



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

28 February 2018

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: Request for Unrestricted Use, No Further Action Approval
UST 202D Site Investigation Report
Fort Monmouth, Monmouth County, Oceanport, New Jersey
PI G000000032**

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this Site Investigation (SI) Report to summarize previous investigations and present the results of additional field sampling at the Parcel 81 former Underground Storage Tank (UST) 202D. Based on the information presented in this SI, an Unrestricted Use, No Further Action (NFA) determination is requested for UST 202D.

1.0 OBJECTIVES

Groundwater sampling was conducted in 2017 and 2018 to address New Jersey Department of Environmental Protection (NJDEP) comments on UST 202D (**Attachment A, Correspondences 3 and 6**). Proposed field investigation activities were documented in the Unregulated Heating Oil Tank (UHOT) Work Plan (WP) (August 2017), which was approved in October 2017 by NJDEP (**Attachment A, Correspondences 1 and 2**).

2.0 SITE DESCRIPTION

UST 202D was a 500-gallon steel No. 2 fuel oil UST (without a Registration ID) that was removed in May 2005. The former location of UST 202D is shown on **Figure 1**. Holes were observed in the tank and soil staining and a petroleum odor were observed during tank removal; approximately 20 cubic yards of contaminated soil were excavated. Discharge Investigation and Corrective Action Report (DICAR) No. 050523-1621-46 was submitted to NJDEP in 2005. As documented in the closure report for UST 202D (**Attachment A, Correspondence 7**), post-excavation samples were collected along the sidewalls and bottom of the excavation and analyzed for total petroleum hydrocarbons (TPH).

Additional groundwater samples were collected in June 2011 from one temporary well at the former UST 202D location. Samples were analyzed for Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs). Benzene and 2-methylnaphthalene were detected at concentrations that exceeded the NJDEP interim Ground Water Quality Criteria (GWQC). NFA approval was requested in 2015 for UST 202D soils. However, NJDEP concluded there was insufficient information relative to groundwater contamination for an NFA approval (**Attachment A, Correspondence 6 and 7**).

2.1 Site Land Use

Parcel 81, also known as The Marina, currently has an active restaurant which is located in Building 450 about 300 feet southeast of UST 202D and along the north bank of Oceanport Creek. UST 202D was near former Building 202, which was civilian quarters according to FTMM personal property records and has been demolished (**Figure 2**). The area near UST 202D is currently used as landscaped open space and paved parking areas associated with the existing restaurant. Future land use is assumed to be the same as the current restaurant and associated open space and parking land uses.

2.2 Site Geology and Hydrogeology

UST 202D is located on the former Main Post (MP) of FTMM. The Hornerstown Formation underlies much of the MP including the UST 202D area and is approximately 25 to 30 feet thick based on other MP soil borings. This formation is distinguished by varying proportions of glauconitic clay, silty clay, and minor sand. The Tinton Formation underlies the Hornerstown Formation and consists of dense fine sand and trace silt, glauconite, and clay.

Soil encountered in borings at UST 202D were primarily brown sand with some silt and traces of clay. Deeper soils below approximately two feet (ft) typically consisted of light gray and orange-brown mottled sand. Indications of fill (concrete and gravel) were observed in all borings at varying depths from 0 to 5 feet. Soil borings logs are provided in **Attachment B**. The depth to groundwater at UST 202D typically ranged from approximately 1.5 to 2.5 ft below ground surface (bgs) (**Table 1**). Groundwater is typically encountered in the brown sand and flows southeast towards Oceanport Creek. (**Figure 3**).

3.0 PREVIOUS INVESTIGATIONS

Post-excavation soil samples were collected from 5 locations (202D-1 to 202D-5) in May 2005 and analyzed for TPH, as reported in the *Underground Storage Tank Closure and Removal Investigation Report* (Attachment L in **Attachment A, Correspondence 7**). Samples 202D-3 and 202D-Duplicate had TPH concentrations exceeding 1,000 mg/kg and were further analyzed for VOCs; none were detected above the NJDEP RDCSRs.

As discussed in Section 2.0, a groundwater sample from a temporary well was collected in 2011 at former UST 202D. Benzene (1.61 µg/L) and 2-methylnaphthalene (233 µg/L) were present in groundwater that exceeded the NJDEP GWQC (1 and 30 µg/L, respectively) as shown in **Attachment A, Correspondence 7**. Therefore, the Army identified UST 202D as a site where unresolved groundwater issues remained (as also discussed in **Attachment A, Correspondence 7**).

In 2016, soil sampling was performed at Parcel 81 in response to NJDEP comments on the 10 February 2016 work plan (**Attachment A, Correspondence 5**). One soil boring (PAR-79-SS-02) was advanced and three soil samples were collected at the location of former UST 202D. As shown on Table 1 in **Attachment A, Correspondence 4**, the maximum total Extractable Petroleum Hydrocarbons (EPH) concentration encountered in soil at UST 202D was 345 mg/kg. A second soil boring (PAR-79-202-SS-01) was advanced and additional soil samples were collected from a location about 50 feet downgradient of former UST 202D; TPH concentrations were insignificant (9.8 J mg/kg and less). The results were below the NJDEP EPH standard of 5,100 mg/kg indicating further soil investigation at UST 202D was not warranted.

In 2016, the Army performed additional groundwater investigation work. Temporary well (PAR-79-202-TMW-01) was installed, sampled, and subsequently abandoned at a location about 50 feet downgradient of former UST 202D. Permanent, existing monitoring wells 202MW01 and M16MW02 were also sampled. The locations of the groundwater samples are shown on Figure 2 and Figure 5 in **Attachment A, Correspondence 4**. There was one slight polynuclear aromatic hydrocarbon (PAH) exceedance (0.19 µg/L of benzo[a]anthracene) of the NJDEP GWQC (0.1 µg/L) in the temporary well sample that was not attributable to fuel oil contamination. There were no GWQC exceedances in samples from the permanent wells.

Additional groundwater investigation work was performed in 2017 as described below.

4.0 SITE INVESTIGATION RESULTS

NJDEP recommended the installation of a permanent well immediately downgradient of UST 202D (**Attachment A, Correspondence 3**). One permanent monitoring well (PAR-81-202D-MW-02) and a temporary well (PAR-81-202D-TMW-05) were installed in November 2017 to a depth of 12.5 bgs at the former location of UST 202D. The boring log for PAR-81-202D-TMW-05 noted elevated PID readings, petroleum odors, and soil staining. Boring logs and field notes are provided in **Attachments B and C**. An additional three temporary monitoring wells and one field screening boring were installed in November 2017 to delineate the potential extent of groundwater contamination. The field screening boring was installed downgradient of PAR-81-202D-TMW-02 and PAR-81-202D-TMW-03. Contamination was not observed during the boring operations and there were no elevated PID readings noted on the boring log. The new permanent well (PAR-81-202D-MW-02) and existing downgradient monitoring well M16MW02 were sampled in January 2018 (**Figure 2**). Groundwater samples were analyzed for VOCs and SVOCs in accordance with NJDEP requirements for No. 2 fuel oil (**Table 2**).

4.1 Groundwater Results

Groundwater sampling was performed in November 2017 (temporary wells) and January 2018 (permanent wells) at the following locations (**Figure 2**):

- New permanent well PAR-81-202D-MW-02,
- Existing permanent well M16MW02,
- Temporary well PAR-81-202D-TMW-02,
- Temporary well PAR-81-202D-TMW-03,
- Temporary well PAR-81-202A-TMW-04, and
- Temporary well PAR-81-202D-TMW-05.

4.1.1 Exceedances of NJDEP Comparison Criteria

Exceedances of the NJDEP GWQC occurred at two temporary wells during the 2017 sampling (see **Figure 4 and Table 2**):

- Temporary well PAR-81-202D-TMW-05 (located at the former UST 202D and at the same location as permanent well PAR-81-202D-MW-02) had a 2-methylnaphthalene concentration of 53.3 µg/L that exceeded the NJDEP GWQC of 30 µg/L.

- Temporary well PAR-81-202D-TMW-05 also had Total TICs concentration of 967.3 µg/L which exceeded the NJDEP GWQC of 500 µg/L.
- Temporary well PAR-81-202D-TMW-02 (located approximately 50 ft downgradient of former UST 202D) had one PAH concentration [benzo(a)anthracene] of 1.4 µg/L that exceeded the NJDEP GWQC of 0.1 µg/L.

4.1.2 Constituents of Potential Concern (COPCs)

Benzo(a)anthracene is not typically related to fuel oil contamination and therefore is not considered a COPC in groundwater at UST 202D. This and other PAHs have been encountered at other FTMM locations within surficial soils and fill that are unrelated to fuel oil USTs. The exceedance of benzo(a)anthracene at PAR-81-202D-TMW-02 is most likely the result of entrainment of soil in the groundwater sample resulting from sample turbidity, which is common with temporary well grab groundwater samples. This rationale has previously been accepted by NJDEP at other nearby UST sites (**Attachment A, Correspondences 3 and 4**).

Both 2-methylnaphthalene and Total TICs exceeded the NJDEP GWQC at temporary well PAR-81-202D-TMW-05, which was installed at the former UST 202D location and where permanent well PAR-81-202D-MW-02 was subsequently located. However, there were no exceedances of these analytes at either permanent well PAR-81-202D-MW-02 or at the downgradient permanent well M16MW02. In comparison to temporary well results, the results from the permanent wells are much more representative of groundwater conditions because the permanent well was developed and purged prior to low flow groundwater sampling. Therefore, the Army has concluded that 2-methylnaphthalene is not a COPC in groundwater at UST 202D and that no further action is appropriate.

5.0 SUMMARY AND RECOMMENDATIONS

No COPCs were identified in soil at UST 202D. Given the results of the permanent monitoring wells PAR-81-202D-MW-02 and the downgradient well M16MW02, an Unrestricted Use, NFA determination is requested for UST 202D.

Thank you for reviewing this request; we look forward to your approval and/or comments. Our technical Point of Contact is Kent Friesen at (732) 383-7201; kent.friesen@parsons.com. I can be reached at (732) 380-7064; william.r.colvin18.civ@mail.mil.

Sincerely,


William R. Colvin, PMP, CHMM, PG
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)

Attachments:

Figure 1 - Site Location

Figure 2 - Site Layout and Sampling Locations

Figure 3 – UST 202D Groundwater Contours

Figure 4 – UST 202D Groundwater Results

Table 1 - Groundwater Gauging Data and Elevations (January 15, 2018)

Table 2 – Groundwater Sampling Results – Comparison to NJDEP Ground Water Quality Criteria

Attachment A - Regulatory Correspondence

Attachment B – Soil Boring Logs and Well Construction Details

Attachment C – Field Notes



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:

- "Request for Unrestricted Use, No Further Action Approval, UST 202D Site Investigation Report, Fort Monmouth, Monmouth County, Oceanport, New Jersey" (28 February 2018)

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: 28 February 2018

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

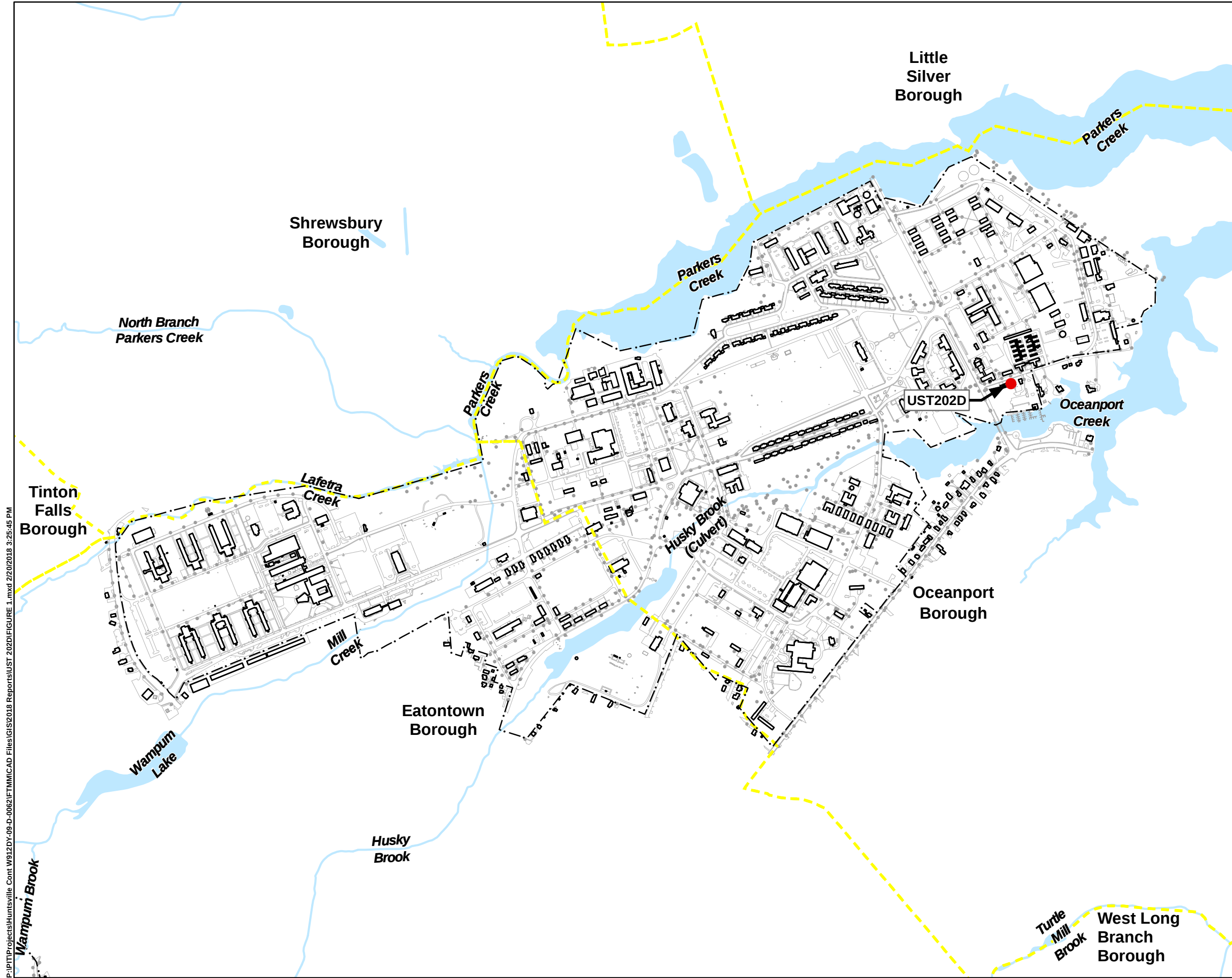
FIGURES

Figure 1 –UST 202D Location

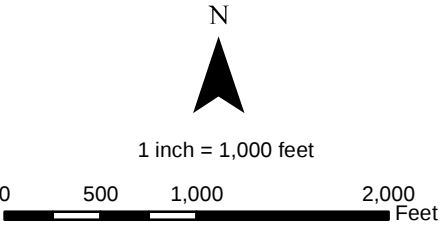
Figure 2 – UST 202D Site Layout and Sampling Locations

Figure 3 – UST 202D Groundwater Contours

Figure 4 – UST 202D Groundwater Results

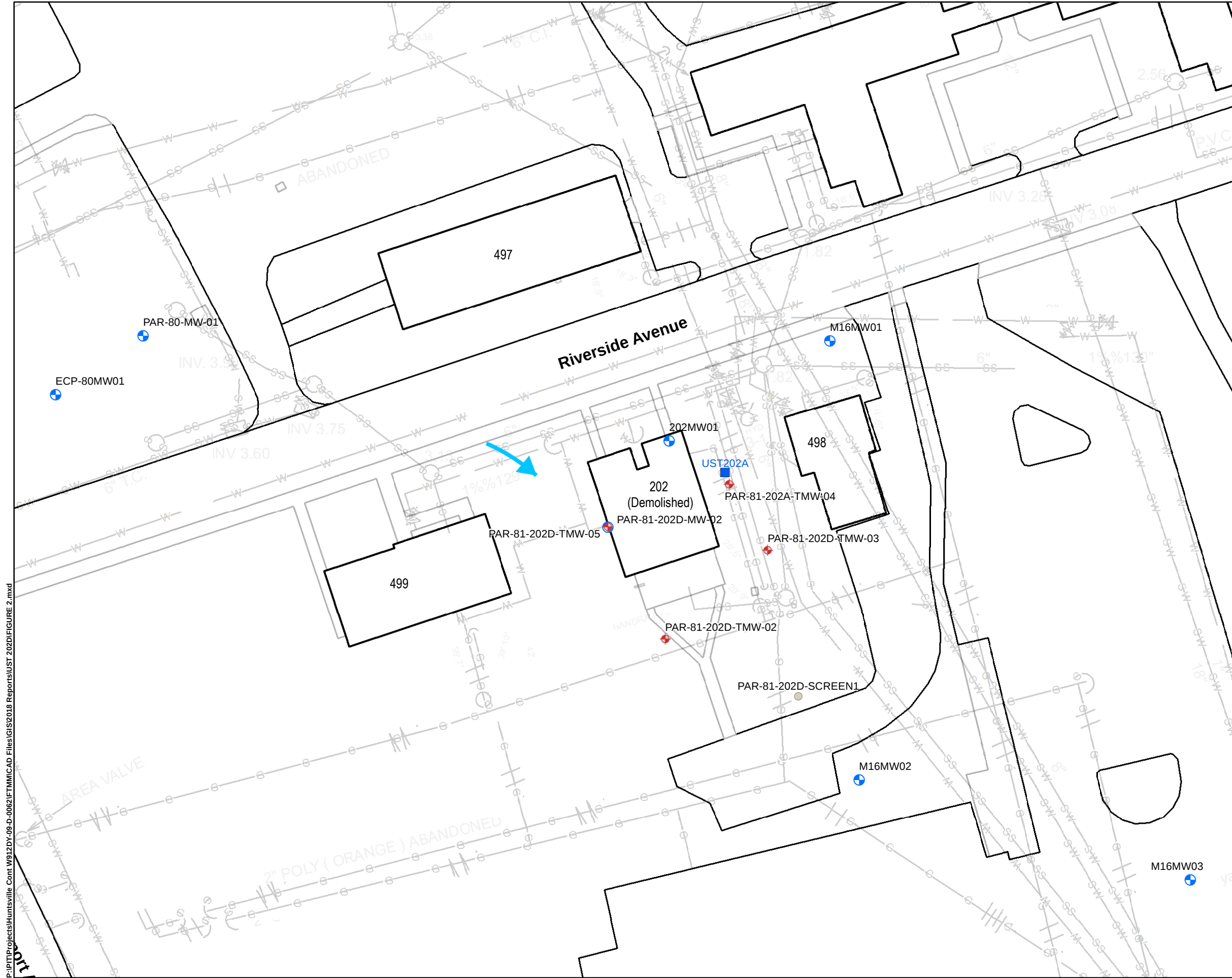


- LEGEND:**
- UHOT Location
 - Installation Boundary
 - - - Municipal Boundary
 - Surface Water Feature

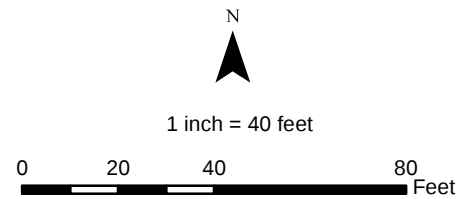


Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
UST202D SITE LOCATION	
CREATED BY: RR	REVIEWED BY: JC
DATE: FEB. 2018	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-02130	FILE: FIGURE 1.mxd



- LEGEND:**
- Temporary Monitoring Well
 - Soil Boring
 - Former UST Location
 - Shallow Monitoring Well
 - W Water Line
 - S Sanitary Sewer Line
 - SW Storm Sewer Line
 - G Gas Line
 - Estimated Groundwater Flow Direction

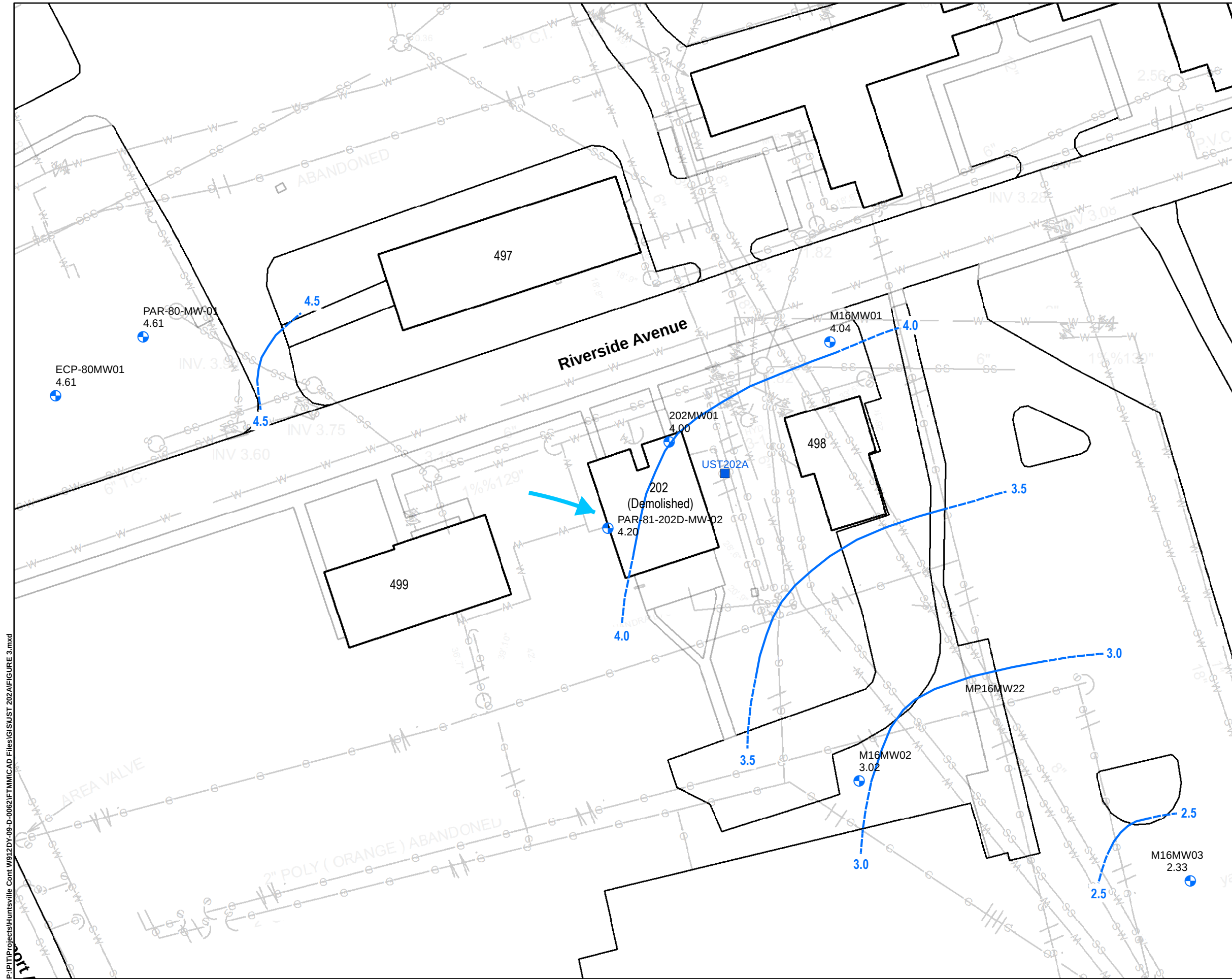


Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008; 2008 SI Report; USGS NHD, 2012.

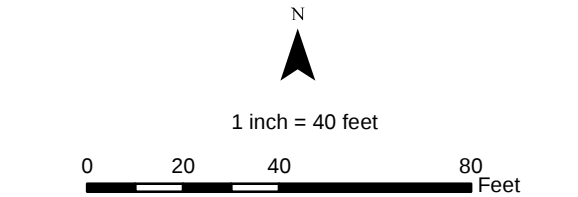
PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
--	------------------------------------

**UST202D SITE LAYOUT
AND SAMPLING LOCATIONS**

CREATED BY: RR	REVIEWED BY: AM
DATE: FEB. 2018	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06031	FILE: FIGURE 2.mxd



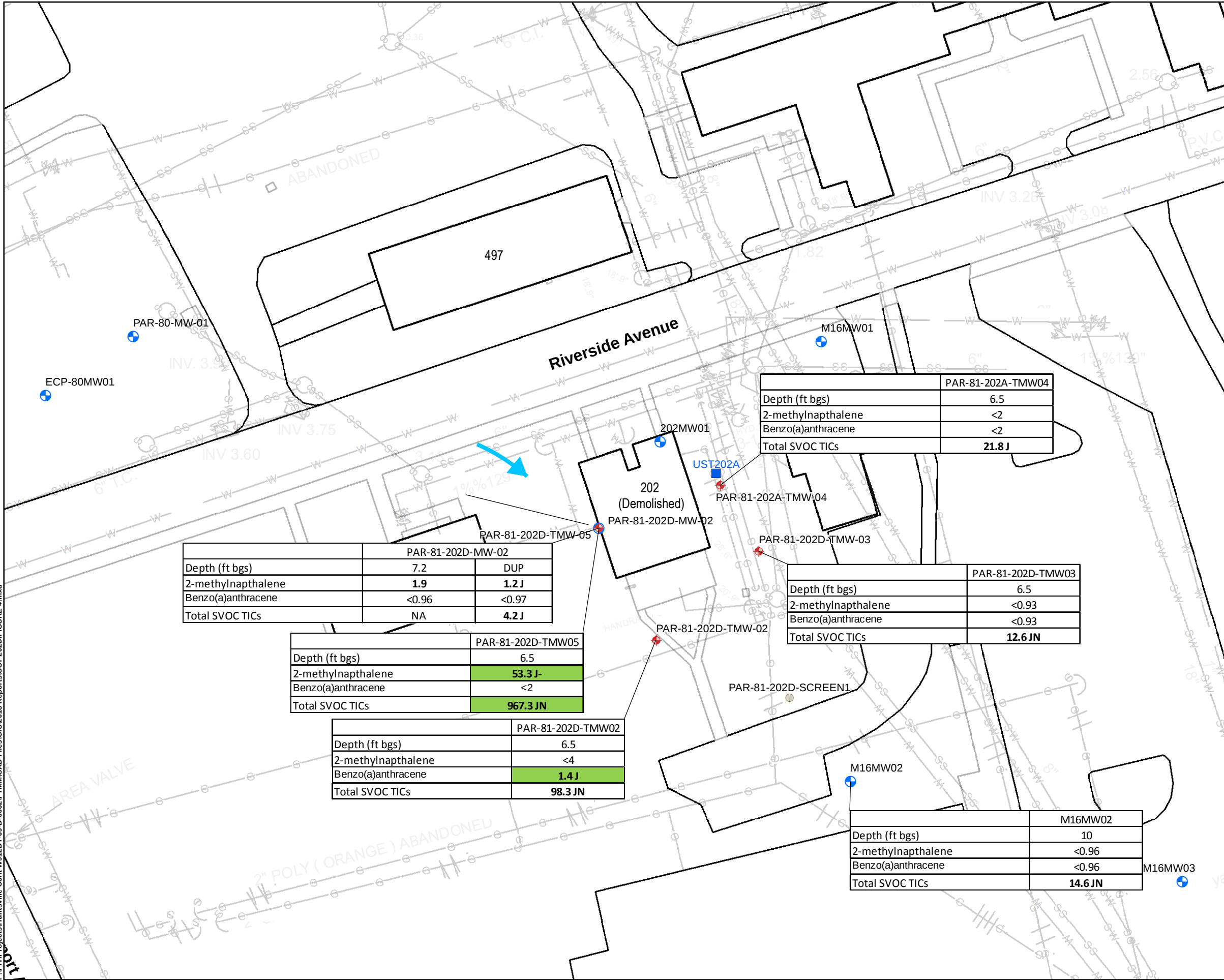
- LEGEND:**
- Former UST Location
 - Shallow Monitoring Well
 - W Water Line
 - S Sanitary Sewer Line
 - SW Storm Sewer Line
 - G Gas Line
 - Inferred Groundwater Flow Direction
 - Potentiometric Surface Elevation Contour
 - Inferred Potentiometric Surface Elevation Contour



Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008; 2008 SI Report; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL		Fort Monmouth New Jersey	
UST202D GROUNDWATER CONTOURS - JANUARY 15, 2018			
CREATED BY: RR		REVIEWED BY: JC	
DATE: FEB. 2018		FIGURE NUMBER: FIGURE 3	
PROJECT NUMBER: 748810-06031		FILE: FIGURE 3.mxd	

P:\PTT\Projects\Huntsville Cont W912.DY-09-D-0062\FTMMCAD Files\GIS\2018 Reports\UST 202D\FIGURE 4.mxd

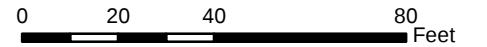


LEGEND:

- Temporary Monitoring Well
- Soil Boring
- Former UST Location
- Shallow Monitoring Well
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction



1 inch = 40 feet



Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008; 2008 SI Report; USGS NHD, 2012.

PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

**UST202D SAMPLING
LOCATION RESULTS**

CREATED BY: RR	REVIEWED BY: AM
DATE: FEB. 2018	FIGURE NUMBER: FIGURE 4
PROJECT NUMBER: 748810-06031	FILE: FIGURE 4.mxd

Tables

Table 1 - Groundwater Gauging Data and Elevations (January 15, 2018)

Table 2 – Ground Water Sampling Results – Comparison to NJDEP Ground Water Quality Criteria

Table 1
Groundwater Gauging Data and Elevations (January 15, 2018)
Parcel 81 UST 202D
Fort Monmouth, New Jersey

Site	Well Permit #	Y Coord. (North)	X Coord. (East)	Installation Date	Depth	Well Riser Pipe Casing Length	Well Screen Length	Top of PVC Well Casing (elevation)	Ground Surface Elevation	Gauge Time	Gauged Depth to Water	Gauged Depth to Bottom	Calculated Groundwater Elevation	Sampling Date
					(ft.)						(ft. TOC)	(ft. TOC)	(ft.)	
Parcel 81 UST 202D														
PAR-81-202D-MW-02	E201712748	540325.7	622816.8	11/10/2017	14.70	4.70	10.00	8.35	5.74	10:06	4.15	15.33	4.20	1/16/2018
M16MW01	E201102873	540402	622908	3/9/2011	15.00	5.00	10.00	5.58	5.89	10:15	1.54	14.82	4.04	NS
M16MW02	E201102874	540222	622920	3/9/2011	15.00	5.00	10.00	6.87	4.81	10:19	3.85	13.5	3.02	NS
M16MW03	E201102875	540181	623056	3/9/2011	15.00	5.00	10.00	4.11	4.58	10:23	1.78	14.44	2.33	NS
202MW01	N/A	540361	622842	8/15/2011	15.00	5.00	10.00	8.65	6.62	10:08	4.65	17.14	4.00	NS
ECP-80MW01	E201000904	540380.000	622590.000	3/23/2010	20.00	5.00	15.00	8.66	N/A	10:30	4.05	14.97	4.61	NS
PAR-80-MW-01	E201602886	540404.000	622626.000	4/1/2016	12.00	2.00	10.00	8.85	6.91	10:32	4.24	22.4	4.61	NS

Notes:

- The synoptic round of water levels in the wells was collected on October 21, 2016.
- Information on well permit number, X and Y coordinates, depth, screen length, screen interval and TOC elevation were provided by FTMM in a table in June 2013 except well installed by Parsons.
- ft = feet
- TOC = Top of Casing
- Elevation = feet above mean sea level
- N/A = information not available
- NS = Not Sampled
- **Bolded** top of casing elevations represent a mathematical adjustment between earlier NAD systems and the NAD 88 spatial system: the wells were reduced 1.09 feet to reflect the changes in the NAD systems.

