997 to 2011 from a network of up to 16 wells and in August 2013. Historic exceedances of metals except for lead are attributed to background water quality. The August 2013 sampling was conducted for lead analysis only, and lead was not detected. Following the recommendations in the August 2013 BSE results, NJDEP subsequently agreed to discontinue the groundwater LTM program (NJDEP, 2014).

Surface Water

Quarterly surface water sampling was conducted at four locations in Husky Brook associated with FTMM-12 from October 1996 through September 2010. The most recent eight quarters of surface water monitoring data were determined to be representative of recent conditions. Concentrations of VOCs and metals detected upstream of FTMM-12 were similar to concentrations detected at the downstream edge of the site. This comparison indicated that FTMM-12 is not significantly impacting VOC or metal concentrations in Husky Brook.

Sediment

One PCB was detected in 1 of 25 sediment samples collected for the FTMM-12 and FTMM-14 sites in April 2000 at a concentration slightly above the NJDEP RDCSRS and the USEPA Residential RSL for soil. The detected PCB concentration does not exceed the NJDEP NRDCSRS or USEPA Industrial RSL for soil. The PCB detection occurred upstream of FTMM-12 and FTMM-14, and is not associated with this site.

FTMM-14

FTMM-14 is located on the MP, and is bordered by houses along Gosselin Avenue to the north, by Husky Brook to the south, and by Murphy Drive to the east (Figure 9).

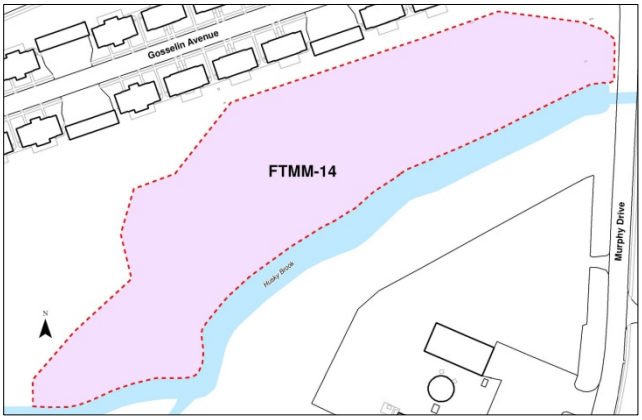


Figure 9 – FTMM-14 Site Boundary and Layout

FTMM-14 was in use as a landfill between 1965 and 1966, and was reportedly used as a general purpose disposal area for building rubble and was later covered with dredged material from Husky Brook Lake. The landfill soil cover material ranges in thickness from 6 to 78 inches bgs and averages 30.6 inches thick. Previous investigations at FTMM-14 are summarized

below, and the Final RI Report was submitted to NJDEP in July 2015.

Soil

Soil samples collected in 1998 were analyzed for VOCs, metals, SVOCs, pesticides, and PCBs. Concentrations of seven SVOCs (all of which were PAHs), one pesticide, and seven metals exceeded their current NJDEP RDCSRS and/or USEPA Residential RSL in at least 1 of 124 soil samples. These COPCs were further evaluated in the HHRA, however none were determined to be COCs.

Groundwater

Quarterly groundwater sampling was performed from June 1997 to August 2011 based on the recommendations from the 1995 SI. Concentrations of one VOC (1,4-dichlorobenzene) and 18 metals exceeded their NJDEP GWQS and/or the USEPA Tapwater RSL in at least one sample collected between November 2009 to August 2011 and in August 2013. The August 2013 sampling was conducted for VOCs. No VOCs exceeded GWQS. Following the recommendations based on the August 2013 BSE results, NJDEP subsequently agreed to discontinue the groundwater LTM program (NJDEP, 2014).

The 2015 RI determined that all detected metals were considered representative of background conditions. Therefore no metals were identified as COPCs in groundwater. 1,4-dichlorobenzene was not identified as a COPC because it exceeded the USEPA Tapwater RSL in only 2 of 81 samples collected from November 2009 to August 2011, was not detected during the August 2013 BSE, and the exceedances were very slightly above the RSL.

Surface Water

Quarterly surface water sampling was conducted at four locations in Husky Brook associated with FTMM-14 from October 1996 through September 2010. The most recent eight quarters of surface water monitoring data were evaluated as being representative of recent conditions. Concentrations of VOCs and metals detected upstream of FTMM-14 are similar to concentrations detected at the downstream edge of the site. This comparison indicated that FTMM-14 is not significantly impacting VOC or metal concentrations in Husky Brook.

