



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-9
600 ARMY PENTAGON
WASHINGTON, DC 20310-0600

07 November 2019

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Northern Bureau of Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, NJ 07927-1112

**SUBJECT: Findings of the Parcel 57 Commissary Building Investigation
Fort Monmouth, Monmouth County, New Jersey
PI G000000032**

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team prepared this report of the soil investigations within and near the Parcel 57 former Commissary Building 1007 as proposed in **Reference 1** (provided in **Attachment A**) and approved by the New Jersey Department of Environmental Protection (Department) in **Reference 2 (Attachment A)**.

1.0 OBJECTIVES AND SITE DESCRIPTION

The purpose of this investigation was to address the Department's concerns related to transfer of Parcel 57 due to previous removal of petroleum-contaminated soils from the area underlying a portion of Building 1007, which was the former Main Post Commissary building until FTMM closed in 2011. Petroleum-contaminated soils were encountered during construction of the Commissary Building in January 1997. The discharge was reported to the Department, and case number 97-1-11-0938-02 was assigned. Approximately 4,000 cubic yards of petroleum-contaminated soil were removed from the vicinity of the Commissary Building in 1997. The estimated area of contamination at the Commissary Building is shown on **Figure 1**. A removal action report was prepared by the FTMM Directorate of Public Works Environmental Office in 1997 as presented in Attachment A of **Reference 3**. Additional site background and investigation results at Parcel 57 are also presented in **Reference 3**.

2.0 FIELD ACTIVITIES

Soil borings with the collection of soil samples was conducted on 30 and 31 October 2019 to assess the current condition of soils underlying the former Commissary Building within the area of a petroleum-contaminated soil removal performed in 1997. Soil boring locations are shown on **Figure 1**. Two soil borings (PAR57-CB-SB-01 and PAR57-CB-SB-02) were advanced inside of the building and five borings (PAR57-CB-SB-03, PAR57-CB-SB-03a, PAR57-CB-SB-03b, PAR57-CB-SB-03c and PAR57-CB-SB-03d) were advanced outside the building and near the loading docks. Borings PAR57-CB-SB-03a, PAR57-CB-SB-03b, PAR57-CB-SB-03c and PAR57-CB-SB-03d were contingency locations located near boring SB-03.

On 30 October 2019 a track-mounted 54LT Geoprobe rig with a macro core sampling tube was initially used to penetrate through the 6- to 7-inch thick concrete floor at the interior sample locations; however, this rig could not advance the sampling tube through the approximately 16-inch-thick layer of $\frac{3}{4}$ in. crushed stone encountered below the flooring due to the stone collapsing into the boring hole at location SB-01. A more powerful track-mounted 7822DT Geoprobe rig was used on 31 October 2019 to collect soil samples at the six locations except PAR57-CB-SB-01, which could not be accessed again since the rig was too large to fit through the access doors of Building 1007. Boring depths ranged from 10 to 15 feet below ground surface (ft bgs), and field screening was performed every 6 inches throughout the borings with a photoionization detector (PID). One sample was collected from each boring at the depth interval that exhibited the highest PID reading or, if no elevated PID readings were recorded, from just above the groundwater table. Soil samples from three borings (PAR57-CB-SB-02, PAR57-CB-SB-03 and PAR57-CB-SB-03b) were analyzed for unfractionated Extractable Petroleum Hydrocarbons (EPH) in accordance with the requirements for fuel oil No. 2 in Table 2-1 of the New Jersey Administrative Code (NJAC) 7:26E *Technical Requirements for Site Remediation* (TRSR). Soil samples from borings PAR57-CB-SB-03a, PAR57-CB-SB-03c and PAR57-CB-SB-03d were collected for EPH analysis, extracted by the lab and held for contingency analysis pending the results of the other samples.

Samples were also collected, extracted by the lab and held for contingency analysis of naphthalene and 2-methylnaphthalene in 25 percent of the samples where EPH was detected over 1,000 mg/kg. The sample from contingency boring PAR57-CB-SB-03B was analyzed for EPH due to slightly elevated PID readings encountered in the field. Cuttings were placed back in each boring, and each boring was topped with bentonite chips and then the concrete was replaced to match the surrounding flooring or pavement thickness.

3.0 SITE INVESTIGATION RESULTS

The results of the soil investigation are presented in this section. Boring logs are provided in **Attachments B**. A small band of dark gray-stained sandy soil with slightly elevated PID readings (up to 0.5 parts per million [ppm] above ambient background) was encountered from 4.4 to 4.7 ft bgs in boring PAR57-CB-SB-02; therefore the 4.5 to 5 ft bgs interval was submitted for EPH analysis. Gray-stained soil, a slight petroleum odor and slightly elevated PID readings (up to 1.7 ppm) were observed in boring PAR57-CB-SB-03b from 4.5 to 5.5 ft bgs; therefore the 4.75 to 5.25 ft bgs interval was submitted for EPH analysis. There were no indications of petroleum impacts in boring PAR57-CB-SB-03; therefore, a sample from 5.5 to 6.0 ft bgs located above the water table in this boring was submitted for EPH analysis.