TABLE 2
GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
Parcel 81
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	PAR-81-202D-TMW-02	PAR-81-202D-MW-02		PAR-81-202D-TMW-03	PAR-81-202D-TMW-05
Sample ID		PAR-81-202D-TMW-02-6.5	PAR-81-202D-GW-MW-02-7.2	PAR-81-202D-GW-MW-02-2122	PAR-81-202D-TMW-03-6.5	PAR-81-202D-TMW-05-6.5
Sample Date		11/1/2017	1/16/2018	1/16/2018	11/1/2017	11/1/2017
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
1,1,1,2-Tetrachloroethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,1-Trichloroethane	30	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2,2-Tetrachloroethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2-Trichloroethane	3	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	50	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloropropene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichlorobenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichloropropane	0.03	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trichlorobenzene	9	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,4-Trimethylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dibromo-3-chloropropane	0.02	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dibromoethane	0.03	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichlorobenzene	600	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloroethane	2	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloropropane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3,5-Trimethylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichlorobenzene	600	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichloropropane	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,4-Dichlorobenzene	75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
2,2-Dichloropropane	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
2-Chlorotoluene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Acetone	6,000	< 10.8	3.4 J	< 3.8 UJ	< 4.8	< 8.3
Benzene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromobenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromochloromethane	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromodichloromethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromoform	4	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Carbon tetrachloride	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chlorobenzene	50	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chlorodibromomethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	5	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroform	70	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,2-Dichloroethene	70	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,3-Dichloropropene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cymene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Dichlorodifluoromethane	1,000	< 0.75	< 0.75 UJ	< 0.75 UJ	< 0.75	< 0.75
Ethyl benzene	700	< 0.75	0.58 J	< 0.75	< 0.75	6.5
Hexachlorobutadiene	1	< 0.75	< 3.8	< 3.8	< 0.75	< 0.75
Isopropylbenzene	700	< 0.75	0.48 J	< 0.75	< 0.75	5.5
Meta/Para Xylene	1,000	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Methyl bromide	10	< 0.75 UJ	< 0.75 UJ	< 0.75 UJ	< 0.75 UJ	< 0.75 UJ
Methyl butyl ketone	300	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl chloride	100	< 0.75	< 0.75 UJ	< 0.75 UJ	< 0.75	< 0.75
Methyl ethyl ketone	300	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl isobutyl ketone	100	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl Tertbutyl Ether	70	0.73 J	< 0.75	< 0.75	< 0.75	< 0.75
Methylene chloride	3	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Naphthalene	300	< 0.75	< 0.75	< 0.75	< 0.75	1.7
n-Butylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	4.4
Ortho Xylene	1,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
p-Chlorotoluene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Propylbenzene	100	< 0.75	0.75 J	0.52 J	< 0.75	11.2
sec-Butylbenzene	100	< 0.75	0.48 J	0.37 J	< 0.75	7
Styrene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Tert Butyl Alcohol	100	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5
tert-Butylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Tetrachloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Toluene	600	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Total Xylenes	1,000	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3
Trans-1,2-Dichloroethene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trans-1,3-Dichloropropene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trichloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trichlorofluoromethane	2,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Vinyl chloride	1	< 0.75	< 0.75 UJ	< 0.75 UJ	< 0.75	< 0.75
TIC VOCs (µg/l)						
Total TICs	500	NA	5.1 JN	1.8 JN	46.9 JN	238.5 JN

Loc ID	NJ Ground Water Quality Criteria	PAR-81-202D-TMW-02	PAR-81-202D-MW-02		PAR-81-202D-TMW-03	PAR-81-202D-TMW-05
Sample ID		PAR-81-202D-TMW-02-6.5	PAR-81-202D-GW-MW-02-7.2	PAR-81-202D-GW-MW-02-2122	PAR-81-202D-TMW-03-6.5	PAR-81-202D-TMW-05-6.5
Sample Date		11/1/2017	1/16/2018	1/16/2018	11/1/2017	11/1/2017
Filtered		Total	Total	Total	Total	Total
Semivolatile Organic Compounds (µg/l)						
1,2,4-Trichlorobenzene	9	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
1,2-Dichlorobenzene	600	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
1,2-Diphenylhydrazine	20	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
1,3-Dichlorobenzene	600	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
1,4-Dichlorobenzene	75	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
2,4,5-Trichlorophenol	700	< 12	< 2.9	< 2.9	< 2.8	< 6
2,4,6-Trichlorophenol	20	< 4	< 0.96	< 0.97	< 0.93	< 2
2,4-Dichlorophenol	20	< 4	< 0.96	< 0.97	< 0.93	< 2
2,4-Dimethylphenol	100	< 20	< 4.8	< 4.9	< 4.6	< 10
2,4-Dinitrophenol	40	< 32	< 7.7	< 7.8	< 7.4	< 16
2,4-Dinitrotoluene	10	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
2,6-Dinitrotoluene	10	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
2-Chloronaphthalene	600	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
2-Chlorophenol	40	< 8	< 1.9	< 1.9	< 1.9	< 4
2-Methylnaphthalene	30	< 4	1.9	1.2 J	< 0.93	53.3 J-
2-Methylphenol	100	< 4	< 0.96	< 0.97	< 0.93	< 2
2-Nitroaniline	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
2-Nitrophenol	100	< 8	< 1.9	< 1.9	< 1.9	< 4
3,3'-Dichlorobenzidine	30	< 12	< 2.9	< 2.9	< 2.8	< 6 UJ
3-Nitroaniline	100	< 8	< 1.9	< 1.9	< 1.9	< 4 UJ
4,6-Dinitro-2-methylphenol	1	< 20	< 4.8	< 4.9	< 4.6	< 10
4-Bromophenyl phenyl ether	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
4-Chloro-3-methylphenol	100	< 4	< 0.96	< 0.97	< 0.93	< 2
4-Chloroaniline	30	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
4-Chlorophenyl phenyl ether	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
4-Nitroaniline	5	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
4-Nitrophenol	100	< 20	< 4.8	< 4.9	< 4.6	< 10
Acenaphthene	400	< 4	0.22 J	0.23 J	< 0.93	9.6 J-
Acenaphthylene	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Anthracene	2,000	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Benidine	20	< 120	< 28.7	< 29.1	< 27.8	< 60 UJ
Benzo(a)anthracene	0.1	1.4 J	< 0.96	< 0.97	< 0.93	< 2 UJ
Benzo(a)pyrene	0.1	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Benzo(b)fluoranthene	0.2	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Benzo(ghi)perylene	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Benzo(k)fluoranthene	0.5	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Benzyl alcohol	2,000	< 8	< 1.9	< 1.9	< 1.9	< 4 UJ
Bis(2-Chloroethoxy)methane	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Bis(2-Chloroethyl)ether	7	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Bis(2-Chloroisopropyl)ether	300	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Bis(2-Ethylhexyl)phthalate	3	< 4	0.21 J	< 0.97	< 0.93	< 2 UJ
Butyl benzyl phthalate	100	< 4	0.13 J	< 0.97	< 0.93	< 2 UJ
Carbazole	100	< 4	0.12 J	< 0.97	< 0.93	< 2 UJ
Chrysene	5	1.3 J	< 0.96	< 0.97	< 0.93	< 2 UJ
Cresol	NLE	< 4	< 0.96	< 0.97	< 0.93	< 2
Dibenz(a,h)anthracene	0.3	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Dibenzofuran	100	< 4	0.35 J	0.27 J	< 0.93	< 2 UJ
Diethyl phthalate	6,000	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Dimethyl phthalate	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Di-n-butylphthalate	700	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Di-n-octylphthalate	100	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Fluoranthene	300	1.7 J	< 0.96	< 0.97	0.19 J	1.2 J
Fluorene	300	< 4	0.41 J	0.31 J	< 0.93	14.2 J-
Hexachlorobenzene	0.02	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Hexachlorobutadiene	1	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Hexachlorocyclopentadiene	40	< 8	< 1.9	< 1.9	< 1.9	< 4 UJ
Hexachloroethane	7	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Indeno(1,2,3-cd)pyrene	0.2	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Isophorone	40	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Naphthalene	300	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
Nitrobenzene	6	< 8	< 1.9	< 1.9	< 1.9	< 4 UJ
N-Nitrosodimethylamine	0.8	< 8	< 1.9	< 1.9	< 1.9	< 4 UJ
N-Nitroso-di-n-propylamine	10	< 4	< 0.96	< 0.97	< 0.93	< 2 UJ
N-Nitrosodiphenylamine	10	< 8	< 1.9	< 1.9	< 1.9	< 4 UJ
Pentachlorophenol	0.3	< 32	< 7.7	< 7.8	< 7.4	< 16
Phenanthrene	100	< 4	0.29 J	0.24 J	< 0.93	25.9 J-
Phenol	2,000	< 4	< 0.96	< 0.97	< 0.93	< 2
Pyrene	200	1.6 J	< 0.96	< 0.97	0.19 J	2.2 J
TIC SVOCs (µg/l)						
Total TICs	500	98.3 JN	NA	4.2 J	12.6 JN	967.3 JN

Footnote:

- 1) All historical data collected prior to 2013 are reported as provided by others.
- 2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.
- 3) NLE = no limit established.
- 4) ND = not detected in any background sample, no background concentration available.
- 5) Bold chemical detection
- 6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.

E (or ER) = Estimated result.

B = Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

D = Results from dilution of sample.

R = Rejected, data validation rejected the results.

J-DL = Elevated sample detection limit due to difficult sample matrix.

U = non-detect, i.e. not detected at or above this value.

JN = Tentatively identified compound, estimated concentration.

U-DL = Elevated sample detection limit due to difficult sample matrix.

UJ = The compound was not detected; however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

J+ = The result is an estimated quantity, but the result may be biased high.

J = estimated detected value due to a concentration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

J- = The result is an estimated quantity, but the result may be biased low.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

a) DELETE THIS NOTE BEFORE GOING FINAL: Refer to the NJDEP Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010) and the NJDEP Health Based and Ecological Screening Criteria for Petroleum Hydrocarbons (Version 4.0, August 9, 2010) to determine the category of tank being investigated and the appropriate cleanup standards or screening levels for that category of tank.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria

####

NJDEP Interim Specific GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria. A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

NJDEP Interim Generic GWQC values are presented for the NJ GWQS where there is not a XXXXX or a NJDEP Interim Specific GWQC. Available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

10) Criteria action level source document and web address.

- The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010

<http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf>

Attachment A

Correspondence:

1. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, *Supplemental Unregulated Heating Oil Tank (UHOT) Work Plan, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. October 13.
2. Department of the Army. 2017. *Supplemental Unregulated Heating Oil Tank (UHOT) Work Plan, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. August 15.
3. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *Request for No Further Action at Multiple Parcel 79 Storage Tanks Site Investigation Report Addendum dated May 2017, Fort Monmouth, Oceanport, Monmouth County*. May 8.
4. Department of the Army. 2017. *Parcel 79 Storage Tanks Site Investigation Report Addendum dated February 2017, Fort Monmouth, Oceanport, Monmouth County*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. February 8.
5. Department of the Army. 2016. *Response to NJDEP's 25 August 2015 Comments on the April 2015 underground Storage Tanks within ECP Parcel 79, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. February 10.
6. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Underground Storage Tanks Within ECP Parcel 79 dated April 2015, Fort Monmouth, Oceanport, Monmouth County*. August 25.
7. Department of the Army. 2015. *Underground Storage Tanks within Parcel 79, Fort Monmouth, NJ*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 22.



State of New Jersey

CHRIS CHRISTIE
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Northern Field Operations
7 Ridgedale Avenue
Cedar Knolls, NJ 07927
Phone #: 973-631-6401
Fax #: 973-656-4440

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

October 13, 2017

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

Re: Supplemental Unregulated Heating Oil Tank Work Plan
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (Department) has completed review of the Supplemental Unregulated Heating Oil Tank Work Plan (UST Workplan). The UST Workplan included proposal for further investigation(s) at various Underground Storage Tank (UST) locations. The Department offers the following comments:

- **UST 142B, UST 202A, UST 202D** – The proposal to install monitor wells (MWs) is approved. Please ensure that all approved sampling methodologies are utilized. Please also document field observations, including the presence of free product and/or sheen in any of the MWs. Please note that the proposal to install additional MW, as needed, is also approved as this may assist in further delineating the extent of ground water contamination.
- **UST 211** – Further investigation is approved as proposed. However, the Department recommends installing one temporary well south of boring locations SCREEN 5 and SCREEN 6.
- **UST 228B** – Further investigation is approved as proposed. Based on the findings from previous investigation(s) and subsequent sampling results (soils and ground water), the Department may recommend removing the UST.
- **UST 444** – The installation of borings (6), temporary wells (3) and permanent monitor wells (3) is approved. However, as other USTs were present in the area, please ensure that results from UST 444 and other USTs' results are not co-mingled.
- **UST 490** – Further investigation is approved as proposed. However, please indicate if any previous soil remediation in the form of soil removal was performed when this UST was removed in 1990 or thereafter.
- **UST 750J, UST 800-12, UST 800-20, UST 884, UST 906A and UST 3035** – Further investigations are approved as proposed at these locations.

Please submit all results of the findings to my attention for review. If possible, please have each UST findings, tables, figures and maps individually prepared. Thank you and please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to be 'A.J. Joshi', enclosed within a circular stamp or seal.

A.J. Joshi

C: James Moore, USACE
Rich Harrison, FMERA
Joe Fallon, FMERA
Joe Pearson, Calibre
File



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

15 August 2017

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Northern Bureau of Field Operations
7 Ridgedale Avenue
Cedar Knolls, NJ 07927

**SUBJECT: Supplemental Unregulated Heating Oil Tank (UHOT) Work Plan
Fort Monmouth, New Jersey
PI G000000032**

Figures:

- Figure 1 – UHOT Locations
- Figure 2 – UST 142B Sample Location
- Figure 3 – UST 202A and UST 202D Sample Locations
- Figure 4 – UST 211 Sample Locations
- Figure 5 – UST 228B Sample Location
- Figure 6 – UST 444 Sample Locations
- Figure 7 – UST 490 Sample Locations
- Figure 8 – UST 750J Sample Location
- Figure 9 – UST 800-12 Sample Locations
- Figure 10 – UST 800-20 Sample Locations
- Figure 11 – UST 884 Sample Locations
- Figure 12 – UST 906A Soil Sample Locations
- Figure 13 – UST 906A Groundwater Sample Locations
- Figure 14 – UST 3035 Sample Locations

Tables:

- Table 1 – Sampling Summary
- Table 2 – UST 906A Soil Sample Results
- Table 3 – UST 906A Groundwater Sample Results

Attachments:

- A. Groundwater Flow Direction Maps

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this Work Plan to describe the proposed sampling and analyses activities to support environmental investigations at select unregulated heating oil tanks (UHOTs; also referred to as underground storage tanks [USTs] in this submittal) at FTMM (Figure 1).

The UHOTs described in this Work Plan are being evaluated in accordance with the New Jersey Administrative Code (NJAC) 7:26E *Technical Requirements for Site Remediation*. Most of these UHOTs require a remedial investigation (RI) in accordance with NJAC 7:26E-4.3 for delineation of an identified release of fuel oil constituents in groundwater. However, additional USTs have been included in this Work Plan that only require site investigation (SI) soil or groundwater sampling (NJAC 7:26E-3.4 or -3.5) to determine if a release has occurred, as designated below:

- UST 142B (SI)
- UST 202A (SI)
- UST 202D (RI)
- UST 211 (RI)
- UST 228B (SI)
- UST 444 (RI)
- UST 490 (RI)
- UST 750J (SI)
- UST 800-12 (RI)
- UST 800-20 (RI)
- UST 884 (RI)
- UST 906A (RI)
- UST 3035 (SI)

Specific data needs and proposed sampling at each UHOT site are described in the subsections below. Groundwater flow directions in the area where delineation in groundwater is required are generally not well established due to the distances to other nearby monitor wells. Therefore, regional groundwater flow directions from previous documents (Attachment A) were used as a basis for initial planning of groundwater sampling at each site.

The proposed groundwater assessment strategy includes a combination of field screening and groundwater sampling and analysis to delineate the groundwater plume. For a typical UHOT site without any previous plume assessment, Geoprobe soil borings will be placed in a ring around the former tank site, and each boring will be advanced to a depth below the shallow groundwater. Field screening using a photoionization detector (PID) and visual observation of the Geoprobe soil cores will be used to identify and assess areas impacted by fuel oil downgradient of the source area. Previous Geoprobe assessments at FTMM have successfully identified fuel oil contamination in areas downgradient of former UHOTs using these field screening techniques. The field screening results will be used to verify the contaminant migration direction (and by implication, the groundwater flow direction) for each UHOT site. Temporary groundwater monitoring wells will then be placed within and outside of the plume at each tank site using a Geoprobe, and the groundwater will be sampled to verify the nature and extent of groundwater contamination. Following receipt of analytical data from the temporary wells, permanent monitoring wells will be installed to establish a monitoring network with a minimum of three wells at each site: a source area well near the former tank site, a well downgradient of the source but within the plume, and a downgradient sentry well beyond the plume. Select existing monitoring wells will also be used for water level measurements to complement the monitoring network. All new permanent monitoring wells and the existing monitoring wells to be used for water level measurements will be surveyed by a New Jersey-licensed surveyor in accordance with the Sampling and Analysis Plan (SAP; Reference 23).

Sampling and analytical procedures will follow the protocols established for previous FTMM Work Plan submittals (Reference 24). All Site personnel will be required to read, understand, and comply with the safety guidelines in the Accident Prevention Plan (APP) including the Site Health and Safety Plan (SHASP), which is included as Appendix A of the APP (Reference 25). The detailed field procedures to be used for the activities described in this sampling plan are described in the SAP (Reference 23). Please let me know if you need these or any other documents referred to in this Work Plan to be sent to you.

Specific sampling and analytical requirements are summarized in Table 1, and are described for each UHOT in the subsections below.

1. UST 142B

UST 142B was a steel 550-gallon No. 2 fuel oil UST that was removed in July 1994, along with approximately 30 cubic yards of contaminated soil, as presented in Attachment H of *USTs Within ECP Parcel 79* (Reference 2). Subsequently, NJDEP required a groundwater investigation to be performed (Reference 13); a temporary well was installed, sampled and abandoned in August 2016. Multiple polynuclear aromatic hydrocarbons (PAHs) were detected in the groundwater sample, which was attributed to sample turbidity rather than a release of fuel oil to groundwater (as reported in Reference 10). NJDEP (Reference 22) then recommended resampling using a method to reduce turbidity due to the high concentrations for PAHs detected.

To address this data need, a 2-inch diameter permanent monitoring well will be installed at the former UST 142B tank location, as shown on Figure 2. This approach is expected to result in a low-turbidity groundwater sample without PAH exceedances. The well will be installed within a Geoprobe boring and will be completed with a 10-foot well screen to approximately 7 feet (ft) below the water table (estimated at approximately 4 ft below ground surface [bgs]). The well will be developed to meet the criteria specified in NJDEP's most recent *Field Sampling Procedures Manual*. Low-flow sampling methods will be used to sample this well and the sample will be analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) in accordance with the requirements for No. 2 fuel oil in Table 2-1 of the NJAC 7:26E *Technical Requirements for Site Remediation*. The Field Geologist will note any indications of fill within the soil column such as cinders, coal, or other debris. A letter report will be prepared for UST 142B that either requests a No Further Action (NFA) determination or recommends additional investigation or action, as warranted from the analytical data.

2. UST 202A

UST 202A was a fiberglass 1,000-gallon heating oil UST that was removed in October 2001, along with an unspecified quantity of contaminated soil, as presented in Attachment J of *USTs Within ECP Parcel 79* (Reference 2). NJDEP (Reference 13) subsequently required a groundwater investigation for the UST 202A and UST 202D area. One temporary well and two existing permanent wells were sampled in May and August 2016 (Reference 10). NJDEP then recommended installation of a permanent well nearby to assess UST 202D (Reference 22); at the same time, NFA was not approved for UST 202A. Additional data are needed to delineate groundwater contamination associated with UST 202A and to delineate groundwater contamination at nearby UST 202D (described in Section 3 below).

To address the UST 202A data need, one temporary monitoring well will be installed at the former UST 202A tank location, as shown on Figure 3. The well will be installed within a Geoprobe boring and will be completed with a 5-foot well screen to approximately 4 ft below the water table (estimated at approximately 2 ft bgs). This well will be sampled and the sample will be analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. The Army may also install and sample additional permanent wells based on the temporary well results. A letter report will be prepared for UST 202A that either requests a No Further Action (NFA) determination or recommends additional investigation or action.

3. UST 202D

UST 202D was a steel 500-gallon heating oil UST that was removed in May 2005 along with approximately 20 cubic yards of contaminated soil (Attachment L of Reference 2). A temporary well was sampled at the former UST 202D location in June 2011; benzene (1.61 µg/L) and 2-methylnaphthalene (109 to 233 µg/L) were detected at concentrations greater than NJDEP Ground Water Quality Criteria (GWQC). NJDEP subsequently required a groundwater investigation for UST 202D (Reference 13). One temporary well and two existing permanent wells were sampled in May and August 2016 (Reference 10). NJDEP then recommended installation of a permanent well to assess UST 202D with low-flow sampling and analysis for VOCs and SVOCs (Reference 22).

To address this data need, one permanent monitoring well and at least three temporary wells will be installed at the former UST 202D tank location, as shown on Figure 3. Recent temporary well results (Reference 10) suggest that fuel oil constituents have not migrated more than approximately 50 ft downgradient of the former tank location (Figure 3). Therefore, two additional downgradient temporary wells and one field screening boring will be installed for verification at offset locations approximately 50 feet downgradient of the former tank location to verify that the plume was not missed. A third temporary well will be installed at the former UST 202A location as described in Section 2.0 above. These temporary wells will be installed within a Geoprobe boring and will typically be completed with a 5-foot well screen to approximately 4 ft below the water table (estimated to be 2 ft bgs). Samples will be collected from the temporary wells for VOCs and SVOCs analyses, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. Additional temporary wells may be installed as needed based on the groundwater sampling described above.

It is anticipated that existing well M16MW02 will be utilized as a downgradient sentry monitor well for the UST 202D site. New well 202MW02 will be developed. Both new well 202MW02 and existing well M16MW02 will be sampled using low-flow methods; the samples will be analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from monitoring wells 202MW01, 202MW02, M16MW01, and M16MW02 (Figure 3) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 202D.

4. UST 211

UST 211 was a fiberglass 2000-gallon No. 2 fuel oil UST that was removed in November 2001. As presented in Attachment F.1 of Reference 8, one closure soil sample contained 3,968 mg/kg Total Petroleum Hydrocarbons (TPH). A temporary well was sampled at the former UST 211 location in August 2016; multiple analytes were detected at concentrations greater than the GWQCs including 1,2,4-trimethylbenzene (543 $\mu\text{g/L}$), benzene (2.8 $\mu\text{g/L}$), naphthalene (1,450 $\mu\text{g/L}$), 2-methylnaphthalene (6,680 $\mu\text{g/L}$), total VOC Tentatively Identified Compounds (TICs; 1,302 $\mu\text{g/L}$) and total SVOC TICs (14,322 $\mu\text{g/L}$) (Attachment D of Reference 8). NJDEP stated that additional remedial efforts were required for this site (Reference 19). Additional data are needed to delineate groundwater contamination at UST 211.

To address this data need, multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed near the former UST 211 tank location, as shown on Figure 4. Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 4) will be advanced at locations around the former UST 211 location to provide field verification of the groundwater flow direction, which is assumed to be towards the north-northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be approximately 12 ft bgs based on previous drilling at PAR-72-211-TMW-01. The field screening borings will be logged visually and with a PID, which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to validate the locations for subsequent temporary wells to assist with delineating the groundwater plume.

A total of four additional temporary monitor wells are proposed at UST 211. A line of three temporary monitor wells (TMW-02 through TMW-04) will be installed along Russel Avenue (approximately 60 ft downgradient of the tank) to verify the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-05) will be installed further downgradient to establish the downgradient extent of the plume prior to installing a downgradient permanent sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings (like SCREEN7 on Figure 4) may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5-foot well screen to approximately 4 ft below the water table (estimated at approximately 12 ft bgs). Samples will be collected from each temporary well and analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Based on the analytical results of the temporary well samples, three permanent monitoring wells will be installed for groundwater monitoring: one at the source area (MW-01); one within the plume (MW-02); and one downgradient sentry location (MW-03). The new wells will be developed and sampled using low-flow methods, and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells, and from nearby wells 200MW01 (located south of Building 216; see Attachment A), 200MW06 (located north of Building 228; Figure 5), and B5MW05B (located southeast of Building 261), to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 211.

5. UST 228B

UST 228B is a steel 1,000-gallon No. 2 fuel oil UST that was partially uncovered in December 2010, and then re-buried and left in place. Therefore, UST 228B has not been administratively closed. The Army has conducted soil sampling along the tank to determine if a release has occurred at UST 228B, and the results were described in Attachment G.4 of Reference 8. One soil sample from the 7 to 7.5 foot interval of boring PAR-72-228-SB-03 had a 2-methylnaphthalene concentration of 23.9 mg/kg which exceeded the NJDEP Impact to Ground Water (IGW) screening level, but not the Residential Direct Contact Soil Remediation Standard (RDCSRS). Synthetic Precipitation Leachate Procedure (SPLP) analysis for 2-methylnaphthalene was not performed (as prescribed by NJDEP guidance) on this soil sample due to exceedance of holding times. However, a temporary well located about 10 ft downgradient of boring PAR-72-228-SB-03 was sampled and 2-methylnaphthalene was notably absent in this sample. NJDEP agreed that additional remedial efforts were required (Reference 19). Further evaluation of the soil boring log for PAR-72-228-SB-03 indicates that groundwater was encountered at approximately 7 ft bgs, and therefore this sample may have been from the saturated zone and, if so, IGW screening levels would not apply, and there would be no soil exceedances at this site. Additional data, as described below, are needed to assess the potential for unsaturated soil to exceed the SPLP criteria for 2-methylnaphthalene.

To address this data need, one Geoprobe soil boring (SB-04) will be advanced at the location of the previous boring PAR-72-228-SB-03 where the IGW screening level for 2-methylnaphthalene was exceeded (Figure 5). An unsaturated soil sample (from above the water table) will be collected from approximately 7 to 7.5 ft bgs for 2-methylnaphthalene analysis using the SPLP procedure. A letter report will be prepared for UST 228B that reports the results of this additional investigation.

6. UST 444

UST 444 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in January 2010; an unreported quantity of contaminated soil was removed the following month (Attachment U of Reference 2). NJDEP required a groundwater investigation for the UST 444 area (Reference 13). A temporary well was sampled at the former UST 444 location in August 2016; multiple analytes were detected at concentrations greater than the GWQCs, including benzene (1.7 J $\mu\text{g/L}$), 2-methylnaphthalene (30.6 J $\mu\text{g/L}$), and total SVOC TICs (1,758 $\mu\text{g/L}$) (Reference 10). NJDEP commented that further investigation was necessary for this site (Reference 22). Additional data are needed to delineate groundwater contamination at UST 444.

To address this data need, multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 444 tank location, as shown on Figure 6. Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 6) will be advanced at locations around the former UST 444 location to determine the groundwater flow direction which is assumed to be towards the north based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be at approximately 6 ft bgs based on previous drilling at PAR-79-MP-TMW-02. The field screening borings will be logged visually and with a PID, which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to verify the field locations for subsequent temporary wells to assist with delineating the groundwater plume.

A total of three additional temporary monitor wells are proposed at UST 444. A line of two additional temporary monitor wells (TMW-01 and TMW-02) will be installed approximately 100 ft downgradient of the tank to verify the direction and lateral boundaries of the plume. Results from a temporary well (PAR-79-MP-TMW03) installed in August 2016 for another former UST investigation will be used to complete this line of temporary wells (there were no exceedances of GWQC in this well). A third temporary monitor well (TMW-03) will be installed approximately 100 feet farther downgradient to establish the downgradient extent of the plume prior to installing a permanent downgradient sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will be completed with a 5-foot well screen to approximately 4 feet below the water table (estimated at approximately 6 ft bgs). Each temporary well will be sampled and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed for groundwater monitoring at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; therefore the actual locations may be adjusted from those shown on Figure 6 based on these data. The new wells will be developed and sampled using low-flow methods, and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby well 430MW-1 (Figure 6) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 444.

7. UST 490

UST 490 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in May 1990 (Attachment CC of Reference 2). NJDEP subsequently required additional characterization of groundwater contamination for the UST 490 area (Reference 13). Multiple rounds of Geoprobe soil sampling performed from 2005 through 2016 verified the presence of petroleum contaminated soils near the former UST location. Groundwater was sampled in August 2016 from a temporary well (PAR-79-490-TMW-03) located downgradient of the former UST location and just south of Building 490; 2-methylnaphthalene (63.5 µg/L) and total SVOC TICs (1,323 µg/L) were detected at concentrations greater than the GWQCs (Reference 10). NJDEP commented that additional groundwater investigations must also include analyses for PAHs (Reference 22). As described below, additional data are needed to estimate the nature and extent of groundwater contamination at UST 490.

Previous sampling results have been used to select additional field screening borings, temporary monitoring wells and permanent monitoring wells which will be installed downgradient of the former UST 490 location (Figure 7). Field screening Geoprobe borings will be advanced at two locations (SCREEN1 and SCREEN2; Figure 7) south of Building 490 to determine the groundwater flow direction which is assumed to be towards the southeast based on regional groundwater maps (Attachment A). The field screening borings will be advanced past the water table, which is assumed to be at approximately 3 ft bgs based on previous drilling at PAR-79-490-TMW-03. The field

screening borings will be logged visually and with a PID, which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the field locations of temporary wells to be installed to delineate the groundwater plume.

A total of four additional temporary monitor wells are proposed at UST 490. Two temporary monitor wells (TMW-04 and TMW-05) will be installed approximately 50 ft from the previous PAR-79-490-TMW-03 location to locate the lateral (cross-gradient) boundaries of the plume. Two temporary monitor wells (TMW-06 and TMW-07) will be installed approximately 70 and 120 ft farther downgradient from Building 490 to establish the downgradient extent of the plume, prior to installing a permanent downgradient sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5-ft well screen to approximately 4 ft below the water table (estimated at approximately 3 ft bgs). Samples will be collected from each temporary well for VOC and SVOC analyses, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Existing well 490MW01 will be maintained as a source area well at the former UST 490 location. Two new permanent monitoring wells will be installed for groundwater monitoring within the plume (MW-02) and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; therefore the actual locations may be adjusted from those shown on Figure 7. The two new wells will be developed. These two new wells and existing well 490MW01 will be sampled using low-flow methods and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells, from the new well at former UST 142B (Figure 2), and from existing well M16MW01 (Figure 3) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 490.

8. UST 750J

UST 750J was a steel 1,000-gallon heating oil UST that was removed in August 2009, along with approximately 24 cubic yards of contaminated soil (Attachment M of Reference 6). NJDEP commented that a groundwater investigation was warranted (Reference 21).

One temporary monitoring well (TMW-01) will be installed at the former UST 750J tank location (Figure 8). The well will be installed within a Geoprobe boring and will be completed with a 5 foot well screen to approximately 4 ft below the water table (approximately 6.5 ft bgs). A sample from this well will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. A letter report will be prepared for UST 750J that either requests a NFA determination or recommends additional investigation or action.

9. UST 800-12

UST 800-12 was a steel 1,000-gallon No. 2 fuel oil UST located in the parking lot of the former First Atlantic Credit Union (Building 1006). This UST was removed in May 2003 along with

approximately 18 cubic yards of contaminated soil (Attachment J of Reference 3). NJDEP commented that a groundwater investigation for the UST 800-12 area was necessary (Reference 15). Temporary well ARE-800-TMW-07 was installed and sampled at the former UST 800-12 location in August 2016; 2-methylnaphthalene (148 µg/L) and total SVOC TICs (510 µg/L) were detected at concentrations greater than the GWQCs (Reference 9). Based on these groundwater results, NJDEP (Reference 20) commented that further groundwater investigation was necessary. Further delineation of groundwater contamination at UST 800-12 will be performed as described below.

Multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 800-12 tank location (Figure 9). Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 9) will be advanced at locations around the former UST 800-12 location to determine the local groundwater flow direction, which is assumed to be towards the north-northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be approximately 8.5 ft bgs based on previous drilling at ARE-800-TMW-07 (Reference 9). The field screening borings will be logged visually and the soils will be monitored with a PID which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the field locations for temporary wells to assist with delineating the groundwater plume.

A total of four temporary monitor wells are proposed at UST 800-12. A line of three temporary monitor wells (TMW-01 through TMW-03) will be installed approximately 80 ft downgradient of the location of the former tank to determine the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-04) will be installed approximately 80 ft farther downgradient to establish the downgradient extent of the plume; this temporary well will be installed and sampled prior to installing a permanent downgradient sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5 foot well screen to approximately 4 ft below the water table (approximately 8.5 ft bgs). Each temporary well will be sampled and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; the actual locations may be adjusted from those shown on Figure 9 based on these data. The new permanent wells will be developed and sampled using low-flow methods. The groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby existing wells 812MW05 and 812MW13 (Figure 2 of Attachment A) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 800-12.

10. UST 800-20

UST 800-20 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in July 2003 along with approximately 80 cubic yards of contaminated soil (Attachment O of Reference 3). NJDEP commented that a groundwater investigation for the UST 800-20 area was necessary (Reference 15). A temporary well was sampled at the former UST 800-20 location in August 2016; 1,1,2-trichloroethane (5.5 µg/L), 2-methylnaphthalene (41 µg/L) and total SVOC TICs (724 µg/L) were detected at concentrations greater than the GWQCs (Reference 9). Based on these groundwater results, NJDEP commented that additional groundwater investigation was necessary for this site (Reference 20). Further delineation of groundwater contamination at UST 800-20 will be performed as described below.

Multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 800-20 tank location (Figure 10). Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 10) will be advanced at locations around the former UST 800-20 location to determine the local groundwater flow direction, which is assumed to be towards the north-northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table which is assumed to be at approximately 7 ft bgs based on previous drilling at ARE-800-TMW-08 (Reference 9). The field screening borings will be logged visually and with a PID which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the locations for temporary wells to assist with delineating the groundwater plume.

A total of four additional temporary monitor wells are proposed at former UST 800-20. A line of three temporary monitor wells (TMW-01 through TMW-03) will be installed approximately 60 ft downgradient of the former tank to verify the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-04) will be installed approximately 80 ft farther downgradient to establish the downgradient extent of the plume, prior to installing a downgradient permanent sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5 foot well screen approximately 4 ft below the water table (approximately 7 ft bgs). Samples from each temporary well will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; the actual locations may be adjusted from those shown on Figure 10 based on these data. The new wells will be developed and sampled using low-flow methods. The groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells, and from nearby existing wells 812MW05 and 812MW13 (Figure 2 of Attachment A), to determine the local

groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 800-20.

11. UST 884

UST 884 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in October 2003 along with an unspecified amount of contaminated soil (Attachment U of the Reference 3). NJDEP commented that a groundwater investigation was necessary for the UST 884 area (Reference 15). A temporary well was sampled at the former UST 884 location in April 2016; 2-methylnaphthalene (150 µg/L) and total VOC TICs (981 µg/L) were detected at concentrations greater than the GWQCs (Reference 9). Based on these groundwater results, NJDEP commented additional groundwater investigation was necessary (Reference 20). Further delineation of groundwater contamination at UST 884 will be performed as described below.

Multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 884 tank location (Figure 11). Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 11) will be advanced at locations around the former UST 884 location to determine the local groundwater flow direction, which is assumed to be towards the northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be at approximately 6 ft bgs based on previous drilling at ARE-800-TMW-05 (Reference 9). The field screening borings will be logged visually and with a PID which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the locations for temporary wells to assist with delineating the groundwater plume.

A total of four additional temporary monitor wells are proposed at UST 884. A line of three temporary monitor wells (TMW-01 through TMW-03) will be installed approximately 60 ft downgradient of the tank to verify the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-04) will be installed approximately 60 ft farther downgradient to establish the downgradient extent of the plume, prior to installing a downgradient permanent sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5-foot well screen to approximately 4 ft below the water table (approximately 6 ft bgs). Samples will be collected from each temporary well and analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; based on these data, the actual locations may be adjusted from those shown on Figure 11. The new wells will be developed, and sampled using low-flow methods. The samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby existing wells 800MW01 and 800MW02 (located west and north of Building 800), to determine the

local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 884.

12. UST 906A

UST 906A was a steel 1,000-gallon No. 2 fuel oil UST that was removed in June 1990 (Attachment D of Reference 1). NJDEP did not approve the Army's NFA request for UST 906A due to elevated TPH levels in soil and 2-methylnaphthalene in groundwater at a concentration greater than the GWQC (Reference 14). The Army subsequently prepared a Work Plan for the UST 906A area (Reference 4), which was approved by NJDEP (Reference 16).

Field work at the UST 906A site was performed in April, May, and August 2016 and consisted of Geoprobe soil sampling near the former tank area and temporary well sampling from within and downgradient of the former UST 906A tank area. Soil sample results are presented in Table 2 and Figure 12, and as indicated, Extractable Petroleum Hydrocarbons (EPH) concentrations were greater than the NJDEP cleanup criteria of 5,100 mg/kg are present near the former tank area. The soil EPH exceedance has not been delineated in the northwest direction from the former tank site. One soil sample from boring PAR-68-SB-04 (Figure 12) was also analyzed for SVOCs and 2-methylnaphthalene in this sample (35 mg/kg) exceeded the NJDEP IGW screening level.

Groundwater analyses are presented in Table 3 and Figure 13. The groundwater sample at PAR-68-TMW-01 from the former UST 906A source area exceeded the GWQC for 1,2,2-trichloroethane (present at 4.6 µg/L) and total SVOC TICs (present at 2,719 µg/L). The groundwater sample further downgradient at PAR-68-TMW-02 exceeded the GWQC for 1,2,4-trimethylbenzene (102 µg/L), 2-methylnaphthalene (386 µg/L) and total SVOC TICs (2,319 µg/L). Based on these groundwater results, it is apparent that a groundwater plume associated with UST 906A has migrated in the north-northwest direction below Building 906 and farther downgradient an unknown distance. Therefore, additional data, as described below, are needed to delineate groundwater contamination at former UST 906A.