Sediment

Sediment sampling at FTMM-14 is discussed above with FTMM-12.

FTMM-18

FTMM-18 is located on the northern part of the MP, between Parkers Creek to the north and multiple buildings and Sherrill Avenue to the south (Figure 10).

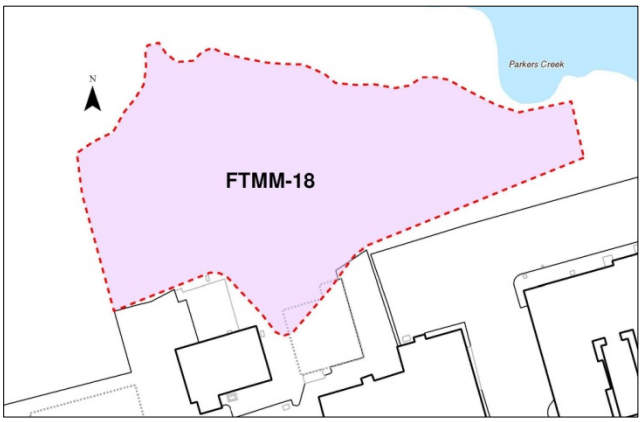


Figure 10 – FTMM-18 Site Boundary and Layout

The period of operation for FTMM-18 is unknown, however past use of the site reportedly consisted of both landfill and non-landfill-related components. A building demolition debris disposal area is located in the southern portion of FTMM-18, just north of Building 293. The landfill soil cover material ranges in thickness from 0 to 60 inches bgs and averages 28 inches thick. Previous investigations at FTMM-18 are summarized below, and the Final RI Report was submitted to NJDEP in October 2015.

Soil

Soil samples collected in 1999 were analyzed for VOCs, metals, SVOCs, pesticides, and PCBs. Concentrations of six SVOCs (all of which are PAHs) and six metals exceeded their current NJDEP RDCSRS and/or USEPA RSL in at least 1 of 65 soil samples. Concentrations of four PAHs, and one metal exceeded their exceeded their NJDEP NRDCSRS and/or USEPA Industrial RSL in at least one soil sample. COPCs in soil that were evaluated in the HHRA included six PAHs and five metals (Parsons, 2015). No COPCs were determined to be COCs.

Groundwater

Quarterly groundwater sampling was performed from June 1997 to August 2011 and in August

2013, using a network of up to 10 monitoring wells. In that time, concentrations of six VOCs and 17 metals exceeded the NJDEP GWQS and/or the USEPA Tapwater RSL in at least one sample. Following the recommendations based on the August 2013 BSE results, NJDEP agreed to continue to sample four select wells for VOCs annually at FTMM-18 (NJDEP, 2014).

Surface Water

Quarterly surface water samples were collected upstream, adjacent to, and downstream of FTMM-18 from October 1996 to September 2010. PCE concentrations that exceeded the NJDEP SWQS were detected upstream of FTMM-18, and therefore were determined not to be site-related.

Sediment

Sediment sampling was conducted in Parkers Creek in April 2000 to evaluate PCB-related impacts to stream sediments associated with FTMM-18. One PCB (Aroclor 1254) was detected in two of eight samples, with one sample concentration slightly above than the NJDEP RDCSRS for total PCBs and the USEPA Residential RSL for Aroclor 1254. The other detected PCB concentration was below comparison criteria. There are multiple storm sewer outlets at Parkers Creek upstream of the two sample locations that may be a source of PCBs. However, the detection could not be definitively attributed to upstream sources, and therefore was considered a sediment COPC that is potentially site-related and was evaluated in the HHRA.

FTMM-25

FTMM-25 is located in the CWA. It is bounded by Pearl Harbor Avenue to the west, Shrewsbury Creek to the north, a wooded area to the east and the Pulse Power Facility Building to the south (Figure 11). FTMM-25 currently consists of a partially wooded lot with tall grass to the center and trees to the north, east and west.