The EPH soil analytical data are presented in **Table 1**; please note data validation is ongoing. The EPH results for the samples analyzed ranged from 15.9 mg/kg (PAR57-CB-SB-03 duplicate) to 37.2 mg/kg (PAR57-CB-SB-03b) and were less than the Department's EPH soil remediation criterion of 5,100 mg/kg. Since EPH was not detected above 1,000 mg/kg, there was no need for additional contingency analysis for EPH or naphthalene and 2-methyl naphthalene. Therefore, in accordance with **Reference 4**, there is no need for additional action for soils at the Commissary Building.

4.0 RECOMMENDATIONS

Based on the results of this investigation, the Army requests the Department's concurrence that no further action is needed and that an Unrestricted Use, NFA determination be issued for the former Commissary Building 1007 within Parcel 57.

Thank you for reviewing this report; we look forward to your approval and/or comments. Our technical Point of Contact is Kent Friesen; kent.friesen@parsons.com. I can be reached at (732) 383-5104; william.r.colvin18.civ@mail.mil.

Sincerely,



William R. Colvin
Fort Monmouth BRAC Environmental Coordinator

cc: Ashish Joshi (e-mail and 2 hard copies)
William Colvin, BEC (e-mail and 1 hard copy)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Joseph Fallon, FMERA (e-mail)
Cris Grill, Parsons (e-mail)

References:

1. U.S. Army. 2019. FTMM Sampling Plan for Commissary Building. Email and certification form from the FTMM BRAC Environmental Coordinator to NJDEP. 11 October.
2. NJDEP. 2019. Letter to U.S. Army, Re: *Sampling Plan for Commissary Building - Parcel 57*. 18 October.
3. U.S. Army. 2019. Fort Monmouth, NJ; Commissary Building Footprint Category Determination. 11 October.
4. NJDEP. 2019. Evaluation of Extractable Petroleum Hydrocarbons in Soil Technical Guidance. Version 1.0, June.

Attachments:

Figure 1 – Soil Sample Locations, Parcel 57 Commissary Building 1007
Table 1 – Soil Sampling Results and Comparison to NJDEP EPH Criteria

Attachment A - Regulatory Correspondence
Attachment B – Soil Boring Logs

This page intentionally left blank.



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.

Document:

- "Findings of the Parcel 57 Commissary Building Investigation; Fort Monmouth, Monmouth County, New Jersey" (07 November 2019)

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) 383-5104

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: _____

Date: 07 November 2019

Name/Title: William R. Colvin

Fort Monmouth BRAC Environmental Coordinator

Completed form should be sent to:

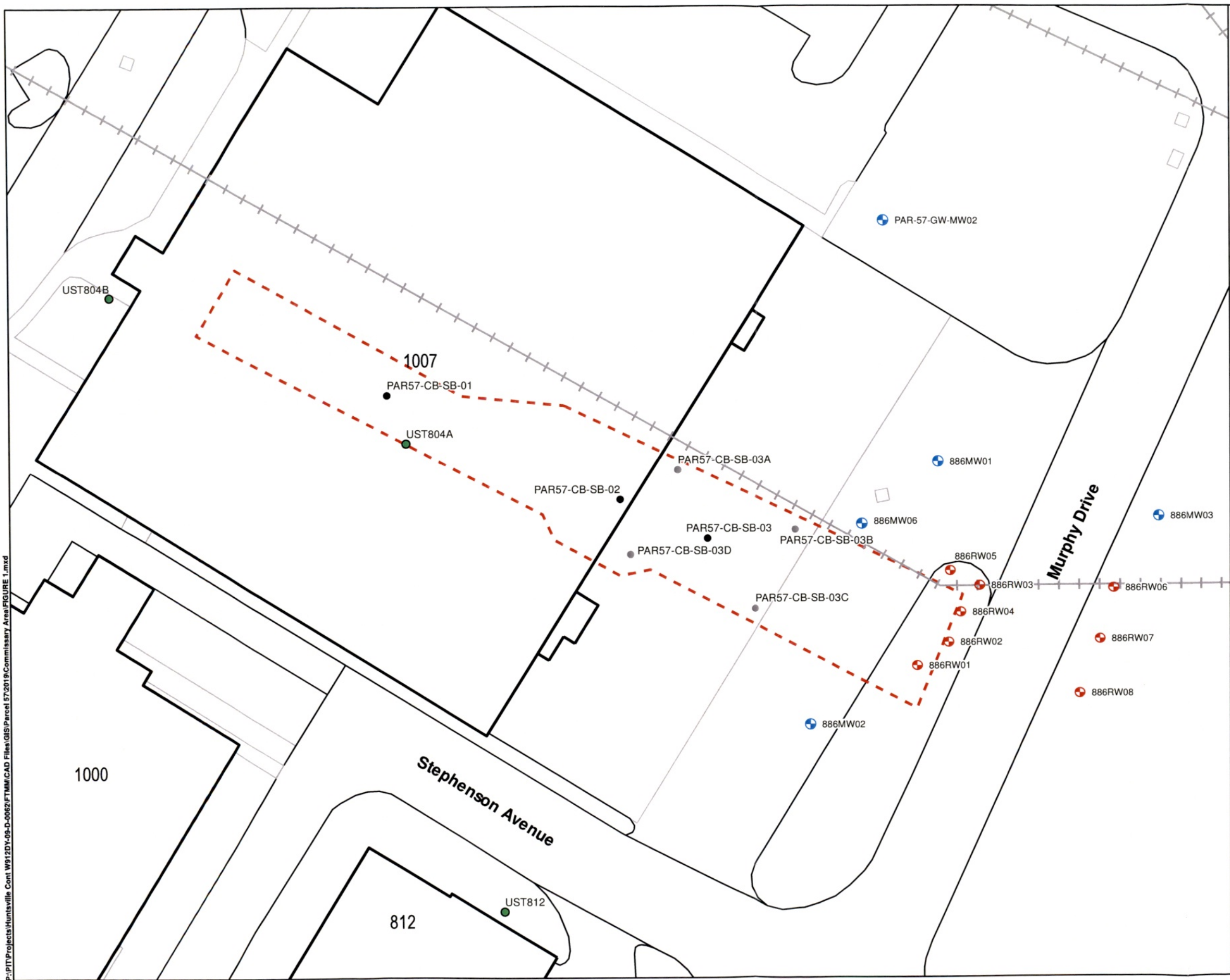
Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Bureau of Northern Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, New Jersey 07927-1112

This page intentionally left blank.

FIGURES

Figure 1 – Soil Sample Locations, Parcel 57 Commissary Building 1007

This page intentionally left blank.

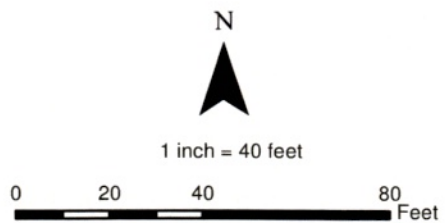


LEGEND:

- Shallow Monitoring Well
- Recovery Well
- Former UST Location
- Soil Boring
- Contingency Soil Boring
- Approximate Location of Former Railroad Track (based on 1962 FTMM plan figure)
- Area of Contamination from 1997 Commissary Site Report

NOTE:

No soil samples were collected from boring PAR-57-CB-SB-01 since hole kept collapsing due to crushed stone encountered below concrete floor.



Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
SOIL SAMPLE LOCATIONS PARCEL 57 COMMISSARY BLDG-1007	
CREATED BY: RR	REVIEWED BY: KF
DATE: NOV. 2019	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06030	FILE: FIGURE 1.mxd

P:\PT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 57\2019\Commissary Area\FIGURE 1.mxd

TABLES

Table 1 – Soil Sampling Results and Comparison to NJDEP EPH Criteria

This page intentionally left blank.

TABLE 1
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP EPH CRITERIA
SITE PARCEL 57 - COMMISSARY BUILDING 1007
FORT MONMOUTH, NEW JERSEY

Loc ID	NJDEP EPH Soil Remediation Criteria - Residential	PARCEL 57				
Sample ID		PAR-57-CB-SB- 02-4.5-5.0	PAR-57-CB-SB-03- 5.5-6.0	PAR-57-CB-SB- 303-5.5-6.0*	PAR-57-CB-SB- 03B-4.75-5.25	PAR-57-EB- 10312019
Sample Date		10/31/2019	10/31/2019	10/31/2019	10/31/2019	10/31/2019
Extractable Petroleum Hydrocarbons (mg/kg)						
Total Unfractionated EPH C9-C40	5,100	26.1	20.2	15.9	37.2	0.094U

Notes:

- 1) Lab data is preliminary and has not been validated.
- 2) * indicates duplicate.

This page intentionally left blank.

ATTACHMENT A

Regulatory Correspondence

This page intentionally left blank.



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.

**Document: Parcel 57 Commissary Sampling Plan
Fort Monmouth, Monmouth County, NJ
PI G000000032**

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) 383- 5104

Ext: _____

Fax: _____

Mailing Address: P.O. Box 148

City/Town: Oceanport

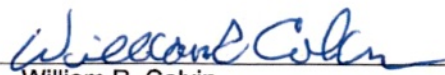
State: NJ

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.

Name/Title: 
William R. Colvin
BRAC Environmental Coordinator

11 October 2019

Date

Completed form and document sent to: Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Bureau of Northern Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, New Jersey 07927-1112

From: [Colvin, William Robert CIV USARMY HODA DCS G-9 \(USA\)](#)
To: ashish.joshi@dep.state.nj.us
Cc: [Moore, James T NAN02](#); [Grill, Cris](#); [Accorsi, Frank](#); [Friesen, Kent](#)
Subject: [EXTERNAL] FTMM Sampling Plan for Commissary Building
Date: Friday, October 11, 2019 9:12:35 AM
Attachments: [FTMM Par 57 Figure Proposed SB Commissary 101019 .pdf](#)
[FTMM CertForm for Commissary Building Sampling.pdf](#)

Good Morning AJ:

As discussed during our monthly call on 8 October 2019, below is the Army's proposed sampling plan for the Commissary Building located at Parcel 57, Fort Monmouth (FTMM), Monmouth County NJ.

1. Two soil borings (SB-01 and SB-02) will be advanced inside the building and one boring (SB-03) advanced outside and near the loading docks. The boring locations are shown on the attached figure. Four contingency borings (SB-03a, SB-03b, SB-03c and SB-03d) as shown on the figure will also be advanced outside and near boring SB-03.
2. One soil sample per boring will be collected and submitted for EPH analysis, and 25% of samples where EPH is detected over 1,000 mg/kg will be analyzed for naphthalene and 2-methyl naphthalene (refer to 7:26E TRSR-Table 2.1 for No. 2 Heating Oil). Samples from the contingency borings will also be collected, extracted and held by the lab for contingency EPH analysis pending the results of SB-03.
3. Borings will be screened with a PID for real-time field indications of petroleum contamination. Borings will be advanced to a depth of 12 ft bgs, or to a depth where elevated PID readings or petroleum odors are no longer observed. The soil sample submitted for lab testing will be collected from a 2-foot interval that exhibits the highest PID reading or, if no elevated PID readings are recorded, then a sample will be collected 6-inches above the interface of the water table.
4. Cuttings will be placed back in each boring, the boring will be topped with bentonite chips and the surface material thickness (concrete) will be matched to the surrounding thickness of the concrete.
5. No groundwater samples will be collected.

We look forward to your review of this proposed sampling plan, and approval. The drilling investigation is scheduled for 24 October 2019.

The Department's Report Certification is attached. Please let me know if a hard copy of this submittal is required.

Should you have any questions or require additional information, please contact me by phone at (732) 383-5104 or by email at william.r.colvin18.civ@mail.mil.

Thank you,

Bill
William R. Colvin
BRAC Environmental Coordinator
Fort Monmouth, New Jersey
732-383-5104



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Site Remediation and Waste Management Program
401 EAST STATE STREET
MAIL CODE 401-05F
Trenton, New Jersey 08625

PHIL MURPHY
Governor

CATHERINE R. McCABE
Commissioner

SHEILA OLIVER
Lt. Governor

October 18, 2019

Mr. William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
P. O. Box 148
Oceanport, NJ 07757

Re: **Sampling Plan for Commissary Building – Parcel 57**
Fort Monmouth, Oceanport, Monmouth County
SRP PI # 000000032

Mr. Colvin:

The New Jersey Department of Environmental Protection (Department) has completed the review of the above referenced sampling plan submitted via email on October 11, 2019. Based upon the review of the proposal to advance two soils borings (SB-01 and SB-02) inside the building and one boring (SB-03) outside and near the loading docks is acceptable. One soils sample will be collected from each boring and analyzed for EPH with a contingency for further analysis for 2-methyl naphthalene is also acceptable. Please submit the results of the soil samples to my attention for review. Please feel free to contact me if you have any questions. Thank you.

Sincerely,

A.J. Joshi

C: Mr. Jim Moore, BRAC Project Manager
Ms. Cristina Grill, Parsons
Mr. Joseph Fallon, FMERA
File

This page intentionally left blank.

ATTACHMENT B

Soil Boring Logs

This page intentionally left blank.

Soil Boring Log

CLIENT: <u>USACE</u>					INSPECTOR: <u>TOM HORN</u>		BORING/WELL ID: FTMM - <u>PAR-57-CB-SB-01</u>	
PROJECT NAME: <u>FTMM - RI</u>					DRILLER: <u>ECDI, LOUN TIGH</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM -</u>					WEATHER: <u>OVERCAST, LT. RAIN 57°F</u>			
PROJECT NUMBER: <u>748810-</u>					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL:					DATE/TIME START: <u>10-30-19 / 0900</u>		Oceanport, New Jersey	
DATE: <u>10-30-19</u>					DATE/TIME FINISH: <u>10-30-19 / 1055</u>			
TIME:					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
<u>0</u>					<u>CONCRETE UNDERLAIN W/ PLASTIC DRY M-C GRAVEL TO UNKNOWN DEPTH</u>			
<u>1</u>								
<u>2</u>					<u>END OF BORING @ 1.5'</u>			
<u>3</u>								
<u>4</u>								
<u>5</u>								
<u>6</u>								
<u>7</u>								
<u>8</u>								
<u>9</u>								
<u>10</u>								
Remarks: <u>VACUUMED BELOW TIE CONCRETE AND PLASTIC SHEETING LAYER, REMOVED GRAVEL TO ABOUT 8" BELOW FLOOR LEVEL</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation
U - Undisturbed Tube					Fine Grained (Silt & Clay)			
C - Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30			
					M. Dense: 10-30 M. Stiff: 4-8 Hard: >30			

Soil Boring Log

CLIENT: <u>USACE</u> PROJECT NAME: <u>FTMM-</u> PROJECT LOCATION: <u>FTMM-</u> or Parcel PROJECT NUMBER: _____ GROUNDWATER OBSERVATIONS WATER LEVEL: _____ DATE: _____ TIME: _____ MEAS. FROM: _____					INSPECTOR: <u>TOM HORN</u> DRILLER: <u>ECDI - COLIN TIGER</u> WEATHER: <u>OVERCAST, 70°F</u> CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u> RIG TYPE: <u>Geoprobe®</u> DATE/TIME START: <u>10-31-19 / 1220</u> DATE/TIME FINISH: _____ WEIGHT OF HAMMER: <u>N/A</u> DROP OF HAMMER: <u>N/A</u> TYPE OF HAMMER: <u>N/A</u>		BORING/WELL ID: <u>SB-02</u> LOCATION DESCRIPTION: <u>INDOOR</u> LOCATION PLAN: _____ FL Monmouth, New Jersey																		
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS																		
0	SB-02		60/45	0.0	0-8" ^{DRY} CONCRETE RUBBER AND F-C GRAVEL																				
1				0.0	8" to 53" moist orange TAN F-m SAND, LITTLE F-m GRAVEL, TR SILT																				
2				0.0	53-56" DK GRAY-STAINED ORANGE-TAN F-m SAND, LITTLE F-m GRAVEL, TR SILT.																				
3				0.1	56-60" - ORANGE-TAN F-m SAND LITTLE F-m GRAVEL, TR. SILT.																				
4				0.5																					
5				0.4																					
5		60/35		0.2	5-9.25' - SAA UNDER																				
6				0.1	9.25-10 WET DENSE DK GRAY C. GRAVEL.																				
7				0.1																					
8				0.0																					
9				0.0																					
10				0.0																					
Remarks: <u>GRAB ANALYTICAL SAMPLE PAR-57-CB-SB-02-4.5-5.0 FROM 4.5-5.0 DEPTH INTERIM. THIS SUPERCEDES THE PREVIOUS LOG FROM 10-30-19</u>																									
Sample Types S - Split-Spoon U - Undisturbed Tube C - Rock Core A - Auger Cuttings					Consistency vs. Blowcount / Foot <table border="1"> <tr> <th colspan="2">Granular (Sand & Gravel)</th> <th colspan="2">Fine Grained (Silt & Clay)</th> </tr> <tr> <td>V. Loose: 0-4</td> <td>Dense: 30-50</td> <td>V. Soft: <2</td> <td>Stiff: 8-15</td> </tr> <tr> <td>Loose: 4-10</td> <td>V. Dense: >50</td> <td>Soft: 2-4</td> <td>V. Stiff: 15-30</td> </tr> <tr> <td>M. Dense: 10-30</td> <td></td> <td>M. Stiff: 4-8</td> <td>Hard: >30</td> </tr> </table>			Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30	and - 35-60% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation	
Granular (Sand & Gravel)		Fine Grained (Silt & Clay)																							
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15																						
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30																						
M. Dense: 10-30		M. Stiff: 4-8	Hard: >30																						

Soil Boring Log

CLIENT: <u>USACE</u> PROJECT NAME: <u>FTMM</u> PROJECT LOCATION: <u>FTMM</u> or Parcel PROJECT NUMBER: GROUNDWATER OBSERVATIONS WATER LEVEL: DATE: TIME: MEAS. FROM:					INSPECTOR: <u>TOM HORN</u> DRILLER: <u>ECOI - COUNTY</u> WEATHER: <u>OVERCAST, 70°F</u> CONTRACTOR: <u>East Coast Drilling, Inc.</u> RIG TYPE: <u>Geoprobe(R)</u> DATE/TIME START: <u>10-31-19/1220</u> DATE/TIME FINISH: <u>10-31-19/1245</u> WEIGHT OF HAMMER: <u>N/A</u> DROP OF HAMMER: <u>N/A</u> TYPE OF HAMMER: <u>N/A</u>			BORING/WELL ID: <u>SB-02</u> LOCATION DESCRIPTION: <u>IND BOR</u> LOCATION PLAN: Ft. Monmouth, New Jersey	
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS		
0			60/42		10-15' - WET GRAY-BLUE LOOSE SILTY SAND, LITTLE F.M. GRAVEL				
1									
2									
3									
4									
5							END OF BORING @ 15'		
6									
7									
8									
9									
10									
Remarks:									
Sample Types					Consistency vs. Blowcount / Foot				
S - Split-Spoon					Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		
U - Undisturbed Tube					V. Loose: 0-4 Dense: 30-60		V. Soft: <2 Stiff: 8-15		
C - Rock Core					Loose: 4-10 V. Dense: >60		Soft: 2-4 V. Stiff: 15-30		
A - Auger Cuttings					M. Dense: 10-30		M. Stiff: 4-8 Hard: >30		
							and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation		

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Tom Horn</u>		BORINGWELL ID: <u>SB-03</u>	
PROJECT NAME: FTMM-					DRILLER: <u>ECDI - LUNN TGH</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM- or Parcel					WEATHER: <u>PMN 67°F</u>		<u>SB-03 OUTSIDE</u>	
PROJECT NUMBER:					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe®</u>		LOCATION PLAN	
WATER LEVEL: <u>= 6'</u>					DATE/TIME START: <u>10-31-19 / 0830</u>		FL Monmouth, New Jersey	
DATE: <u>10-31-19</u>					DATE/TIME FINISH: <u>10-31-19 / 0845</u>			
TIME: <u>0835</u>					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0	<u>03</u>		<u>50/34</u>	<u>0.0</u>	<u>0-8" ORY CONCRETE RUBBLE AND F-C GRAVEL. MED DENSE</u>			
				<u>0.0</u>				
1				<u>0.0</u>	<u>8"-60" MOIST MED DENSE GRAY-ORANGE BROWN SILTY SAND, LITTLE F-M GRAVEL</u>			
				<u>0.0</u>				
2				<u>0.0</u>				
				<u>0.0</u>				
3				<u>0.0</u>				
				<u>0.0</u>				
4				<u>0.0</u>				
				<u>0.0</u>				
5			<u>60/48</u>	<u>0.0</u>	<u>5-6.5' - WET DENSE GREENISH-BROWN SILTY SAND</u>			
				<u>0.0</u>				
6				<u>0.0</u>	<u>6.5'-6.6' - WET MED DENSE BLACK ORGANIC (ROOTS, PEAT) SLIGHT ORGANIC ODOOR.</u>		<u>GRAB SAMPLE 0845</u>	
				<u>0.1</u>				
7				<u>0.0</u>	<u>6.6-10' WET, DENSE LIGHT OLIVE (GLAUCONITE) F. SAND, LITTLE SILT, TR F GRAVEL</u>			
				<u>0.0</u>				
8				<u>0.0</u>				
				<u>0.0</u>				
9				<u>0.0</u>				
				<u>0.0</u>				
10					<u>END OF BORING @ 10'</u>			

Remarks: COLLECT ANNUAL SAMPLES INCLUDING PAR-57-CB-SB-03-5.5-6.0
DUPLICATE: PAR-57-CB-SB-303-5.5-6.0, m5/m50 volumes: PAR-57-CB-SB-03-5.5-6.0-45/m50

Sample Types	Consistency vs. Blowcount / Foot			
S - Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
U - Undisturbed Tube	V. Loose: 0-4	Dense: 50-59	V. Soft: <2	Stiff: 8-15
C - Rock Core	Loose: 4-10	V. Dense: >60	Soft: 2-4	V. Stiff: 15-30
A - Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE					INSPECTOR: _____		BORINGWELL ID: SB-03A	
PROJECT NAME: FTMM -					DRILLER: _____		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM- or Parcel					WEATHER: _____			
PROJECT NUMBER: _____					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe®		LOCATION PLAN	
WATER LEVEL: _____					DATE/TIME START: 10-31-19/1040		FI, Monmouth, New Jersey	
DATE: _____					DATE/TIME FINISH: 10-31-19/1050			
TIME: _____					WEIGHT OF HAMMER: N/A			
MEAS. FROM: _____					DROP OF HAMMER: N/A			
TYPE OF HAMMER: N/A								
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0	03A		60/30	0.1	0-8" DRY ^{LOOSE} CONCRETE RUBBLE, AND F-C GRAVEL			
				0.1				
1				0.1	8"-50" - MOIST DENSE GRAY-ORANGE-BROWN SILTY SAND, LITTLE F-MATERIAL			
				0.1				
2				0.0	50"-60" MOIST DENSE OLIVE SILTY SAND.			
				0.0				
3				0.0				
				0.0				
4				0.0				
				0.0				
5			60/30	0.1	5-9.5' - WET DENSE OLIVE SILTY SAND.		GRAB SAMPLE @ 11.00	
				0.0				
6				0.0				
				0.0				
7				0.0	9.5-10' - BLACK-BROWN PEAT, ORGANIC MATERIAL		FROM 5-5.5'	
				0.0				
8				0.0	SUBTLE ORGANIC ODOR.			
				0.0				
9				0.0				
				0.0				
10					END OF BORING @ 10'			
Remarks: CONVERT PAR-57-CB-SB-03A - 5.5-6.0								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)		and - 35-50%	
U - Undisturbed Tube					V. Loose: 0-4 Dense: 30-50		some - 20-35%	
C - Rock Core					V. Soft: <2		Little - 10-20%	
A - Auger Cuttings					Loose: 4-10 V. Dense: >50		trace - <10%	
					M. Soft: 2-4		moisture, density, color, gradation	
					M. Stiff: 4-8			
					Hard: >30			

Soil Boring Log

CLIENT: USACE PROJECT NAME: FTMM - PROJECT LOCATION: FTMM- or Parcel PROJECT NUMBER: GROUNDWATER OBSERVATIONS WATER LEVEL: . DATE: TIME: MEAS. FROM:					INSPECTOR: <u>TOM HORN</u> DRILLER: <u>ECDI - GUY NGH</u> WEATHER: <u>OVERCAST 70°</u> CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u> RIG TYPE: <u>Geoprobe®</u> DATE/TIME START: <u>0915/10-31-19</u> DATE/TIME FINISH: <u>10-31-19/0930</u> WEIGHT OF HAMMER: <u>N/A</u> DROP OF HAMMER: <u>N/A</u> TYPE OF HAMMER: <u>N/A</u>			BORING/WELL ID: <u>SB-03B</u> LOCATION DESCRIPTION: <u>OUTSIDE CONTINGENCY</u> LOCATION PLAN: <u>Fl. Monmouth, New Jersey</u>																	
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS																		
0	<u>D3B</u>			0.0	0-8" DRY MED LOOK CONCRETE RUBBLE AND F-C GRAVEL																				
				0.0																					
1				0.0	8"-4.5' MOIST DENSE LT-ORANGE SILTY SAND, LITTLE F-C GRAVEL																				
				0.0																					
2				0.1	4.5-5' MOIST ^{MED DENSE} GRAY-BROWN SILTY SAND, GRAY-STAINING AND SLIGHT PETROLEUM-LIKE ODOR																				
				0.1																					
3				1.0																					
				1.2																					
4				1.3																					
				1.7																					
5				1.4	5-5.5' - MOIST ^{LOOK} GRAY BROWN SILTY SAND AND M-C GRAVEL, SLIGHT PETROLEUM-LIKE ODOR,		<u>COLLECT SAMPLE 0945</u>																		
				1.2																					
6				0.2	5.5-6.5' - WET MED DENSE GRAY-BROWN-GREEN SILTY SAND LITTLE F GRAVEL,																				
				0.1																					
7				0.0	6.5-9.5' - WET DENSE OLIVE SILTY SAND, RE F. GRAVEL																				
				0.0																					
8				0.0	9.5-10' WET BLACK-BROWN PEAT, SLIGHT ORGANIC ODOR																				
				0.0																					
9				0.0																					
				0.0																					
10					END OF BORING @ 10'																				
Remarks: <u>GRAB SAMPLE PAR-57-CB-SB-03B-4.75-5.25</u> <u>FROM 4.75-5.25'</u>																									
Sample Types S - Split Spoon U - Undisturbed Tube C - Rock Core A - Auger Cuttings					Consistency vs. Blowcount / Foot <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">Granular (Sand & Gravel)</th> <th colspan="2">Fine Grained (Silt & Clay)</th> </tr> <tr> <td>V. Loose: 0-4</td> <td>Dense: 30-50</td> <td>V. Soft: <2</td> <td>Stiff: 8-15</td> </tr> <tr> <td>Loose: 4-10</td> <td>V. Dense: >50</td> <td>Soft: 2-4</td> <td>V. Stiff: 15-30</td> </tr> <tr> <td>M. Dense: 10-30</td> <td></td> <td>M. Stiff: 4-8</td> <td>Hard: >30</td> </tr> </table>			Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30	and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation	
Granular (Sand & Gravel)		Fine Grained (Silt & Clay)																							
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15																						
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30																						
M. Dense: 10-30		M. Stiff: 4-8	Hard: >30																						

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>TOM HORN</u>		BORING/WELL ID: <u>SB-03C</u>	
PROJECT NAME: FTMM-					DRILLER: <u>ECDI CONSULTING</u>		LOCATION DESCRIPTION: <u>CONTINGENCY</u>	
PROJECT LOCATION: FTMM- or Parcel					WEATHER: <u>LT. RAIN</u>		OUTSIDE	
PROJECT NUMBER:					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>		LOCATION PLAN	
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe®</u>		FL Monmouth, New Jersey	
WATER LEVEL: <u>6' BGS</u>					DATE/TIME START: <u>10-31-19/0850</u>			
DATE: <u>10-31-19</u>					DATE/TIME FINISH: <u>10-31-19/0900</u>			
TIME: <u>0855</u>					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
TYPE OF HAMMER: <u>N/A</u>								
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0	SB-03C	60/30		0.0	0 - 8" - DRY, MED LOOSE CONCRETE RUBBLE (LT. GRAY) AND F-M GRAVEL			
1				0.0	8 - 60" MOIST, DENSE ORANGE-BROWN F-M SAND, LITTLE F-M GRAVEL, TR SILT			
2				0.0				
3				0.0				
4				0.0				
5	SB-03C	60/30		0.0	5 - 5.75' WET MED LOOSE LT GRAY-GREENISH-TAN F-C SAND, SOME F-C GRAVEL		GRAB Samp 0855	
6				0.0	5.75 - 9.5' - WET MED DENSE GRAY OLIVE SILTY SAND.			
7				0.0	9.5 - 10'			
8				0.0				
9				0.0				
10				0.0	END OF BORING @ 10'			
Remarks: <u>GRAB ANALYTICAL SANDY PAR-57-CB-SB-03C-5-5-6.0</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)		end - 35-80%	
U - Undisturbed Tube					V. Loose: 0-4 Dense: 30-50		some - 20-35%	
C - Rock Core					Loose: 4-10 V. Dense: >50		little - 10-20%	
A - Auger Cuttings					M. Dense: 10-30		trace - <10%	
					Fine Grained (Silt & Clay)		moisture, density, color, gradation	
					V. Soft: <2 Silt: 8-15			
					Soft: 2-4 V. Stiff: 15-30			
					M. Stiff: 4-8 Hard: >30			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>TOM MORRIS</u>		BORING/WELL ID: <u>SB-03D</u>	
PROJECT NAME: <u>FTMM</u>					DRILLER: <u>ECDI - COLIN TIGHE</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM</u> or Parcel					WEATHER: <u>OVERCAST 70°</u>		<u>CONTINGENCY</u>	
PROJECT NUMBER:					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>		<u>OUTSIDE</u>	
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe®</u>		LOCATION PLAN	
WATER LEVEL:					DATE/TIME START: <u>10-31-19 / 0910</u>		FL Monmouth, New Jersey	
DATE:					DATE/TIME FINISH: <u>10-31-19 / 0915</u>			
TIME:					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
TYPE OF HAMMER: <u>N/A</u>								
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0	03D		60/42	0.0	0-8" - DRY, MED-LOOSE CONCRETE RUBBLE AND F-C GRAVEL.			
1				0.0	8" - 60" MOIST, DENSE ORANGE-BROWN SILTY SAND SOME F-M GRAVEL.			
2				0.0				
3				0.0				
4				0.0				
5			60/58	0.0	5-5.2' SAA		GRAB sample 0915	
6				0.0	5.2-5.7 MOIST, DENSE LT. OLIVE GRAY BROWN SILTY SAND			
7				0.0	5.7-6.5 WET DK OLIVE SILTY SAND			
8				0.0	6.5-6.8 WET DK BEN - BLACK PEAT ORGANICS SLIGHT ORG. ODOOR			
9				0.0	6.8-7.5' WET OLIVE SAND MILD ORG			
10				0.0	7.5-10' WET LOOSE LT ORANGE TAN BROWN F-C SAND, TE. SILT. END OF BORING @ 10'			
Remarks: <u>CONCRETE SAMPLE (FROM 6" ABOVE WATER) PAR-57-CB-SB-03D-5.5-6.0</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			and - 35-50% some - 20-35% fine - 10-20% trace - <10% moisture, density, color, gradation
U - Undisturbed Tube					Fine Grained (Silt & Clay)			
C - Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Silt: 8-15			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Silt: 15-30			
					M. Dense: 10-30 M. Silt: 4-8 Hard: >30			