Multiple soil borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 906A tank location, as shown on Figures 12 and 13. Field screening Geoprobe borings (locations PAR-68-TMW-2-1 through TMW-2-4 shown on Figure 13) were previously used in April 2016 to verify the north-northwest direction of plume migration; therefore, additional field screening borings are not proposed for the future work.

One additional soil boring (SB-07 on Figure 12) will be advanced to the northwest of the former UST 906A excavation for collection of soil samples to delineate the EPH exceedances in this direction. Three soil samples will be collected from this boring to characterize the soil with depth: one from above, one from within, and one from below the most contaminated soil interval within the boring. The soil samples will be analyzed for EPH and the sample with the highest field indications of contamination will be analyzed for the SVOCs 2-methylnaphthalene and naphthalene, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

A total of three temporary monitoring wells will be installed. A line of two temporary monitoring wells (TMW-03 and TMW-04 on Figure 13) will be installed approximately 100 ft downgradient of the tank to verify the lateral boundaries of the plume. The previous temporary well PAR-68-TMW-02 established the plume migration direction. An additional temporary monitoring well (TMW-05)

will be installed approximately 70 ft further downgradient to verify the downgradient extent of the plume, prior to installing a permanent downgradient sentry well. The borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5 foot well screen to approximately 4 ft below the water table (approximately 5 ft bgs). Groundwater samples will be collected from each temporary well and will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at: the source area (MW-01, same location as new soil boring SB-07); within the plume (MW-02, same location as previous temporary well PAR-68-TMW-02); and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data from the new temporary wells have been evaluated; the actual locations may be adjusted from those shown on Figure 13 based on these data. The new wells will be developed and sampled using low-flow methods and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby existing well M12MW14 (Figure 13) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 906A.

13. UST 3035

UST 3035 was a steel 5,000-gallon No. 2 fuel oil UST that was removed in 1989. The location of former UST 3035 is not well documented and has been estimated based on the location of the former boiler room at Building 3035 (Figure 14).

As described in Reference 5, closure soil samples were not collected when former UST 3035 was removed. The SI Report Addendum was submitted to NJDEP along with a request for a NFA determination. NJDEP was unable to approve the NFA request without analytical data (Reference 17) and the Army proposed additional sampling (Reference 7) which was approved by NJDEP (Reference 18) and is the basis of the work described below.

Soil samples will be collected from three borings (SB-01, SB-02, and SB-03) (Figure 14) to support a future NFA request. Two soil samples will be collected from each boring. At each boring, a sample will be collected from approximately 8.0-8.5 ft bgs (or another interval representative of the soil below the removed tank) and from a 6-inch interval just above the water table (approximately 2 ft bgs). One of these two soil samples will be collected from the most contaminated interval encountered based on field evidence (visual, olfactory, or PID screening). If there is no field evidence of petroleum contamination, then the two soil samples will be collected from 8.0-8.5 ft bgs and from just above the water table (approximately 3 ft bgs). Each soil sample will be analyzed for total EPH with additional contingency SVOCs analyses (25 percent) for naphthalene and 2-methylnaphthalene if EPH concentrations exceed 1,000 mg/kg. These soil analyses are consistent with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. A letter report will be prepared for UST 3035 that reports the results of this investigation.

14. SUMMARY

We look forward to your review of this Work Plan and approval or comments. The technical Point of Contact (POC) for this matter is Kent Friesen at (732) 383-7201 or by email at kent.friesen@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

William R. Colvin, PMP, PG, CHMM
BRAC Environmental Coordinator

cc: Ashish Joshi, NJDEP (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)
Cris Grill, Parsons (e-mail)

REFERENCES CITED:

1. Department of the Army. 2015. *Underground Storage Tanks Within Parcel 68, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 14.
2. Department of the Army. 2015. *Underground Storage Tanks Within ECP Parcel 79, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 22.
3. Department of the Army. 2015. *No Further Action Request, Site Investigation Report Addendum for the 800 Area Including, ECP Parcels 55 and 56, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. June 12.
4. Department of the Army. 2016. *Parcel 68 Work Plan Addendum for a Former UST Site, Fort Monmouth, Oceanport, Monmouth County, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. March 2.
5. Department of the Army. 2016. *No Further Action Request, Site Investigation Report Addendum for the Howard Commons Underground Storage Tanks, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 26.
6. Department of the Army. 2016. *No Further Action Request, Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. October 28.
7. Department of the Army. 2016. *Clarification of Underground Storage Tanks at Howard Commons, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. December 6.
8. Department of the Army. 2016. *No Further Action Request, Site Investigation Report Addendum, ECP Parcel 72 Underground Storage Tanks, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. December 13.
9. Department of the Army. 2017. *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. January 23.
10. Department of the Army. 2017. *Request for No Further Action at Multiple Parcel 79 Storage Tank Site Investigation Report Addendum, Fort Monmouth, Oceanport, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. February 8.

11. New Jersey Department of Environmental Protection (NJDEP). 2007. Letter to the Army, RE: *Underground Storage Tank Closure & Remedial Investigation Reports, 800 Area UST No. 9, 800 Area UST No. 12, Fort Monmouth, NJ*. December 31.
12. New Jersey Department of Environmental Protection (NJDEP). 2010. *Protocol for Addressing Extractable Petroleum Hydrocarbons*. Site Remediation Program. Version 5.0. August 9.
13. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Underground Storage Tanks Within ECP Parcel 79 dated April 2015, Fort Monmouth, Oceanport, Monmouth County*. August 25.
14. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Underground Storage Tanks Within ECP Parcel 68, 74, and 77 dated April 2015, Fort Monmouth, Oceanport, Monmouth County*. September 24.
15. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 & 56, Fort Monmouth, Oceanport, Monmouth County*. November 10.
16. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *Parcel 68 Work Plan Addendum and Response to NJDEP's September 24, 2015 Comments on the April 2015 Underground Storage Tanks Within ECP Parcels 68, 74 and 77, Fort Monmouth, New Jersey & Parcel 68 Work Plan Addendum for a Former UST Site (March 2016)*. March 29.
17. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *No Further Action Request Site Investigation Report Addendum for the Howard Commons Underground Storage Tanks dated April 2016, Fort Monmouth, Oceanport, Monmouth County*. November 28.
18. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *Clarification of Underground Storage Tanks at Howard Commons dated December 6, 2016, Fort Monmouth, Oceanport, Monmouth County*. December 20.
19. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *No Further Action Request Site Investigation Report Addendum ECP Parcel 72 Underground Storage Tanks dated December 13, 2016, Fort Monmouth, Oceanport, Monmouth County*. February 7.
20. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum, Fort Monmouth, Oceanport, Monmouth County*. March 16.
21. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *No Further Action Request Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks, Fort Monmouth, Oceanport, Monmouth County*. April 4.

22. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *Request for No Further Action at Multiple Parcel 79 Storage Tanks Site Investigation Report Addendum, Fort Monmouth, Oceanport, Monmouth County*. May 8.
23. Parsons. 2013. *Final Sampling and Analysis Plan, Remedial Investigation/Feasibility Study/Decision Documents, Fort Monmouth, Oceanport, Monmouth County, New Jersey*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, AL. Revision 0. March.
24. Parsons. 2015. *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan for Parcels 28, 38, 39, 49, 57, 61 and 69*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, AL. Revision 1. August.
25. Parsons. 2016. *Final Accident Prevention Plan, Remedial Investigation/Feasibility Study/Decision Documents, Fort Monmouth, Oceanport, Monmouth County, New Jersey*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, AL. Revision 1. November.



State of New Jersey

CHRIS CHRISTIE
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-292-2117

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

May 8, 2017

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

Re: *Request for No Further Action at Multiple Parcel 79 Storage Tanks Site Investigation
Report Addendum*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, received February 10, 2017, prepared by the Department of the Army's Office of Assistant Chief of Staff for Installation Management to present the results of additional sampling efforts at numerous above and underground storage tanks located within Parcel 79. Comments are as follows:

ASTs 1 & 2

Based upon soil and ground water analytical results, it is agreed no further action is necessary.

UST 142B

The request for an NFA for the PAHs found in ground water is not acceptable. The concentrations of benzo(a)anthracene is 85 times the Ground Water Quality Standard (GWQS). The concentration of benzo(a)pyrene is 149 times the GWQS, and benzo(b)fluoranthene is 97 times the GWQS. This location must be resampled using a method to reduce turbidity. Given the high concentrations when compared to samples taken from other UST locations, the Department is concerned these ground water concentrations may be indicative of actual ground water conditions, rather than the result of very turbid samples. A permanent well using low flow sampling methodology may be required to address this issue.

UST 444

Soil boring logs indicated odors and elevated PID readings. In addition, benzene, 2-methylnaphthalene and SVOC TICs exceeded the GWQS. As indicated in the submittal, further investigation at this location is necessary.

USTs 202A & 202D

As previously indicated in an email of April 17, 2017, the installation of a permanent well at a location immediately downgradient of UST 202D is recommended. Required analyses include VOs and SOVCs; the collection of SVOCs should be via low-flow.

UST 490

Ground water samples obtained from this location exceed the GWQS for 2-methylnaphthalene, PAHs, and SVOC TICs. The additional ground water investigations proposed must also include analyses for PAHs.

USTs Requiring No Additional Action

Following review of the referenced information, it is agreed no further action is necessary for the following #2 fuel USTs removed from within Parcel 79, as referenced in the above submittal:

- UST 437
- UST 440
- UST 441
- UST 445
- UST 448
- UST 449
- UST 450
- UST 451

Please contact this office if you have any questions.

Sincerely,



Linda S. Range

C: James Moore, USACE
Rich Harrison, FMERA
Joe Fallon, FMERA
Joe Pearson, Calibre



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. BOX 148
OCEANPORT, NEW JERSEY 07757

08 February 2017

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

**Subject: Request for No Further Action at Multiple Parcel 79 Storage Tanks Site
Investigation Report Addendum
Fort Monmouth, Oceanport, New Jersey
PIG000000032**

Attachments:

- A. Figure 1: Layout of Parcel 79
Figure 2: Parcel 79 Area 75 Sample Locations
Figure 3: Groundwater Sample Locations for Multiple USTs at Parcel 79
Figure 4: Parcel 79 UST 142B Sample Locations
Figure 5: Parcel 79 UST 202A and 202D Sample Locations
Figure 6: Parcel 79 UST 490 Sample Locations
- B. Table 1: Validated Laboratory Data Results for Groundwater, Parcel 79
Table 2: Validated Laboratory Data Results for Soil, Parcel 79
- C. Field Notes
- D. Boring Logs
- E. Analytical Data

Previous Correspondence (not attached):

- 1. Army letter to NJDEP dated 22 April 2015, Subject: *Underground Storage Tanks within Parcel 79 Fort Monmouth, New Jersey.*
- 2. NJDEP letter to the Army dated 25 August 2015, Subject: *Underground Storage Tanks within ECP Parcel 76 dated April 2015 Fort Monmouth.*
- 3. Army letter to NJDEP dated 10 February 2016, Subject: *Response to NJDEP's August 25, 2015 Comments on the April 2015 Underground Storage Tanks within ECP Parcel 79, Fort Monmouth, New Jersey.*
- 4. NJDEP letter to Army dated 30 March 2016, Subject: *Response to NJDEP's August 25, 2015 Comments on the April 2015 Underground Storage Tanks within ECP Parcel 79 and Work Plan Addendum for Former Storage Tank Sites, Fort Monmouth, Oceanport, Monmouth County.*

Dear Ms. Range:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this addendum to present the results of additional field sampling at the two Area 75 former Aboveground Storage Tanks (ASTs; designated as AST-1 and AST-2) and thirteen former Underground Storage Tanks (USTs) 142B, 202A, 202D, 437, 440, 441, 444, 445, 448, 449, 450, 451, and 490, all located within Environmental Condition of Property (ECP) Parcel 79 (Figure 1 of **Attachment A**). These USTs were unregulated heating oil tanks (UHOTs) that were identified as requiring additional sampling of groundwater. The Area 75 ASTs and USTs 202A, 202D, and 490 were also identified as requiring additional soil sampling, as described in the 10 February 2016 Parcel 79 Work Plan Addendum (Correspondence 3) and in the following subsection 1.0, 2.0, and 3.0.

One temporary groundwater monitor well was installed with a Geoprobe[®] rig immediately downgradient of Parcel 79 USTs 142B, 202A, 202D, 437, 440, 441, 444, 445, 448, 449, 450, and 451, and a groundwater sample was collected from each well to determine if a fuel oil release had impacted groundwater. For the Area 75 ASTs, a temporary well was installed immediately downgradient of each former tank. Three temporary wells were installed at UST 490 to delineate the extent of groundwater contamination. Groundwater samples were also collected from three permanent monitor wells (202MW01 at UST 202A, M16MW01 at 202D, and 490MW01 at UST 490). Field sampling for temporary wells was completed on 3, 4, and 5 August 2016. Field sampling for permanent wells was completed on 25 May 2016. All groundwater samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) plus tentatively identified compounds (TICs), in accordance with the requirements for No. 2 Fuel Oil in Table 2-1 of the New Jersey Administrative Code (NJAC) 7:26E Technical Requirements for Site Remediation.

Soil samples were also collected from borings advanced with a Geoprobe[®] rig at the Area 75 ASTs and USTs 202A, 202D, and 490 to assess current concentrations and vertical extent of extractable petroleum hydrocarbons (EPH) in soil. Field sampling was completed on 12 and 13 April 2016. One soil sample from boring PAR-79-490-SB-04 (at UST 490) was also analyzed for the additional contingency SVOC analytes naphthalene and 2-methylnaphthalene due to EPH concentration exceeding 1,000 mg/kg (NJDEP, 2010¹).

It is important to note that the occurrence of polycyclic aromatic hydrocarbons (PAHs) in Parcel 79 groundwater warrants additional explanation. Exceedances of the NJDEP Ground Water Quality Criteria (GWQC) for multiple PAHs occurred at 12 of the 17 temporary wells during the August 2016 sampling. In contrast, none of the seven groundwater samples collected at permanent monitor wells 290MW01, M16MW01, and 490MW01 had any PAH exceedances. Furthermore, another nearby permanent well within Parcel 79 (430MW01; see Figure 3 of **Attachment A**) had no PAHs detected in samples collected in 1995, as reported in Attachment O of Correspondence 1. These relatively low solubility, high molecular weight PAHs such as benzo(a)pyrene have been

¹ NJDEP, 2010. *Protocol for Addressing Extractable Petroleum Hydrocarbons*. Site Remediation Program. Version 5.0. August 9.

encountered at other FTMM locations within surficial soils and fill that are unrelated to fuel oil USTs. Evidence of soil fill including brick and coal fragments were encountered within several Parcel 79 soil borings; please see **Attachment D**. Therefore, the PAH groundwater exceedances at Parcel 79 temporary wells were most likely the result of entrainment of soil resulting in sample turbidity, which is common with temporary well grab groundwater samples. In contrast, fuel oil releases are typically characterized by the specific PAHs naphthalene and 2-methylnaphthalene in groundwater. Therefore, temporary monitor wells with PAH exceedances that were not characteristic of fuel oil (i.e., without signature exceedances of naphthalene and 2-methylnaphthalene) are not considered indicative of a fuel oil release to groundwater.

The locations of the field samples are presented in Figures 1 through 6 of **Attachment A**. The analytical results and exceedances of applicable NJDEP criteria are provided in **Attachment B**. Field notes are provided in **Attachment C**, and boring logs are provided in **Attachment D**. The samples were analyzed by ALS Environmental; analytical data packages are provided in **Attachment E**.

1.0 AREA 75 ABOVE-GROUND STORAGE TANKS

AST-1 and AST-2 were bulk above-ground fuel oil tanks that were removed in 1995 as described in Attachment E of Correspondence 1. Four soil borings were sampled in response to NJDEP comments on the 10 February 2016 Work Plan Addendum (Correspondence 4). Soil samples were analyzed for EPH; additional contingency SVOC analysis for naphthalene and 2-methylnaphthalene was not required due to EPH concentrations not exceeding 1,000 mg/kg (NJDEP, 2010).

Soil analytical results are presented in Table 2 (**Attachment B**). The maximum total EPH concentration encountered in soil was 319 mg/kg, which is below the NJ Residential Direct Contact Soil Remediation Standard (RDCSRS) of 5,100 mg/kg. The results from the soil borings at AST-1 and AST-2 indicate that further soil investigation is not warranted.

Temporary well PAR-79-A75-TMW-01 was installed, sampled, and subsequently abandoned at the location of AST-2, and temporary well PAR-79-A75-TMW-02 was installed, sampled, and subsequently abandoned at the location of AST-1 (see Figure 2 of **Attachment A**). Groundwater was encountered at approximately 3 to 4 feet below ground surface (ft bgs) in the soil borings, and at 4 ft bgs and 9 ft bgs at the two wells; please see **Attachments C and D**. As shown on Table 2 of **Attachment B**, there were seven PAH exceedances of the GWQC (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) in the primary sample and four exceedances (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene) in the duplicate sample at PAR-79-A75-TMW01. There were three exceedances (benzo[a]anthracene, benzo[a]pyrene, and benzo[b]fluoranthene) of the GWQC in the groundwater sample at PAR-79-A75-TMW02. As indicated above, the PAH exceedances are attributable to entrainment of soil resulting in sample turbidity associated with the installation of the temporary wells. None of the groundwater samples collected in May 2016 from permanent monitor wells associated with Parcel 79 had any PAH exceedances. Another nearby permanent well within Parcel 79 (430MW01) had no PAHs detected

in samples collected in 1995. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

2.0 MULTIPLE PARCEL 79 UNDERGROUND STORAGE TANKS

The results of the sampling and analyses are provided below for each of the ten UHOT sites shown on Figures 3 and 4 in **Attachment A**.

UST 142B

UST 142B was a residential fuel oil tank that was removed in 1994 as described in Attachment H of Correspondence 1. Temporary well PAR-79-142-TMW-01 was installed, sampled, and subsequently abandoned (Figure 4 of **Attachment A**). Groundwater was encountered at approximately 7 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, there were seven GWQC exceedances (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene). As previously discussed, the PAH exceedances in this temporary well sample are attributable to entrainment of soil resulting in sample turbidity. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene)

UST 437

UST 437 was a residential fuel oil tank that was removed in 2010 as described in Attachment Q of Correspondence 1. Temporary well PAR-79-MP-TMW-08 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 6 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 440

UST 440 was a residential fuel oil tank that was removed in 2010 as described in Attachment R of Correspondence 1. Temporary well PAR-79-MP-TMW-01 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 5 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, benzo(a)anthracene (0.23 µg/l) and benzo(a)pyrene (0.13 µg/l) slightly exceeded the GWQC (0.1 µg/l) neither of which are indicative of fuel oil. As previously discussed, the PAH exceedances are attributable to entrainment of soil resulting in sample turbidity associated with the installation of the temporary well. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

UST 441

UST 441 was a residential fuel oil tank that was removed in 2010 as described in Attachment D of Correspondence 1. Temporary well PAR-79-MP-TMW-07 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 8 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**,

benzo(a)anthracene (0.34 µg/l), benzo(a)pyrene (0.29 µg/l), and benzo(b)fluoranthene (0.31 µg/l) slightly exceeded the GWQC (0.1, 0.1, and 0.2 µg/l, respectively). As previously discussed, the PAH exceedances are attributable to entrainment of soil resulting in sample turbidity associated with the installation of the temporary well. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

UST 444

UST 444 was a residential fuel oil tank that was removed in 2010 as described in Attachment V of Correspondence 1. Temporary well PAR-79-MP-TMW-02 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 4 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, one VOC (benzene) and three SVOCs (2-methylnaphthalene, benzo[a]anthracene, and benzo[a]pyrene) exceeded the GWQC. The total sum of SVOC TICs also exceeded the GWQC. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

UST 445

UST 445 was a residential fuel oil tank that was removed in 2010 as described in Attachment U of Correspondence 1. Temporary well PAR-79-MP-TMW-06 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 5 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 448

UST 448 was a residential fuel oil tank that was removed in 2010 as described in Attachment W of Correspondence 1. Temporary well PAR-79-MP-TMW-03 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 4 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 449

UST 449 was assumed to be a residential fuel oil tank because of information identified during a records review. Soil samples were collected in 2010, and a soil sample for a test trench was excavated in May 2010. The results of the test trench and visual evidence indicated that a release had occurred, but no tank was found. The soils had a strong petroleum odor as described in Attachment X of Correspondence 1. Temporary well PAR-79-MP-TMW-04 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 5 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, benzo(a)anthracene (0.25 µg/l), benzo(a)pyrene (0.13 µg/l), and benzo(b)fluoranthene (0.22 µg/l) slightly exceeded the GWQC (0.1, 0.1, and 0.2, respectively). As previously discussed, the PAH exceedances are attributable to entrainment of soil resulting in

sample turbidity associated with the installation of the temporary well. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

UST 450

UST 450 was a residential fuel oil tank that was removed in 2010 as described in Attachment Y of Correspondence 1. Temporary well PAR-79-MP-TMW-05 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 5 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 451

UST 451 was a residential fuel oil tank that was removed in 2010 as described in Attachment Z of Correspondence 1. Temporary well PAR-79-MP-TMW-09 was installed, sampled, and subsequently abandoned (Figure 3 of **Attachment A**). Groundwater was encountered at approximately 4 ft bgs; please see **Attachment C**. As shown on Table 2 of **Attachment B**, benzo(a)anthracene (0.18 µg/l) slightly exceeded the GWQC (0.1 µg/l) in this groundwater sample. As previously discussed, the PAH exceedances are attributable to entrainment of soil resulting in sample turbidity associated with the installation of the temporary wells. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

3.0 USTS 202A AND 202D

USTs 202A and 202D were residential fuel oil tanks that were removed in 2001 as described in Attachment J of Correspondence 1. Three soil borings (see Figure 5 of **Attachment A**) were sampled in response to NJDEP comments on the 10 February 2016 Work Plan Addendum (Correspondence 4). Soil samples were analyzed for EPH; additional contingency SVOC analyses for naphthalene and 2-methylnaphthalene was not required (NJDEP, 2010). Soil analytical results are presented in Table 2 (Attachment B). The maximum total EPH concentration encountered in soil was 345 mg/kg. The results from the soil borings at USTs 202A and 202D indicate that further soil investigation is not warranted.

Temporary well PAR-79-202-TMW-01 was installed, sampled, and subsequently abandoned (Figure 5 of **Attachment A**). Groundwater was encountered at approximately 2 to 5 ft bgs; please see **Attachments C and D**. Permanent monitor wells 202MW01 and M16MW02 were previously installed at this site, and were also sampled (Figure 5 of **Attachment A**). Well 202MW01 was installed near the former location of UST 202D in August 2011 but apparently was never previously sampled. Well M16MW02 was constructed in March 2011 and is located downgradient of USTs 202A and 202D.

As shown on Table 2 of **Attachment B**, there was one slight PAH exceedance (benzo[a]anthracene at 0.19 µg/l) of the GWQC (0.1 µg/l) in the temporary well sample. There were no exceedances of the GWQC in the permanent well samples. As previously discussed, the PAH exceedances are attributable to entrainment of soil resulting in sample turbidity associated with the installation of

the temporary well. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene).

4.0 UST 490

UST 490 was a residential fuel oil tank that was removed in 1990 as described in Attachment CC of Correspondence 1. Four soil borings were sampled in response to NJDEP comments on the 10 February 2016 Work Plan Addendum (Correspondence 4), and soil samples were analyzed for EPH.

Total EPH concentrations of 1,600 mg/kg in one of the soil samples (the 3.5 to 4 ft bgs interval of boring PAR-79-490-SB-04; see Table 2 of **Attachment B**) exceeded the contingency analysis threshold of 1,000 mg/kg (NJDEP, 2010), and therefore this sample was also analyzed for naphthalene and 2-methylnaphthalene. The 2-methylnaphthalene concentration of 9,000 µg/kg in this sample exceeded the NJDEP IGW screening level of 8,000 µg/kg, but did not exceed the RDCSRS. Additional Synthetic Precipitation Leachate Procedure (SPLP) analysis of this soil sample was not performed, as prescribed in NJDEP (2010).

Three temporary wells (PAR-79-490-TMW-01, PAR-79-490-TMW-02, and PAR-79-490-TMW-03) were installed, sampled for groundwater, and subsequently abandoned (Figure 6 of **Attachment A**). Existing monitor well 490MW01, installed in August 2011, was also sampled. (**Attachment A**). Groundwater was encountered at approximately 2 to 3.5 ft bgs; please see **Attachments C and D**.

As shown on Table 2 of **Attachment B**, PAH exceedances of the GWQC were encountered at temporary wells PAR-79-490-TMW01 (benzo[a]anthracene) and PAR-79-490-TMW02 (benzo[a]anthracene and benzo[b]fluoranthene). As previously discussed, the PAH exceedances are attributable to entrainment of soil resulting in sample turbidity associated with the installation of the temporary wells. There were no exceedances of the GWQC indicative of fuel oil (i.e., naphthalene or 2-methylnaphthalene). There were no exceedances of the GWQC in the three groundwater samples collected from permanent well 490MW01. However, there were GWQC exceedances for 2-methylnaphthalene and the sum of SVOC TICs in the groundwater sample from PAR-79-490-TMW03, which was located downgradient of the former UST 490.

5.0 SUMMARY

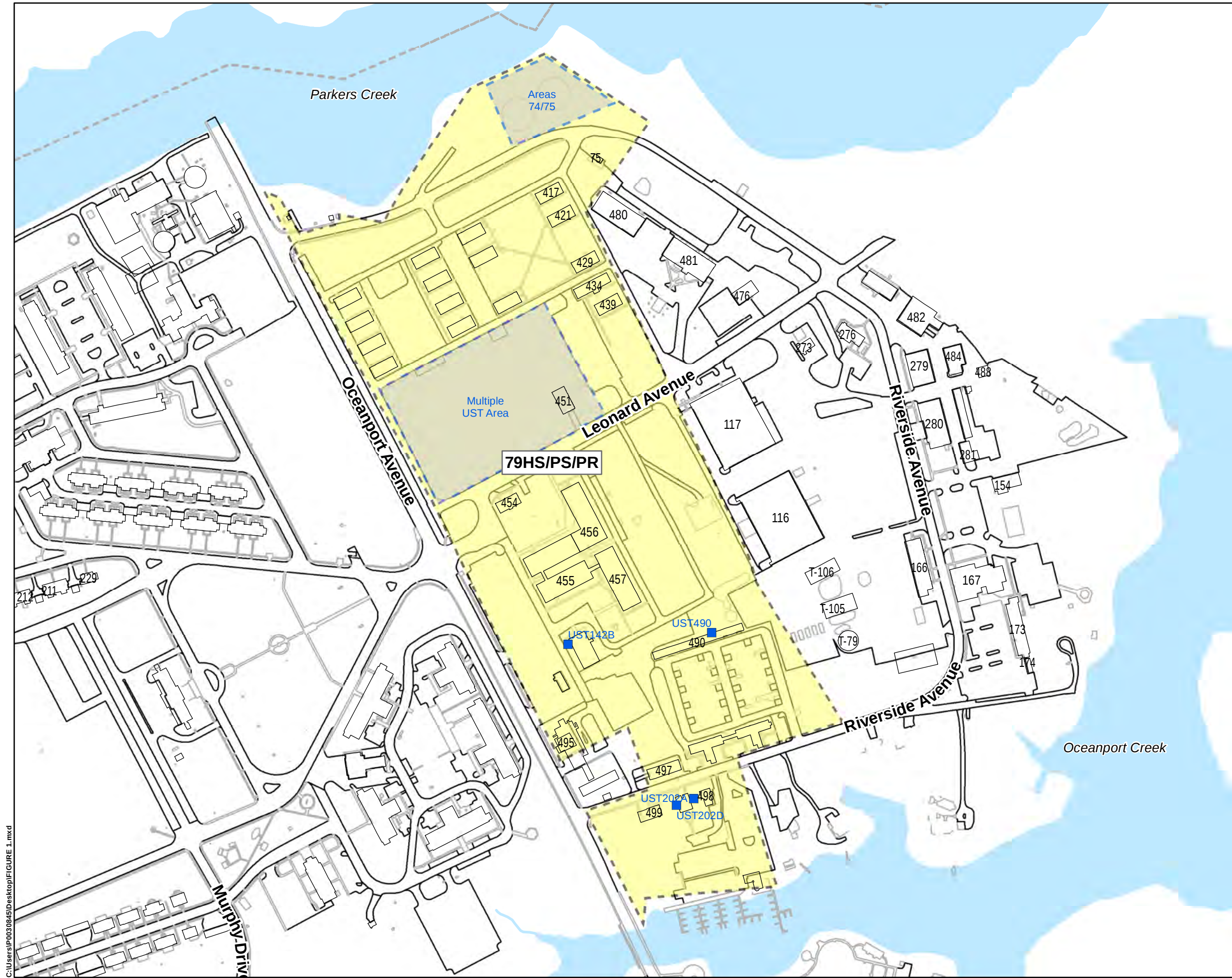
No Further Action determinations are requested for soil and groundwater for the two ASTs at Area 75 and USTs 202A and 202D. No Further Action determinations are requested for groundwater for USTs 142 B, 437, 440, 441, 445, 448, 449, 450, and 451. Additional work would be needed for NFA determinations to be made at USTs 490 and 444. The technical Point of Contact (POC) for this matter is Kent Friesen at (732) 383-7201 or kent.friesen@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or william.r.colvin18.civ@mail.mil.

Linda S. Range, NJDEP
Request for NFA at Multiple Parcel 79 Storage Tanks
08 February 2017
Page 8 of 8

Sincerely,

William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator

cc: Linda Range, NJDEP (3 hard copies)
Delight Balducci, HQDA ACSIM (CD)
Joseph Pearson, Calibre (CD)
James Moore, USACE (CD)
Jim Kelly, USACE (CD)
Cris Grill, Parsons (CD)



LEGEND:

- Parcel 79 Boundary
- Municipal Boundary
- Multiple UST Area
- Surface Water Feature
- UST Location



1 inch = 300 feet

0 150 300 600 Feet

Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008; 2008 SI Report; USGS NHD, 2012.