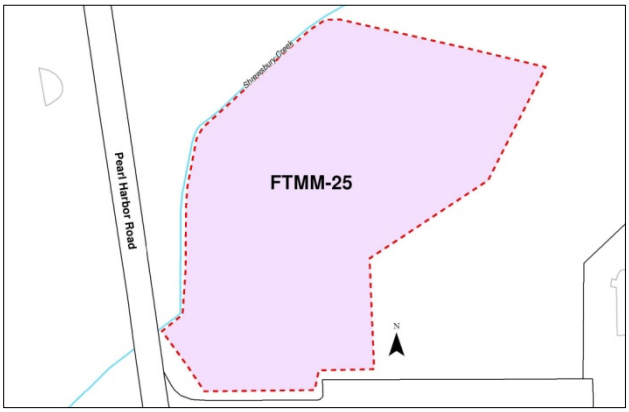


Figure 11 – FTMM-25 Site Boundary and Layout

FTMM-25 was in use as a landfill between 1955 and 1956, and was reportedly used for the disposal of debris from the demolition of buildings at CWA. The landfill soil cover material ranges in thickness from 1 to 30 inches bgs and averages 20 inches thick. Previous investigations at FTMM-25 are summarized below, and the Final RI Report was submitted to NJDEP in August 2016

Soil

Soil samples collected in 1998 were analyzed for VOCs, metals, SVOCs, pesticides, and PCBs. Concentrations of six SVOCs (all of which are PAHs), two pesticides, two PCBs, and 10 metals exceeded their current NJDEP RDCSRS and/or USEPA RSL in at least one soil sample. Concentrations of four PAHs and two metals exceeded their NJDEP NRDCSRS and/or USEPA Industrial RSL in at least one soil sample. COPCs in soil that were evaluated in the HHRA included six PAHs, two PCBs, and five metals. No COPCs were identified as COCs.

Groundwater

Groundwater monitoring occurred at FTMM-25 from December 1997 to July 2011 using a network of up to four monitoring wells; and additional baseline monitoring was performed in August 2013. Eleven metals were detected at concentrations exceeding their NJDEP GWQS and/or the USEPA Tapwater RSL and also the maximum background concentration established by Weston (1995). Following the recommendations based on the August 2013 BSE results, NJDEP subsequently agreed to discontinue the groundwater LTM program (NJDEP, 2014).

Two metals were evaluated as COPCs in the HHRA during the 2015 RI. Concentrations of the

other detected metals were considered to be representative of background conditions and/or are essential human nutrients.

Surface Water

A surface water sampling event conducted at Shrewsbury Creek was performed in June 2010. The PAHs detected were likely not related to the landfill, and detected metal concentrations were similar to those found in background samples. Surface water quality did not pose an unacceptable risk based on available data and therefore was not evaluated further during the 2015 RI.

Sediment

Sediment sampling conducted in April 2000 in Shrewsbury Creek to evaluate potential PCB-related impacts to sediments showed no PCBs detected in the samples collected at and downstream of FTMM-25.

SCOPE AND ROLE OF RESPONSE ACTION

A vegetated soil cover will be placed over the landfill area to address safety concerns for non-resident use from future exposure to solid waste at the landfills and will control surface water run-off and erosion. LUCs to maintain the soil cap and prevent residential land use will be implemented at the landfills.

Containment is considered by USEPA to be a highly effective way to remediate historic landfills in many cases. USEPA has identified containment as a presumptive remedy for historic landfills because it repeatedly has been shown to be effective at treating similar wastes at other CERCLA sites. USEPA developed presumptive remedies to streamline the selection of cleanup methods for certain categories of sites by narrowing the consideration of cleanup methods to treatment technologies or remediation approaches that have a proven track record in the Superfund program. The Army, as lead agency, has determined that it is appropriate to apply the presumptive remedy of capping for these seven landfills based on the soil and contaminant characteristics found at the site, and the guidance provided in the directive, *Presumptive Remedy for CERCLA Municipal Landfill Sites, EPA OSWER Directive No. 9355.0-49FS* (September 1993). Further information on the selection of presumptive remedies for landfills at military installations is presented in the directive, *Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills, EPA OSWER Directive No. 9355.0-67FS.*

SUMMARY OF SITE RISKS

A HHRA evaluation of the potential risk from human exposure to contaminants in soil, surface water, sediment, and groundwater was conducted as part of the RI at each landfill. No COPCs were identified in surface water at any of the landfill sites included in the RI. Therefore, further evaluation of surface water in the HHRAs was not conducted and no unacceptable risks are expected from human exposure to surface water.