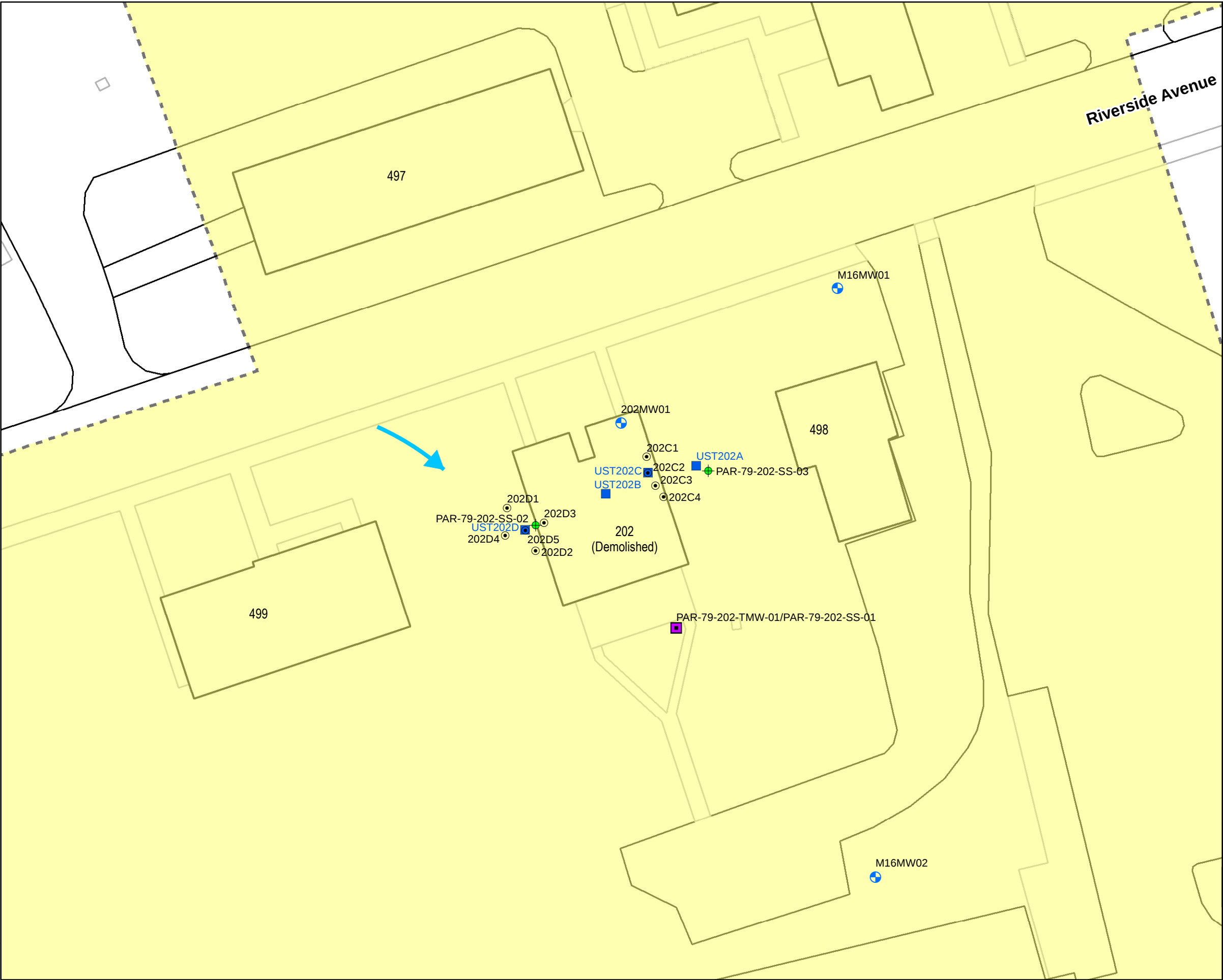
PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

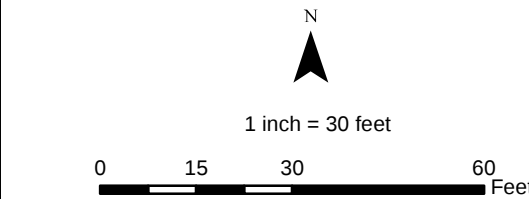
LAYOUT OF PARCEL 79

CREATED BY: RR	REVIEWED BY: KF
DATE: JAN. 2017	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06010	FILE: FIGURE 1.mxd

P:\PTT\Projects\Huntsville Cont W912.DY-09.D-0062\FTMMCAD Files\GIS\2016 RI\FIGURE 6.mxd



- LEGEND:**
- Parcel 79 Boundary
 - Municipal Boundary
 - Shallow Monitoring Well
 - Former UST Location
 - Soil Sample (2016)
 - Soil and Groundwater Sample (2016)
 - Estimated Groundwater Flow Direction



Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008; 2008 SI Report; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL		Fort Monmouth New Jersey	
PARCEL 79 UST202A AND UST202D SAMPLE LOCATIONS			
CREATED BY: RR		REVIEWED BY: KF	
DATE: JUN. 2016		FIGURE NUMBER: FIGURE 5	
PROJECT NUMBER: 748810-06010		FILE: FIGURE 5.mxd	

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Areas within rectangle are associated
with sampling at UST 202D

Loc ID	NJ Ground Water Quality Criteria	202MW01		490MW01			M16MW02		P79-490-TMW03	P79-MP-TMW01	P79-MP-TMW02
Sample ID		202MW01-14.5	202MW01-9.5	490MW01-14.5	490MW01-19.5	490MW01-9.5	M16MW02-14.5	M16MW02-9.5	PAR-79-490-TMW03	PAR-79-MP-TMW01	PAR-79-MP-TMW02
Sample Date		5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	8/4/2016	8/3/2016	8/3/2016
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)											
1,1,1,2-Tetrachloroethane	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,1,1-Trichloroethane	30	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,1,2,2-Tetrachloroethane	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,1,2-Trichloroethane	3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2.7 J	< 0.75	< 0.75 UJ
1,1-Dichloroethane	50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,1-Dichloroethene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,1-Dichloropropene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,2,3-Trichlorobenzene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,2,3-Trichloropropane	0.03	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.5 UJ	< 2.5	< 2.5 UJ
1,2,4-Trichlorobenzene	9	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,2,4-Trimethylbenzene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	4.7 J
1,2-Dibromo-3-chloropropane	0.02	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2.5 UJ	< 2.5	< 2.5 UJ
1,2-Dibromoethane	0.03	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,2-Dichlorobenzene	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,2-Dichloroethane	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,2-Dichloropropane	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,3,5-Trimethylbenzene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	10.9 J
1,3-Dichlorobenzene	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,3-Dichloropropane	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
1,4-Dichlorobenzene	75	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
2,2-Dichloropropane	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
2-Chlorotoluene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Acetone	6,000	< 5	< 5	5.7	4.8 J	5 J	< 5	< 5	11.4 B	5.5 B	6.5 B
Benzene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	1.7 J
Bromobenzene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Bromochloromethane	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Bromodichloromethane	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Bromoform	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Carbon tetrachloride	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Chlorobenzene	50	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Chlorodibromomethane	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Chloroethane	5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Chloroform	70	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Cis-1,2-Dichloroethene	70	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Cis-1,3-Dichloropropene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Cymene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	2.2 J
Dichlorodifluoromethane	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Ethyl benzene	700	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Hexachlorobutadiene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Isopropylbenzene	700	< 1	< 1	0.42 J	0.42 J	0.46 J	< 1	< 1	0.41 J	< 0.75	1.3 J
Meta/Para Xylene	1,000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 1.5 UJ	< 1.5	1 J
Methyl bromide	10	< 1	0.44 JB	0.6 J	0.51 J	0.52 J	0.4 JB	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Methyl butyl ketone	300	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 3.8 UJ	< 3.8	< 3.8 UJ
Methyl chloride	100	0.4 J	< 1	< 1	0.48 J	0.58 J	0.35 J	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Methyl ethyl ketone	300	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 3.8 UJ	< 3.8	< 3.8 UJ
Methyl isobutyl ketone	100	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 3.8 UJ	< 3.8	< 3.8 UJ
Methyl Tertbutyl Ether	70	< 1	< 1	< 1	< 1	< 1	0.55 J	0.51 J	< 0.75 UJ	< 0.75	< 0.75 UJ
Methylene chloride	3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	202MW01		490MW01			M16MW02		P79-490-TMW03	P79-MP-TMW01	P79-MP-TMW02
Sample ID		202MW01-14.5	202MW01-9.5	490MW01-14.5	490MW01-19.5	490MW01-9.5	M16MW02-14.5	M16MW02-9.5	PAR-79-490-TMW03	PAR-79-MP-TMW01	PAR-79-MP-TMW02
Sample Date		5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	8/4/2016	8/3/2016	8/3/2016
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Naphthalene	300	< 1	< 1	4.2	4.3	4.4	< 1	< 1	7.7 J	< 0.75	96.6 J
n-Butylbenzene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Ortho Xylene	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	1.2 J
p-Chlorotoluene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Propylbenzene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.61 J	< 0.75	< 0.75 UJ
sec-Butylbenzene	100	< 1	< 1	4.6	4.9	4.7	< 1	< 1	6 J	< 0.75	3.9 J
Styrene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Tert Butyl Alcohol	100	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 12.5 UJ	< 12.5	< 12.5 UJ
tert-Butylbenzene	100	< 1	< 1	0.85 J	0.78 J	0.78 J	< 1	< 1	< 0.75 UJ	< 0.75	0.46 J
Tetrachloroethene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Toluene	600	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Trans-1,2-Dichloroethene	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Trans-1,3-Dichloropropene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Trichloroethene	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Trichlorofluoromethane	2,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
Vinyl chloride	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.75 UJ	< 0.75	< 0.75 UJ
TIC VOCs (µg/l)											
Total TICs, Volatile	500	NA	NA	20.4 JN	21.5 JN	8.2 JN	NA	NA	171 JN	NA	134.1 JN
Semivolatile Organic Compounds (µg/l)											
1,2,4-Trichlorobenzene	9	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
1,2-Dichlorobenzene	600	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
1,2-Diphenylhydrazine	20	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
1,3-Dichlorobenzene	600	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
1,4-Dichlorobenzene	75	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
2,4,5-Trichlorophenol	700	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 2.8	< 2.9	< 2.9
2,4,6-Trichlorophenol	20	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96
2,4-Dichlorophenol	20	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96
2,4-Dimethylphenol	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 4.6	< 4.8	< 4.8
2,4-Dinitrophenol	40	< 14.8 UJ	< 18.6 UJ	< 16.6 UJ	< 16.2 UJ	< 17.3 UJ	< 17.6 UJ	< 16.8 UJ	< 7.4	< 7.7	< 7.7
2,4-Dinitrotoluene	10	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	NA	NA
2,6-Dinitrotoluene	10	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	NA	NA
2-Chloronaphthalene	600	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
2-Chlorophenol	40	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9
2-Methylnaphthalene	30	< 1.9	< 2.3	< 2.1	< 2	< 2.2	< 2.2	< 2.1	63.5	< 0.96	30.6 J
2-Methylphenol	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96
2-Nitroaniline	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
2-Nitrophenol	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9
3,3'-Dichlorobenzidine	30	< 14.8	< 18.6	< 16.6	< 16.2	< 17.3	< 17.6	< 16.8	< 2.8	< 2.9	< 2.9 UJ
3-Nitroaniline	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9 UJ
4,6-Dinitro-2-methylphenol	1	< 7.4 UJ	< 9.3 UJ	< 8.3 UJ	< 8.1 UJ	< 8.6 UJ	< 8.8 UJ	< 8.4 UJ	< 4.6	< 4.8	< 4.8
4-Bromophenyl phenyl ether	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
4-Chloro-3-methylphenol	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96
4-Chloroaniline	30	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
4-Chlorophenyl phenyl ether	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
4-Nitroaniline	5	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
4-Nitrophenol	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 4.6	< 4.8	< 4.8
Acenaphthene	400	< 0.046	< 0.058	1.1	1.1	1.2	0.012 J	< 0.053	< 0.93	0.012 J	0.97 J
Acenaphthylene	100	< 0.046	< 0.058	0.14	0.14	0.17	< 0.055	< 0.053	< 0.93	0.022 J	< 0.038 UJ
Anthracene	2,000	< 0.046	< 0.058	0.13	0.13	0.14	< 0.055	< 0.053	8.2	0.029 J	0.39 J

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	202MW01		490MW01			M16MW02		P79-490-TMW03	P79-MP-TMW01	P79-MP-TMW02
Sample ID		202MW01-14.5	202MW01-9.5	490MW01-14.5	490MW01-19.5	490MW01-9.5	M16MW02-14.5	M16MW02-9.5	PAR-79-490-TMW03	PAR-79-MP-TMW01	PAR-79-MP-TMW02
Sample Date		5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016	8/4/2016	8/3/2016	8/3/2016
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Benzidine	20	< 27.8	< 34.9	< 31.1	< 30.3	< 32.4	< 33	< 31.6	< 27.8 UJ	< 28.7 UJ	< 28.7 UJ
Benzo(a)anthracene	0.1	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	0.04 J	< 0.053	< 0.93	0.23 J	0.27 J
Benzo(a)pyrene	0.1	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	0.13 B	0.14 JB
Benzo(b)fluoranthene	0.2	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	0.041 J	< 0.053	< 0.93	0.2 J	0.2 J
Benzo(ghi)perylene	100	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	0.081 B	0.082 JB
Benzo(k)fluoranthene	0.5	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	0.07 B	0.078 JB
Benzyl alcohol	2,000	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9
Bis(2-Chloroethoxy)methane	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Bis(2-Chloroethyl)ether	7	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Bis(2-Chloroisopropyl)ether	300	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Bis(2-Ethylhexyl)phthalate	3	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Butyl benzyl phthalate	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	0.15 J
Carbazole	100	< 7.4	< 9.3	2.4 J	2.6 J	2.5 J	< 8.8	< 8.4	< 0.93	< 0.96	1.2 J
Chrysene	5	0.016 J	< 0.058	< 0.052	< 0.051	< 0.054	0.056	< 0.053	< 0.93	0.19 J	0.2 J
Cresol	NLE	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96
Dibenz(a,h)anthracene	0.3	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	< 0.038	0.043 JB
Dibenzofuran	100	< 7.4	< 9.3	3.5 J	3.6 J	3.3 J	< 8.8	< 8.4	< 0.93	< 0.96	2.5 J
Diethyl phthalate	6,000	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	0.18 J	< 0.96 UJ
Dimethyl phthalate	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Di-n-butylphthalate	700	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	0.14 J	< 0.96 UJ
Di-n-octylphthalate	100	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	0.099 J
Fluoranthene	300	0.02 J	0.022 J	< 0.052	< 0.051	< 0.054	0.1	< 0.053	< 0.93	0.59	0.89 J
Fluorene	300	< 0.046	< 0.058	2.2	2.2	2.5	0.03 J	< 0.053	< 0.93	0.033 J	3.2 J
Hexachlorobenzene	0.02	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Hexachlorobutadiene	1	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Hexachlorocyclopentadiene	40	< 7.4 UJ	< 9.3 UJ	< 8.3 UJ	< 8.1 UJ	< 8.6 UJ	< 8.8 UJ	< 8.4 UJ	< 1.9	< 1.9	< 1.9 UJ
Hexachloroethane	7	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Indeno(1,2,3-cd)pyrene	0.2	< 0.046	< 0.058	< 0.052	< 0.051	< 0.054	< 0.055	< 0.053	< 0.93	0.11 J	0.11 J
Isophorone	40	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
Naphthalene	300	< 0.046	< 0.058	0.83	0.83	0.83	0.051 J	< 0.053	< 0.93	< 0.038	23.8 J
Nitrobenzene	6	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9 UJ
N-Nitrosodimethylamine	0.8	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9 UJ
N-Nitroso-di-n-propylamine	10	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96 UJ
N-Nitrosodiphenylamine	10	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 1.9	< 1.9	< 1.9 UJ
Pentachlorophenol	0.3	< 14.8	< 18.6	< 16.6	< 16.2	< 17.3	< 17.6	< 16.8	< 7.4	< 0.96 UJ	< 0.96 UJ
Phenanthrene	100	< 0.046	< 0.058	0.5	0.49	0.5	0.091	< 0.053	72.4	0.23 J	5.8 J
Phenol	2,000	< 7.4	< 9.3	< 8.3	< 8.1	< 8.6	< 8.8	< 8.4	< 0.93	< 0.96	< 0.96
Pyrene	200	0.014 J	< 0.058	< 0.052	< 0.051	< 0.054	0.069	< 0.053	7.1	0.29 J	0.69 J
TIC SVOCs (µg/l)											
Total TICs, Semi-Volatile	500	NA	NA	NA	38.6 JN	36.7 JN	NA	NA	1323.1 JN	414.4 JN	1757.9 JN

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	P79-MP-TMW03	P79-MP-TMW04	P79-MP-TMW05	P79-MP-TMW06	P79-MP-TMW07	P79-MP-TMW08	P79-MP-TMW09	PAR-79-142-TMW01	PAR-79-202-TMW01
Sample ID		PAR-79-MP-TMW03	PAR-79-MP-TMW04	PAR-79-MP-TMW05	PAR-79-MP-TMW06	PAR-79-MP-TMW07	PAR-79-MP-TMW08	PAR-79-MP-TMW09	PAR-79-142-TMW01	PAR-79-202-TMW01
Sample Date		8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/5/2016	8/5/2016
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)										
1,1,1,2-Tetrachloroethane	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,1,1-Trichloroethane	30	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,1,2,2-Tetrachloroethane	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,1,2-Trichloroethane	3	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,1-Dichloroethane	50	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,1-Dichloroethene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,1-Dichloropropene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2,3-Trichlorobenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2,3-Trichloropropane	0.03	< 2.5	< 2.5 UJ	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 UJ	< 2.5
1,2,4-Trichlorobenzene	9	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2,4-Trimethylbenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2-Dibromo-3-chloropropane	0.02	< 2.5	< 2.5 UJ	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 UJ	< 2.5
1,2-Dibromoethane	0.03	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2-Dichlorobenzene	600	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2-Dichloroethane	2	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,2-Dichloropropane	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,3,5-Trimethylbenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,3-Dichlorobenzene	600	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,3-Dichloropropane	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
1,4-Dichlorobenzene	75	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
2,2-Dichloropropane	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
2-Chlorotoluene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Acetone	6,000	6 B	4.2 JB	5.3 B	4.2 JB	< 3.8	7.8 B	3.7 JB	7.2 BJ	< 3.8
Benzene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Bromobenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Bromochloromethane	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Bromodichloromethane	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Bromoform	4	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Carbon tetrachloride	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Chlorobenzene	50	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Chlorodibromomethane	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Chloroethane	5	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Chloroform	70	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Cis-1,2-Dichloroethene	70	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Cis-1,3-Dichloropropene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Cymene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Dichlorodifluoromethane	1,000	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Ethyl benzene	700	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Hexachlorobutadiene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Isopropylbenzene	700	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Meta/Para Xylene	1,000	< 1.5	< 1.5 UJ	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5 UJ	< 1.5
Methyl bromide	10	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Methyl butyl ketone	300	< 3.8	< 3.8 UJ	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8 UJ	< 3.8
Methyl chloride	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Methyl ethyl ketone	300	< 3.8	< 3.8 UJ	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8 UJ	< 3.8
Methyl isobutyl ketone	100	< 3.8	< 3.8 UJ	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8 UJ	< 3.8
Methyl Tertbutyl Ether	70	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	0.48 J
Methylene chloride	3	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	P79-MP-TMW03	P79-MP-TMW04	P79-MP-TMW05	P79-MP-TMW06	P79-MP-TMW07	P79-MP-TMW08	P79-MP-TMW09	PAR-79-142-TMW01	PAR-79-202-TMW01
Sample ID		PAR-79-MP-TMW03	PAR-79-MP-TMW04	PAR-79-MP-TMW05	PAR-79-MP-TMW06	PAR-79-MP-TMW07	PAR-79-MP-TMW08	PAR-79-MP-TMW09	PAR-79-142-TMW01	PAR-79-202-TMW01
Sample Date		8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/5/2016	8/5/2016
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total
Naphthalene	300	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
n-Butylbenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Ortho Xylene	1,000	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
p-Chlorotoluene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Propylbenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
sec-Butylbenzene	100	< 0.75	0.34 J	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Styrene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Tert Butyl Alcohol	100	< 12.5	< 12.5 UJ	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5 UJ	< 12.5
tert-Butylbenzene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Tetrachloroethene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Toluene	600	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Trans-1,2-Dichloroethene	100	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Trans-1,3-Dichloropropene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Trichloroethene	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Trichlorofluoromethane	2,000	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
Vinyl chloride	1	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75 UJ	< 0.75
TIC VOCs (µg/l)										
Total TICs, Volatile	500	NA	1	NA	NA	NA	NA	NA	1.5 JN	NA
Semivolatile Organic Compounds (µg/l)										
1,2,4-Trichlorobenzene	9	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
1,2-Dichlorobenzene	600	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
1,2-Diphenylhydrazine	20	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
1,3-Dichlorobenzene	600	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
1,4-Dichlorobenzene	75	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
2,4,5-Trichlorophenol	700	< 3	< 2.9	< 2.8	< 3	< 2.9	< 3.3	< 3.2	< 15 UJ	< 2.9
2,4,6-Trichlorophenol	20	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
2,4-Dichlorophenol	20	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
2,4-Dimethylphenol	100	< 5	< 4.8	< 4.6	< 5	< 4.9	< 5.6	< 5.3	< 25 UJ	< 4.8
2,4-Dinitrophenol	40	< 7.9	< 7.6	< 7.4	< 8	< 7.8	< 8.9	< 8.6	< 40 UJ	< 7.7
2,4-Dinitrotoluene	10	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	10	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	600	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
2-Chlorophenol	40	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
2-Methylnaphthalene	30	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	2.9 J	< 0.96
2-Methylphenol	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
2-Nitroaniline	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
2-Nitrophenol	100	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
3,3'-Dichlorobenzidine	30	< 3	< 2.9	< 2.8	< 3	< 2.9	< 3.3	< 3.2	< 15 UJ	< 2.9
3-Nitroaniline	100	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
4,6-Dinitro-2-methylphenol	1	< 5	< 4.8	< 4.6	< 5	< 4.9	< 5.6	< 5.3	< 25 UJ	< 4.8
4-Bromophenyl phenyl ether	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
4-Chloro-3-methylphenol	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
4-Chloroaniline	30	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
4-Chlorophenyl phenyl ether	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
4-Nitroaniline	5	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
4-Nitrophenol	100	< 5	< 4.8	< 4.6	< 5	< 4.9	< 5.6	< 5.3	< 25 UJ	< 4.8
Acenaphthene	400	< 0.04	0.012 J	< 0.037	0.026 J	0.018 J	< 0.044	< 0.043	0.27 J	< 0.038
Acenaphthylene	100	< 0.04	0.04 J	< 0.037	< 0.04	0.2 J	< 0.044	0.025 J	8.1 J	0.2 J
Anthracene	2,000	< 0.04	0.096	< 0.037	< 0.04	0.081	< 0.044	< 0.043	4.5 J	0.016 J

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	P79-MP-TMW03	P79-MP-TMW04	P79-MP-TMW05	P79-MP-TMW06	P79-MP-TMW07	P79-MP-TMW08	P79-MP-TMW09	PAR-79-142-TMW01	PAR-79-202-TMW01
Sample ID		PAR-79-MP-TMW03	PAR-79-MP-TMW04	PAR-79-MP-TMW05	PAR-79-MP-TMW06	PAR-79-MP-TMW07	PAR-79-MP-TMW08	PAR-79-MP-TMW09	PAR-79-142-TMW01	PAR-79-202-TMW01
Sample Date		8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/4/2016	8/5/2016	8/5/2016
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total
Benzidine	20	< 29.7 UJ	< 28.6 UJ	< 27.8 UJ	< 29.9 UJ	< 29.4 UJ	< 33.3 UJ	< 32.1 UJ	< 150 UJ	< 28.8
Benzo(a)anthracene	0.1	0.043 J	0.25 J	< 0.037	0.021 J	0.34 J	< 0.044	0.18 J	8.5 J	0.19 J
Benzo(a)pyrene	0.1	0.043 JB	0.13 B	< 0.037	< 0.04	0.29 J	< 0.044	0.081 B	14.9 J	0.057
Benzo(b)fluoranthene	0.2	0.066 B	0.22 J	< 0.037	< 0.04	0.31 J	0.027 JB	0.12 B	19.4 J	0.13 J
Benzo(ghi)perylene	100	< 0.04	0.087 B	< 0.037	< 0.04	0.17 B	< 0.044	0.046 JB	12.6 J	0.044 J
Benzo(k)fluoranthene	0.5	0.028 JB	0.073 B	< 0.037	< 0.04	0.1 B	< 0.044	0.042 JB	7.5 J	< 0.038
Benzyl alcohol	2,000	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
Bis(2-Chloroethoxy)methane	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Bis(2-Chloroethyl)ether	7	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Bis(2-Chloroisopropyl)ether	300	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Bis(2-Ethylhexyl)phthalate	3	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	0.33 J
Butyl benzyl phthalate	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	0.12 J	0.65 J	< 0.96
Carbazole	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	1.5 J	< 0.96
Chrysene	5	0.054	0.15	< 0.037	0.022 J	0.3 J	0.029 J	0.1	13.5 J	0.066
Cresol	NLE	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Dibenz(a,h)anthracene	0.3	< 0.04	0.023 JB	< 0.037	< 0.04	0.048 JB	< 0.044	< 0.043	2.9 J	< 0.038
Dibenzofuran	100	< 0.99	0.29 J	< 0.93	< 1	< 0.98	< 1.1	< 1.1	0.75 J	< 0.96
Diethyl phthalate	6,000	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	0.28 J
Dimethyl phthalate	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Di-n-butylphthalate	700	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	0.71 J	0.28 J
Di-n-octylphthalate	100	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Fluoranthene	300	0.464	0.74	0.637	0.35	0.78	0.488 J	0.57	17.7 J	0.652
Fluorene	300	< 0.04	0.13 B	0.016 JB	0.017 JB	0.05 B	< 0.044	0.018 JB	0.77 J	0.024 J
Hexachlorobenzene	0.02	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Hexachlorobutadiene	1	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Hexachlorocyclopentadiene	40	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
Hexachloroethane	7	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Indeno(1,2,3-cd)pyrene	0.2	< 0.05	0.099 J	< 0.046	< 0.05	0.2 J	< 0.056	0.047 JB	11.9 J	0.042 J
Isophorone	40	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Naphthalene	300	0.05	0.1	< 0.037	< 0.04	0.062	< 0.044	< 0.043	3.3 J	< 0.038
Nitrobenzene	6	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
N-Nitrosodimethylamine	0.8	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
N-Nitroso-di-n-propylamine	10	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
N-Nitrosodiphenylamine	10	< 2	< 1.9	< 1.9	< 2	< 2	< 2.2	< 2.1	< 10 UJ	< 1.9
Pentachlorophenol	0.3	< 0.99 UJ	< 0.95 UJ	< 0.93 UJ	< 1 UJ	< 0.98 UJ	< 1.1 UJ	< 1.1 UJ	< 5 UJ	< 0.96
Phenanthrene	100	0.061 B	0.34 J	0.026 JB	0.13 J	0.2 J	0.038 JB	0.093 B	8.7 J	0.075
Phenol	2,000	< 0.99	< 0.95	< 0.93	< 1	< 0.98	< 1.1	< 1.1	< 5 UJ	< 0.96
Pyrene	200	0.076	0.37 J	< 0.037	0.037 J	0.45 J	0.05 J	0.14	18.4 J	0.083
TIC SVOCs (µg/l)										
Total TICs, Semi-Volatile	500	NA	79.6 JN	11.9 J	33.3 JN	45.7 JN	19.7 JN	96.8 JN	253.7 JN	144.6 JN

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	PAR-79-490-TMW01	PAR-79-490-TMW02	PAR-79-A75-TMW01		PAR-79-A75-TMW02
Sample ID		PAR-79-490-TMW01	PAR-79-490-TMW02	PAR-79-A75-TMW01	PAR-79-A75-TMW101	PAR-79-A75-TMW02
Sample Date		8/5/2016	8/5/2016	8/5/2016	8/5/2016	8/5/2016
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
1,1,1,2-Tetrachloroethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,1-Trichloroethane	30	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2,2-Tetrachloroethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2-Trichloroethane	3	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	50	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloropropene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichlorobenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichloropropane	0.03	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trichlorobenzene	9	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,4-Trimethylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dibromo-3-chloropropane	0.02	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dibromoethane	0.03	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichlorobenzene	600	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloroethane	2	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloropropane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3,5-Trimethylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichlorobenzene	600	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichloropropane	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,4-Dichlorobenzene	75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
2,2-Dichloropropane	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
2-Chlorotoluene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Acetone	6,000	19.3 B	4.3 JB	5.4 B	< 3.8 UJ	28.1 B
Benzene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromobenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromochloromethane	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromodichloromethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromoform	4	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Carbon tetrachloride	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chlorobenzene	50	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chlorodibromomethane	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	5	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroform	70	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,2-Dichloroethene	70	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,3-Dichloropropene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cymene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Dichlorodifluoromethane	1,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Ethyl benzene	700	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Hexachlorobutadiene	1	< 0.75	< 0.75	< 0.75 UJ	< 0.75	< 0.75
Isopropylbenzene	700	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Meta/Para Xylene	1,000	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Methyl bromide	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Methyl butyl ketone	300	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl chloride	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Methyl ethyl ketone	300	3.2 J	< 3.8	< 3.8	< 3.8	4.1 J
Methyl isobutyl ketone	100	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl Tertbutyl Ether	70	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Methylene chloride	3	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	PAR-79-490-TMW01	PAR-79-490-TMW02	PAR-79-A75-TMW01		PAR-79-A75-TMW02
Sample ID		PAR-79-490-TMW01	PAR-79-490-TMW02	PAR-79-A75-TMW01	PAR-79-A75-TMW101	PAR-79-A75-TMW02
Sample Date		8/5/2016	8/5/2016	8/5/2016	8/5/2016	8/5/2016
Filtered		Total	Total	Total	Total	Total
Naphthalene	300	< 0.75	0.51 J	< 0.75	< 0.75	< 0.75
n-Butylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Ortho Xylene	1,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
p-Chlorotoluene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Propylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
sec-Butylbenzene	100	< 0.75	0.51 J	< 0.75	< 0.75	< 0.75
Styrene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Tert Butyl Alcohol	100	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5
tert-Butylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Tetrachloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Toluene	600	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trans-1,2-Dichloroethene	100	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trans-1,3-Dichloropropene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trichloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trichlorofluoromethane	2,000	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Vinyl chloride	1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
TIC VOCs (µg/l)						
Total TICs, Volatile	500	NA	8.1 JN	NA	NA	NA
Semivolatile Organic Compounds (µg/l)						
1,2,4-Trichlorobenzene	9	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
1,2-Dichlorobenzene	600	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
1,2-Diphenylhydrazine	20	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
1,3-Dichlorobenzene	600	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
1,4-Dichlorobenzene	75	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
2,4,5-Trichlorophenol	700	< 2.9	< 2.9	< 3.1	< 3.2	< 5
2,4,6-Trichlorophenol	20	< 0.98	< 0.96	< 1	< 1.1	< 1.7
2,4-Dichlorophenol	20	< 0.98	< 0.96	< 1	< 1.1	< 1.7
2,4-Dimethylphenol	100	< 4.9	< 4.8	< 5.2	< 5.3	< 8.4
2,4-Dinitrophenol	40	< 7.8	< 7.7	< 8.3	< 8.5	< 13.4
2,4-Dinitrotoluene	10	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	10	NA	NA	NA	NA	NA
2-Chloronaphthalene	600	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
2-Chlorophenol	40	< 2	< 1.9	< 2.1	< 2.1	< 3.4
2-Methylnaphthalene	30	0.69 J	< 0.96	0.28 J	< 1.1	< 1.7
2-Methylphenol	100	< 0.98	< 0.96	< 1	< 1.1	< 1.7
2-Nitroaniline	100	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
2-Nitrophenol	100	< 2	< 1.9	< 2.1	< 2.1	< 3.4
3,3'-Dichlorobenzidine	30	< 2.9	< 2.9	< 3.1 UJ	< 3.2	< 5
3-Nitroaniline	100	< 2	< 1.9	< 2.1 UJ	< 2.1	< 3.4
4,6-Dinitro-2-methylphenol	1	< 4.9	< 4.8	< 5.2	< 5.3	< 8.4
4-Bromophenyl phenyl ether	100	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
4-Chloro-3-methylphenol	100	< 0.98	< 0.96	< 1	< 1.1	< 1.7
4-Chloroaniline	30	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
4-Chlorophenyl phenyl ether	100	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
4-Nitroaniline	5	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
4-Nitrophenol	100	< 4.9	< 4.8	< 5.2	< 5.3	< 8.4
Acenaphthene	400	0.089	0.68 J	0.32 J	0.065 J	0.24
Acenaphthylene	100	0.028 J	0.6 J	0.15 J	0.02 J	0.026 J
Anthracene	2,000	0.026 J	0.61 J	1.1 J	0.16 J	0.12

Attachment B - Table 1
Validated Laboratory Data Results for Groundwater
Parcel 79

Loc ID	NJ Ground Water Quality Criteria	PAR-79-490-TMW01	PAR-79-490-TMW02	PAR-79-A75-TMW01		PAR-79-A75-TMW02
Sample ID		PAR-79-490-TMW01	PAR-79-490-TMW02	PAR-79-A75-TMW01	PAR-79-A75-TMW101	PAR-79-A75-TMW02
Sample Date		8/5/2016	8/5/2016	8/5/2016	8/5/2016	8/5/2016
Filtered		Total	Total	Total	Total	Total
Benzidine	20	< 29.4	< 28.7	< 31.1 UJ	< 31.9	< 50.4
Benzo(a)anthracene	0.1	0.14 J	0.26 J	5.3 J	0.64 J	0.43 J
Benzo(a)pyrene	0.1	0.023 JB	0.061	5.6 J	0.57 J	0.28
Benzo(b)fluoranthene	0.2	< 0.039	0.21 J	7.5 J	0.78 J	0.38
Benzo(ghi)perylene	100	< 0.039	0.045 J	4 J	0.4 J	0.18
Benzo(k)fluoranthene	0.5	< 0.039	0.031 J	2.7 J	0.26 J	< 0.067
Benzyl alcohol	2,000	< 2	< 1.9	< 2.1 UJ	< 2.1	< 3.4
Bis(2-Chloroethoxy)methane	100	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Bis(2-Chloroethyl)ether	7	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Bis(2-Chloroisopropyl)ether	300	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Bis(2-Ethylhexyl)phthalate	3	< 0.98	0.35 J	< 1 UJ	< 1.1	< 1.7
Butyl benzyl phthalate	100	< 0.98	0.16 J	< 1 UJ	< 1.1	< 1.7
Carbazole	100	< 0.98	< 0.96	0.36 J	< 1.1	< 1.7
Chrysene	5	0.048 J	0.25 J	5.3 J	0.52 J	0.3
Cresol	NLE	< 0.98	< 0.96	< 1	< 1.1	< 1.7
Dibenz(a,h)anthracene	0.3	< 0.039	< 0.038	0.92 J	0.094 J	0.05 J
Dibenzofuran	100	0.22 J	0.73 J	0.39 J	< 1.1	< 1.7
Diethyl phthalate	6,000	< 0.98	< 0.96	1.8 J	0.88 J	0.48 J
Dimethyl phthalate	100	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Di-n-butylphthalate	700	< 0.98	0.33 J	< 1 UJ	0.24 J	0.38 J
Di-n-octylphthalate	100	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Fluoranthene	300	0.379	0.9	10.3 J	1.9 J	1.94
Fluorene	300	0.13	2.2	0.33 J	0.063 J	0.16
Hexachlorobenzene	0.02	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Hexachlorobutadiene	1	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Hexachlorocyclopentadiene	40	< 2	< 1.9	< 2.1 UJ	< 2.1	< 3.4
Hexachloroethane	7	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Indeno(1,2,3-cd)pyrene	0.2	< 0.049	0.13 J	4.3 J	0.45 J	0.2
Isophorone	40	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
Naphthalene	300	0.12	< 0.038	0.44 J	0.07 J	0.12
Nitrobenzene	6	< 2	< 1.9	< 2.1 UJ	< 2.1	< 3.4
N-Nitrosodimethylamine	0.8	< 2	< 1.9	< 2.1 UJ	< 2.1	< 3.4
N-Nitroso-di-n-propylamine	10	< 0.98	< 0.96	< 1 UJ	< 1.1	< 1.7
N-Nitrosodiphenylamine	10	< 2	< 1.9	< 2.1 UJ	< 2.1	< 3.4
Pentachlorophenol	0.3	< 0.98	< 0.96	< 1	< 1.1	< 1.7
Phenanthrene	100	0.29 J	1.1 J	3.4 J	0.47 J	0.44 J
Phenol	2,000	< 0.98	< 0.96	< 1	< 1.1	< 1.7
Pyrene	200	0.053	0.65 J	9.2 J	1.1 J	0.5 J
TIC SVOCs (µg/l)						
Total TICs, Semi-Volatile	500	9.9 JN	171.7 JN	9 JN	55 J	46.2 JN

Footnote:

- 1) All historical data collected prior to 2013 are reported as provided by others.
- 2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.
- 3) NLE = no limit established.
- 4) ND = not detected in any background sample, no background concentration available.
- 5) Bold chemical detection
- 6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.	J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.
B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.	E (or ER) = Estimated result.
R = Rejected, data validation rejected the results.	D = Results from dilution of sample.
U = non-detect, i.e. not detected at or above this value.	J-DL = Elevated sample detection limit due to difficult sample matrix.
U-DL = Elevated sample detection limit due to difficult sample matrix.	JN = Tentatively identified compound, estimated concentration.
U-ND = Analyte not detected in sample, but no detection or reporting limit provided.	

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria

####

NJDEP Interim Specific GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria. A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

NJDEP Interim Generic GWQC values are presented for the NJ GWQS where there is not a XXXXX or a NJDEP Interim Specific GWQC. Available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

10) Criteria action level source document and web address.