The HHRAs evaluated exposure of current/future outdoor workers, future utility workers, and future recreational users to COPCs in soil, groundwater, and sediment through dermal contact, incidental ingestion, and inhalation of particulates. The HHRA used an exposure point concentration based on the analytical results from soil, groundwater, and sediment samples at all seven landfill sites.

Site groundwater is not used as a drinking water source by current outdoor workers or indoor workers, because municipal water is provided for use. Therefore, there are no current exposures to groundwater.

Risks to Current/Future Outdoor Workers, Utility Workers, or Future Recreational Users Exposed to Soil. No unacceptable potential non-carcinogenic or carcinogenic effects to current/future outdoor or utility workers or future recreational users are expected from exposure to soil through dermal contact, incidental ingestion, and inhalation of particulates.

Risks to Future Utility Workers Exposed Groundwater for Non-Drinking Water Purposes. No unacceptable potential non-carcinogenic or carcinogenic effects to current/guture utility workers are expected from exposure to soil through dermal contact or incidental ingestion.

WHAT IS RISK AND HOW IS IT CALCULATED?

Human Health Risk Assessment:

A Superfund baseline HHRA is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the COPCs at the site in various media (i.e., soil, groundwater, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated. The USEPA has established standard RME exposure scenarios for residents and commercial/industrial receptors that are used to calculate the RSLs (i.e., concentrations of COPCs in environmental media that are protective of human health).

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or non-cancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step provides a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. Concentrations of COPCs at the site are compared to the concentrations that are protective of the standard RME scenarios established by the USEPA to quantify the risk or hazard that may be expected. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk. For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a threshold (measured as an HI of less than or equal to) 1) exists below which non-cancer health hazards are not expected to occur. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site and are referred to as COCs in the final remedial decision or Decision Document.

Risks to Current/Future Outdoor Workers, Utility Workers, or Future Recreational Users Exposed to Sediment. No unacceptable potential non-carcinogenic or carcinogenic effects to current/future outdoor workers or future recreational users are expected from exposure to sediment through dermal contact, incidental ingestion, and inhalation of particulates.

In summary, the HHRAs concluded that soil, groundwater, and sediment do not pose an unacceptable risk to human health and the environment for current and future intended land use. HHRAs are included in each landfill site's respective RI Report.

SUMMARY OF PREFERRED ALTERNATIVE

To address safety concerns, a vegetated soil cover will be placed over the landfill area after the landfill is regraded to provide safety protection for future non-residential use. The conceptual design for the vegetated soil cover is

shown on Figure 12. The vegetated soil cover will be placed consistent with the NJDEP Solid Waste regulations (**New Jersey Administrative Code [N.J.A.C.]** 7:26-2A). Additional soil will be added to the existing soil cover to provide a "two" feet minimum of soil between the ground surface and landfilled debris. The use of a vegetated soil cover will offer safety protection to non-residents from future exposure to solid waste at the landfill and will also control surface water runoff and erosion.

LUCs to maintain the soil cap and prevent residential land use will also be implemented at the landfills. The Army will prepare a LUCIP to implement the institutional controls, document the location of the EC, and identify the procedural responsibilities including landfill cover inspections, monitoring and reporting, and long-term management requirements, etc.

The Army will be responsible for documenting and implementing the LUCs, which is expected to occur through the filing of a deed notice at the time of property transfer, and would also be responsible to conduct reviews to ensure that the LUCs remain protective of human health and the environment. When the property is transferred out of federal control, the LUCs would be incorporated into the title and the new owner would be responsible for complying with the LUCs. Although the Army may later transfer its procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army would retain ultimate responsibility for remedy integrity.

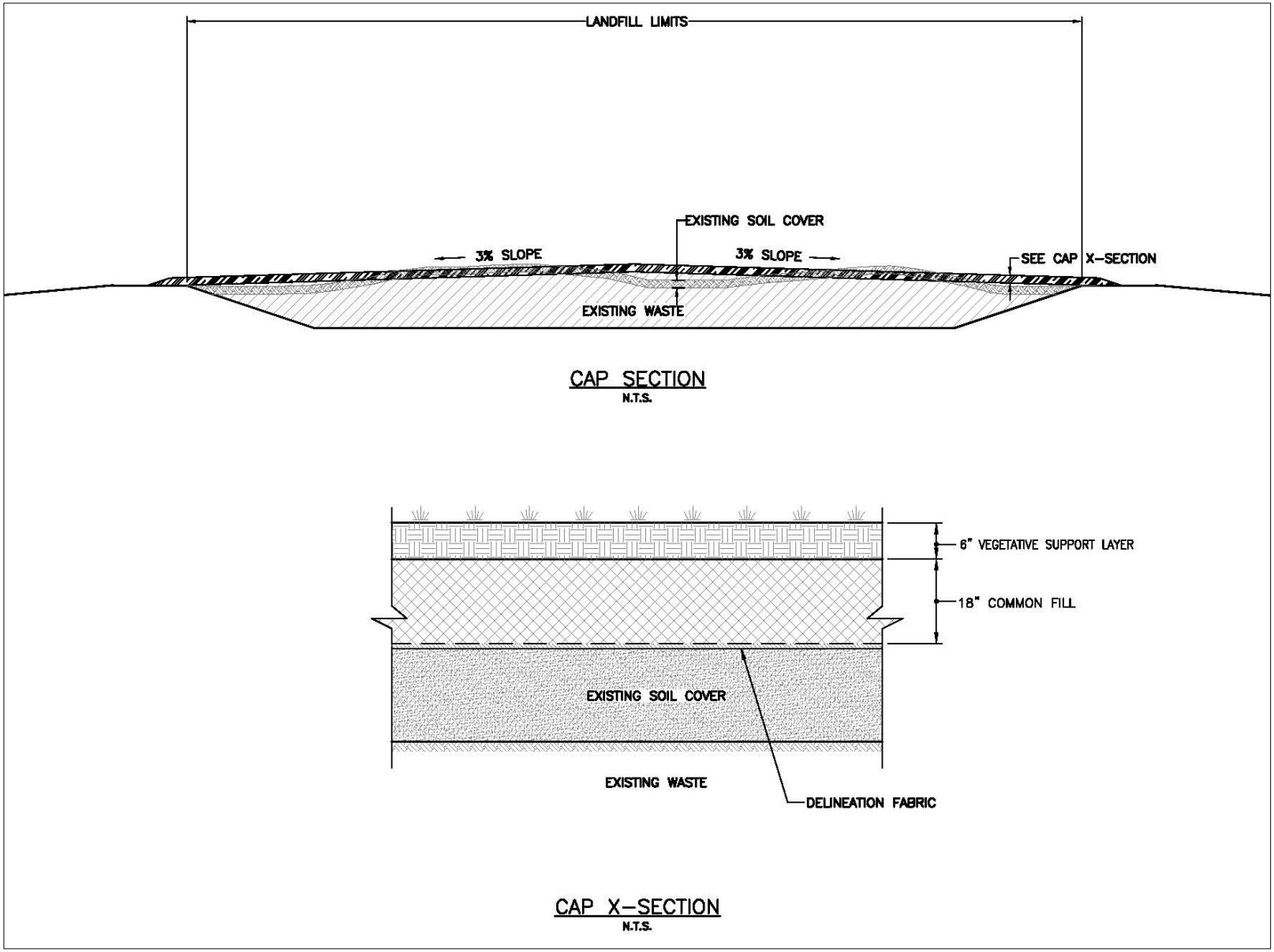
In addition, **Classification Exception Areas** (CEAs) will be established at FTMM-05 and FTMM-18 pursuant to NJDEP's Technical Requirements for Site Remediation (TRSR) (N.J.A.C. 7:26E) and Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C). IC in the form of a CEA will be implemented and it will remain in place until NJDEP GWQS are achieved at the site.

COMMUNITY PARTICIPATION

Public participation is an important component of remedy selection. The Army is soliciting input from the community on the preferred alternative identified for the landfills. The comment period includes a public meeting at which the Army will present this Proposed Plan. Both oral and written comments will be accepted at this meeting. The Army and the NJDEP encourage the public to gain a more comprehensive understanding of the site and the remedial activities that have been conducted at the landfills. The dates for the public comment period; the date, location, and time of the public meeting; and the locations of the Administrative Record files are provided on the front page of this Proposed Plan.