- The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010
<http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf>

Attachment B - Table 2
Validated Laboratory Data Results for Soil
Parcel 79

Sample ID	NJ Residential Direct Contact SRS	NJ Non- Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Soil PAR-79-202-SB-01 2-2.5	Soil PAR-79-202-SB-01 3-3.5	Soil PAR-79-202-SB-01 9.5-10	Soil PAR-79-202-SB-02 3.5-4	Soil PAR-79-202-SB-02 3-3.5	Soil PAR-79-202-SB-02 8-8.5	Soil PAR-79-202-SB-03 2-2.5	Soil PAR-79-202-SB-03 3-3.5	Soil PAR-79-202-SB-03 9.5-10	Soil PAR-79-490-SB-01 1.5-2	Soil PAR-79-490-SB-01 2-2.5	Soil PAR-79-490-SB-01 9.5-10
Depth															
Sample Date				4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016
Semivolatile Organic Compounds (µg/kg)															
2-Methylnaphthalene	230,000	2,400,000	8,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6,000	17,000	25,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)															
C10-C12 Aromatics	NLE	NLE	NLE	0.86 JB	< 0.57	1.3 JB	1.7 B	1.2 JB	0.9 JB	0.64 JB	< 0.55	0.93 JB	0.74 JB	0.66 JB	< 0.59
C12-C16 Aliphatics	NLE	NLE	NLE	< 0.5 UJ	< 0.54 UJ	1.8 J	106	< 0.54 UJ	< 0.54 UJ	< 0.51	< 0.52	< 0.61 UJ	< 0.46 UJ	< 0.48 UJ	< 0.56 UJ
C12-C16 Aromatics	NLE	NLE	NLE	0.66 J	0.34 J	0.81 J	33.3	1.7	0.56 J	0.76 J	0.32 J	0.64 J	0.31 J	0.24 J	0.31 J
C16-C21 Aliphatics	NLE	NLE	NLE	< 0.49 UJ	< 0.53 UJ	1.6 J	90.2	0.72 J	< 0.53 UJ	0.51 J	< 0.51	< 0.6 UJ	< 0.45 UJ	< 0.47 UJ	< 0.55 UJ
C16-C21 Aromatics	NLE	NLE	NLE	0.44 J	< 0.21	0.55 J	80.6	1.1 J	0.56 J	0.76 J	0.38 J	0.25 J	0.31 J	0.35 J	0.54 J
C21-C36 Aromatics	NLE	NLE	NLE	2.1 B	0.31 J	0.86 J	9	3.9	0.7 J	1 J	0.5 J	0.39 J	0.67 J	1 J	< 0.31
C21-C40 Aliphatics	NLE	NLE	NLE	3 JB	1.3 JB	2.3 JB	9.6 J	8.2 J	1.2 JB	1.5 B	1.4 B	1.9 JB	1.1 J	0.74 J	1.2 J
C9-C12 Aliphatics	NLE	NLE	NLE	0.4 J	0.52 J	0.63 J	14.3 J	0.46 J	0.5 J	0.25 J	0.23 J	0.28 J	0.4 J	0.33 J	0.42 J
Total Aliphatics	NLE	NLE	NLE	3.7 J	2.5 J	6.3 J	220 J	9.8 J	2.3 J	2.8 J	2.2 J	2.8 J	2 J	< 1.6 UJ	2.2 J
Total Aromatics	NLE	NLE	NLE	4 J	1.4 J	3.5 J	125	8	2.7 J	3.2 J	1.7 J	2.2 J	2 J	2.3 J	1.7 J
Total EPH	5,100	1,700	NLE	7.8 J	3.8 J	9.8 J	345	17.7	5 J	6 J	3.9 J	4.8 J	4 J	3.7 J	3.8 J
Wet Chemistry - Solids															
Percent Solids (percent)	NLE	NLE	NLE	85.5	77	72.8	72.4	74.6	74.6	83.5	79.8	65.9	88.5	83.7	74.9

Attachment B - Table 2
Validated Laboratory Data Results for Soil
Parcel 79

Sample ID	NJ Residential Direct Contact SRS	NJ Non- Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Soil PAR-79-490-SB-02 2-2.5	Soil PAR-79-490-SB-02 3.5-4	Soil PAR-79-490-SB-02 8-8.5	Soil PAR-79-490-SB-03 2-2.5	Soil PAR-79-490-SB-03 6-6.5	Soil PAR-79-490-SB-03 9.5-10	Soil PAR-79-490-SB-04 2-2.5	Soil PAR-79-490-SB-04 3.5-4	Soil PAR-79-490-SB-04 8-8.5	Soil PAR-79-A75-SB-01 0.5-1	Soil PAR-79-A75-SB-01 2-2.5	Soil PAR-79-A75-SB-01 9.5-10
Depth															
Sample Date				4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/12/2016	4/13/2016	4/13/2016	4/13/2016
Semivolatile Organic Compounds (ug/kg)															
2-Methylnaphthalene	230,000	2,400,000	8,000	NA	NA	NA	NA	NA	NA	NA	9,000 J	NA	NA	NA	NA
Naphthalene	6,000	17,000	25,000	NA	NA	NA	NA	NA	NA	NA	< 86 UJ	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)															
C10-C12 Aromatics	NLE	NLE	NLE	< 0.54	1.6 B	< 0.6	0.54 JB	1.5 B	1.1 JB	1.3 JB	19.9	0.94 JB	1.1 B	0.56 JB	< 0.47
C12-C16 Aliphatics	NLE	NLE	NLE	< 0.52 UJ	129	< 0.58 UJ	0.51 J	9.5 J	< 0.54 UJ	24.6 J	357 J	< 0.61 UJ	0.66 J	< 0.47 UJ	< 0.45 UJ
C12-C16 Aromatics	NLE	NLE	NLE	0.23 J	46	< 0.24	0.58 J	4.3	0.54 J	13.8	309	0.74 J	2.2	< 0.2	< 0.19
C16-C21 Aliphatics	NLE	NLE	NLE	< 0.51 UJ	92.5	< 0.56 UJ	15.1 J	9.5 J	< 0.53 UJ	21 J	270 J	< 0.59 UJ	1.1 J	< 0.46 UJ	< 0.44 UJ
C16-C21 Aromatics	NLE	NLE	NLE	0.8 J	109	0.69 J	6.7	7.9	< 0.22	18.5	453	0.46 J	74.5	1 J	0.43 J
C21-C36 Aromatics	NLE	NLE	NLE	0.65 J	10.2 J	0.39 J	108	1.6	0.4 J	2.7	43.3	0.66 J	233 J	0.38 J	< 0.25
C21-C40 Aliphatics	NLE	NLE	NLE	1.9 J	9.3 J	< 0.66 UJ	246	6.5 JB	1.9 JB	3.5 JB	41.1 J	1.6 JB	5.1 J	< 0.53 UJ	< 0.51 UJ
C9-C12 Aliphatics	NLE	NLE	NLE	0.5 J	15.8 J	0.25 J	0.39 J	2.4 J	0.64 J	5.8 J	104 J	0.44 J	0.33 J	0.33 J	0.14 J
Total Aliphatics	NLE	NLE	NLE	2.9 J	246 J	< 2 UJ	262 J	27.9 J	3.3 J	55 J	772 J	2.9 J	7.2 J	< 1.6 UJ	< 1.5 UJ
Total Aromatics	NLE	NLE	NLE	2 J	166	1.6 J	116	15.3	2.2 J	36.3	825	2.8 J	311	2.1 J	< 1.1
Total EPH	5,100	1,700	NLE	4.9 J	413	< 3.3	378	43.2	5.5 J	91.4	1,600	5.6 J	318	3.2 J	< 2.6
Wet Chemistry - Solids															
Percent Solids (percent)	NLE	NLE	NLE	79.2	84.7	71.8	86	77.8	74.1	70.9	75.5	71	90.6	90.3	90.8

Attachment B - Table 2
Validated Laboratory Data Results for Soil
Parcel 79

Sample ID	NJ Residential Direct Contact SRS	NJ Non- Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Soil PAR-79-A75-SB-101	Soil PAR-79-A75-SB-02	Soil PAR-79-A75-SB-02	Soil PAR-79-A75-SB-02	Soil PAR-79-A75-SB-03	Soil PAR-79-A75-SB-03	Soil PAR-79-A75-SB-03	Soil PAR-79-A75-SB-04	Soil PAR-79-A75-SB-04	Soil PAR-79-A75-SB-04
Depth				2-2.5	0.5-1	3.5-4	9.5-10	0.5-1	3-3.5	9.5-10	0.5-1	3-3.5	9.5-10
Sample Date				4/13/2016	4/13/2016	4/13/2016	4/13/2016	4/13/2016	4/13/2016	4/13/2016	4/13/2016	4/13/2016	4/13/2016
Semivolatile Organic Compounds (ug/kg)													
2-Methylnaphthalene	230,000	2,400,000	8,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6,000	17,000	25,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)													
C10-C12 Aromatics	NLE	NLE	NLE	0.48 JB	0.88 JB	1.4 B	0.75 JB	0.87 JB	1 JB	0.79 JB	1.1 BJ	1.2 BJ	1.6 BJ
C12-C16 Aliphatics	NLE	NLE	NLE	< 0.45 UJ	0.76 J	0.63 J	< 0.47 UJ	< 0.45 UJ	0.69 J	< 0.49 UJ	0.47 J	0.9 J	< 0.53 UJ
C12-C16 Aromatics	NLE	NLE	NLE	0.2 J	1.4	3.7	0.33 J	1.8	2	< 0.2	1.3 J	0.97 J	1.6 J
C16-C21 Aliphatics	NLE	NLE	NLE	< 0.44 UJ	0.92 J	1.3 J	< 0.46 UJ	1.6 J	1.6 J	< 0.48 UJ	0.74 J	< 0.48 UJ	1.4 J
C16-C21 Aromatics	NLE	NLE	NLE	0.63 J	27	77	0.21 J	21.9	77.3	0.42 J	2.8 J	11.1 J	5.5 J
C21-C36 Aromatics	NLE	NLE	NLE	0.26 J	117 J	192 J	1.4 J	61.1 J	232 J	2.3 J	6.6 J	19.9 J	15.8 J
C21-C40 Aliphatics	NLE	NLE	NLE	1.8 J	4.1 J	15.8 J	1.8 JB	2.1 J	4.9 J	0.7 J	4.3 JB	12.7 J	19 J
C9-C12 Aliphatics	NLE	NLE	NLE	0.37 J	0.89 J	0.67 J	0.39 J	0.4 J	0.41 J	0.48 J	0.79 J	0.66 J	0.48 J
Total Aliphatics	NLE	NLE	NLE	2.6 J	6.7 J	18.4 J	2.6 J	4.5 J	7.6 J	1.7 J	6.3 J	14.7 J	21 J
Total Aromatics	NLE	NLE	NLE	1.6 J	146	275	2.6 J	85.7	312	3.7 J	11.9 J	33.2 J	24.4 J
Total EPH	5,100	1,700	NLE	4.1 J	152	293	5.2 J	90.2	319	5.4 J	18.2	47.9	45.5
Wet Chemistry - Solids													
Percent Solids (percent)	NLE	NLE	NLE	90.9	77.7	87.1	86.8	89.8	88	86.1	87.1	83.6	77.9

Footnote:

1) All historical data collected prior to 2013 are reported as provided by others.

2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.

3) NLE = no limit established.

5) **Bold** = chemical detection

6) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

J = estimated detected value due to a concentration below the reporting limit or due to discrepancies in meeting

U = non-detect, i.e. not detected at or above this value.

7)

- Cell Shade values represent a result that is above the NJ Residential Direct Contact Soil Remediation Standard.

####

There are no NJDEP soil standards for individual PCB Aroclors, therefore the total PCB NJDEP standards were used for individual Aroclors.

- Cell Shade values represent a result that is above the NJ Non-Residential Direct Contact Soil Remediation Standard.

###

There are no NJDEP soil standards for individual PCB Aroclors, therefore the total PCB NJDEP standards were used for individual Aroclors.

- Cell Shade values represent a result that is above the NJ Impact to GW Soil Screening Level

###

Remediation Standard.

###

- Cell Shade values represent a result that is above both the NJ Residential and Non-Residential Direct Contact Soil Remediation Standard.

###

8) Criteria action level source document and web address.

- The NJ Residential Direct Contact Soil Remediation Standard refers to the NJDEP's May 7, 2012 Remediation Standards

http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Non-Residential Direct Contact Soil Remediation Standard refers to the NJDEP's May 7, 2012 Remediation Standards.

http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Impact to GW Soil Screening Level criteria refers to the Development of Site Specific Impact to Ground Water Soil Remediation Standards - Nov 2013 revised

http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

February 10, 2016

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

Re: Response to NJDEP's August 25, 2015 Comments on the April 2015 *Underground Storage Tanks Within ECP Parcel 79, Fort Monmouth, New Jersey*
PI G000000032

Dear Ms. Range:

Fort Monmouth and Parsons have reviewed the New Jersey Department of Environmental Protection (NJDEP) comments on the subject submittal for ECP Parcel 79, as documented in your letter dated August 25, 2015. We appreciate this opportunity to work with you on Parcel 79. Responses to your comments are provided below, for your review and concurrence or further comments.

A. Attachment E – Areas 74 and 75, Aboveground Storage Tanks and Associated Piping

A1. COMMENT: *Area 75 – Aboveground Storage Tanks: Two 210,000 gallon aboveground storage tanks, utilized from the 1940s through the 1980s, were removed in May of 1995. Based upon a review of the analytical results and chain of custody (COC) as well as a conversation with Joe Fallon this date, who collected the samples, it appears 13 samples were collected in the proximity of AST A - all analytical results were below 1000 ppm, and 15 samples in the proximity of AST B. Per Mr. Fallon, the samples would have been collected both at/along the perimeter and within the footprint/center of the former ASTs, mainly at 0-6", but also at deeper intervals (as indicated on the COCs). Although it appears sampling frequency and location may have been adequate, it is unclear the analytical parameter requirements, either those in effect at the time of sampling or currently in effect, were met as regarding contingency analysis for AST B. Of the 15 samples apparently collected for AST B, 5 exceeded the trigger for additional analyses on 25% of those exceeding 1000 ppm (VOs+ 10 at the time of sampling, 2-methylnaphthalene and naphthalene per current guidance). It is also unclear where the ground water sampling points referenced for Area 74 were located relative to the former ASTs of Area 75?*

A1. RESPONSE: Additional soil and groundwater sampling is proposed at Area 75 as described in the attached ***Parcel 79 Work Plan Addendum***. Soil sample results from 1995 were reported in the April 2015 ***Underground Storage Tanks Within ECP Parcel 79*** submittal; however, there is some uncertainty regarding the sample locations because a sample map was not located. For example, the highest Total Petroleum Hydrocarbons (TPH) concentrations in soil were encountered in samples labeled as "AST-B," but it is unclear to which of the two ASTs these sample designations referred. Further, there was uncertainty regarding the locations of groundwater samples collected for adjoining

Area 74. Therefore, soil and groundwater from both former AST locations (AST-1 and AST-2 as described in the attached **Parcel 79 Work Plan Addendum**) will be re-sampled to characterize the current concentration of TPH constituents in this area and, if necessary, the need for any contingency analyses in soil. Soil samples from 4 boring locations within the vicinity of the former ASTs, and groundwater samples from two of these four locations, will be collected as described in the attached **Parcel 79 Work Plan Addendum**.

A2: COMMENT: *Area 74 -Associated Piping: As per Enclosure 4 of Attachment E, the underground piping was previously NFAed.*

A2: RESPONSE: Agreed.

B. Underground Storage Tanks

B1. COMMENT: *In addition to those USTs previously granted a designation of NFA, it is agreed no further action is necessary for the following #2 fuel USTs:*

UST 29-1 – 1000 gallon steel

UST 142A – 1000 gallon steel; C93-3714

UST 401-26 – 1000 gallon steel

UST 416-32 – 1000 gallon steel

UST 430B-45 – 550 gallon tank; C93-3987*

**note – page 1, Section 1.1 and scrap receipt each indicate UST was steel; Att B states fiberglass*

UST 443-49 – 1080 gallon steel

UST 474 – 1000 gallon steel

B1. RESPONSE: Agreed. File photographs of UST 430B-45 confirm that it was a steel tank.

B2. COMMENT: *Although the 2008 Site Investigation previously performed did include ground water sampling, a review of the sampling points did not indicate they were placed within distances sufficient to allow for adequate evaluation of the USTs referenced below. Based upon soil contamination extending to within 2' of, and in many cases, into the ground water table (GWT), a ground water investigation is necessary at the following UST locations (the elimination of the sheen via excavation, as referenced for USTs 441, 444 is insufficient):*

UST 142B (Attachment H)

UST 437 (Attachment Q)

UST 440 (Attachment R)

UST 441 (Attachment S)

UST 444 (Attachment U)

UST 448 (Attachment W); please specify if well P79-E2 is sufficiently proximate to comply with regulations/guidance

UST 449 (Attachment X)

UST 450 (Attachment Y)

UST 451 (Attachment Z)

B2. RESPONSE: Additional groundwater sampling is proposed to assess the potential for impacts to groundwater from each of the UST sites listed above, as described in the attached **Parcel**

79 Work Plan Addendum. The 2008 SI sample P79-E2 was slightly displaced from the former UST 448 location and so additional sampling near this UST location will be performed. Also, UST 445 has been added to this list (see Response B3 below). A total of 10 groundwater samples will be collected from temporary well locations downgradient of these former USTs.

B3. COMMENT: *Though it is understood no evidence was found of a tank remaining in the below referenced locations during geophysical or trenching activities, a tank was noted as present in historic Army material, e.g. 1956 Fuel Storage Map, while Attachment 1 indicates heating oil USTs may remain between Tilly Avenue and Leonard Avenue. No soil sampling was apparently performed in any of these locations. Unless all tanks, former or current, have been evaluated in accordance with the applicable Departmental regulations and guidance documents, the NJDEP cannot comment as to the absence or presence of a petroleum discharge. The request on page 7 of 7 for designation of an NFA for the following USTs cannot be granted unless the necessary sampling is performed at each:*

UST/Bldg. No. 168 (Attachment I)

UST/Bldg. No. 169 (Attachment I)

UST/Bldg. No. 407

UST/Bldg. No. 415

UST/Bldg. No. 424

UST/Bldg. No. 425

UST/Bldg. No. 435 (Attachment P)

UST/Bldg. No. 438

UST/Bldg. No. 442

UST/Bldg. No. 455 (Attachment V)

UST/Bldg. No. 456 (Attachment AA consisted of only analytical data, from a single sample – 6-12”; information provided is insufficient for evaluation/comment)

USTs/Bldg. No.s 457 through 467

UST/Bldg. No.s 469 through 473

UST/Bldg. No. 476

UST/Bldg. No. 488

UST/Bldg. No. 489

B3. RESPONSE: As discussed in the April 2015 *Underground Storage Tanks Within ECP Parcel 79* submittal, the Army has conducted adequate due diligence to assess the presence of USTs within Parcel 79, including the use of geophysical survey techniques, historical maps and metal detectors to locate USTs. Since there were no indications of USTs at these sites, the Army is not proposing additional assessment work at the above locations.

Note that Attachment V in the April 2015 *Underground Storage Tanks Within ECP Parcel 79* submittal provides analytical data for UST 445, not UST 455 as noted above. There was no tank removed or analytical data collected at the Building 455 location; however, the Army removed an UST and collected analytical data in support of closure at UST 445. Therefore, we request that NJDEP re-evaluate UST/Bldg. No. 445 as described in Attachment V of the April 2015 *Underground Storage Tanks Within ECP Parcel 79* submittal. In anticipation of NJDEP's request to address a potential data need, one additional groundwater sample is proposed from a location

downgradient of UST 445 to assess the potential for impact to groundwater, as described in the attached **Parcel 79 Work Plan Addendum**.

Although Building 433 was not specifically mentioned in the above comment, the Army has no record or geophysical evidence of an UST at former Building 433, and therefore the Army is not proposing additional assessment work at the Building 433 location.

B4. COMMENT: *While not indicated as present on the 1956 Fuel Storage map, nor found during geophysical survey activities, the 2014 ECP UHOT Report indicates a potential for the presence of an UST at several additional locations. Although no tank was found, insufficient information (sampling) has been submitted to allow for comment as to the presence or absence of a discharge for the following:*

UST/Bldg. No. 170 (Attachment I)

UST/Bldg. No. 171 (Attachment I)

UST/Bldg. No. 408

UST/Bldg. No. 436

UST/Bldg. No. 468

B4. RESPONSE: Comment acknowledged. As discussed in the April 2015 **Underground Storage Tanks Within ECP Parcel 79** submittal, the Army has conducted adequate due diligence to assess the presence of USTs within Parcel 79, including the use of geophysical survey techniques, historical maps and metal detectors to locate USTs. Since there were no indications of USTs at these sites, the Army is not proposing additional assessment work at the above locations. If the Army has creditable evidence of a potential release, then we will evaluate these locations to achieve regulatory acceptance and site/parcel closure. However, in absence of any new evidence, we believe that the Army has done an adequate level of due diligence.

C. Attachments J, K & L – USTs at Former Building 202

C1. COMMENT: *Four USTs were noted as present, and removed (although the ECP UHOT report indicates high potential for the continued presence of two USTs), at the former building, the specific locations of which two (202A & 202B), were not indicated. Although apparently no discharge was associated with USTs 202B or 202C (the submittal implies no soils were removed at either UST prior to the sampling which indicated non-detect TPH levels), discharges were associated with both USTs 202A and 202D.*

The affected soils at UST 202A were removed to 5.5', likely extending to within 2' of or into the ground water table, in this area, and contained almost 8,000 ppm TPHC, the level referenced in the Department's guidance (<http://www.nj.gov/dep/srp/guidance/rs/#phc>) as the residual product/free product limit. As such, it is possible former UST 202A could have contributed to the levels of ground water contamination noted at UST 202D. An NFA at this time is, therefore, not appropriate.

As indicated in the submittal, ground water was found to contain benzene at low levels, 2-methylnaphthalene, and BN TICs in a sampling event performed in June of 2011 at UST 202D. An NFA of the soils, as requested, is not appropriate at this time. Insufficient information is known relative to the ground water contamination in the area, including the current extent or levels of contamination.

C1. RESPONSE: Additional soil and groundwater sampling is proposed at former USTs 202A and 202D to assess the potential for impacts to groundwater, as described in the attached **Parcel 79 Work Plan Addendum**. This will include sampling from existing well 202MW01, which was installed in August 2011 but apparently not yet sampled. Soil samples from 3 boring locations near the former USTs 202A and 202D, and groundwater samples from one of these borings and two existing monitor wells, will be collected as described in the attached **Parcel 79 Work Plan Addendum**.

We respectfully request that NJDEP reconsider approving NFA for USTs 202B and 202C based on the soil results previously submitted (Attachments K and L of the April 2015 **Underground Storage Tanks Within ECP Parcel 79**). Following tank removals, there was no requirement for contaminated soil excavation, and all TPH soil results were nondetected for each of these tank sites.

D. Attachment CC/UST 490- aka UST 490-58

D1. COMMENT: *Although a Site Assessment Compliance Statement and Standard Reporting Form for tank removal are reported in Attachment CC as submitted to the DEP in 1991, as indicated in the submittal, there is no record of NFA approval from the NJDEP; no soil sampling had been performed at that time.*

Soil sampling collected from the 6-6.5' interval was performed in 2005, indicating levels of TPH ranged from 2981 to 8762 ppm, with VO's below criteria. Ground water samples were below the Ground Water Quality Standards (GWQS) in effect at the time, however, no report was submitted; 2-methylnaphthalene was found at 32.13 ppb. Additional sampling (actual locations of which are unclear) performed in May of 2010 (prior to phase-in of EPH), at the 3.5-4' interval – the rationale for selection of that interval is unreported – found TPH ranging from ND to 5941.76 ppm. Although the required contingency sampling was reported as exhibiting no exceedences in the submittal, the Impact to Ground Water Standard for 2-methylnaphthalene of 8 ppm was exceeded in Sample B4, with a result of 30.32 ppm. Ground water sampling conducted in May and July of 2010 found elevated levels of 2-methylnaphthalene, as well as elevated BN TICs.

No figure identifying the location of the May 2010 sampling was provided, however, it appears contamination above the 5100 ppm criterion may be present from at least the 3.5 to the 6.5' interval, and deeper. TPH/EPH cannot exceed the residual product/free product limit of 8,000 mg for No. 2 fuel; 2-methylnaphthalene above standard in the soil as well as the ground water is present. Compliance averaging of the soils is not appropriate. Additional characterization of the ground water contamination is required. The current conditions of the ground water and the extent of any contamination must be determined, at which time further decisions regarding remedial requirements may be determined.

D1. RESPONSE: Additional soil and groundwater sampling is proposed at former UST 490, as described in the attached **Parcel 79 Work Plan Addendum**. This will include sampling from existing well 490MW01, which was installed in August 2011 but not yet sampled. Soil samples from 3 boring locations near the former UST 490, and groundwater samples from these three borings and one existing monitor well, will be collected as described in the attached **Parcel 79 Work Plan Addendum**.

Linda S. Range, NJDEP
Response to Comments
Underground Storage Tanks Within ECP Parcel 79
February 10, 2016
Page 6 of 6

We look forward to your review of these responses and approval or additional comments. The technical Point of Contact (POC) for this matter is Kent Friesen at (732) 383-7201 or by email at kent.friesen@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,



William R. Colvin, PMP, PG, CHMM
BRAC Environmental Coordinator

Attachment:

Parcel 79 Work Plan Addendum for Former Storage Tank Sites

cc: Delight Balducci, HQDA ACSIM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

Fort Monmouth
Oceanport and Monmouth County, New Jersey
Parcel 79 Work Plan Addendum for Former Storage Tank Sites
Date: February 2016

1.0 PURPOSE

The purpose of this Parcel 79 Work Plan is to outline the site-specific Scope of Work (SOW) for the investigation of former underground storage tank (UST) and above-ground storage tanks (AST) sites within Parcel 79 at Fort Monmouth. In general, the scope consists of supplemental soil and groundwater sampling at select UST and AST sites to assess the potential for impacts to groundwater, as requested by the New Jersey Department of Environmental Protection (NJDEP) in their comment letter dated August 25, 2015. The field activities will involve:

- Advancement of approximately 10 shallow soil borings using a Geoprobe rig to depths below shallow groundwater, and collection of soil samples from select boring intervals for chemical analysis of petroleum constituents.
- Installation of temporary monitor wells within approximately 16 Geoprobe borings, and collection of “grab” groundwater samples for chemical analysis of petroleum constituents.
- Re-development and sampling of 3 existing monitor wells for chemical analysis of petroleum constituents.

Additional details on the rationale for the proposed work are provided in Parsons response to NJDEP’s comment letter dated February 9, 2016.

2.0 REFERENCE DOCUMENTS

HEALTH AND SAFETY - All Site personnel are required to read, understand, and comply with the safety guidelines in the Accident Prevention Plan (APP) including the Site Health and Safety Plan (SHASP), which is included as Appendix A of the APP.

FIELD PROCEDURES – The detailed field procedures to be used for the activities described in this sampling plan are described in the March 2013 Final Sampling and Analysis Plan (SAP).

3.0 SITE BACKGROUND

Parcel 79 is located within the eastern portion of the Main Post at Fort Monmouth, just east of Oceanport Avenue (**Figure 1**). Available information for multiple USTs at Parcel 79 was previously provided to NJDEP in the Army’s submittal dated April 22, 2015 and entitled *Underground Storage Tanks Within ECP Parcel 79, Fort Monmouth, New Jersey*. The NJDEP responded in their letter dated August 25, 2015 approving No Further Action (NFA) for some USTs, but requiring assessment of groundwater at other UST sites prior to determining if NFA was appropriate. NJDEP’s rationale for requiring additional

groundwater assessment included the potential for soil contamination extending to within 2 ft of or into groundwater.

One round of depth-to-water measurements was previously collected from multiple existing monitor wells within Parcel 79 in October 2015 to support this supplemental field evaluation (see **Figure 2**). Groundwater flow directions are interpreted to be towards the northeast in the northern portion, towards the southeast in the southern portion, and towards the east in the central portion of Parcel 79.

4.0 SAMPLING LOCATIONS

General locations for additional sampling were identified in the Army's recent responses to NJDEP comments, and are shown on **Figure 1**. A description of the field sampling and analytical activities to be performed is presented below. A summary of the field sampling and analytical activities is presented in **Table 1**.

4.1 Area 75 Above-Ground Storage Tanks

The NJDEP (2010) guidance entitled "*Protocol For Addressing Extractable Petroleum Hydrocarbons*" specifies contingency analysis for naphthalene and 2-methylnaphthalene in the event that extractable petroleum hydrocarbon (EPH) concentrations exceed 1,000 mg/kg. In their comment letter dated August 25, 2015, NJDEP noted that contingency analysis was not previously performed for soil samples from "AST-B" that had TPH concentrations in excess of 1,000 mg/kg. Therefore, soil and groundwater from two former AST locations (AST-1 and AST-2) in Area 75 will be re-sampled to characterize the current concentrations of constituents in these areas. Additional samples are proposed at four locations (four borings and two temporary wells) as shown on **Figure 3**.

Soil samples will be collected from four Geoprobe[®] borings (two from the former tank centers, and two downgradient) completed to at least 4 feet below the water table to assess current concentrations and vertical extent of extractable petroleum hydrocarbons (EPH). Three soil samples will be collected from each boring. Previous surface soil samples were collected from 0 to 0.5 ft bgs, but slightly deeper near-surface soil samples will be collected to allow for the potential that some backfill was placed over the site during tank demolition. Samples will be collected from 0.5-1.0 ft bgs, from a deeper 6-inch interval that is below any field evidence of contamination to delineate vertical extent, and from the most contaminated intermediate interval encountered (between 0.5-1.0 ft bgs and the deeper vertical extent sample) based on field evidence (visual, olfactory, [photoionization detector [PID] screening). Each soil sample will be analyzed for EPH and, if necessary, for any contingency analyses (naphthalene and 2-methylnaphthalene) required by Table 2.1 of the Technical Requirements for Site Remediation.

Groundwater samples will be collected from the two Geoprobe[®] borings located north (downgradient) of the former AST locations, as shown on **Figure 3**. Groundwater from these locations will be sampled using temporary wells within the Geoprobe borings, and then the borings will be abandoned. Each groundwater sample will be analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) plus tentatively identified compounds (TICs), as specified in Table 2-1 of the NJAC 7:26E Technical Requirements for Site Remediation.

4.2 Multiple Parcel 79 Underground Storage Tanks

NJDEP noted that groundwater assessment was not performed for USTs 437, 440, 441, 444, 445, 448, 449 (where no tank was found), 450, and 451 (**Figure 4**), and for UST 142B (**Figure 5**). Therefore, additional sampling of groundwater is proposed from immediately downgradient of each of these former tank locations. A Geoprobe[®] boring will be completed to approximately 4 feet below the water table. Groundwater from these locations will be sampled using temporary wells within the Geoprobe borings, and then the borings will be abandoned. Each groundwater sample will be analyzed for VOCs and SVOCs plus TICs.

4.3 USTs 202A and 202D

NJDEP noted that groundwater assessment was not performed for USTs 202A and 202D. Therefore, additional sampling of groundwater is proposed from the vicinity of each former tank location. Soil sampling will also be performed because NJDEP commented that soil contamination encountered at UST 202A could have contributed to impacts to groundwater.

Additional Geoprobe soil sampling is proposed for three locations as shown on **Figure 6**. Each Geoprobe boring will be completed to at least 4 feet below the water table to assess current concentrations and vertical extent of EPH. Three soil samples will be collected from each boring. Samples will be collected from approximately 3.0-3.5 ft bgs (or another interval representative of clean overburden), from a deeper 6-inch interval that is below any field evidence of contamination to delineate vertical extent, and from the most contaminated intermediate interval encountered (between 3.0-3.5 ft bgs and the deeper vertical extent sample) based on field evidence (visual, olfactory, PID screening). Each soil sample will be analyzed for EPH, with additional contingency SVOC analysis for naphthalene and 2-methylnaphthalene in the event that EPH concentrations exceed 1,000 mg/kg.

Groundwater from one downgradient boring location will be sampled using a temporary well within the Geoprobe boring, and then the boring will be abandoned. This groundwater sample will be analyzed for VOCs and SVOCs plus TICs.

Existing monitor well 202MW01 was constructed by the Army at this site in 2011 to monitor groundwater contamination from the UST 202D site, but was never sampled. Well 202MW01 and downgradient well M16MW02 will be re-developed and sampled using the NJDEP low-flow purge and sample method, and analyzed for VOCs and SVOCs plus TICs.

4.4 UST 490

NJDEP noted that groundwater assessment was not performed for UST 490, and that TPH in soil exceeded the residential standard. Therefore, additional sampling of soil and groundwater is proposed at this former tank location.

Additional Geoprobe soil and groundwater sampling is proposed for three locations as shown on **Figure 7**. The purpose of the two Geoprobe locations north of Building 490 is to supplement the existing soil and groundwater analyses for delineation of TPH contamination in excess of soil and groundwater comparison criteria towards the east and north. The purpose of the third Geoprobe location south of Building 490 is for delineation of petroleum contamination in the downgradient direction (south). Each Geoprobe boring will be completed to at least 4 feet below the water table to assess current concentrations

and vertical extent of EPH. Three soil samples will be collected from each boring. Samples will be collected from approximately 2.0-2.5 ft bgs (or another interval representative of clean overburden), from a deeper 6-inch interval that is below any field evidence of contamination to delineate vertical extent, and from the most contaminated intermediate interval encountered (between 2.0-2.5 ft bgs and the deeper vertical extent sample) based on field evidence (visual, olfactory, PID screening). Each soil sample will be analyzed for EPH, with additional contingency SVOC analysis for naphthalene and 2-methylnaphthalene in the event that EPH concentrations exceed 1,000 mg/kg.

Groundwater samples from these three boring locations will be sampled using temporary wells within the Geoprobe borings, and then the borings will be abandoned. Each groundwater sample will be analyzed for VOCs and SVOCs plus TICs.

Existing monitor well 490MW01 was constructed by the Army at this site in 2011 to monitor groundwater contamination from the UST 490 site, but was never sampled. Well 490MW01 will be re-developed and sampled using the NJDEP low-flow purge and sample method, and analyzed for VOCs and SVOCs plus TICs.

5.0 OTHER ITEMS

Additional sampling of soil or groundwater may be performed to further delineate the extent of contamination in excess of applicable regulatory levels, based on the results of the sampling proposed in Section 4.0.

TABLE 1
SAMPLING SUMMARY FOR PARCEL 79 WORK PLAN ADDENDUM
FORT MONMOUTH, NEW JERSEY

Parcel	Location	Field Meter Readings ^{a/}	VOCs + TICs by Method 8260C ^{b/}	SVOCs + TICs by Method 8270D ^{c/}	Non-Fractionated EPH ^{d/}
Soil					
79	Area 75 ASTs (Figure 3) - 4 soil borings, 3 samples each (assume 1 sample in each boring requires contingency SVOC analysis) ^{e/}	4	0	4	12
79	USTs 202A and 202D (Figure 6) - 3 soil borings, 3 samples each (assume 1 sample in each boring requires contingency SVOC analysis) ^{e/}	4	0	3	9
79	UST 490 - 3 soil borings, 3 samples each (assume 1 sample in each boring requires contingency SVOC analysis) ^{e/}	3	0	3	9
Groundwater					
79	Area 75 ASTs - 2 groundwater samples (Figure 3)	2	2	2	0
79	USTs 437, 440, 441, 444, 445, 448, 449, 450, and 451 (Figure 4) - 1 groundwater sample each	9	9	9	0
79	UST 142B (Figure 5) - 1 groundwater sample	1	1	1	0
79	USTs 202A and 202D (Figure 6) - 3 groundwater samples	3	3	3	0
79	UST 490 - 4 groundwater samples	4	4	4	0
QA/QC samples (see SAP for additional details) ^{f/}					
Field Duplicates (5% Sampling Frequency per media)		NA ^{g/}	1	2	2
Matrix Spike (5% Sampling Frequency per media)		NA	1	2	2
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	2	2
Trip Blank (1 per cooler of VOCs per media)		NA	1	0	0
QA Split (5% per media)		NA	1	2	2
Equipment Blank (5% Sampling Frequency per media)		NA	1	2	2
TOTAL		NA	25	39	40

Notes:

NA = not applicable.

TBD = to be determined.

^{a/} Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID h pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.

^{b/} VOCs = volatile organic compounds; TICs = tentatively identified compounds.

^{c/} SVOCs = semivolatile organic compounds; TICs = tentatively identified compounds.

^{d/} EPH = extractable petroleum hydrocarbons.

^{e/} If any EPH concentrations in soil exceed 1000 mg/kg in any of the site samples, then minimum 25% of the samples where EPH exceeds 1

^{f/} QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan.



State of New Jersey

CHRIS CHRISTIE
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-633-1439

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

August 25, 2015

John Occhipinti
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Underground Storage Tanks Within ECP Parcel 79 dated April 2015*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Occhipinti:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, received April 28, 2015, prepared by Department of the Army Office of Assistant Chief of Staff for Installation Management to provide responses to NJDEP letters of July 10, 2012 and May 30, 2013, and to provide a comprehensive documentation of the location and "closure status" of USTs identified within ECP Parcel 79.

Identification of the USTs in the submittal was made based upon review of historic records as well as the past performance of various geophysical/magnetometer surveys. As indicated in the report (and substantiated in Attachment D), twenty nine (29) USTs have previously received a designation of No Further Action (NFA) necessary from the Department. The submittal (page 7 of 7) proposes sufficient activity has taken place to allow for NFA of the entire Parcel 79 with the exception of an unused UST at Building 446 (which apparently did not undergo sampling) and the ground water at two of the USTs (UST 202D and UST 490), however, this office does not agree with same, and additional comment is warranted.

Attachment E -Areas 74 & 75 – Aboveground Storage Tanks & Associated Piping

Area 75 – Aboveground Storage Tanks

Two 210,000 gallon aboveground storage tanks, utilized from the 1940s through the 1980s, were removed in May of 1995. Based upon a review of the analytical results and chain of custody

(COC) as well as a conversation with Joe Fallon this date, who collected the samples, it appears 13 samples were collected in the proximity of AST A – all analytical results were below 1000 ppm, and 15 samples in the proximity of AST B. Per Mr. Fallon, the samples would have been collected both at/along the perimeter and within the footprint/center of the former ASTs, mainly at 0-6", but also at deeper intervals (as indicated on the COCs). Although it appears sampling frequency and location may have been adequate, it is unclear the analytical parameter requirements, either those in effect at the time of sampling or currently in effect, were met as regarding contingency analysis for AST B. Of the 15 samples apparently collected for AST B, 5 exceeded the trigger for additional analyses on 25% of those exceeding 1000 ppm (VOs+10 at the time of sampling, 2-methylnaphthalene and naphthalene per current guidance). It is also unclear where the ground water sampling points referenced for Area 74 were located relative to the former ASTs of Area 75?

Area 74 – Associated Piping

As per Enclosure 4 of Attachment E, the underground piping was previously NFAed.

Underground Storage Tanks

In addition to those USTs previously granted a designation of NFA, it is agreed no further action is necessary for the following #2 fuel USTs:

- UST 29-1 – 1000 gallon steel
- UST 142A – 1000 gallon steel; C93-3714
- UST 401-26 – 1000 gallon steel
- UST 416-32 – 1000 gallon steel
- UST 430B-45 – 550 gallon tank*; C93-3987

*note – page 1, Section 1.1 and scrap receipt each indicate UST was steel; Att B states fiberglass

- UST 443-49 – 1080 gallon steel
- UST 474 – 1000 gallon steel

Although the 2008 Site Investigation previously performed did include ground water sampling, a review of the sampling points did not indicate they were placed within distances sufficient to allow for adequate evaluation of the USTs referenced below. Based upon soil contamination extending to within 2' of, and in many cases, into the ground water table (GWT), a ground water investigation is necessary at the following UST locations (the elimination of the sheen via excavation, as referenced for USTs 441, 444 is insufficient):

- UST 142B (Attachment H)
- UST 437 (Attachment Q)
- UST 440 (Attachment R)
- UST 441 (Attachment S)
- UST 444 (Attachment U)
- UST 448 (Attachment W); please specify if well P79-E2 is sufficiently proximate to
comply with regulations/guidance
- UST 449 (Attachment X)

UST 450 (Attachment Y)

UST 451 (Attachment Z)

Though it is understood no evidence was found of a tank remaining in the below referenced locations during geophysical or trenching activities, a tank was noted as present in historic Army material, e.g. 1956 Fuel Storage Map, while Attachment I indicates heating oil USTs may remain between Tilly Avenue and Leonard Avenue. No soil sampling was apparently performed in any of these locations. Unless all tanks, former or current, have been evaluated in accordance with the applicable Departmental regulations and guidance documents, the NJDEP cannot comment as to the absence or presence of a petroleum discharge. The request on page 7 of 7 for designation of an NFA for the following USTs cannot be granted unless the necessary sampling is performed at each:

UST/Bldg. No. 168 (Attachment I)

UST/Bldg. No. 169 (Attachment I)

UST/Bldg. No. 407

UST/Bldg. No. 415

UST/Bldg. No. 424

UST/Bldg. No. 425

UST/Bldg. No. 435 (Attachment P)

UST/Bldg. No. 438

UST/Bldg. No. 442

UST/Bldg. No. 455 (Attachment V)

UST/Bldg No. 456 (Attachment AA consisted of only analytical data, from a single sample - 6-12"; information provided is insufficient for evaluation/comment)

USTs/Bldg. No.s 457 through 467

UST/Bldg. No.s 469 through 473

UST/Bldg. No. 476

UST/Bldg. No. 488

UST/Bldg. No. 489

While not indicated as present on the 1956 Fuel Storage map, nor found during geophysical survey activities, the 2014 ECP UHOT Report indicates a potential for the presence of an UST at several additional locations. Although no tank was found, insufficient information (sampling) has been submitted to allow for comment as to the presence or absence of a discharge for the following:

UST/Bldg. No. 170 (Attachment I)

UST/Bldg. No. 171 (Attachment I)

UST/Bldg. No. 408

UST/Bldg. No. 436

UST/Bldg. No. 468

Attachments J, K & L – USTs at Former Building 202

Four USTs were noted as present, and removed (although the ECP UHOT report indicates high potential for the continued presence of two USTs), at the former building, the specific locations of which two (202A & 202B), were not indicated. Although apparently no discharge was associated with USTs 202B or 202C (the submittal implies no soils were removed at either UST prior to the sampling which indicated non-detect TPH levels), discharges were associated with both USTs 202A and 202D.

The affected soils at UST 202A were removed to 5.5', likely extending to within 2' of or into the ground water table, in this area, and contained almost 8,000 ppm TPHC, the level referenced in the Department's guidance (<http://www.nj.gov/dep/srp/guidance/rs/#phc>) as the residual product/free product limit. As such, it is possible former UST 202A could have contributed to the levels of ground water contamination noted at UST 202D. An NFA at this time is, therefore, not appropriate.

As indicated in the submittal, ground water was found to contain benzene at low levels, 2-methylnaphthalene, and BN TICs in a sampling event performed in June of 2011 at UST 202D. An NFA of the soils, as requested, is not appropriate at this time. Insufficient information is known relative to the ground water contamination in the area, including the current extent or levels of contamination.

Attachment CC/UST 490- aka UST 490-58

Although a Site Assessment Compliance Statement and Standard Reporting Form for tank removal are reported in Attachment CC as submitted to the DEP in 1991, as indicated in the submittal, there is no record of NFA approval from the NJDEP; no soil sampling had been performed at that time.

Soil sampling collected from the 6-6.5' interval was performed in 2005, indicating levels of TPH ranged from 2981 to 8762 ppm, with VO's below criteria. Ground water samples were below the Ground Water Quality Standards (GWQS) in effect at the time, however, no report was submitted; 2-methylnaphthalene was found at 32.13 ppb. Additional sampling (actual locations of which are unclear) performed in May of 2010 (prior to phase-in of EPH), at the 3.5-4' interval – the rationale for selection of that interval is unreported - found TPH ranging from ND to 5941.76 ppm. Although the required contingency sampling was reported as exhibiting no exceedences in the submittal, the Impact to Ground Water Standard for 2-methylnaphthalene of 8 ppm was exceeded in Sample B4, with a result of 30.32 ppm. Ground water sampling conducted in May and July of 2010 found elevated levels of 2-methylnaphthalene, as well as elevated BN TICs.

No figure identifying the location of the May 2010 sampling was provided, however, it appears contamination above the 5100 ppm criterion may be present from at least the 3.5 to the 6.5' interval, and deeper. TPH/EPH cannot exceed the residual product/free product limit of 8,000 mg for No. 2 fuel; 2-methylnaphthalene above standard in the soil as well as the ground water is

present. Compliance averaging of the soils is not appropriate. Additional characterization of the ground water contamination is required. The current conditions of the ground water and the extent of any contamination must be determined, at which time further decisions regarding remedial requirements may be determined..

Please contact this office if you have any questions.

Sincerely,



Linda S. Range

C: Joe Pearson, Calibre
Rich Harrison, FMERA
Joe Fallon, FMERA
James Moore, USACE
Frank Barricelli, RAB



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

April 22, 2015

Ms. Linda Range
New Jersey Department of Environmental Protection
Case Manager
Bureau of Southern Field Operations
401 East State Street, 5th Floor
PO Box 407
Trenton, NJ 08625

**Re: Underground Storage Tanks within Parcel 79
 Fort Monmouth, NJ**

Attachments:

- A. Correspondence
- B. Summary Table of Parcel 79 Underground Storage Tanks
- C. Site Layout Drawings of Parcel 79 (Recent and Historical)
- D. No Further Action Letters from NJDEP
- E. Areas 74 and 75 ASTs File Review and Analyses
- F. UST 29 File Review
- G. UST 142A Report
- H. UST 142B Report
- I. Bldgs. 168, 169, 170 and 171 File Review
- J. UST 202A File Review
- K. UST 202B File Review
- L. USTs 202C and 202D File Reviews and Report
- M. UST 401 Report
- N. UST 416 Report
- O. UST 430B Report
- P. UST 435 Notes
- Q. UST 437 File Review and Analyses
- R. UST 440 File Review and Analyses
- S. UST 441 File Review and Analyses
- T. UST 443 Report
- U. UST 444 File Review and Analyses
- V. UST 445 File Review and Analyses
- W. UST 448 File Review and Analyses
- X. UST 449 File Review and Analyses
- Y. UST 450 File Review and Analyses
- Z. UST 451 File Review and Analyses
- AA. Bldg. 456 Analyses
- BB. UST 474 File Review and Analyses
- CC. UST 490 File Review, Report and Analyses

DD. Geophysical Survey Report

Previous Correspondence (provided in Attachment A):

1. NJDEP letter to the Army dated July 10, 2012, re: *March 2012 Army Response to NJDEP Correspondence Letter Dated October 28, 2008*.
2. Army letter to NJDEP dated January 31, 2013, re: *NJDEP's Response to Army Correspondence (Dated March 16, 2012)*.
3. NJDEP letter to the Army dated May 30, 2013, re: *Army's January 31, 2013 Correspondence – Miscellaneous USTs*.

Dear Ms. Range:

The U.S. Army Fort Monmouth (FTMM) has reviewed existing file information for underground storage tank (UST) sites at Fort Monmouth within Environmental Condition of Property (ECP) Parcel 79. One purpose of this review was to provide a comprehensive response to NJDEP's previous comments on Parcel 79 (Correspondence 1); these responses (Attachment A) supplement the information previously provided in Correspondence (2) and (3). In addition, this submittal provides comprehensive documentation of the location and closure status of all USTs identified within this parcel, which we believe will be useful for the future Phase II property transfer.

Responses to NJDEP's comments concerning Parcel 79 in Correspondence (1) are provided in Attachment A, as well as the previous correspondence concerning Parcel 79 (Correspondence 1 through 3). The majority of the removed and potential USTs were used for residential heating oil, or were less than 2000 gallons in size and used to store heating oil for nonresidential buildings, and are therefore considered unregulated heating oil tanks (UHOTs). A summary table of UHOTs identified within Parcel 79 is provided as Attachment B, and the locations of these UHOTs within Parcel 79 are presented in Attachment C. All but one of the UHOTs that have been positively identified within Parcel 79 have been removed; the exception is UST 446, which was left in place as described further below. Additional "potential" UHOTs associated with former barracks (as shown on historical drawings; see Attachment C) are also described in this summary that have not been located. The table of UHOTs in Attachment B describes which UHOTs were identified by each of the relevant sources of information, including the Addendum ECP UHOT Report (Parsons, 2014), the 1956 fuel storage tanks map (presented in Attachment C; also previously provided as Appendix O of the 2007 ECP Report, and within Appendix G of the ECP Site Investigation Report), and NJDEP's July 10, 2012 letter (Correspondence 1).

Multiple UHOTs within Parcel 79 have been identified that were previously approved for No Further Action (NFA) by NJDEP; documentation of this approval is provided in Attachment D, and referenced below for specific UHOTs. In these cases, there is generally a supporting investigation report that was previously submitted to NJDEP and that describes the basis for closure. For the sake of brevity, we have not included these reports for UHOTs where NFA has already been approved. However, these reports are available within the FTMM environmental records.

In the Attachment B table, the term "Case Closed" has been used (consistent with previous FTMM procedures) to indicate the Army determined that no further sampling or remedial actions were warranted for a specific UST site. "Case Open" indicates the Army determined that

ongoing monitoring, reporting or possibly even remedial action was warranted. In contrast, "No Further Action" has been reserved for NJDEP approval that no further sampling or remedial actions are warranted. "Case Open" sites previously identified within Parcel 79 in Attachment B can now be considered as "Closed" by this submittal.

The Parcel 79 area generally includes that portion of Fort Monmouth bounded by Parker Creek to the northwest, Oceanport Avenue to the southwest, Oceanport Creek to the southeast, and Burns Avenue (and its southerly extension) to the northeast (see Attachment C). Several discrete areas that are designated as Installation Restoration Program (IRP) sites or as separate ECP parcels are also located within the same general area as Parcel 79, but are excluded from this submittal. These excluded sites are shown on Attachment C and include:

- FTMM-15 Water Tank, also known as Parcel 78.
- FTMM-16 Former Pesticide Storage Area (Bldg. 498), also known as Parcel 81.
- Parcel 80 Former Bldgs. 105 and 106.
- Parcel 82 Residential Communities Initiative (RCI) 400 Area.
- Parcel 95 PCB Transformer Leak near Bldgs. 454 and 456.

These excluded IRP sites and ECP Parcels will be addressed under separate cover as needed.

Bulk fuel oil aboveground storage tanks (ASTs) were previously located in the northeastern portion of Parcel 79 (see the current layout drawing in Attachment C). The two 210,000 gallon fuel oil ASTs were removed in 1995, and associated piping was removed in 1997. Soil samples were collected both for the AST site (designated as Area 75) and the associated piping (designated as Area 74), as well as groundwater samples for Area 74. A file review summary and the results of the investigations are presented in Attachment E. Based upon the results of the analyses, we request No Further Action for this Area 74 and 75 AST site.

Regarding the multiple USTs that were previously removed from Parcel 79, we are submitting the following documentation, and we request a No Further Action determination for each site (site that have been previously approved by NJDEP are highlighted in green):

- UST 29 File Review summary and analyses is presented in Attachment F.
- UST 104 NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 142A investigation report is presented in Attachment G.
- UST 142B investigation report is presented in Attachment H.
- Bldgs. 168, 169, 170 and 171 File Review is presented in Attachment I; these are demolished buildings where USTs are not likely to be present.
- UST 197-2 NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 202A File Review is presented in Attachment J.
- UST 202B File Review is presented in Attachment K.
- UST 202C File Review and Report are presented in Attachment L.
- UST 202D File Review summary, report and additional analyses are presented in Attachment L. NFA for soils at this site is warranted. Benzene and 2-methylnaphthalene in groundwater exceeded the NJDEP Ground Water Quality Criteria.
- UST 400 NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 401 investigation report is presented in Attachment M.
- Bldg. 407 is a demolished building where there were no geophysical survey indications of an underground storage tank found.

- Bldg. 408 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- UST 410 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 411 NFA was approved by NJDEP on 5/30/2013 (Attachment D).
- UST 412 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 413 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 414 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- Bldg. 415 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- UST 416 investigation report is presented in Attachment N.
- UST 417 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 418 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 419 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 420 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 421 NFA was approved by NJDEP on 5/30/2013 (Attachment D).
- UST 422 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 423 NFA was approved by NJDEP on 5/30/2013 (Attachment D).
- Bldg. 424 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 425 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- UST 426 NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 427 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 428 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 429 NFA was approved by NJDEP on 10/23/2000 (Attachment D).
- UST 430A NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 430B investigation report is presented in Attachment O.
- UST 430C NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- Bldg. 433 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- UST 434 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- Bldg. 435 is a demolished building where there were no geophysical survey indications of an underground storage tank found; test trenching was performed as described in Attachment P; no tank was found.
- Bldg. 436 is a demolished building where there were no geophysical survey indications of an underground storage tank found; field studies were performed that discovered USTs at other locations in this general area, but no tank was found at this location.
- UST 437 File Review and Analyses is presented in Attachment Q.
- Bldg. 438 is a demolished building where there were no geophysical survey indications of an underground storage tank found; field studies were performed that discovered USTs at other locations in this general area, but no tank was found at this location.
- UST 439 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 440 File Review and Analyses is presented in Attachment R.
- UST 441 File Review and Analyses is presented in Attachment S.

- Bldg. 442 is a demolished building where there were no geophysical survey indications of an underground storage tank found; field studies were performed that discovered USTs at other locations in this general area, but no tank was found at this location.
- UST 443 investigation report is presented in Attachment T.
- UST 444 File Review and Analyses is presented in Attachment U.
- UST 445 File Review and Analyses is presented in Attachment V.
- UST 446 is a steel 1000 gallon fuel oil tank that was partially excavated in 2010, but was left in place because it was partially covered by the existing Bldg. 451 foundation, and therefore could not be removed without damaging the overlying structure.
- UST 447 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 448 File Review and Analyses is presented in Attachment W.
- UST 449 File Review and Analyses is presented in Attachment X.
- UST 450 File Review and Analyses is presented in Attachment Y.
- UST 451 File Review and Analyses is presented in Attachment Z.
- UST 453 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 454 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- Bldg. 455 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Note that this is a different location than existing Bldg. 455.
- Bldg. 456 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Note that existing Bldg. 456 partially overlies this former Bldg. 456. A single soil sample was collected at Bldg. 456 as presented in Attachment AA.
- Bldg. 457 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Note that existing Bldg. 455 partially overlies this former Bldg. 457.
- Bldg. 458 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 459 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Former Bldg. 460 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Note that existing Bldg. 456 partially overlies this former Bldg. 460.
- Bldg. 460 is an existing building where there were no geophysical survey indications of an underground storage tank found.
- Former Bldg. 461 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Note that existing Bldg. 457 overlies this former Bldg. 461.
- Former Bldg. 462 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Note that existing Bldg. 457 partially overlies this former Bldg. 462.
- Bldg. 463 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 464 is a demolished building where there were no geophysical survey indications of an underground storage tank found.

- Bldg. 465 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 466 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 467 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 468 is a demolished building where there were no geophysical survey indications of an underground storage tank found. Further, there is no tank shown on the 1956 fuel storage drawing (Attachment C).
- Bldg. 469 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 470 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 471 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 472 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 473 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- UST 474 File Review and Analyses is presented in Attachment BB.
- UST 475 NFA was approved by NJDEP on 10/23/2000 (Attachment D).
- Bldg. 476 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 488 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- Bldg. 489 is a demolished building where there were no geophysical survey indications of an underground storage tank found.
- UST 490 File Review, Report and Analyses is presented in Attachment CC. NFA for soils at this site is warranted. 2-Methylnaphthalene in groundwater exceeded the NJDEP Ground Water Quality Criteria.
- UST 491 NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 492 NFA was approved by NJDEP on 8/29/2000 (Attachment D).

Many of the Parcel 79 UHOTs were steel fuel oil tanks associated with former barracks that have been demolished. Geophysical surveys were performed to locate potential USTs that may have remained after the buildings were removed, as described in Attachment DD. A combination of the geophysical surveys as well as the historical maps and metal detectors were used to locate multiple UHOTs within the Parcel 79 area, which were subsequently removed in 2010. However, for multiple building numbers listed in the Attachment B summary table (for example, 407, 408, etc.), there were no geophysical anomalies identified that were potentially related to underground tanks, and consequently no tanks were found at multiple locations.

Groundwater samples were collected from multiple petroleum tank sites during site investigation activities, including the Area 74 bulk fuel oil AST piping area, and USTs 29, 401, 416, and 430B. Groundwater VOC and SVOC analytes from these sites were either non-detected or detected at concentrations below the NJDEP Ground Water Quality Criteria. Groundwater samples were also collected from 8 locations within Parcel 79 during the ECP Site

Investigation (SI; Shaw, 2008); all VOC and SVOC analytes from these samples were also either non-detected or detected at concentrations below the NJDEP Ground Water Quality Criteria. An oily sheen on groundwater was observed within the tank excavations at USTs 441, 444, and 448 during 2010 removal activities; soil remediation was completed at each of these sites, which eliminated the source of the oily sheen. At UST 202D, benzene (1.61 µg/L) and 2-methylnaphthalene (233 µg/L) were present in groundwater at concentrations that exceeded the NJDEP interim Ground Water Quality Criteria (1 and 30 µg/L, respectively). At UST 490, 2-methylnaphthalene was present in groundwater at concentrations up to 115 µg/L, which exceeded the NJDEP interim Ground Water Quality Criteria of 30 µg/L. In summary, the results of previous investigations do not indicate the presence of widespread groundwater contamination at Parcel 79, although two localized areas with exceedance of NJDEP Ground Water Quality Criteria have been identified at USTs 202D and 490.

This information supports the conclusion that UST contamination issues identified within Parcel 79 have been adequately addressed by previous environmental activities. Numerous UHOT sites were identified within this Parcel and were addressed under the FTMM tank removal and assessment program over the past approximately 20 years. Three unresolved issues remain:

- One fuel oil UHOT was partially uncovered and then left in place at former Bldg. 446 due to structural concerns with the overlying Bldg. 451 foundation.
- Groundwater at UST 202D exceeded the NJDEP Ground Water Quality Criteria for benzene and 2-methylnaphthalene.
- Groundwater at UST 490 exceeded the NJDEP Ground Water Quality Criteria for 2-methylnaphthalene.

In summary, we submit that the Army has provided adequate due diligence with regards to the environmental condition of this Parcel, and we request that NJDEP approve No Further Action for Parcel 79, with the exception of the UHOT remaining at Bldg. 446, and groundwater at UST 202D and UST 490. Should you have any questions or require additional information, please contact me at (732) 380-7064 or by email at wanda.s.green2.civ@mail.mil.

Sincerely,



Wanda Green
BRAC Environmental Coordinator

cc: Delight Balducci, HQDA ACSIM
Joseph Pearson, Calibre
James Moore, USACE
Cris Grill, Parsons

ATTACHMENT L

USTs 202C and 202D File Reviews and Report

Contents:

- Underground Storage Tank File Review for Bldg. 202C
- Underground Storage Tank File Review for Bldg. 202D
- Report: *Underground Storage Tank Closure and Remedial Investigation Report, Main Post – 400 Area (former) Building 202 (USTs No. 202C and 202D)*
- Analytical Data Report, Fort Monmouth Environmental Laboratory, Bldg. 202D/UST (collected 25-June-11)

UNDERGROUND STORAGE TANK FILE REVIEW
FORT MONMOUTH BRAC 05 FACILITY
OCEANPORT, NEW JERSEY

Date: March 12, 2015Review Performed By: Kent Friesen, ParsonsSite ID: **Bldg. 202D**Registration ID: NoneRecommended Status of Site: **Case Closed**UST Probability (from May 2014 "Addendum 1 ECP UHOT Report"): **High (see below)**Based on the file review, were there indications of a contaminant release? ☒ Yes ☐ NoNJDEP Release No. or DICAR (If applicable): 05-05-23-1621-46Did NJDEP approve No Further Action (NFA) for this site? ☐ Yes ☒ No ☐ Not ApplicableTank Description: ☒ Steel ☐ Fiberglass Size: 500 gals. Contents: Heating Oil☒ Residential ☐ Commercial/IndustrialTank Removed? ☒ Yes ☐ No If "yes," removal date: 5/23/2005Were closure soil samples taken? ☒ Yes ☐ No Analyses: TPH, VOCsComparison criteria: 5,100 mg/kg TPH, RDCSRSWere closure soil sample results less than comparison criteria? ☒ Yes ☐ No

Brief Narrative

Former Bldg. 202 was civilian quarters according to FTMM real property records. Two fiberglass (202A and 202B) and two steel (202C and 202D) tanks were removed from Bldg. 202. Removal of tanks 202C and 202D were addressed in the same December 2006 TVS report (*Underground Storage Tank Closure Report and Remedial Investigation Report, Main Post – 400 Area (former) Building 202 (USTs No. 202C and 202D)*) (attached).

Following tank removal in May 2005, soil samples were collected from the 202D tank excavation and analyzed by the Fort Monmouth Environmental Laboratory for total petroleum hydrocarbons (TPH). The soil sample results were non-detected (ND) to 1212 mg/kg for TPH, which were less than 5,100 mg/kg for TPH, which is the current TPH remediation criterion. The sample with highest TPH was also analyzed for volatile organic compounds (VOCs); none were detected above the NJDEP Residential Direct Contact Soil Remediation Standard (RDCSRS). On June 25, 2011, additional sampling from the location with the highest TPH detected several SVOC hydrocarbons in soils but below the RDCSRS. In groundwater, the VOC benzene (1.61 ug/L) and SVOC 2-methylnaphthalene (at 233 ug/L) exceeded the Class IIA or interim Groundwater Quality Criteria of (1 ug/L or 30 ug/L, respectively).

In conclusion, the analytical results support the UST Case Status of "Case Closed" for soils. There is evidence of groundwater impacts (benzene and 2-methylnaphthalene). A "high probability" of a tank remaining seems unlikely since a steel tank was already removed.

Recommendations (if any): Change status from "Case Open" to "Case Closed", request NFA

Signed: 

Kent A. Friesen, Parsons

U.S. Army Garrison
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Remedial Investigation Report

***Main Post – 400 Area (former) Building 202
(USTs No. 202C and 202D)***

**NJDEP UST Registration No. 90010
NJDEP Case No. 05-05-23-1621-46
USTs No. 202C and 202D**

December 2006

**UNDERGROUND STORAGE TANK CLOSURE
AND REMEDIAL INVESTIGATION REPORT**

**MAIN POST - 400 AREA (USTS NO. 202C AND 202D)
NJDEP UST REGISTRATION NO. 081533
NJDEP CASE NO. 05-05-23-1621-46**

DECEMBER 2006

PREPARED FOR:

**U.S. ARMY GARRISON, FORT MONMOUTH, NJ
DIRECTORATE OF PUBLIC WORKS
BUILDING 167
FORT MONMOUTH, NJ 07703**

PREPARED BY:

**TECOM-VINNELL SERVICES, INC.
P.O. BOX 60
FT. MONMOUTH, NJ 07703**

TABLE OF CONTENTS

EXECUTIVE SUMMARY	IV
1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES	1
1.1 Overview	1
1.2 Site Description	2
1.2.1 Geological/Hydrogeological Setting	2
1.3 Health and Safety	4
1.4 Removal of the Underground Storage Tanks	4
1.4.1 General Procedures	4
1.4.2 Underground Storage Tank Excavation	4
1.5 Underground Storage Tank Decommissioning and Disposal	5
1.6 Management of Excavated Soils	5
2.0 REMEDIAL INVESTIGATION ACTIVITIES	6
2.1 Overview	6
2.2 Field Screening/Monitoring	6
2.3 Soil Sampling	7
3.0 CONCLUSIONS AND RECOMMENDATIONS	8
3.1 Soil Sampling Results	8
3.2 Conclusions and Recommendations	8

TABLE OF CONTENTS (CONTINUED)

FIGURES

- Figure 1 Site Location Map**
Figure 2 Soil Sampling Location Site Map

TABLES

- Table 1 Summary of Laboratory Analysis**
Table 2 Summary of Laboratory Analytical Results-TPH
Table 3 Summary of Laboratory Analytical Results-VOA

APPENDICES

- Appendix A Certifications**
Appendix B Waste Manifest
Appendix C UST Disposal Certificate
Appendix D Soil Analytical Data Package

EXECUTIVE SUMMARY

UST Closure

On May 23, 2005, two single wall steel underground storage tanks (USTs) were closed by removal in accordance with the Directorate of Public Works (DPW) UST Management Plan for the U.S. Army Garrison, Fort Monmouth, New Jersey. The USTs were located in a grass area on the east and west side of (former) Building 202, a residential building in the Main Post area of Fort Monmouth. USTs No. 202C and 202D were a 1,000-gallon and 500-gallon, respectively, No. 2 heating oil tanks. The fill port and vent pipe were not present in the excavation. The associated supply/return piping was still connected to the tanks coming from the former building. The tank closure was performed by TECOM-Vinnell Services, Inc. (TVS).

Site Assessment

The site assessment was performed by TVS personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual*. Soils surrounding the tank were screened visually and with air monitoring instruments for evidence of contamination. Following removal, the USTs were inspected. Holes were noted in UST No. 202D and potentially contaminated soils were observed surrounding the tank.

The results from the closure soil samples collected from UST No. 202C were all "Not Detected". Post-remediation soil samples were collected after the removal of UST No. 202D and approximately 20 cubic yards of potentially contaminated soils were excavated. Post-remediation samples 202D-1, 202D-2, 202D-3, 202D-4, 202D-5 and 202-duplicate were collected from a total of five (5) locations along the sidewalls and bottom of the excavation. All samples were analyzed for total petroleum hydrocarbons (TPH).

Groundwater was not encountered in the bottom of the excavation.

Findings

The closure and post-remediation soil samples collected from the UST excavations associated with former UST No. 202C and 202D contained no TPH concentrations above the NJDEP health based criterion of 10,000 milligrams per kilogram (mg/kg) for total organic contaminants (N.J.A.C. 7:26E and revisions dated February 3, 1994). The soils surrounding UST No. 202D exhibited signs of potential contamination and were removed. Subsequently, after excavation of the area, analytical results of samples 202D-3 and 202-duplicate had TPH concentrations of 1,212.8 mg/kg and 1,126.9 mg/kg, respectively.

Site Restoration

Following receipt of all post-remediation soil sampling results, the excavation was backfilled to grade with uncontaminated excavated soil and clean fill in compacted lifts. The excavation site was then restored to its original grade with four inches of topsoil and seeded.

Conclusions and Recommendations

Based on the post-remediation soil sampling results, soils with TPH concentrations exceeding the NJDEP health based criterion of 10,000 mg/kg for total organic contaminants do not remain in the location of the former USTs. In the samples analyzed for volatile organics, there are no detected compounds that exceed the NJDEP Residential Direct Contact Soil Cleanup Criteria.

No Further Action is proposed in regard to the closure and site assessment of USTs No. 202C and 202D located adjacent to Building 499.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

Two underground storage tanks (USTs), New Jersey Department of Environmental Protection (NJDEP) Registration No. 90010, were closed in the 400 area of Main Post at U.S. Army Garrison, Fort Monmouth, New Jersey on May 23, 2005. Refer to site location map on Figure 1. This report presents the results of the implementation of the DPW's UST Management Plan, March, 1996. The UST No. 202C was a 1,000-gallon single-walled steel tank and UST No. 202D was a 500-gallon single-walled steel tank. Both USTs were used to store No. 2 heating oil at residential Building 202. The tanks were discovered during demolition of the building.

Decommissioning activities for USTs No. 202C and 202D complied with all applicable federal, state and local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to: N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 & 1910.120. The closure and subsurface evaluation of the USTs were conducted by a NJDEP licensed TVS employee.

This UST Closure and Remedial Investigation Report has been prepared by TVS to assist the U.S. Army Garrison-DPW in complying with the NJDEP - Underground Storage Tanks regulations. The applicable NJDEP regulations at the date of closure were the *Closure of Underground Storage Tank Systems* (N.J.A.C. 7:14B-9 et seq. December, 1987 and revisions dated April 20, 2003).

This report was prepared using information required by the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) (*Technical Requirements*). Section 1 of this UST Closure and Remedial Investigation Report provides a summary of the UST decommissioning activities. Section 2 of this report describes the remedial investigation activities. Conclusions and recommendations, including the results of the soil sampling investigation, are presented in Section 3 of this report.

1.2 SITE DESCRIPTION

Building 202, was located in the eastern portion of the Main Post area of Fort Monmouth, as shown on Figure 1. USTs No. 202C and 202D were located next to the foundation on the east side and west side of Building 202. The fill port and vent pipe were not encountered in the excavation. The associated supply/return piping was still connected to the tanks coming from the former building. A site map is provided on Figure 2.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the 800 Area. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Main Post area.

Regional Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, New Jersey Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, sand and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on Precambrian and lower Paleozoic rocks (Zapeczka, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansey Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and Zapeczka, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member

(Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish brown clayey, medium- to coarse-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray to black, medium-to-fine grained sand with abundant clay, mica, and glauconite.

The Tinton sand conformably overlies the Red Bank Sand and ranges from a clayey medium to very coarse grained feldspathic quartz and glauconite sand to a glauconitic coarse sand. The color varies from dark yellowish orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit (Minard, 1969). The upper part of the Tinton is often highly oxidized and iron oxide encrusted (Minard).

Hydrogeology

The water table aquifer in the Main Post area is identified as part of the "composite confining units", or minor aquifers. The minor aquifers include the Navesink formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation.

Based on records of wells drilled in the Main Post area, water is typically encountered at depths of 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Due to the proximity of the Atlantic Ocean to Fort Monmouth, shallow groundwater may be tidally influenced and may flow toward creeks and brooks as the tide goes out, and away from creeks and brooks as the tide comes in. However, an abundance of clay lenses and sand deposits were noted in borings installed throughout Fort Monmouth. Therefore the direction of shallow groundwater should be determined on a case by case basis.

Shallow groundwater is locally influenced within the Main Post area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean, rivers and tributaries)
- topography
- nature of the fill material within the Main Post area
- presence of clay and silt lenses in the natural overburden deposits
- local groundwater recharge areas (e.g., streams, lakes)

Due to the fluvial nature of the overburden deposits (e.g., sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. This is consistent with lithologies observed in borings installed within the Main Post area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of gravel silt and/or clay.

USTs No. 202C and 202D were located approximately 150 feet north of Oceanport Creek, the nearest water body, which flows into the Shrewsbury River. Based on the Main Post topography, the groundwater flow in the area of Building 202 is anticipated to be to the south.

1.3 HEALTH AND SAFETY

Work site health and safety hazards were minimized during all decommissioning activities. All areas which posed a vapor hazard were monitored by a qualified individual utilizing a calibrated photo-ionizer detector : Thermo Instruments Organic Vapor Monitor (OVM) – Model #580-B. The individual monitored the work area to confirm that there were no contaminants present in the breathing zone above OSHA's permissible exposure limits (PEL's).

1.4 REMOVAL OF THE UNDERGROUND STORAGE TANKS

1.4.1 General Procedures

- All underground utilities were marked out by the respective trade shops or utility contractor prior to excavation activities.
- All activities were carried out with high regard to safety and health and safeguarding of the environment.
- All excavated soils were visually examined and screened with an OVA for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.
- An NJDEP certified Subsurface Evaluator was present during all closure and remediation activities.

1.4.2 Underground Storage Tank Excavation

During decommissioning activities, surficial soil was carefully removed to expose the USTs. The tanks were emptied of all liquids prior to removal from the ground. Approximately 300 gallons of liquid was pumped out of the USTs by Lorco Petroleum Services, Inc. into a tank truck and transported to their NJDEP-approved petroleum recycling and disposal facility located in Elizabeth, New Jersey. Refer to Appendix C for non-hazardous waste manifest (No. NHZ-49685).

After the USTs were removed from the excavations, they were staged on an impervious surface, labeled and examined for holes. Holes in tank No. 202D were observed during the inspection by the Subsurface Evaluator. Soils surrounding the UST were screened visually and with an OVA for evidence of contamination. Soil staining and an odor of petroleum hydrocarbons were observed. It was determined that remedial soil excavation would be conducted prior to sampling.

DPW personnel were made aware of the field conditions that existed, prompting them to call the NJDEP Spill Hotline, in which Case No. 05-05-23-1621-46 was assigned.

1.5 UNDERGROUND STORAGE TANK DECOMMISSIONING AND DISPOSAL

Subsequent to disposal, the USTs were purged with air to remove vapors prior to cutting. A 4 foot by 3 foot access hole was made in the USTs using a pneumatic ripper gun with a non-sparking bit. The USTs were cleaned first with rubber squeegees and then with adsorbent material broomed on the sidewalls and bottom. The adsorbent material was then drummed and subsequently placed into Ft. Monmouth's 'Oil Spill Debris' roll-off container for proper disposal. The atmosphere in and around the tank was monitored using an OVM and an Oxygen/Lower Explosive Level (LEL) meter to ensure safe working conditions during cutting and cleaning activities.

The tanks were then transported by TVS to Red Bank Recycling, Inc., Central Ave., Red Bank, NJ for disposal in compliance with all applicable regulations and laws. Refer to Appendix C for UST disposal certificate.

The Subsurface Evaluator labeled the USTs with the following information:

- site of origin
- NJDEP UST Facility ID number
- date of removal
- size of tank
- previous contents of tank

1.6 MANAGEMENT OF EXCAVATED SOILS

Based on OVA air monitoring and visual observations, approximately 20 cubic yards of potentially contaminated soil was excavated from the area surrounding UST No. 202D. All soil was loaded into a truck and transported to the Main Post ID 27 Soil Staging Area (located behind Bldg.166). The soil was stockpiled on an impervious concrete pad and covered with heavy duty reinforced polyethylene tarps, prior to recycling at Soil Remediation of Philadelphia. Soils that did not exhibit signs of contamination were separated during the excavation and used as backfill.

2.0 REMEDIAL INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Remedial Investigation was managed by U.S. Army DPW personnel. All analyses were performed and reported by Fort Monmouth Environmental Testing Laboratory, a NJDEP-certified testing laboratory. All sampling was performed by a NJDEP Certified Subsurface Evaluator according to the methods described in the NJDEP Field Sampling Procedures Manual (1992). Sampling frequency and parameters analyzed complied with the NJDEP document *Technical Requirements for Site Remediation*, 7:26E-3.9 (June 7, 1993 and revisions dated February 3, 2003) which was the applicable regulation at the date of the closure. All records of the Remedial Investigation activities are maintained by the Fort Monmouth DPW Environmental Office.

The following Parties participated in Closure and Remedial Investigation Activities.

- Ft. Monmouth Directorate of Public Works-Environmental Branch
Contact Person: Joseph Fallon
Phone Number: (732) 532-6223
- Subsurface Evaluator, Tank Closure: Frank Accorsi
Employer: TECOM-Vinnell Services, Inc. (TVS)
Phone Number: (732) 532-5241
NJDEP License No.: 0010042
(TVS)NJDEP License No.: US252302
- Analytical Laboratory: Fort Monmouth Environmental Testing Laboratory
Contact Person: Dan Wright
Phone Number: (732) 532-4359
NJDEP Laboratory Certification No.: 13461
- Used Oil Hauler: Lorco Petroleum Services, Inc., Elizabeth, NJ
Contact Person: Dan MacKay
Phone Number: (908) 820-8800
US EPA ID No.: NJR000023036

2.2 FIELD SCREENING/MONITORING

Field screening was performed by a NJDEP certified Subsurface Evaluator using an OVM and visual observations to identify potentially contaminated material. Soils were removed from the excavation surrounding UST No. 202D until no evidence of contamination remained.

2.3 SOIL SAMPLING

On May 23, 2005, closure soil samples 202C-1, 202C-2, 202C-3, 202C-4, were collected from a total of four (4) locations along the tank centerline bottom of UST No. 202C excavation. On May 24, 2005, post-remediation soil samples 202D-1, 202D-2, 202D-3, 202D-4, 202D-5 and 202D-duplicate were collected from a total of five (5) locations along the sidewalls and the bottom of UST No. 202D excavation. Groundwater was not encountered in the excavation. Refer to soil sampling location map in Figure 3. All samples were analyzed for TPH. Samples 202D-3 and 202D-duplicate had concentrations exceeding 1,000 mg/kg and were further analyzed for volatile organic compounds with a forward library search for 15 tentatively identified compounds (VO+ 15).

The site assessment was performed by TVS personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* and the NJDEP *Field Sampling Procedures Manual*. A summary of sampling activities including parameters analyzed is provided on Table 1. The closure and post-remediation soil samples were collected using properly decontaminated stainless steel trowels. After collection, the samples were immediately placed on ice in a cooler and delivered to Fort Monmouth Environmental Testing Laboratory for analysis.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

Closure soil samples for UST No. 202C were collected from a total of four locations on May 23, 2005. Post-remediation soil samples for UST No. 202D were collected from a total of five locations on May 24, 2005. These samples were collected to evaluate soil conditions following removal of the USTs. All samples were analyzed for TPH. The soil sample results were compared to the NJDEP health based criterion of 10,000 mg/kg for total organic contaminants (N.J.A.C. 7:26D and revisions dated February 3, 1994). A summary of the analytical results and comparison to the NJDEP soil cleanup criteria is provided on Table 2. The analytical data package, including associated quality control data, is provided in Appendix C.

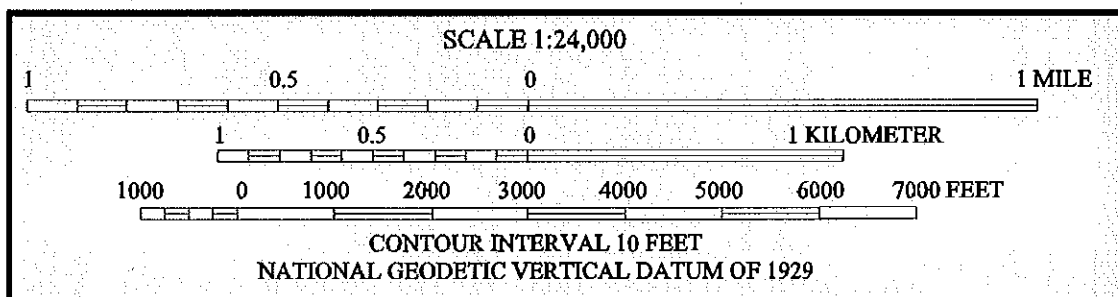
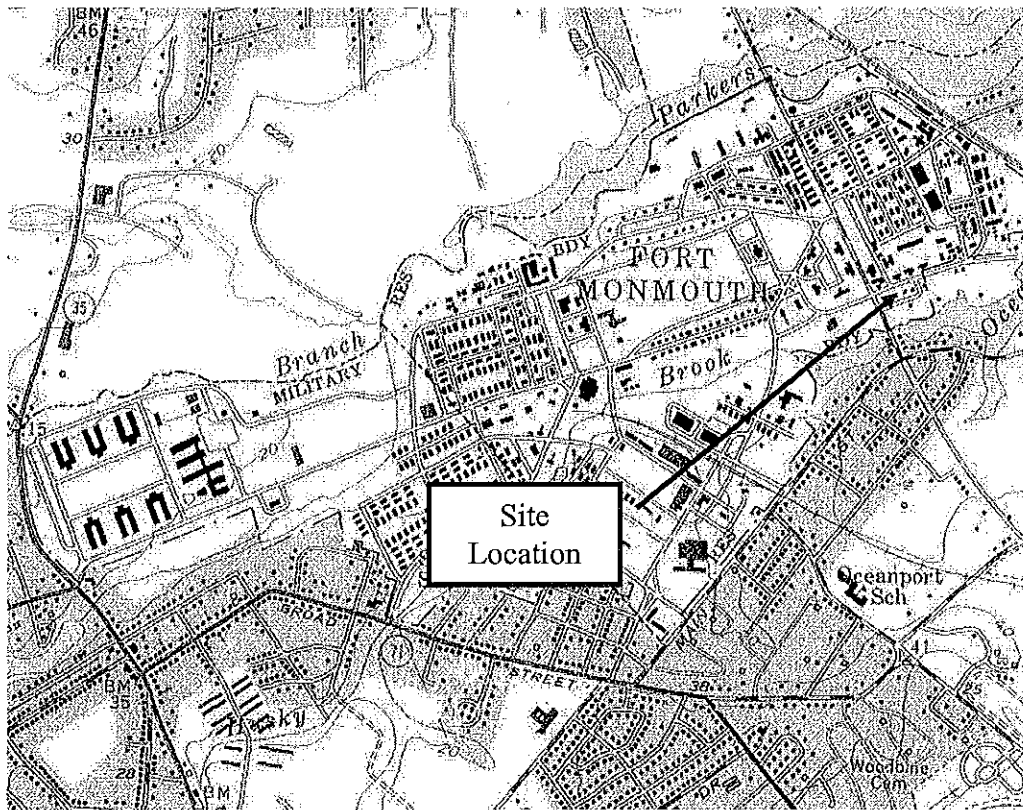
The results from the closure soil samples collected on May 23, 2005 from UST No. 202C were "Not Detected". Post-remediation soil samples collected on May 24, 2005 from UST No. 202D remedial excavation contained concentrations of TPH, but below the NJDEP soil cleanup criteria. Post-remediation samples 202D-3 and 202-duplicate contained TPH concentrations of 1,212.8 mg/kg and 1,126.9 mg/kg, respectively. These two samples were further analyzed for VO+15. The results indicated the compounds were "Not Detected".

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all closure and post-remediation soil samples collected from the closure excavation at USTs No. 202C and 202D were below the NJDEP soil cleanup criteria for total organic contaminants and volatile organic compounds.

Based on the post-remediation soil sampling results, soils with TPH concentrations exceeding the NJDEP soil cleanup criterion for total organic contaminants of 10,000 mg/kg have been excavated from the location of former UST No. 202D.

No Further Action is proposed in regard to the closure and remedial investigation of USTs No.202C and 202D at (former) Building 202.



SOURCE: USGS 7½-MINUTE SERIES (TOPOGRAPHIC)
LONG BRANCH QUADRANGLE, NEW JERSEY, 1981.

FIGURE 1
SITE LOCATION MAP
(FORMER) BUILDING T-49
USTS NO. 90010-76,77
FT. MONMOUTH, NJ

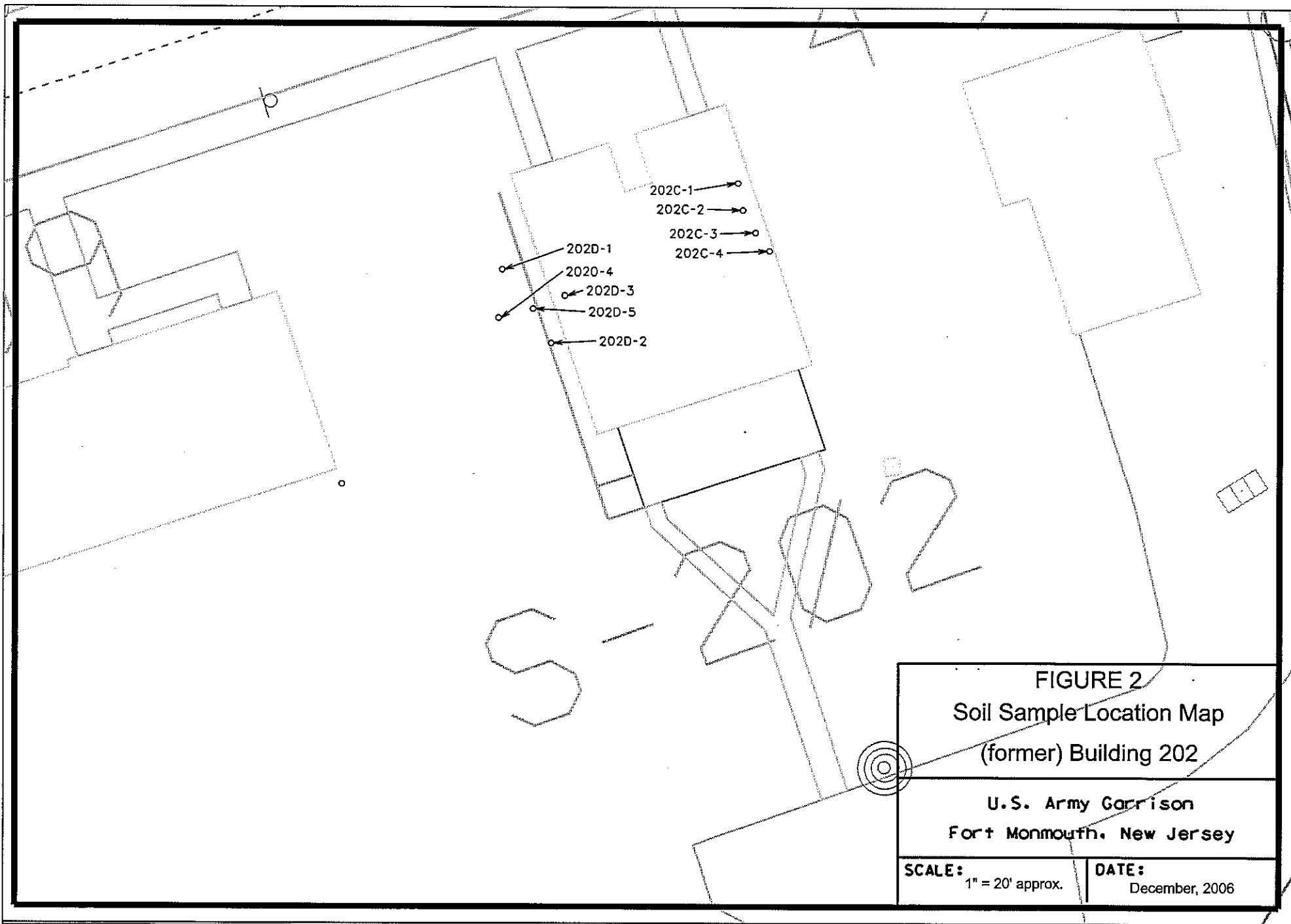


TABLE 1

SUMMARY OF LABORATORY ANALYSIS

FT. MONMOUTH, (former) BUILDING 202, USTs No. 202C and 202D
23 May 2005, 24 May 2005

SAMPLE ID	LAB SAMPLE ID	SAMPLE DATE	SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD
202C-1	5027201	23-May-05	SOIL	TPH	OQA-QAM-25
202C-2	5027202	23-May-05	SOIL	TPH	OQA-QAM-25
202C-3	5027203	23-May-05	SOIL	TPH	OQA-QAM-25
202C-4	5027204	23-May-05	SOIL	TPH	OQA-QAM-25
202D-1	5027205	24-May-05	SOIL	TPH	OQA-QAM-25
202D-2	5027206	24-May-05	SOIL	TPH	OQA-QAM-25
202D-3	5027207	24-May-05	SOIL	TPH, VOA	OQA-QAM-25; SW-846, 8260
202D-4	5027208	24-May-05	SOIL	TPH	OQA-QAM-25
202D-5	5027209	24-May-05	SOIL	TPH	OQA-QAM-25
202-duplicate	5027210	24-May-05	SOIL	TPH, VOA	OQA-QAM-25; SW-846, 8260
Trip Blank	5027211	23-May-05	METHANOL	VOA	SW-846, 8260

ABBREVIATIONS:

TPH = Total Petroleum Hydrocarbons, NJDEP Method OQA-QAM-025 (10/97)

VOA = Volatile Organic Analysis, EPA SW-846 Method 8260

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS

FT. MONMOUTH, (former) BUILDING 202, USTs No. 202C and 202D
23 May 2005, 24 May 2005

TOTAL PETROLEUM HYDROCARBONS

SAMPLE ID	LAB SAMPLE ID	SAMPLE LOCATION	SAMPLE DEPTH	MATRIX	TPH RESULT S
			(in feet)		mg/kg
202C-1	5027201	NORTH END UST	4.5 – 5.0	Soil	ND
202C-2	5027202	NORTH END UST + 5 FT.	4.5 – 5.0	Soil	ND
202C-3	5027203	NORTH END UST + 10 FT.	4.5 – 5.0	Soil	ND
202C-4	5027204	SOUTH END UST	4.5 – 5.0	Soil	ND
202D-1	5027205	NORTH WALL	5.0 – 5.5	Soil	ND
202D-2	5027206	SOUTH WALL	5.0 – 5.5	Soil	ND
202D-3	5027207	EAST WALL	5.0 – 5.5	Soil	1,212.8*
202D-4	5027208	WEST WALL	5.0 – 5.5	Soil	104.1
202D-5	5027209	BOTTOM	5.5 – 6.0	Soil	ND
202-duplicate	5027210	EAST WALL	5.0 – 5.5	Soil	1,126.9*
Trip Blank	5027211	---	---	Methanol	--

ABBREVIATIONS:

mg/kg = milligrams per kilogram = parts per million (ppm)

ND = Compound Not Detected

NA = Compound Not Analyzed

*= Further Analyzed for Volatile Organic Compounds

Gray shading indicates exceedance of NJDEP

health based criterion of 10,000 ppm total organic contaminants

TABLE 3

SUMMARY OF LABORATORY ANALYTICAL RESULTS

**FT. MONMOUTH, (former) BUILDING 202, USTs No. 202C and 202D
24 May 2005**

VOLATILE ORGANIC COMPOUNDS

SAMPLE ID	SAMPLE DATE	Benzene	Toluene	Ethylbenzene	Xylenes (total)
UNITS		ug/kg	ug/kg	ug/kg	ug/kg
202D-3	24 May 2005	ND	ND	ND	ND
202D- duplicate	24 May 2005	ND	ND	ND	ND
Trip Blank	24 May 2005	ND	ND	ND	ND
NJDEP Criteria	Residential	3	1,000	1,000	410

ABBREVIATIONS:

ug/kg = micrograms per kilogram = parts per billion (ppb)

ND = Compound Not Detected

NA = Compound Not Analyzed

Notes:

Gray shading indicates exceedance of NJDEP

Residential Direct Contact Soil Cleanup Criteria

FORT MONMOUTH ENVIRONMENTAL TESTING LABORATORY

DIRECTORATE OF PUBLIC WORKS

PHONE: (732) 532-6224 FAX: (732) 532-6263

WET-CHEM - METALS - ORGANICS - FIELD SAMPLING

CERTIFICATIONS: NJDEP #13461



ANALYTICAL DATA REPORT
Fort Monmouth Environmental Laboratory
ENVIRONMENTAL DIVISION
Fort Monmouth, New Jersey
PROJECT: 11-124965

Bldg. 202D/UST

Field Sample Location	Laboratory Sample ID#	Matrix	Date and Time of Collection	Date Received
202D-3A	1126501	Soil	25-Jun-11 10:15	06/27/11
202D-3A-DUP.	1126502	Aqueous	25-Jun-11 10:45	06/27/11
202D-3A-Field Blank	1126503	Aqueous	25-Jun-11 10:35	06/27/11
202D-3A	1126504	Aqueous	25-Jun-11 10:40	06/27/11

ANALYSIS:
FORT MONMOUTH ENVIRONMENTAL LAB
VOA+15, %SOLIDS

ACCUTEST LABORATORIES
BN+15

Dean Tardiff
6/30/11

Dean Tardiff/Date:
Laboratory Manager

The enclosed report relates only to the items tested. The report may not be reproduced, except in full, without written approval of the U.S. Army Fort Monmouth Directorate of Public Works.

Volatile Analysis Report

U.S. Army, Fort Monmouth Environmental Laboratory

NJDEP Certification #13461

Data File VA10098.D
 Operator ROBERTS
 Date Acquired 27 Jun 2011 2:19 pm

Sample Name MB06271101
 Field ID METHOD 624 6/27/11
 Sample Multiplier 1

CAS#	Compound Name	R.T.	Response	Result	MDL	RL	Qualifiers
107028	Acrolein			not detected	3.21 ug/L	5.00 ug/L	
107131	Acrylonitrile			not detected	0.98 ug/L	5.00 ug/L	
75650	tert-Butyl alcohol			not detected	1.64 ug/L	5.00 ug/L	
1634044	Methyl-tert-Butyl ether			not detected	0.11 ug/L	0.50 ug/L	
108203	Di-isopropyl ether			not detected	0.17 ug/L	0.50 ug/L	
75718	Dichlorodifluoromethane			not detected	0.17 ug/L	0.50 ug/L	
74-87-3	Chloromethane			not detected	0.27 ug/L	0.50 ug/L	
75-01-4	Vinyl Chloride			not detected	0.22 ug/L	0.50 ug/L	
74-83-9	Bromomethane			not detected	0.37 ug/L	0.50 ug/L	
75-00-3	Chloroethane			not detected	0.32 ug/L	0.50 ug/L	
75-69-4	Trichlorofluoromethane			not detected	0.15 ug/L	0.50 ug/L	
75-35-4	1,1-Dichloroethene			not detected	0.15 ug/L	0.50 ug/L	
67-64-1	Acetone			not detected	0.32 ug/L	0.50 ug/L	
75-15-0	Carbon Disulfide			not detected	0.12 ug/L	0.50 ug/L	
75-09-2	Methylene Chloride			not detected	0.26 ug/L	0.50 ug/L	
156-60-5	trans-1,2-Dichloroethene			not detected	0.14 ug/L	0.50 ug/L	
75-35-3	1,1-Dichloroethane			not detected	0.12 ug/L	0.50 ug/L	
108-05-4	Vinyl Acetate			not detected	0.20 ug/L	0.50 ug/L	
78-93-3	2-Butanone			not detected	0.22 ug/L	0.50 ug/L	
156-59-2	cis-1,2-Dichloroethene			not detected	0.12 ug/L	0.50 ug/L	
67-66-3	Chloroform			not detected	0.35 ug/L	0.50 ug/L	
75-55-6	1,1,1-Trichloroethane			not detected	0.12 ug/L	0.50 ug/L	
56-23-5	Carbon Tetrachloride			not detected	0.12 ug/L	0.50 ug/L	
71-43-2	Benzene			not detected	0.12 ug/L	0.50 ug/L	
107-06-2	1,2-Dichloroethane			not detected	0.11 ug/L	0.50 ug/L	
79-01-6	Trichloroethene			not detected	0.11 ug/L	0.50 ug/L	
78-87-5	1,2-Dichloropropane			not detected	0.12 ug/L	0.50 ug/L	
75-27-4	Bromodichloromethane			not detected	0.12 ug/L	0.50 ug/L	
110-75-8	2-Chloroethyl vinyl ether			not detected	0.24 ug/L	0.50 ug/L	
10061-01-5	cis-1,3-Dichloropropene			not detected	0.13 ug/L	0.50 ug/L	
108-10-1	4-Methyl-2-Pentanone			not detected	0.15 ug/L	0.50 ug/L	
108-88-3	Toluene			not detected	0.12 ug/L	0.50 ug/L	
10061-02-6	trans-1,3-Dichloropropene			not detected	0.13 ug/L	0.50 ug/L	
79-00-5	1,1,2-Trichloroethane			not detected	0.14 ug/L	0.50 ug/L	
127-18-4	Tetrachloroethene			not detected	0.14 ug/L	0.50 ug/L	
591-78-6	2-Hexanone			not detected	0.17 ug/L	0.50 ug/L	
126-48-1	Dibromochloromethane			not detected	0.12 ug/L	0.50 ug/L	
108-90-7	Chlorobenzene			not detected	0.12 ug/L	0.50 ug/L	
100-41-4	Ethylbenzene			not detected	0.12 ug/L	0.50 ug/L	
630-20-6	1,1,1,2-tetrachloroethane			not detected	0.13 ug/L	0.50 ug/L	
1330-20-7	m+p-Xylenes			not detected	0.30 ug/L	1.00 ug/L	
1330-20-7	o-Xylene			not detected	0.14 ug/L	0.50 ug/L	
100-42-5	Styrene			not detected	0.14 ug/L	0.50 ug/L	
75-25-2	Bromoform			not detected	0.14 ug/L	0.50 ug/L	
79-34-5	1,1,2,2-Tetrachloroethane			not detected	0.14 ug/L	0.50 ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	0.16 ug/L	0.50 ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	0.15 ug/L	0.50 ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	0.13 ug/L	0.50 ug/L	

*Results between MDL and RL are estimated values

*Higher of PQL's and Ground Water Quality Criteria as per N.J.A.C. 7:9C 07Nov2005

Qualifiers

B = Compound found in related blank

E = Value above linear range

D = Value from dilution

PQL = Practical Quantitation Limit

J= Estimated concentration, value falls between R.L. and M.D.L.

MDL = Method Detection Limit

NLE = No Limit Established

R.T. = Retention Time

R.L. = Reporting Limit

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID:

MB06271101

Lab Name: FMETL NJDEP# 13461
Project: _____ Case No: _____ Location: 202 SDG No.: 11265
Matrix: (soil/water) WATER Lab Sample ID: MB06271101
Sample wt/vol: 5.0 (g/ml) ML Lab File ID: VA10098.D
Level: (low/med) LOW Date Received: 6/25/2011
% Moisture: not dec. _____ Date Analyzed: 6/27/2011
GC Column: RTX-VM ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
---------	---------------	----	------------	---

Volatile Analysis Report

U.S. Army, Fort Monmouth Environmental Laboratory

NJDEP Certification #13461

Data File **VA10103.D**
 Operator **ROBERTS**
 Date Acquired **27 Jun 2011 5:09 pm**

Sample Name **1126503**
 Field ID **FIELD BLANK**
 Sample Multiplier **1**

CAS#	Compound Name	R.T.	Response	Result	MDL	RL	Qualifiers
107028	Acrolein			not detected	3.21 ug/L	5.00 ug/L	
107131	Acrylonitrile			not detected	0.98 ug/L	5.00 ug/L	
75650	tert-Butyl alcohol			not detected	1.64 ug/L	5.00 ug/L	
1634044	Methyl-tert-Butyl ether			not detected	0.11 ug/L	0.50 ug/L	
108203	Di-isopropyl ether			not detected	0.17 ug/L	0.50 ug/L	
75718	Dichlorodifluoromethane			not detected	0.17 ug/L	0.50 ug/L	
74-87-3	Chloromethane			not detected	0.27 ug/L	0.50 ug/L	
75-01-4	Vinyl Chloride			not detected	0.22 ug/L	0.50 ug/L	
74-83-9	Bromomethane			not detected	0.37 ug/L	0.50 ug/L	
75-00-3	Chloroethane			not detected	0.32 ug/L	0.50 ug/L	
75-69-4	Trichlorofluoromethane			not detected	0.15 ug/L	0.50 ug/L	
75-35-4	1,1-Dichloroethene			not detected	0.15 ug/L	0.50 ug/L	
67-64-1	Acetone			not detected	0.32 ug/L	0.50 ug/L	
75-15-0	Carbon Disulfide			not detected	0.12 ug/L	0.50 ug/L	
75-09-2	Methylene Chloride			not detected	0.26 ug/L	0.50 ug/L	
156-60-5	trans-1,2-Dichloroethene			not detected	0.14 ug/L	0.50 ug/L	
75-35-3	1,1-Dichloroethane			not detected	0.12 ug/L	0.50 ug/L	
108-05-4	Vinyl Acetate			not detected	0.20 ug/L	0.50 ug/L	
78-93-3	2-Butanone			not detected	0.22 ug/L	0.50 ug/L	
156-59-2	cis-1,2-Dichloroethene			not detected	0.12 ug/L	0.50 ug/L	
67-66-3	Chloroform			not detected	0.35 ug/L	0.50 ug/L	
75-55-6	1,1,1-Trichloroethane			not detected	0.12 ug/L	0.50 ug/L	
56-23-5	Carbon Tetrachloride			not detected	0.12 ug/L	0.50 ug/L	
71-43-2	Benzene			not detected	0.12 ug/L	0.50 ug/L	
107-06-2	1,2-Dichloroethane			not detected	0.11 ug/L	0.50 ug/L	
79-01-6	Trichloroethene			not detected	0.11 ug/L	0.50 ug/L	
78-87-5	1,2-Dichloropropane			not detected	0.12 ug/L	0.50 ug/L	
75-27-4	Bromodichloromethane			not detected	0.12 ug/L	0.50 ug/L	
110-75-8	2-Chloroethyl vinyl ether			not detected	0.24 ug/L	0.50 ug/L	
10061-01-5	cis-1,3-Dichloropropene			not detected	0.13 ug/L	0.50 ug/L	
108-10-1	4-Methyl-2-Pentanone			not detected	0.15 ug/L	0.50 ug/L	
108-88-3	Toluene			not detected	0.12 ug/L	0.50 ug/L	
10061-02-6	trans-1,3-Dichloropropene			not detected	0.13 ug/L	0.50 ug/L	
79-00-5	1,1,2-Trichloroethane			not detected	0.14 ug/L	0.50 ug/L	
127-18-4	Tetrachloroethene			not detected	0.14 ug/L	0.50 ug/L	
591-78-6	2-Hexanone			not detected	0.17 ug/L	0.50 ug/L	
126-48-1	Dibromochloromethane			not detected	0.12 ug/L	0.50 ug/L	
108-90-7	Chlorobenzene			not detected	0.12 ug/L	0.50 ug/L	
100-41-4	Ethylbenzene			not detected	0.12 ug/L	0.50 ug/L	
630-20-6	1,1,1,2-tetrachloroethane			not detected	0.13 ug/L	0.50 ug/L	
1330-20-7	m+p-Xylenes			not detected	0.30 ug/L	1.00 ug/L	
1330-20-7	o-Xylene			not detected	0.14 ug/L	0.50 ug/L	
100-42-5	Styrene			not detected	0.14 ug/L	0.50 ug/L	
75-25-2	Bromoform			not detected	0.14 ug/L	0.50 ug/L	
79-34-5	1,1,2,2-Tetrachloroethane			not detected	0.14 ug/L	0.50 ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	0.16 ug/L	0.50 ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	0.15 ug/L	0.50 ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	0.13 ug/L	0.50 ug/L	

*Results between MDL and RL are estimated values

*Higher of PQL's and Ground Water Quality Criteria as per N.J.A.C. 7:9C 07Nov2005

Qualifiers

B = Compound found in related blank

E = Value above linear range

D = Value from dilution

PQL = Practical Quantitation Limit

J= Estimated concentration, value falls between R.L. and M.D.L.

MDL = Method Detection Limit

NLE = No Limit Established

R.T. = Retention Time

R.L. = Reporting Limit

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID:

FIELD BLANK

Lab Name: FMETL NJDEP# 13461
Project: _____ Case No: _____ Location: 202 SDG No.: 11265
Matrix: (soil/water) WATER Lab Sample ID: 1126503
Sample wt/vol: 5.0 (g/ml) ML Lab File ID: VA10103.D
Level: (low/med) LOW Date Received: 6/25/2011
% Moisture: not dec. _____ Date Analyzed: 6/27/2011
GC Column: RTX-VM ID: 0.25 (mm) Dilution Factor: 1.0
Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
---------	---------------	----	------------	---

Volatile Analysis Report
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification #13461

Data File **VA10106.D**
 Operator **ROBERTS**
 Date Acquired **27 Jun 2011 6:57 pm**

Sample Name **1126504**
 Field ID **202 D-3A**
 Sample Multiplier **1**

CAS#	Compound Name	R.T.	Response	Result	MDL	RL	Qualifiers
107028	Acrolein			not detected	3.21 ug/L	5.00 ug/L	
107131	Acrylonitrile			not detected	0.98 ug/L	5.00 ug/L	
75650	tert-Butyl alcohol			not detected	1.64 ug/L	5.00 ug/L	
1634044	Methyl-tert-Butyl ether			not detected	0.11 ug/L	0.50 ug/L	
108203	Di-isopropyl ether			not detected	0.17 ug/L	0.50 ug/L	
75718	Dichlorodifluoromethane			not detected	0.17 ug/L	0.50 ug/L	
74-87-3	Chloromethane			not detected	0.27 ug/L	0.50 ug/L	
75-01-4	Vinyl Chloride			not detected	0.22 ug/L	0.50 ug/L	
74-83-9	Bromomethane			not detected	0.37 ug/L	0.50 ug/L	
75-00-3	Chloroethane			not detected	0.32 ug/L	0.50 ug/L	
75-69-4	Trichlorofluoromethane			not detected	0.15 ug/L	0.50 ug/L	
75-35-4	1,1-Dichloroethene			not detected	0.15 ug/L	0.50 ug/L	
67-64-1	Acetone			not detected	0.32 ug/L	0.50 ug/L	
75-15-0	Carbon Disulfide			not detected	0.12 ug/L	0.50 ug/L	
75-09-2	Methylene Chloride			not detected	0.26 ug/L	0.50 ug/L	
156-60-5	trans-1,2-Dichloroethene			not detected	0.14 ug/L	0.50 ug/L	
75-35-3	1,1-Dichloroethane			not detected	0.12 ug/L	0.50 ug/L	
108-05-4	Vinyl Acetate			not detected	0.20 ug/L	0.50 ug/L	
78-93-3	2-Butanone			not detected	0.22 ug/L	0.50 ug/L	
156-59-2	cis-1,2-Dichloroethene			not detected	0.12 ug/L	0.50 ug/L	
67-66-3	Chloroform			not detected	0.35 ug/L	0.50 ug/L	
75-55-6	1,1,1-Trichloroethane			not detected	0.12 ug/L	0.50 ug/L	
56-23-5	Carbon Tetrachloride			not detected	0.12 ug/L	0.50 ug/L	
71-43-2	Benzene	10.60	58653	1.61 ug/L	0.12 ug/L	0.50 ug/L	
107-06-2	1,2-Dichloroethane			not detected	0.11 ug/L	0.50 ug/L	
79-01-6	Trichloroethene			not detected	0.11 ug/L	0.50 ug/L	
78-87-5	1,2-Dichloropropane			not detected	0.12 ug/L	0.50 ug/L	
75-27-4	Bromodichloromethane			not detected	0.12 ug/L	0.50 ug/L	
110-75-8	2-Chloroethyl vinyl ether			not detected	0.24 ug/L	0.50 ug/L	
10061-01-5	cis-1,3-Dichloropropene			not detected	0.13 ug/L	0.50 ug/L	
108-10-1	4-Methyl-2-Pentanone			not detected	0.15 ug/L	0.50 ug/L	
108-88-3	Toluene			not detected	0.12 ug/L	0.50 ug/L	
10061-02-6	trans-1,3-Dichloropropene			not detected	0.13 ug/L	0.50 ug/L	
79-00-5	1,1,2-Trichloroethane			not detected	0.14 ug/L	0.50 ug/L	
127-18-4	Tetrachloroethene			not detected	0.14 ug/L	0.50 ug/L	
591-78-6	2-Hexanone			not detected	0.17 ug/L	0.50 ug/L	
126-48-1	Dibromochloromethane			not detected	0.12 ug/L	0.50 ug/L	
108-90-7	Chlorobenzene			not detected	0.12 ug/L	0.50 ug/L	
100-41-4	Ethylbenzene	15.82	2694889	59.31 ug/L	0.12 ug/L	0.50 ug/L	
630-20-6	1,1,1,2-tetrachloroethane			not detected	0.13 ug/L	0.50 ug/L	
1330-20-7	m+p-Xylenes			not detected	0.30 ug/L	1.00 ug/L	
1330-20-7	o-Xylene	16.87	19226	0.52 ug/L	0.14 ug/L	0.50 ug/L	
100-42-5	Styrene			not detected	0.14 ug/L	0.50 ug/L	
75-25-2	Bromoform			not detected	0.14 ug/L	0.50 ug/L	
79-34-5	1,1,2,2-Tetrachloroethane			not detected	0.14 ug/L	0.50 ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	0.16 ug/L	0.50 ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	0.15 ug/L	0.50 ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	0.13 ug/L	0.50 ug/L	

*Results between MDL and RL are estimated values

*Higher of PQL's and Ground Water Quality Criteria as per N.J.A.C. 7:9C 07Nov2005

Qualifiers

B = Compound found in related blank

E = Value above linear range

D = Value from dilution

PQL = Practical Quantitation Limit

J= Estimated concentration, value falls between R.L. and M.D.L.

MDL = Method Detection Limit

NLE = No Limit Established

R.T. = Retention Time

R.L. = Reporting Limit

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID:

202D-3A

Lab Name: FMETL NJDEP# 13461

Project: _____ Case No: _____ Location: 202 SDG No.: 11265

Matrix: (soil/water) WATER Lab Sample ID: 1126504

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: VA10106.D

Level: (low/med) LOW Date Received: 6/25/2011

% Moisture: not dec. _____ Date Analyzed: 6/27/2011

GC Column: RTX-VM ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/LNumber TICs found: 15

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000103-65-1	Benzene, propyl-	18.36	47	JN
2.	C3 alkyl benzene	20.27	160	J
3.	C4 alkyl benzene	20.53	29	J
4. 000496-11-7	Indane	20.69	130	JN
5.	C4 alkyl benzene	21.34	82	J
6.	1H-Indene-dihydro-methyl-	21.59	76	J
7.	C4 alkyl benzene	21.84	39	J
8.	C4 alkyl benzene	21.96	55	J
9.	1H-Indene-dihydro-methyl-	22.49	73	J
10.	C4 alkyl benzene	22.70	79	J
11.	1H-Indene-dihydro-methyl-	22.75	140	J
12. 000119-64-2	Naphthalene, 1,2,3,4-tetrahydro-	23.03	76	JN
13.	1H-Indene-dihydro-dimethyl-	23.18	51	J
14.	1H-Indene-dihydro-dimethyl-	23.43	59	J
15. 000091-20-3	Naphthalene	23.79	120	JN

Report of Analysis

Page 1 of 3

Client Sample ID: 1126501 202D-3A

Lab Sample ID: JA79584-1

Date Sampled: 06/25/11

Matrix: SO - Soil

Date Received: 06/28/11

Method: SW846 8270C SW846 3550B

Percent Solids: 79.1

Project: Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z64757.D	1	06/30/11	KLS	06/29/11	OP50507	EZ3431
Run #2	Z64771.D	5	06/30/11	KLS	06/29/11	OP50507	EZ3431

	Initial Weight	Final Volume
Run #1	33.4 g	1.0 ml
Run #2	33.4 g	1.0 ml

BN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	817	38	11	ug/kg	
208-96-8	Acenaphthylene	ND	38	12	ug/kg	
98-86-2	Acetophenone	ND	190	6.7	ug/kg	
120-12-7	Anthracene	96.5	38	13	ug/kg	
1912-24-9	Atrazine	ND	190	7.5	ug/kg	
56-55-3	Benzo(a)anthracene	21.6	38	12	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	38	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	38	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	38	14	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	22	ug/kg	
92-52-4	1,1'-Biphenyl	ND	76	4.4	ug/kg	
100-52-7	Benzaldehyde	ND	190	8.7	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	12	ug/kg	
106-47-8	4-Chloroaniline	ND	190	12	ug/kg	
86-74-8	Carbazole	ND	76	18	ug/kg	
105-60-2	Caprolactam	ND	76	12	ug/kg	
218-01-9	Chrysene	21.2	38	13	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	76	15	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	11	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	76	11	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	76	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	76	14	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	190	9.6	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	38	13	ug/kg	
132-64-9	Dibenzofuran	491	76	11	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	76	8.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	18	ug/kg	
84-66-2	Diethyl phthalate	ND	76	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	13	ug/kg	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

000039

Report of Analysis

Page 2 of 3

Client Sample ID:	1126501 202D-3A	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-1	Date Received:	06/28/11
Matrix:	SO - Soil	Percent Solids:	79.1
Method:	SW846 8270C SW846 3550B		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

BN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
117-81-7	bis(2-Ethylhexyl)phthalate	ND	76	33	ug/kg	
206-44-0	Fluoranthene	39.8	38	17	ug/kg	
86-73-7	Fluorene	1080	38	12	ug/kg	
118-74-1	Hexachlorobenzene	ND	76	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	11	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	760	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	11	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	38	13	ug/kg	
78-59-1	Isophorone	ND	76	10	ug/kg	
91-57-6	2-Methylnaphthalene	5400 ^a	380	110	ug/kg	
88-74-4	2-Nitroaniline	ND	190	17	ug/kg	
99-09-2	3-Nitroaniline	ND	190	15	ug/kg	
100-01-6	4-Nitroaniline	ND	190	15	ug/kg	
91-20-3	Naphthalene	1010	38	10	ug/kg	
98-95-3	Nitrobenzene	ND	76	11	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	9.2	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	23	ug/kg	
85-01-8	Phenanthrene	2120	38	17	ug/kg	
129-00-0	Pyrene	209	38	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	72%	55%	21-122%
321-60-8	2-Fluorobiphenyl	75%	80%	30-117%
1718-51-0	Terphenyl-d14	73%	67%	31-129%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	cycloalkane/alkene	6.13	7700	ug/kg	J
	alkane	6.43	17000	ug/kg	J
	unknown	6.61	6900	ug/kg	J
	Naphthalene dimethyl	6.72	19000	ug/kg	J
	Naphthalene dimethyl	6.86	6400	ug/kg	J
	unknown	6.88	7100	ug/kg	J
	alkane	7.16	13000	ug/kg	J
101-81-5	Diphenylmethane	7.45	6100	ug/kg	JN
	Naphthalene trimethyl	7.54	8700	ug/kg	J
	Naphthalene trimethyl	7.72	5400	ug/kg	J
	Naphthalene trimethyl	7.77	9900	ug/kg	J

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

000040

Report of Analysis

Page 3 of 3

Client Sample ID: 1126501 202D-3A	Date Sampled: 06/25/11
Lab Sample ID: JA79584-1	Date Received: 06/28/11
Matrix: SO - Soil	Percent Solids: 79.1
Method: SW846 8270C SW846 3550B	
Project: Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ	

BN TCL List (SOM0 1.1)

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Naphthalene trimethyl	7.89	6800	ug/kg	J
	Naphthalene trimethyl	8.04	11000	ug/kg	J
	alkane	9.05	16000	ug/kg	J
	alkane	9.77	8900	ug/kg	J
	Total TIC, Semi-Volatile		149900	ug/kg	J

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 2

Client Sample ID:	1126502 202D-3A-DUP	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-2	Date Received:	06/28/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R88355.D	1	06/30/11	KLS	06/29/11	OP50500	ER3377
Run #2	R88377.D	5	07/01/11	LP	06/29/11	OP50500	ER3378

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

BN TCL11 List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-86-2	Acetophenone	ND	2.0	0.40	ug/l	
1912-24-9	Atrazine	ND	5.0	0.39	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.40	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.35	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.25	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.42	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.42	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.25	ug/l	
86-74-8	Carbazole	2.3	1.0	0.17	ug/l	
105-60-2	Caprolactam	ND	2.0	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.25	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.31	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.39	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.22	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.0	0.33	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.30	ug/l	
132-64-9	Dibenzofuran	4.5	5.0	0.30	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	2.0	0.19	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.40	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.17	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	25.3	2.0	0.33	ug/l	B
86-73-7	Fluorene	9.0	1.0	0.27	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.13	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	20	0.24	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.21	ug/l	
78-59-1	Isophorone	ND	2.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	109 ^a	5.0	3.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.24	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.29	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.18	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 2

Client Sample ID:	1126502 202D-3A-DUP	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-2	Date Received:	06/28/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

BN TCL11 List

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	35.1	1.0	0.43	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.25	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.44	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	11.7	1.0	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.48	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%	72%	38-129%
321-60-8	2-Fluorobiphenyl	83%	76%	42-117%
1718-51-0	Terphenyl-d14	26%	23%	14-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact/aldol-condensation	4.59	37	ug/l	J
	unknown	8.22	18	ug/l	J
	unknown	9.73	34	ug/l	J
	1H-Indene-dihydro-dimethyl	10.46	17	ug/l	J
	unknown	11.00	16	ug/l	J
	Naphthalene tetrahydro-methyl	11.46	40	ug/l	J
90-12-0	Naphthalene, 1-methyl-	12.13	78	ug/l	JN
	unknown	12.20	17	ug/l	J
	Naphthalene ethyl	13.23	34	ug/l	J
	Naphthalene dimethyl	13.38	59	ug/l	J
	Naphthalene dimethyl	13.58	63	ug/l	J
	Naphthalene dimethyl	13.62	47	ug/l	J
	Naphthalene dimethyl	13.83	26	ug/l	J
	Naphthalene trimethyl	14.97	21	ug/l	J
	alkane	16.20	27	ug/l	J
	unknown	16.84	38	ug/l	J
	Total TIC, Semi-Volatile		535	ug/l	J

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

000043


 ACCUTEST
 JA79584
 LABORATORIES

11 of 116

Report of Analysis

Page 1 of 1

Client Sample ID:	1126502 202D-3A-DUP	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-2	Date Received:	06/28/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M26503.D	1	06/30/11	NAP	06/29/11	OP50500A	E4M1145
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	4.50	0.10	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.016	ug/l	
120-12-7	Anthracene	0.348	0.10	0.010	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.10	0.015	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.0049	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.016	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.010	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.013	ug/l	
218-01-9	Chrysene	ND	0.10	0.023	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.023	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.0096	ug/l	
118-74-1	Hexachlorobenzene	ND	0.020	0.0080	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.011	ug/l	
129-00-0	Pyrene	0.435	0.10	0.0081	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%		32-135%
321-60-8	2-Fluorobiphenyl	50%		31-121%
1718-51-0	Terphenyl-d14	17%		10-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

000044

Report of Analysis

Page 1 of 2

Client Sample ID:	1126503 202D-3A-FIELD BLANK	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-3	Date Received:	06/28/11
Matrix:	AQ - Field Blank Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R88356.D	1	06/30/11	KLS	06/29/11	OP50500	ER3377
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN TCL11 List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-86-2	Acetophenone	ND	2.0	0.40	ug/l	
1912-24-9	Atrazine	ND	5.0	0.39	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.40	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.35	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.25	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.42	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.42	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.25	ug/l	
86-74-8	Carbazole	ND	1.0	0.17	ug/l	
105-60-2	Caprolactam	ND	2.0	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.25	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.31	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.39	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.22	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.0	0.33	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.30	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.30	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.19	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.40	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.17	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	10.1	2.0	0.33	ug/l	B
87-68-3	Hexachlorobutadiene	ND	1.0	0.13	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	20	0.24	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.21	ug/l	
78-59-1	Isophorone	ND	2.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.66	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.24	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.29	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.18	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

000045

Report of Analysis

Page 2 of 2

Client Sample ID:	1126503 202D-3A-FIELD BLANK		
Lab Sample ID:	JA79584-3	Date Sampled:	06/25/11
Matrix:	AQ - Field Blank Water	Date Received:	06/28/11
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

BN TCL11 List

CAS No.	Compound	Result	RL	MDL	Units	Q
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.44	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.48	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		38-129%
321-60-8	2-Fluorobiphenyl	85%		42-117%
1718-51-0	Terphenyl-d14	82%		14-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact/aldol-condensation	4.59	56	ug/l	J
	unknown	26.60	7.8	ug/l	J
	Total TIC, Semi-Volatile		7.8	ug/l	J

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

000046

Report of Analysis

Page 1 of 1

Client Sample ID: 1126503 202D-3A-FIELD BLANK	Date Sampled: 06/25/11
Lab Sample ID: JA79584-3	Date Received: 06/28/11
Matrix: AQ - Field Blank Water	Percent Solids: n/a
Method: SW846 8270C BY SIM SW846 3510C	
Project: Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M26504.D	1	06/30/11	NAP	06/29/11	OP50500A	E4M1145
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.10	0.014	ug/l	
208-96-8	Acenaphthylene	ND	0.10	0.016	ug/l	
120-12-7	Anthracene	ND	0.10	0.010	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.10	0.015	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.0049	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.016	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.010	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.013	ug/l	
218-01-9	Chrysene	ND	0.10	0.023	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.023	ug/l	
206-44-0	Fluoranthene	ND	0.10	0.0096	ug/l	
86-73-7	Fluorene	ND	0.10	0.015	ug/l	
118-74-1	Hexachlorobenzene	ND	0.020	0.0080	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.011	ug/l	
91-20-3	Naphthalene	ND	0.10	0.016	ug/l	
85-01-8	Phenanthrene	ND	0.10	0.016	ug/l	
129-00-0	Pyrene	ND	0.10	0.0081	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		32-135%
321-60-8	2-Fluorobiphenyl	63%		31-121%
1718-51-0	Terphenyl-d14	58%		10-130%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

000047

Report of Analysis

Page 1 of 2

3.4

3

Client Sample ID:	1126504 202D-3A	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-4	Date Received:	06/28/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R88357.D	1	06/30/11	KLS	06/29/11	OP50500	ER3377
Run #2	R88378.D	5	07/01/11	LP	06/29/11	OP50500	ER3378

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

BN TCL11 List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	6.8	1.0	0.37	ug/l	
98-86-2	Acetophenone	ND	2.0	0.40	ug/l	
1912-24-9	Atrazine	ND	5.0	0.39	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.40	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.35	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.25	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.42	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.42	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.25	ug/l	
86-74-8	Carbazole	4.0	1.0	0.17	ug/l	
105-60-2	Caprolactam	ND	2.0	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.25	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.31	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.0	0.39	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.22	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.0	0.33	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	0.30	ug/l	
132-64-9	Dibenzofuran	7.2	5.0	0.30	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.19	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.40	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.17	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	2.8	2.0	0.33	ug/l	
86-73-7	Fluorene	15.2	1.0	0.27	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.13	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	20	0.24	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.21	ug/l	
78-59-1	Isophorone	ND	2.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	233 ^a	5.0	3.3	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.24	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.29	ug/l	

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

000048

Report of Analysis

Page 2 of 2

Client Sample ID:	1126504 202D-3A	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-4	Date Received:	06/28/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

BN TCL11 List

CAS No.	Compound	Result	RL	MDL	Units	Q
100-01-6	4-Nitroaniline	ND	5.0	0.18	ug/l	
91-20-3	Naphthalene	59.5	1.0	0.43	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.25	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.44	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	23.0	1.0	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.48	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	77%	86%	38-129%
321-60-8	2-Fluorobiphenyl	75%	85%	42-117%
1718-51-0	Terphenyl-d14	24%	27%	14-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	unknown	9.74	62	ug/l	J
	alkane	11.47	63	ug/l	J
90-12-0	Naphthalene, 1-methyl-	12.15	84	ug/l	JN
	Naphthalene ethyl	13.24	60	ug/l	J
	Naphthalene dimethyl	13.40	87	ug/l	J
	Naphthalene dimethyl	13.60	100	ug/l	J
	Naphthalene dimethyl	13.65	100	ug/l	J
	Naphthalene dimethyl	13.85	47	ug/l	J
	alkane	13.99	42	ug/l	J
	Naphthalene trimethyl	14.99	39	ug/l	J
	unknown	15.78	40	ug/l	J
	alkane	16.22	74	ug/l	J
	alkane	16.86	110	ug/l	J
	9H-Fluorene methyl	17.05	38	ug/l	J
	unknown	23.16	77	ug/l	J
	Total TIC, Semi-Volatile		1023	ug/l	J

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

000049

Report of Analysis

Page 1 of 1

34

3

Client Sample ID:	1126504 202D-3A	Date Sampled:	06/25/11
Lab Sample ID:	JA79584-4	Date Received:	06/28/11
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	Fort Monmouth Env Testing Lab, Building 173, SELFM-PW-EV, Fort Monmouth, NJ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4M26505.D	1	06/30/11	NAP	06/29/11	OP50500A	E4M1145
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
208-96-8	Acenaphthylene	ND	0.10	0.016	ug/l	
120-12-7	Anthracene	0.930	0.10	0.010	ug/l	
56-55-3	Benzo(a)anthracene	0.113	0.10	0.015	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	0.0049	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.10	0.016	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	0.010	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	0.013	ug/l	
218-01-9	Chrysene	0.146	0.10	0.023	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	0.023	ug/l	
206-44-0	Fluoranthene	0.178	0.10	0.0096	ug/l	
118-74-1	Hexachlorobenzene	ND	0.020	0.0080	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	0.011	ug/l	
129-00-0	Pyrene	1.83	0.10	0.0081	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	63%		32-135%
321-60-8	2-Fluorobiphenyl	65%		31-121%
1718-51-0	Terphenyl-d14	22%		10-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Attachment B
Soil Boring Logs and Well
Construction Details

PARSONS

Well Construction Detail (Single Cased - Stickup)		
Client: USACE		
Well ID: PAR-81-202D-MW-02 PAR-81-	NJBWA Permit No.	
Date Well Installed: 11-10-2017	Location: PAR-81-202D	

	Depth Below Ground Surface (ft)
Ground Surface Cement Grout Fine Sand Type/Size: Well Riser Diameter: Material: Sand Pack Type: Sump Top of Well Casing: +2.7 ft 8 Inches	0.0 0.5 1.0 1.5 2.0 12.0 12.3 12.5
Top of Grout	0.5
Top of Fine Sand	1.0
Top of Sand Pack	1.5
Top of Screen	2.0
Bottom of Screen	12.0
Bottom of Sump	12.3
Bottom of Borehole	12.5

Top of Confining Unit (If present): _____

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>TOM HORN</u>		BORING/WELL ID: <u>PAR-81-2020-MW-02</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>ECDI JOE BARNAK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>81</u>					WEATHER: <u>CLOUDY, 40°F, WINDY</u>		<u>GRASSY AREA</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 6610 DT</u>		LOCATION PLAN	
WATER LEVEL: <u>2.3'</u>					DATE/TIME START: <u>11-10-17 / 0850</u>		Oceanport, New Jersey	
DATE: <u>11-10-17</u>					DATE/TIME FINISH: <u>11-10-17 / 1100</u>			
TIME: <u>0830</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>Augered to 12.5'</u> <u>WET LOOSE GREY-BROWN</u> <u>CUTTINGS TRANSFERRED</u> <u>TO A DRUM.</u> <u>PID READINGS COLLECTED</u> <u>RANGED FROM 0.0 ppm TO</u> <u>0.9 ppm DURING THE</u> <u>INSTALLATION</u>			
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Remarks:								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			
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			
					and - 35-50% some - 20-35% little - 10-20% trace - <10%			
					moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>F. ACCORSI</u>		BORING/WELL ID: <u>PAR-81-202A-TMW-04</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>J. BARNEK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>81</u>					WEATHER: <u>PT. CLOUDY, 50'S</u>			
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL: <u>2.5'</u>					DATE/TIME START: <u>11-1-17 1100</u>		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: <u>11-1-17 1148</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			<u>60/53</u>	0	0-1" TOBACCO			
				0	4"-30" moist, Brown cmf SAND, Little silt, coal fragments	FILL		
1				0				
				0				
2				0				
				0	30"-44" wet Brn-Gm Brn cmf SAND and m' gravel	SW		
3				0				
				0	44"-53" wet yel brn - Brn cmf SAND and silt	SW		
4				0				
				0				
5		<u>60</u>	<u>60/60</u>	0	(SAME as above)			
				0				
6				0				
	<u>PAR-81-202A-TMW-04-6.5</u>			0				
7				0				
				0				
8				0				
				0				
9				0				
				0				
10				0	END OF BORING @ 10 FT.			

Remarks:

TMW (10FT. SCREEN) SET FROM 0-10FT

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

and - 35-50%

some - 20-35%

little - 10-20%

trace - <10%

moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>FRANK ACCORSI</u>		BORING/WELL ID: <u>PAR-81-202D-TMW-02</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>J. BARNEK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>81-202D</u>					WEATHER: <u>PT. CLOUDY, 50'S</u>			
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL: <u>2.5'</u>					DATE/TIME START: <u>11-1-17 0830</u>		Oceanport, New Jersey	
DATE: _____					DATE/TIME FINISH: <u>11-1-17 0940</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			<u>60/48</u>	<u>0</u>	<u>0-3" TOPSOIL</u>			
				<u>0</u>	<u>3-36" moist, Or. Brown Coarse to fine</u>			
1				<u>0</u>	<u>SAND, some mf Gravel,</u>	<u>SW</u>		
				<u>0</u>	<u>tr. silt</u>			
2				<u>0</u>				
				<u>0</u>				
3				<u>0</u>	<u>36"-48" wet, Brn, mf SAND and</u>	<u>SW</u>		
				<u>0</u>	<u>Silty Clay</u>			
4				<u>0</u>				
				<u>0</u>				
5			<u>60/54</u>	<u>0</u>	<u>0-54" Wet, Or. Brn - Brn cmf SAND,</u>	<u>SW</u>		
				<u>0</u>	<u>tr. silt</u>			
6				<u>0</u>				
	<u>PAR-81-202D-TMW-02-6.5</u>			<u>0</u>				
7				<u>0</u>				
				<u>0</u>				
8				<u>0</u>				
				<u>0</u>				
9				<u>0</u>				
				<u>0</u>				
10				<u>0</u>	<u>END OF BORING @ 10 FT</u>			

Remarks:
TMW (10' SCREEN) SET AT 10 FT.

Sample Types	Consistency vs. Blowcount / Foot				
S -- Split Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		
U -- Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	and - 35-50%
C -- Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	some - 20-35%
A -- Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30	little - 10-20%
					trace - <10%
					moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>FRANK ACCORSI</u>		BORING/WELL ID: <u>PAR-81-202D-TMW-03</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>J. BARNEK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM <u>Parcel 81</u>					WEATHER: <u>PT. CLOUDY 50'S</u>			
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL: <u>2.5'</u>					DATE/TIME START: <u>11-1-17 0950</u>		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: <u>11-1-17 1050</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			<u>60/48</u>	<u>0</u>	<u>0-4" TOPSOIL</u>			
				<u>0</u>	<u>4"-18" MOIST, BRN M-F SAND, L. clayey silt</u>		<u>SW</u>	
1				<u>0</u>	<u>18"-48" wet, BRN MP SAND, some silty clay</u>		<u>SW</u>	
				<u>0</u>				
2				<u>0</u>				
				<u>0</u>				
3				<u>0</u>				
				<u>0</u>				
4				<u>0</u>				
				<u>0</u>				
5			<u>60/56</u>	<u>0</u>	<u>0-18" wet, GRN BROWN cmf SAND, L. fine gravel, L. silty clay</u>		<u>SW</u>	
				<u>0</u>	<u>18"-56" wet, GRN BROWN silty clay, L. f. gravel</u>			
6				<u>0</u>				
	<u>PAR-81-202D-TMW-03-6.5'</u>			<u>0</u>				
7				<u>0</u>				
				<u>0</u>				
8				<u>0</u>				
				<u>0</u>				
9				<u>0</u>				
				<u>0</u>				
10				<u>0</u>	<u>END OF BORING @ 10 FT</u>			
Remarks: <u>TMW SCREEN (6 FT) SET TO 10 FT, DEEP</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S -- Split-Spoon					Granular (Sand & Gravel)			
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			
					and - 35-50% some - 20-35% little - 10-20% trace - <10%			
					moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>F. ACCORSI</u>		BORING/WELL ID: <u>PAR-81-202 D-TMW-05</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>J. BARNEK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM Parcel 81-202D</u>					WEATHER: <u>PT. CLOUD, 50'S</u>			
PROJECT NUMBER: 748810-					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL: <u>2.5'</u>					DATE/TIME START: <u>11-1-17 1200</u>		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: <u>11-1-17 1350</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			<u>60/50</u>	<u>0</u>	<u>0-4" TOP SOIL</u>			
				<u>0</u>	<u>4"-12" moist, Brn, mf SAND, L silt, some f. gravel</u>	<u>SW</u>		
1				<u>0</u>				
				<u>0</u>				
2				<u>0</u>				
				<u>0</u>	<u>wet @ 3'</u>			
3				<u>14</u>				
				<u>116</u>	<u>42"-50" wet, grn/gray mf SAND, L silt, STRONG PETROLEUM ODORS, STAINING</u>	<u>SW</u>		
4				<u>016</u>				
5			<u>60/54</u>	<u>14</u>	<u>0-54" wet, yel brn f. SAND, some silt</u>	<u>SP</u>		
				<u>4</u>				
6				<u>0</u>				
(GW)	<u>PAR-81-202D-TMW-05-6.5'</u>			<u>0</u>				
7				<u>0</u>				
				<u>0</u>				
8				<u>0</u>				
				<u>0</u>				
9				<u>0</u>				
10					<u>END OF BORING @ 10FT.</u>			
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: 30-50				V. Soft: <2 Stiff: 8-15		
C -- Rock Core		Loose: 4-10 V. Dense: >50				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: F. ACCORSI		BORING/WELL ID: PAR-81-202 D-SCREEN 1	
PROJECT NAME: FTMM - ECP					DRILLER: J. BARNEK		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel 81-202 D					WEATHER: PT. CLOUD, SD'S			
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL: _____					DATE/TIME START: 11-1-17 1150		Oceanport, New Jersey	
DATE: _____					DATE/TIME FINISH: 11-1-17 1200			
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			60/50	0	0-4" TOPSOIL			
				0	4"-24" moist, Brn cmf SAND, L. silt, DEBRIS- GLASS	FILL		
1				0				
				0				
2				0	24"-32" moist, blk mf SAND, some silt	SW		
				0				
3				0	32"-44" wet, brn-yel brn, Silty Clay,			
				0				
4								
5			60/60	0	0-60" wet, yel brn-gray Silty Clay,			
				0	L. f. Gravel			
6				0				
				0				
7				0				
				0				
8				0				
				0				
9				0				
				0				
10					END OF BORING @ 10 FT			
Remarks: NO SAMPLES COLLECTED								
Sample Types		Consistency vs. Blowcount / Foot						
S -- Split-Spoon		Granular (Sand & Gravel)				Fine Grained (Silt & Clay)		
U -- Undisturbed Tube		V. Loose: 0-4		Dense: 30-50	V. Soft: <2		Stiff: 8-15	
C -- Rock Core		Loose: 4-10		V. Dense: >50	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 PROJECT NAME: FTMM - ECP PROJECT LOCATION: FTMM Parcel PROJECT NUMBER: 748810-					INSPECTOR: C. Watson DRILLER: J. BARNAK WEATHER: 68°F clear CONTRACTOR: East Coast Drilling, Inc. (ECDI)		BORING/WELL ID: PAR-74-202-FMWC1 LOCATION DESCRIPTION: f.w.c. 74-202																
GROUNDWATER OBSERVATIONS WATER LEVEL: 2.5 DATE: 8/5/16 TIME: 0905 MEAS. FROM: BGS					RIG TYPE: Geoprobe(R) 7822DT DATE/TIME START: 0850 DATE/TIME FINISH: 0900 WEIGHT OF HAMMER: N/A DROP OF HAMMER: N/A TYPE OF HAMMER: N/A		LOCATION PLAN Oceanport, New Jersey																
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS																
0			60/60	0	0-7" moist, Brown, mf loose SAND, little silt, grass																		
1					7"-38" moist, Dark Brown, Dense, f SAND, some silt, some clay																		
2					38"-52" moist, gray, f SAND, little clay, trace silt, saturated 24"																		
3					52"-60" wet, gray/brown/brownish mt, mottled SAND, tr. silt																		
4																							
5			60/60	0	0-16" saturated, SAA																		
6					16"-60" saturated, gray/brown/orange, mc, mottled SAND, little silt trace f gravel																		
7																							
8																							
9																							
10																							
Remarks:																							
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; font-size: small;"> <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
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																		

Soil Boring Log

CLIENT: USACE					INSPECTOR: CW		BORING/WELL ID: PAR-79-201-SB-01	
PROJECT NAME: FTMM - ECP					DRILLER: JOE BARNAK		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel					WEATHER:		Parcel 79	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)		LOCATION PLAN	
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		Oceanport, New Jersey	
WATER LEVEL: ~2.5					DATE/TIME START: 4/12/16 1440			
DATE: 4/12/16					DATE/TIME FINISH: 4/12/16 1455			
TIME:					WEIGHT OF HAMMER: N/A			
MEAS. FROM: 845					DROP OF HAMMER: N/A			
					TYPE OF HAMMER: N/A			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADVI REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0			60/60	0	0-2" Topsoil/grass			
1					2"-29" Moist, Brown, MF SAND, little silt, little gravel concrete chunk @ 10"			
1450 2	2-2.5				29"-60" Saturated, Brown, M. Dense MF SAND, some silt, trace clay, trace gravel			
1455 3	3-3.5							
4								
5			60/60	0	0-8" SAA			
6					8-60" Wet, light/orange/brown, mottled MF SAND, little silt			
7								
8								
9								
1500 9.5-10								
10								
Remarks:								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			
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			
					and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>CW</u>		BORING/WELL ID: <u>PAF-79-202-56-02</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>JOE BARNAK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel					WEATHER: <u>50°F RAIN</u>		<u>Parcel 79</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL: <u>~2'</u>					DATE/TIME START: <u>4/12/16</u> <u>1350</u>		Oceanport, New Jersey	
DATE: <u>4/12/16</u>					DATE/TIME FINISH: <u>4/12/16</u> <u>1405</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			<u>68/32</u>	<u>0</u>	0-26" moist, brown, MF SAND, little silt, trace f gravel			
1				<u>0</u>	26- 43 47" saturated, black, F sand and silt, organics			
2				<u>0</u>	47-53" wet, gray, m. dense, MF SAND, little silt			
3	<u>3-3.5</u>			<u>10.9</u>				
4	<u>3.5-4</u>			<u>68.5</u>				
5				<u>56.4</u>				
6				<u>0</u>	0-6" SAA			
7				<u>0</u>	6"-60" saturated, light grey/gray/brown, medium mf SAND, little silt			
8	<u>8-8.5</u>							
9								
10								
Remarks:								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			
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			
					and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation			

1400

1400

1405

1410

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>GW</u>		BORING/WELL ID: <u>PAR-79-202-SB-03</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>JOE BAWAK</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel					WEATHER: <u>50°F DRY</u>		<u>Parcel 79</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)		LOCATION PLAN	
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		Oceanport, New Jersey	
WATER LEVEL: <u>22.5</u>					DATE/TIME START: <u>4/12/16</u> <u>1420</u>			
DATE: <u>4/12/16</u>					DATE/TIME FINISH: <u>4/12/16</u> <u>1430</u>			
TIME:					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM: <u>BCS</u>					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>60/49</u>	<u>0</u>	0-16" Brown, mf SAND, little silt, trace f gravel		
1					16"-49" saturated, mf, M. dense SAND, some silt, trace clay, trace f gravel		
1430	2-2.5						
1435	3-3.5						
4							
5			<u>60/60</u>	<u>0</u>	0-3" SAA		
6					3"-60" saturated, light gray/brown/Brown, mottled mf SAND, little silt		
7							
8							
9							
1440	9.5-10						
10							

Remarks:

Sample Types	Consistency vs. Blowcount / Foot				
S - Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		and - 35-50%
U - Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 6-16	some - 20-35%
C - Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	little - 10-20%
A - Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30	trace - <10%
					moisture, density, color, gradation

Attachment C
Field Notes

GW & Soil Sampling Nov 1 2017

- Personnel: F. Accorsi, B. Dietert, ECDI
Task: GW & Soil Investigations at 12 UHOT sites, 4 parcel sites, & 2 TRP sites
Weather: clear, 40-65°, some clouds
0730: ECDI onsite, H&S meeting
0830: Prep bottleware, load equip, calibrate PID
0850: Mob to 202A & 202D
0905: Start drilling 202D-TMW-02 (PAR81)
0935: Begin PID every 6" on ~~0-5'~~^{BD} 4' recovery (0-5')
0940: Record soil boring log ^{PAR-81-202D} TW-02
Set Temp Well at 11 ft, Screen 3-11 ft.
WL: 1.5 ft bgs
1020: Start drilling 202D-TMW-03 ^{PAR81}
1030: Collect VOC+TICS 202D-TMW-02 ^{PAR81} sample
1030: Collect SVOC+TICS 202D-TMW-02 ^{PAR81} sample
1035: Record Soil Boring Log TW-03
1055: Set Temp Well TW-03 (202D),
10 ft, Screen 2-10 ft.
1105: Start drilling 202A-TMW-04 ^{PAR81}
1110: Collect sample VOCs+TICS 202D-TMW-03-6.5 ^{PAR81}
1115: Collect sample SVOC+TICS 202D-TMW-03-6.5 ^{PAR81}
1120: Record Soil Boring Log 202A-TMW-04
1130: Set Temp Well 202A-TMW-04
at 10 ft, Screen 2-10 ft.
1145: Collect sample VOCs+TICS, 202A-TMW-04-6.5 ^{PAR81}
1145: Collect sample SVOCs+TICS, 202A-TMW-04-6.5 ^{PAR81}

Nov 1 2017 (cont.)

- 1145: Start drilling PAR-81-202D-SCREEN 1
1200: PID screening on 202D-SCREEN 1,
record soil boring log - no sample
1215: Begin drilling 202D-TMW-05
(replacing 202D-mw02 on Saw)
1222: Record PID every 6", record
Soil bore log.
1400 ^{BD}: Collect sample VOCs+TICS, 202D-TMW-05-6.5 ^{PAR81}
1400 ^{BD}: Collect sample SVOC+TICS, 202D-TMW-05-6.5 ^{PAR81}
1410: MW01: 4.54 ft. BToc
MW-01: 1.70 ft BToc
MW-02: 3.88 ft BToc
1450: Mob back to office - Begin COCs,
Clean-up / Quality Control Report,
Unpack cooler-refrigerate

11/1/17

BD