Comments made at the meeting will be transcribed. A copy of the transcript will be included in the Decision Document and will be added to the FTMM Administrative Record file and information repositories.

Figure 12 - Landfill Cover System Design



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GLOSSARY OF TERMS

Administrative Record – A file that contains all information used by the lead agency to make its decision on the selection of a response action under CERCLA. A copy of this file is to be available for public review at or near the site, usually at the information repository.

Classification Exception Area (CEA) – A NJDEP designation established whenever groundwater standards in a particular area are not met. It ensures the use of the groundwater in that area is restricted until standards are achieved.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, otherwise known as Superfund) – A federal law that addresses the funding for and remediation of abandoned or uncontrolled hazardous waste sites. This law also establishes criteria for the creation of key documents such as the Remedial Investigation, Feasibility Study, Proposed Plan, and Decision Document.

Chemical of Concern (COC) – COCs are defined as the COPCs (see below) that are present at sufficient concentrations to pose a risk to human health or the environment.

Contaminant of Potential Concern (COPC) – A chemical that is identified as a potential threat to human health or the environment and is evaluated further in the baseline risk assessment.

Decision Document – A report documenting the final action, approved by the regulatory agencies, that is required at CERCLA sites.

Groundwater – Water found beneath the earth's surface that fills pores between materials such as sand, soil, or gravel. In aquifers, groundwater occurs in sufficient quantities that it may be used for drinking water, irrigation, and other purposes.

Ground Water Quality Standards (GWQS) – NJDEP GWQS, N.J.A.C 7:9C, establish the designated uses of the State's groundwater and specify the water quality (criteria) necessary to attain those designated uses. The ground water quality criteria are numerical values assigned to each constituent (pollutant) discharged to groundwater of the State. The GWQS also contain technical and general policies to ensure that the designated uses can be adequately protected. Groundwater is classified according to its hydrogeologic characteristics and designated uses.

Hydrogen Releasing Compound (HRC®) – A proprietary technology from Regenesis Bioremediation Products, Inc. HRC® is a chemical which, upon hydration, undergoes chemical reactions to ultimately generate hydrogen, which is used by microorganisms to degrade chlorinated compounds in groundwater.

Human Health Risk Assessment (HHRA) – An evaluation of the potential threat to human health due to environmental COPCs.

Institutional Control (IC) – A mechanism used to provide notice of residual contamination and the need to limit human activities at or near a contaminated site. This may include land use restrictions, well restriction areas, deed notices, and declarations of environmental restrictions. Land use controls consists of both institutional controls and engineering controls.

Impact to Groundwater (IGW) – A NJDEP soil cleanup standard that is applied in soil above the groundwater table that is designed to be protective of groundwater quality.

Land Use Control (LUC) – Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property in order to manage risks to human health and the environment. Physical mechanisms include physical barriers to limit access to real property, such as fences or signs, providing potable water, as well as a variety of engineered remedies to contain or reduce contamination. Legal mechanisms include zoning, permits, and deed restrictions on property; for example, allowing only commercial or industrial use of a property where contaminants have not been remediated to residential levels.

Land Use Control Implementation Plan (LUCIP) – Documents the LUCs required during and after implementation of the preferred alternative.

National Contingency Plan (NCP) – National Oil and Hazardous Substances Pollution Contingency Plan, "National Contingency Plan" (40 CFR 300). Provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

New Jersey Administrative Code (N.J.A.C.) – The collection of all rules and regulations made by the executive branch agencies of the State of New Jersey.

Old Field Habitats – Old field habitats include formerly mowed areas where the vegetation includes grasses, forbes and often immature trees. Old field habitats at the MP include grasses, many forbes including Queen Ann's lace (*Daucus carota*), pokeweed (*Phytolacca americana*), goldenrod (*Solidago sp.*), milkweed (Asclepias syriaca), and sparse saplings of tree species including eastern red cedar (*Juniperus virginiana*) and winged sumac (*Rhus copallinum*).

Polycyclic Aromatic Hydrocarbons (PAH) – A group of compounds formed as a result of the incomplete combustion of hydrocarbons. PAHs commonly occur in the environment, originating from both natural and man-made sources.

Polychlorinated Biphenyls (PCB) – A group of persistent chemicals used in transformers and capacitors for insulating purposes and in gas pipeline systems as a lubricant.

Potable Water – Water of a quality suitable for drinking

Primary and Secondary Drinking Water Standards – Primary Drinking Water Standards limit the allowable concentrations of contaminants which may affect consumer health. Secondary Drinking Water Standards were developed to address the aesthetic qualities of drinking water (e.g., color, taste, odor).

Preferred Alternative(s) – The alternative(s) that, when compared to other potential alternatives, was/were determined to best meet the CERCLA evaluation criteria and is proposed for implementation at a MRS.

Proposed Plan – A plan that identifies the preferred remedial alternative(s) for a site, and is made available to the public for comment.

Public Education – A variety of methods to educate the public regarding potential hazards at the site, including, but not limited to, fact sheets, letters, newspaper notices, meetings, and website.

Regional Screening Level (RSL) – USEPA Screening levels are risk-based concentrations derived from standardized equations combining information assumptions with EPA toxicity data. RSLs are considered by the EPA to be protective for humans over a lifetime.

Remedial Action Objective (RAO) – Cleanup objective that specify the level or area of cleanup ore attainment.

Remedial Investigation (RI) – Exploratory inspection conducted at a site to define the nature and extent of contamination present, and to assess potential related hazards and risks.

Responsiveness Summary – A component of the Record of Decision that summarizes information about the comments and views of the public and support agency regarding both the remedial alternatives and general concerns about the site submitted during the public comment period. It also documents in the record how public comments were integrated into the decision-making process.

Riparian – Riparian areas are ecosystems adjacent to a river or waterway that, in an undisturbed state, provide habitat for wildlife and help improve water quality. Riparian areas are usually transitional zones between wetland and upland areas and are generally comprised of grasses, shrubs, trees, or a mix of vegetation types that exist within a variety of landscapes (e.g., natural, agricultural, forested, suburban, and urban).

Semivolatile Organic Compounds (SVOC) – An organic compound which has a boiling point higher than water and which may vaporize when exposed to temperatures above room temperature. SVOCs include phenols and polynuclear aromatic hydrocarbons (PAH).

Volatile Organic Compound (VOC) – Organic chemical compound whose composition makes it possible for it to evaporate under normal indoor atmospheric conditions of temperature and pressure.

ACRONYMS AND ABBREVIATIONS

ACRONYM	DEFINITION
µg/L	microgram(s) per liter
Army	U.S. Army
bgs	below ground surface
BRAC	Base Realignment and Closure
CEA	Classification Exception Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COCs	Chemicals of Concern
COPC	Constituent of Potential Concern
the Corps	Corps of Engineers New York District
CWA	Charles Wood Area
EA	Evans Area
EC	engineering control
FTMM	Fort Monmouth
GWQS	Ground Water Quality Standard(s)
HHRA	Human Health Risk Assessment
HI	Hazard Index
HRC	Hydrogen Releasing Compound
IC	institutional control
IGW	Impact to Groundwater
LTM	Long-Term Monitoring
LUC	Land Use Controls
LUCIP	Land Use Controls Implementation Plan
MP	Main Post
NCP	National Contingency Plan
NFA	No Further Action
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NRDCSRS	Non-Residential Direct Contact Soil Remediation Standard
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
RAO	Remedial Action Objective
RDCSRS	Residential Direct Contact Soil Remediation Standard
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
SI	Site Investigation
SL	Screening Level
SVOC	Semivolatile Organic Compound
SWQS	Surface Water Quality Standard
TCE	Trichloroethene
TRSR	Technical Requirements for Site Remediation

ACRONYM	DEFINITION
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound
WERS	Worldwide Environmental Restoration Services

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Sites FTMM-03, FTMM-04, FTMM-05, FTMM-12, FTMM-14, FTMM-18, and FTMM-25 is important to the Army. Comments provided by the public are valuable in helping the Army select a remedy for the FTMM landfills.

You may use the space below to write your comments. Comments must be postmarked by March 17, 2017. Mailed comments should be sent to Mr. William Colvin, at the address listed on Page 1. If you have any questions about the comment period, please contact Mr. Colvin at (732) 380-7064. Those with electronic communications capabilities may submit their comments to the Army via Internet at the following e-mail address: william.r.colvin18.civ@mail.mil.

Name: _____

Address: _____

City: _____

State and Zip: _____

Comments: