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: "Summary Remedial Investigation Report for Parcel 51 – Building 686"

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: BRAC Environmental Coordinator
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: 07 November, 2016

Name/Title: William R. Colvin / BRAC Environmental Coordinator

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

November 7, 2016

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: Summary Remedial Investigation Report for Parcel 51 - Building 686
Request for No Further Action Determination
Fort Monmouth, New Jersey
PI G000000032

Figure:

Figure 1 – Parcel 51 Layout and Sampling Locations
Figure 2 – EPH/TPH Concentrations in Soil at Parcel 51
Figure 3 – Parcel 51 Groundwater Elevations

Tables:

Table 1 – Groundwater Gauging Data and Elevations (May 25, 2016)
Table 2 – Detected Soil Sampling Results – Comparison to NJDEP Soil Remediation Standards
Table 3 – Results of Compliance Averaging at Parcel 51
Table 4 – Detected Groundwater Sampling Results – Comparison to NJDEP Ground Water Quality Standards

Attachments:

A. Previous Parcel 51 Correspondence
B. Previous Parcel 51 Work Plans and Reports
C. Field Notes from the Excavation of UST 81533-212
D. Soil Boring and Monitoring Well Logs
E. PAR-51-MW-01 Monitoring Well forms
F. Low Flow Purge and Sampling Records

Dear Ms. Range:

The U.S. Army Fort Monmouth (FTMM) has prepared this Summary Remedial Investigation (RI) Report (SRIR) to present the results of the Supplemental Phase II Site Investigation (SI) (Parsons, 2015) at Environmental Condition of Property (ECP) Parcel 51 in the area of Building 686. The data collected for Parcel 51 Building 686 indicates a petroleum release from a former underground storage tank (UST). A Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) risk assessment was not performed, and the New Jersey Department of Environmental Protection (NJDEP) soil cleanup standards were used to evaluate the need for remediation. This is

appropriate because Parcel 51 Building 686 is a petroleum, oil, or lubricants (POL) site and exempt from the CERCLA process according to the Department of Defense (DOD) Defense Environment Restoration Program (DERP) Manual (March, 2012).

1.0 OBJECTIVES

The objective of the supplemental field work performed in April and May 2016 at Parcel 51, as described in the ECP Supplemental Phase II SI Work Plan (WP) Addendum, was to evaluate data gaps identified by the NJDEP in a letter dated June 16, 2015. The NJDEP requested FTMM to evaluate a historical total petroleum hydrocarbon (TPH) exceedance in soil, and historical 2-methylnaphthalene exceedances in grab groundwater samples. In a November 23, 2015 response letter (provided in **Attachment A**), FTMM provided additional information that the historical petroleum hydrocarbons release was likely related to a former 2000-gallon No. 2 fuel oil UST adjacent to Building 686, and outlined a proposed sampling program to address the data gaps. The Supplemental ECP Phase II SI WP Addendum was accepted by the NJDEP without further comment for Parcel 51 in a letter dated December 22, 2015 (**Attachment A**).

This SRIR provides an overview of information for this site, including results of the 2016 investigation, and information regarding the UST investigations in the area of Building 686.

2.0 SITE DESCRIPTION

Parcel 51 is located in the central portion of the Main Post (MP) and includes the: 750 Motor Pool; the area around Buildings 787, 788, and 789; the 600 Area Buildings; 500 Area Buildings; and Former Barracks along Semaphore Avenue (Figure D1 of the ECP WP Addendum, provided in **Attachment B**). This investigation was focused on the portion of Parcel 51 near Building 686 which had a historical soil and groundwater exceedance, related to releases from USTs which had previously been remediated and attained NFA determinations from NJDEP. The site layout is depicted on **Figure 1**.

There were numerous USTs in the 600 area, as discussed in Section 3.0 below. Parcel 51 was designated in the U.S. Army BRAC 2005 Environmental Condition of Property Report (U.S. Army, 2007) as a Category 2 Parcel, indicating an area where only release or disposal of petroleum products has occurred, and where the contamination description indicates hazardous substance release, petroleum storage, and petroleum release. A site-wide SI Report for Fort Monmouth, including Parcel 51, was previously submitted in 2008. Correspondence between NJDEP and the U.S. Army BRAC (provided in **Attachment A**) indicate that the only contamination remaining that precluded NFA for the site in the SI phase were a TPH exceedance from the SI at P51-G12, and a grab groundwater sample exceeding the interim groundwater quality criterion for 2-methylnaphthalene at P51-E12. Therefore the 2016 investigation focused on confirming and delineating these exceedances, which were determined to be the result of a fuel oil hydrocarbon release from a UST near Building 686. The site layout and sample locations are shown on **Figure 1**.

Additional information concerning the Parcel 51 background and environmental setting is provided in the reports and work plan provided in **Attachment B**.

3.0 UNDERGROUND STORAGE TANKS

Numerous UST removals and extensive investigation of USTs within the 600 Area have been conducted (U.S. Army, 2015; Versar, 2002). Two UST excavations documented in a Versar (2002) *Closure and Site Investigation Report for Underground Storage Tanks in the 600 Area* (specifically USTs 81533-107 and 81533-212) were located near the exceedances north of Building 686 (**Attachment B**). The footprint of the excavation of UST 81533-107 depicted in Versar (2002) was reexamined by Parsons, and was determined to be larger than reported. Field notes from the excavation of UST 81533-107 were used to determine the area of the excavation as depicted on **Figure 2** and are included in **Attachment C**.

Multiple USTs were excavated and removed from Parcel 51 under the FTMM tank removal and assessment program that qualified as Underground Heating Oil Tanks (UHOTs). Because Parcel 51 had multiple former barracks, and covers a large geographical portion of the Main Post (MP), there were many UHOTs located within the Parcel. The 2008 SI used a soil sampling grid to determine areas of soil contamination; however this SRIR is focused only on the area north of Building 686 where contamination was identified.

4.0 GEOLOGY AND HYDROGEOLOGY

Soil descriptions (**Attachment D**) provided as part of the 2016 sampling program included brown, medium dense, medium fine sand with little silt to 15 feet below ground surface (bgs). Versar (2002) describes the soils in the 600 area as yellowish grey to reddish brown clayey, medium-to-coarse grained sand that contains abundant rock fragments, minor mica, and glauconite, underlain by dark grey to black medium-to-fine grained sand with abundant clay mica and glauconite. The soils in the area have been locally altered by excavation or fill activities.

Depth to water measurements were collected (**Table 1**) and are shown on **Figure 3**. Due to a partially clogged screen, the groundwater elevation at monitoring well 600MW01 may not be representative of actual groundwater conditions, and based on the small data set, the groundwater data were not contoured, but is inferred based on site wide groundwater data to flow to the north.

5.0 SOIL RESULTS

Two soil borings were installed to address historic TPH concentrations at boring P51-G12. Boring PAR-51-SB-01 was installed adjacent to P51-G12 to assess current extractable petroleum hydrocarbons (EPH) concentrations and determine the vertical extent of contamination, and PAR-51-SB-02 was installed to the northeast to determine horizontal extent (**Figure 1**). Soil boring logs are provided in **Attachment D**. In each boring three soil samples were collected. At PAR-51-SB-01 samples were collected at 6.0 to 6.5 feet below ground surface (bgs) (the same depth interval as the elevated TPH at adjacent boring P51-G12 in 2007), at 6.6 to 7.0 feet, and 12.5 to 13 feet bgs. At PAR-51-SB-02 samples were collected at 4 to 4.5 feet, 6 to 6.5 feet, and 9.5 to 10 feet bgs. All of the soil samples were analyzed for EPH (fractionated) by ALS Environmental (ALS) in Middletown, PA. Also, 25% of the samples where EPH was detected exceeding 1,000 mg/kg were also analyzed for naphthalene and 2-methylnaphthalene (two samples exceeded 1,000 mg/kg, and the higher of the two was analyzed for naphthalene and 2-methylnaphthalene). Detected

concentrations were compared to NJDEP soil remediation standards for Category 1 releases as required in the Protocol for Addressing Extractable Petroleum Hydrocarbons, (Version 5.0, August 9, 2010).

At PAR-51-SB-01, one sample in the 6.5-7 feet bgs interval exceeded the Residential Direct Contact Soil Remediation Standard (RDCSRS) for EPH with a concentration of 5,260 mg/kg compared to the RDCSRS for Category 1 releases of 5,100 mg/kg. These results indicate that concentrations of EPH remain slightly above state standards adjacent to 2007 boring P-51-G12, although the concentration in 2016 was found to be lower than the TPH concentration found in 2007 (7,487 mg/kg). The vertical extent of EPH in this area was delineated by the 12.5 to 13 foot sample in PAR-51-SB-01, which had an EPH concentration of 4.8J mg/kg, well below the residential standard. Detected concentrations of naphthalene and 2-methylnaphthalene in the 6.5 to 7 foot sample were below the RDCSRS. At PAR-51-SB-02, none of the soil samples exceeded RDCSRS. The sampling results are provided in **Table 2**. Based on these sampling results concentrations of petroleum hydrocarbons have decreased in the area of P51-G12 (comparing 2007 TPH to 2016 EPH results) to just above the current EPH residential standard, and EPH is delineated both vertically and horizontally (**Figure 2**). The concentration of naphthalene at PAR-51-SB-01 was 0.39 mg/kg, which is lower than the concentrations previously detected at nearby borings P51-SB-1, P51-SB-2 and P51-TMP-1.

Based on the delineation, no further investigation is recommended for soils. Additionally, as discussed above, the concentrations of petroleum hydrocarbons in soil are decreasing, and are at a concentration that is only slightly above the standard at P51-G12. To evaluate if the single point exceedance might require a remedial action, a compliance averaging evaluation was performed. Compliance averaging was performed by calculating the arithmetic mean for the data set within the delineated area of the petroleum hydrocarbons. Both historical TPH and new EPH results were used, which is consistent with the findings in NJDEP's EPH-TPH Field Study that the EPH and TPH data for fuel oil no. 2 are comparable (NJDEP 2010[1]). The data set consisted of both the 2007 and 2016 results in the area of P51-G12 that exceed the standard (to be conservative), as well as the surrounding delineation borings (in all nine or fewer total sample points), consistent with the method described in Appendix A of the NJDEP's *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (2012). The results indicate that the mean concentration is 2,373.6 mg/kg, which is below the RDCSRS of 5,100 mg/kg (**Table 3**). Therefore, based on the compliance averaging evaluation and the decreasing concentration over time, no further remedial action is recommended for soils.

6.0 GROUNDWATER QUALITY

One permanent monitoring well (PAR-51-MW-01) was installed and developed hydraulically downgradient of P51-G12 to assess the northern extent of fuel hydrocarbon concentrations in groundwater exceeding Ground Water Quality Standard (GWQS) (**Figure 1**). The well was installed to 13 feet bgs, and constructed with a two-inch diameter, 10-foot-long screen placed in the uppermost 10 feet of the saturated zone as proposed in the work plan, and shown on the

[1] Question 2 in New Jersey Department of Environmental Protection, Site Remediation Program, Health Based and Ecological Screening Criteria for Petroleum Hydrocarbons, Frequently Asked Questions, Version 4.0, August 2010.

monitoring well log provided in **Attachment D.** The well permit forms are provided in **Attachment E**. Well PAR-51-MW-01 and existing well 600MW04 were developed using surge and purge methods in accordance with the procedure outlined in the NJDEP Field Sampling Procedures Manual ([FSPM]; NJDEP, 2005) on April 27, 2016.

Monitoring wells PAR-51-MW-01, 600MW01, and 600MW04 were sampled on May 25, 2016 using Low Flow Purge and Sampling (LFPS) for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) plus tentatively identified compounds (TICs); two profile samples (at 14.7 and 19.7 feet) were collected as 600MW04 because it contained 10 feet or more of saturated well screen and had not been previously sampled or profiled. The samples were collected only after the monitored parameters had achieved stabilization in accordance with the NJDEP FSPM (NJDEP, 2005). LFPS records are provided in **Attachment F**.

The laboratory results indicate that low concentrations of VOCs and SVOCs were detected, however, all detected compounds were less than their respective NJDEP GWQS (**Table 4**).

7.0 SUMMARY

The data gaps at the Parcel 51 Building 686 area have now been fully investigated in accordance with the ECP Phase II SI WP that was approved by NJDEP. EPH concentrations in soil are limited in area, are fully delineated, and are decreasing over time as expected with hydrocarbons. There were no exceedances of GWQS in groundwater samples. Based on the Summary RI results of the soil and groundwater sampling, no further investigation is recommended.

The Army requests a No Further Action (NFA) designation for Parcel 51. The technical Point of Contact (POC) for this matter is Cris Grill. Ms. Grill can be reached at (617) 449-1583 or by email at cris.grill@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, CHMM, PG
BRAC Environmental Coordinator

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

REFERENCES CITED:

Department of Defense (DoD). 2012. *Defense Environmental Restoration Program (DERP) Management Manual*. No. 4715.20. March 9, 2012.

NJDEP, 2010. *Health Based and Ecological Screening Criteria for Petroleum Hydrocarbons Frequency Asked Questions*. Version 4.0, August 9.

NJDEP, 2012. *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria.* Version 1.0, September.

NJDEP, 2015. *Re: Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 Dated February 2015. Fort Monmouth. Oceanport, Monmouth County. PI G000000032.* June 16.

NJDEP, 2015. *Re: Revision 1 - Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 Dated November 2015. Fort Monmouth. Oceanport, Monmouth County. PI G000000032.* December 22.

Parsons, 2015. *Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83, Final, Revision 1.* November.

U.S. Army BRAC. 2007. *Environmental Condition of Property Report - Fort Monmouth, Monmouth County, New Jersey*. Final. January 29, 2007.

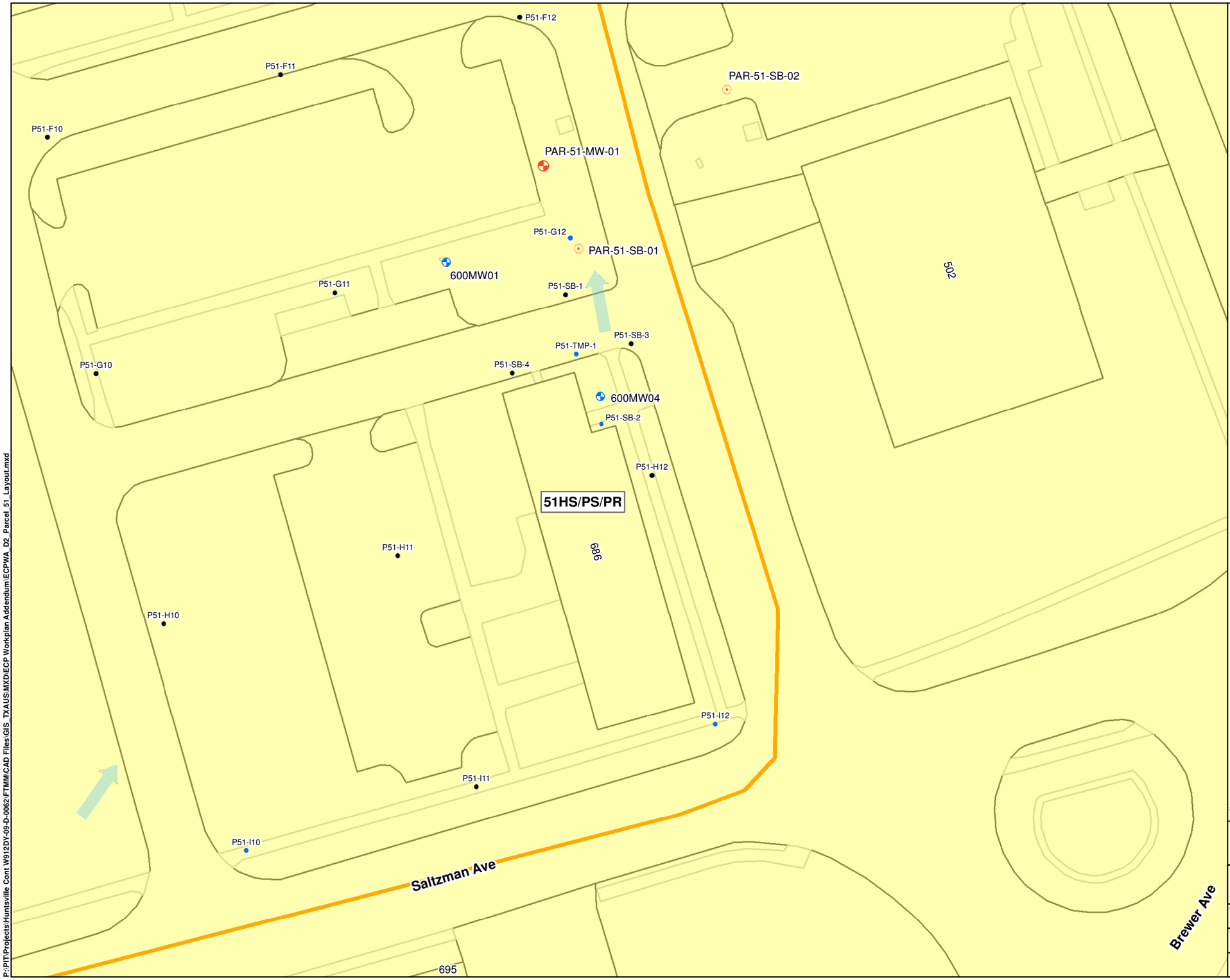
U.S. Army BRAC. 2008. *Site Investigation Report Fort Monmouth*. Final. July 21.

U.S. Army BRAC. 2015. *Subject: State of New Jersey Department of Environmental Protection Comments on the Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 dated February 2015 Fort Monmouth, Oceanport, Monmouth County.* November 23.

U.S. Army BRAC. 2015. *No Further Action Request, Site Investigation Report Addendum for the ECP Parcel 51 Underground Storage Tanks (Excluding the Building 750 Motor Pool Area), Fort Monmouth, NJ*. December 8.

Versar, 2002. *Closure and Site Investigation Report for Underground Storage Tanks in the 600 Area.* February.

FIGURES



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LEGEND:

- 2016 Soil Boring
- Shallow Monitoring Well (2016)
- Historic Geoprobe Soil Sample Location (2007, 2010)
- Historic Geoprobe Soil and Groundwater Sample Location (2007, 2010)
- Shallow Monitoring Well
- Geophysical Investigation Area - Electromagnetic (EM) and Ground Penetrating Radar (GPR)
- Parcel 51 Boundary
- Municipal Boundary
- Surface Water Feature
- Installation Boundary
- Generalized Groundwater Flow Direction

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description
  - HS – Hazardous Substance Storage
  - HR – Hazardous Substance Release
  - PS – Petroleum Storage
  - PR – Petroleum Release
  - (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 40 feet

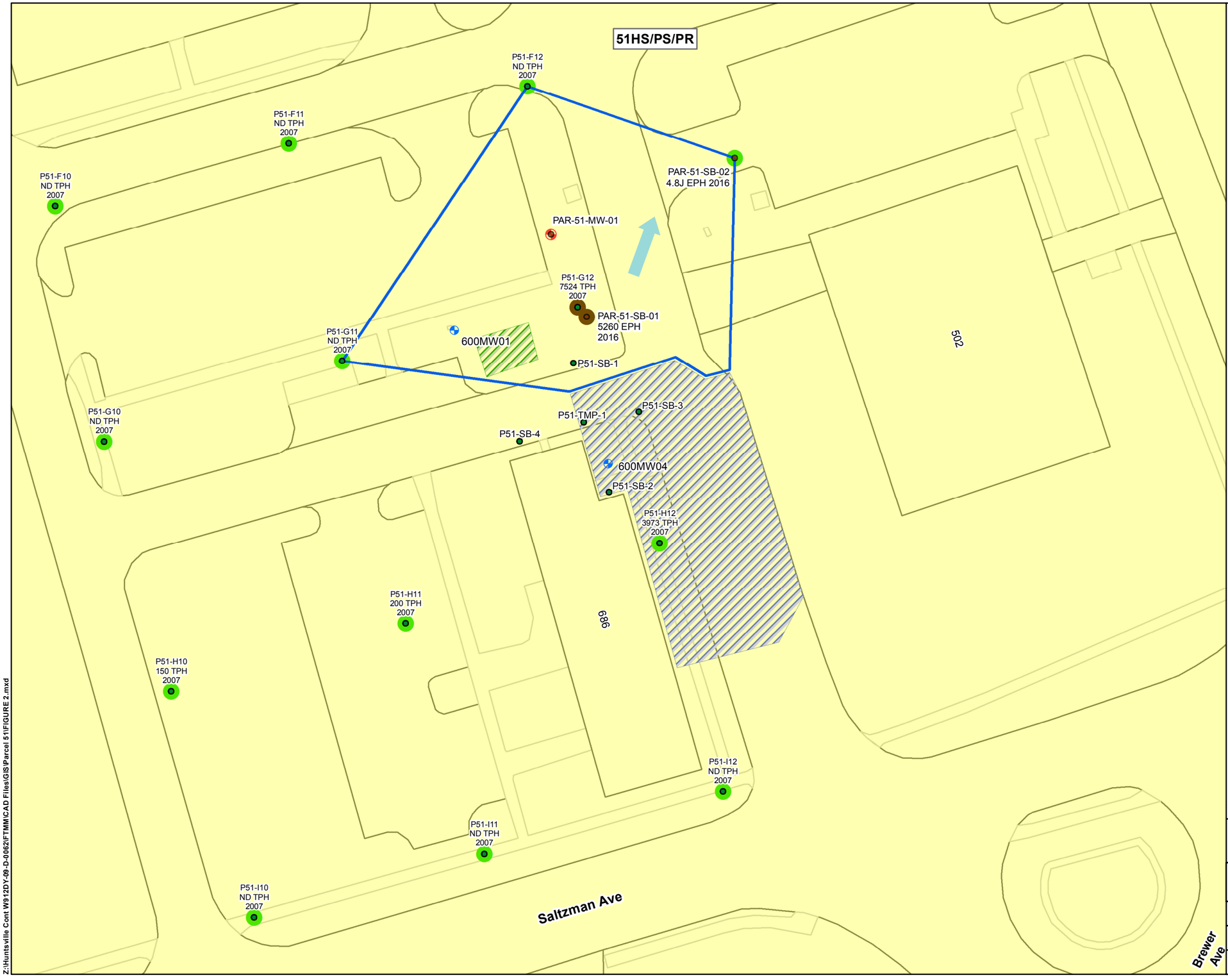
0 20 40 80 Feet

Source: FTMM Supplied CAD; Shaw Environmental 2008.

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

PARCEL 51 LAYOUT AND SAMPLING LOCATIONS

CREATED BY: RR	REVIEWED BY: ME
DATE: NOV. 2016	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-01000	FILE: ECPWA_D2_Parcel_51_Layout.mxd



LEGEND:

- 2016 Soil Borings
- Shallow Monitoring Well (2016)
- Historic Soil Borings
- Shallow Monitoring Well
- Parcel 51 Boundary
- Surface Water Feature
- Generalized Groundwater Flow Direction
- 1993 Area of Excavation (UST 81533-212)
- 1996 Area Of Excavation (UST 81533-107)
- Extent of EPH/TPH Exceedances
- EPH/TPH Concentration is Less Than NJ Residential Direct Contact Soil Remediation Standard (5,100 mg/kg)
- EPH/TPH Concentration Exceeds NJ Residential Direct Contact Soil Remediation Standard (5,100 mg/kg

J - Estimated Concentration

NOTE:

Concentrations shown are the highest concentrations detected at each boring.

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description: HS – Hazardous Substance Storage; HR – Hazardous Substance Release; PS – Petroleum Storage; PR – Petroleum Release; (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 40 feet

0 20 40 80 Feet

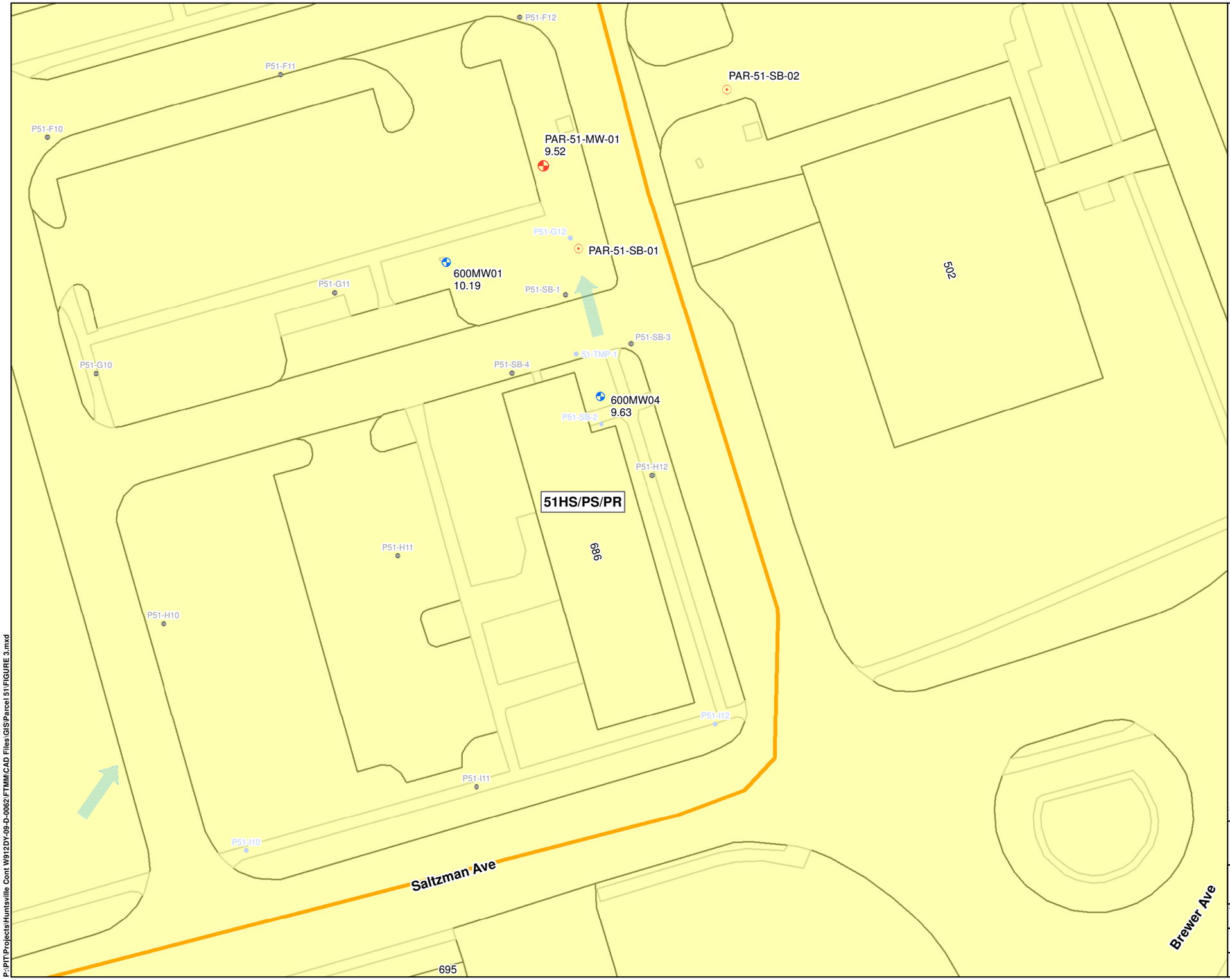
Source: FTMM Supplied CAD; Shaw Environmental 2008.

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

EPH/TPH CONCENTRATIONS IN SOIL AT PARCEL 51

CREATED BY: RR	REVIEWED BY: CM
DATE: OCT. 2016	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06008	FILE: FIGURE 2.mxd

Z:\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 51\FIGURE 2.mxd



LEGEND:

- Surface/Subsurface Soil Sample Location (for analysis of EPH with 25% of samples analyzed for 2-metyl-napthlene and naplthlene) (2016)
- Shallow Monitoring Well (2016)
- Historic Geoprobe Soil Sample Location (2007, 2010)
- Historic Geoprobe Soil and Groundwater Sample Location (2007, 2010)
- Suspected Steel UST
- Shallow Monitoring Well
- Geophysical Investigation Area - Electromagnetic (EM) and Ground Penetrating Radar (GPR)
- Parcel 51 Boundary
- Municipal Boundary
- Surface Water Feature
- Installation Boundary
- Inferred Groundwater Flow Direction

NOTE:

1. 600MW01 was partially clogged with silt, and gauged elevation may not reflect actual groundwater conditions. Therefore, this elevation was not used.
2. Elevations provided are in feet ablove mean sea level.

BRAC Parcel Label Definitions

8(2)PS
- Parcel Number
- Category Number
- Contaminant Description
  - HS – Hazardous Substance Storage
  - HR – Hazardous Substance Release
  - PS – Petroleum Storage
  - PR – Petroleum Release
  - (P) – Possible Release or Disposal

N

1 inch = 40 feet

0 20 40 80 Feet

Source: FTMM Supplied CAD; Shaw Environmental 2008.

PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

PARCEL 51
GROUNDWATER ELEVATIONS

CREATED BY:	REVIEWED BY:
RR	RF
DATE:	FIGURE NUMBER:
SEP. 2016	FIGURE 3
PROJECT NUMBER:	FILE:
748810-06008	FIGURE 3.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 51\FIGURE 3.mxd

TABLES

Table 1

Groundwater Gauging Data and Elevations (May 25, 2016)

Parcel 51

Fort Monmouth, New Jersey

Well ID	Installation Date	Well Permit #	Y Coord. (North)	X Coord. (East)	Depth (ft. bgs)	Casing Length (ft)	Screen Length (ft)	TOC Elevation (ft)	Gauge Time	PID Reading (ppm)	Gauged Depth to Water (ft. TOC)	Gauged Depth to Bottom (ft. TOC)	Calculated Groundwater Elevation (ft)
Shallow Monitoring Wells													
PAR-51-MW-01	4/6/2016	E201602888	539546.00	619091.00	13.0	6.3	10.0	18.32	8:12	0.0	8.80	16.30	9.52
600MW01	7/8/1994	29-30968	539100.48	618593.01	15.0	2.0	13.0	15.27	8:15	0.0	5.08	9.00	10.19 *
600MW04	8/17/2011	--	539452	619115	20.0	7.2	15.0	17.64	8:19	0.0	8.01	22.20	9.63

Notes:
1) ft = feet
2) DTW = depth to water (measured from the top of well casing)
3) DTB = depth to bottom of well (measured from the top of well casing)
4) bgs = below ground surface
5) ppm = parts per million (of VOCs)
6) TOC = Top of Casing
7) Elevation = feet above mean sea level
8) N/A = information not available
9) LFPS = Low-Flow Purging and Sampling
10) * = may not be representative of groundwater elevation conditions due to partially clogged well screen

TABLE 2
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
PARCEL 51
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	P51-TMP-1	P51-SB-1	P51-SB-2	P51-SB-3	P51-SB-4	P51-F10		P51-F11	
Sample ID				P51-SS-51-TMP1-7.0-7.5	P51-SS-SB1-7.0-7.5	P51-SS-SB2-7.0-7.5	P51-SS-SB3-7.0-7.5	P51-SS-SB4-7.0-7.5	P51-F10-A	P51-F10-C	P51-F11-A	P51-F11-C
Depth				7-7.5	7-7.5	7-7.5	7-7.5	7-7.5	0-0.5	3.5-4	0-0.5	4.5-5
Sample Date				1/8/2010	11/17/2010	11/18/2010	11/19/2010	11/20/2010	11/2/2007	11/2/2007	11/2/2007	11/2/2007
Volatile Organic Compounds (mg/kg)												
Ethyl benzene	7,800	110,000	13	NA	**1.26**	< 0.104	< 0.111	< 0.098	NA	NA	NA	NA
Meta/Para Xylene	NLE	170,000	NLE	NA	**0.74**	< 0.208	< 0.221	< 0.195	NA	NA	NA	NA
Naphthalene	6	17	25	NA	**19.28 D**	**6.29**	< 0.111	< 0.098	NA	NA	NA	NA
Total Xylenes	12,000	170,000	19	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (mg/kg)												
1,1'-Biphenyl	3,100	34,000	140	**3.16**	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	230	2,400	8	**34.1**	**44.97 D**	**24.54 D**	< 0.56	< 0.59	NA	NA	NA	NA
Acenaphthene	3,400	37,000	110	**0.617**	< 0.62	< 0.58	< 0.56	< 0.59	NA	NA	NA	NA
Anthracene	17,000	30,000	2,400	< 0.036	**9.41**	**12.67 D**	< 0.56	< 0.59	NA	NA	NA	NA
Dibenzofuran	NLE	NLE	NLE	**1.24**	< 0.62	< 0.58	< 0.56	< 0.59	NA	NA	NA	NA
Fluorene	2,300	24,000	170	**2.7**	< 0.62	< 0.58	< 0.56	< 0.59	NA	NA	NA	NA
Naphthalene	6	17	25	**11.3**	**11.95**	< 0.58	< 0.56	< 0.59	NA	NA	NA	NA
Phenanthrene	NLE	300,000	NLE	**10.5**	< 0.62	< 0.58	< 0.56	< 0.59	NA	NA	NA	NA
Pyrene	1,700	18,000	840	**1.73**	< 0.62	< 0.58	< 0.56	< 0.59	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/kg)												
Total Petroleum Hydrocarbons	5,100	54,000	NLE	NA	NA	NA	NA	NA	ND	ND	ND	ND
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)												
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total EPH (Category 1)	5,100	54,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry - Solids												
Percent Solids (percent)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Footnotes:
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NLE = no limit established.
ND = not detected.
Chemical detections are bolded.
Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.
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J = estimated detected value due to a concentration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.
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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.

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Cell Shade values represent a result that is above the NJ Impact to GW Soil Screening Level.
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TABLE 2
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
PARCEL 51
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	P51-F12		P51-G10		P51-G11		P51-G12			
Sample ID				P51-F12-A	P51-F12-C	P51-G10-A	P51-G10-C	P51-G11-A	P51-G11-B	P51-G12-A	P51-G12-C	P51-G12-D	P51-G12-D DUP
Depth				0-0.5	3.5-4	0-0.5	3.5-4	0-0.5	1.5-2	0-0.5	4.5-5	6-6.5	6-6.5
Sample Date				11/2/2007	11/2/2007	11/1/2007	11/1/2007	11/1/2007	11/1/2007	11/6/2007	11/6/2007	11/6/2007	11/6/2007
Volatile Organic Compounds (mg/kg)													
Ethyl benzene	7,800	110,000	13	NA	NA	NA	NA	NA	NA	NA	NA	**0.73**	**0.56**
Meta/Para Xylene	NLE	170,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	NA	NA	NA	< 0.36	< 0.32
Total Xylenes	12,000	170,000	19	NA	NA	NA	NA	NA	NA	NA	NA	**1.9**	**1.4**
Semivolatile Organic Compounds (mg/kg)													
1,1'-Biphenyl	3,100	34,000	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	3,400	37,000	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	17,000	30,000	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2,300	24,000	170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NLE	300,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	1,700	18,000	840	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/kg)													
Total Petroleum Hydrocarbons	5,100	54,000	NLE	ND	ND	ND	ND	ND	ND	ND	**273**	**7,487**	**7,524**
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)													
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total EPH (Category 1)	5,100	54,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry - Solids													
Percent Solids (percent)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Footnotes:
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TABLE 2
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
PARCEL 51
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	P51-H10		P51-H11		P51-H12		P51-I10		P51-I11	
Sample ID				P51-H10-A	P51-H10-C	P51-H11-A	P51-H11-C	P51-H12-A	P51-H12-C	P51-I10-A	P51-I10-C	P51-I11-A	P51-I11-C
Depth				0-0.5	3.5-4	0-0.5	3.5-4	0-0.5	4-8	0-0.5	3.5-4	0-0.5	3.5-4
Sample Date				10/31/2007	10/31/2007	10/31/2007	10/31/2007	10/31/2007	10/31/2007	11/5/2007	11/5/2007	10/31/2007	10/31/2007
Volatile Organic Compounds (mg/kg)													
Ethyl benzene	7,800	110,000	13	NA	NA	NA	NA	NA	< 0.29	NA	NA	NA	NA
Meta/Para Xylene	NLE	170,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	< 0.29	NA	NA	NA	NA
Total Xylenes	12,000	170,000	19	NA	NA	NA	NA	NA	< 0.58	NA	NA	NA	NA
Semivolatile Organic Compounds (mg/kg)													
1,1'-Biphenyl	3,100	34,000	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	3,400	37,000	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	17,000	30,000	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2,300	24,000	170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NLE	300,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	1,700	18,000	840	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/kg)													
Total Petroleum Hydrocarbons	5,100	54,000	NLE	**150**	ND	**200**	**98**	**99**	**3,973**	ND	ND	ND	ND
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)													
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total EPH (Category 1)	5,100	54,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wet Chemistry - Solids													
Percent Solids (percent)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Footnotes:
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TABLE 2
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION STANDARDS
PARCEL 51
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	P51-I12		PAR-51-SB-01			PAR-51-SB-02		
Sample ID				P51-I12-A	P51-I12-C	PAR-51-SB-01-12.5-13	PAR-51-SB-01-6.5-7	PAR-51-SB-01-6-6.5	PAR-51-SB-02-4.5-5	PAR-51-SB-02-6-6.5	PAR-51-SB-02-9.5-10
Depth				0-0.5	3-3.5	12.5-13	6.5-7	6-6.5	4.5-5	6-6.5	9.5-10
Sample Date				11/5/2007	11/5/2007	4/6/2016	4/6/2016	4/6/2016	4/6/2016	4/6/2016	4/6/2016
Volatile Organic Compounds (mg/kg)											
Ethyl benzene	7,800	110,000	13	NA	NA	NA	NA	NA	NA	NA	NA
Meta/Para Xylene	NLE	170,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	12,000	170,000	19	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (mg/kg)											
1,1'-Biphenyl	3,100	34,000	140	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	**2.3**	NA	NA	NA	NA
Acenaphthene	3,400	37,000	110	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	17,000	30,000	2,400	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2,300	24,000	170	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	**0.39**	NA	NA	NA	NA
Phenanthrene	NLE	300,000	NLE	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	1,700	18,000	840	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/kg)											
Total Petroleum Hydrocarbons	5,100	54,000	NLE	ND	ND	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)											
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	**0.83 JB**	**104**	**34.9**	**0.92 JB**	**0.93 JB**	**0.85 JB**
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	< 0.53 UJ	**1,440**	**617**	< 0.52 UJ	**0.54 J**	< 0.56 UJ
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	**0.31 J**	**1,010**	**247**	< 0.22	**0.24 J**	**0.36 J**
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	**0.62 J**	**784**	**359**	**0.54 J**	< 0.53 UJ	< 0.54 UJ
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	**0.73 J**	**1,230**	**374**	**0.35 J**	**0.44 J**	< 0.22 UJ
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	**0.3 J**	**182 J**	**74.5 J**	< 0.29	< 0.3	< 0.31 UJ
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	**1.2 J**	**160 J**	**86.6 J**	**1.5 J**	**0.71 J**	**2 JB**
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	**0.47 J**	**344 J**	**156 J**	**0.63 J**	**0.69 J**	**0.47 J**
Total Aliphatics	NLE	NLE	NLE	NA	NA	**2.7 J**	**2,720**	**1,220 J**	**3 J**	**2.5 J**	**3 J**
Total Aromatics	NLE	NLE	NLE	NA	NA	**2.2 J**	**2,530**	**730**	**1.7 J**	**1.9 J**	**1.6 J**
Total EPH (Category 1)	5,100	54,000	NLE	NA	NA	**4.8 J**	**5,260**	**1,950**	**4.8 J**	**4.3 J**	**4.6 J**
Wet Chemistry - Solids											
Percent Solids (percent)	NLE	NLE	NLE	NA	NA	**79.1**	**78.6**	**76.2**	**82.7**	**79.3**	**76.3**

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Table 3
Results of Compliance Averaging at Parcel 51
Fort Monmouth, New Jersey

Loc ID (analyte)	Depth (ft bgs)	Analyte (EPH or TPH)	TPH/EPH Concentration (mg/kg)
P51-F12	3.5-4	TPH	0
P51-G12	4.5-5	TPH	273
P51-G12 (Dup)	6-6.5	TPH	7524
P51-H12 (TPH)	4-8	TPH	3973
PAR-51-SB-01	6-6.5	EPH	1950
PAR-51-SB-01	6.5-7	EPH	5260
PAR-51-SB-02	4.5-5	EPH	4.8
PAR-51-SB-02	6-6.5	EPH	4.3
Average			2373.6
RDCSRS			5100
Does Compliance Averaging Meet Standard?			Yes

Notes:
1) Average is also the arithmetic mean.
2) "0" subsituted for non-detect values per NJDEP Attainment guidance.
3) Only concentrations located within the functional area surrounding borings P51-G12 and PAR-51-SB-01 in the subsurface soil from 2 to 8 feet bgs are included in this table.
4) The duplicate sample at P51-G12 was used for the 6-6.5 interval to be conservative, the sample concentration was 7,487.

TABLE 4
DETECTED GROUND WATER SAMPLING RESULTS -
COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
PARCEL 51
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Standard	600MW01		600MW04		PAR-51-MW-01	
Sample ID		P51-GW-600MW01-0	600MW01-7	600MW04-14.7	600MW04-19.7	PAR-51-GW-MW01-12.55	PAR-51-GW-MW101-12.55
Sample Date		11/22/2010	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016
Filtered		Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)							
1,2,4-Trimethylbenzene	100	NA	< 0.33	< 0.33	**0.37 J**	< 0.33	< 0.33
Cis-1,2-Dichloroethene	70	< 0.5	< 0.33	**0.33 J**	**0.35 J**	< 0.33	< 0.33
Isopropylbenzene	700	NA	< 0.33	**0.99 J**	**1**	**0.99 J**	**0.92 J**
Methyl bromide	10	< 0.5	< 0.33	< 0.33	< 0.33	**0.47 J**	**0.42 JB**
Methyl chloride	100	< 0.5	**0.36 JB**	**0.45 JB**	**0.47 JB**	< 0.33	< 0.33
Naphthalene	300	NA	< 0.33	**1.1 B**	**1.3 B**	**1.9 B**	**1.3 B**
n-Butylbenzene	100	NA	< 0.33	< 0.33	< 0.33	**1.2**	**0.97 J**
Propylbenzene	100	NA	< 0.33	**0.96 J**	**1.1**	**1.4**	**1.3**
sec-Butylbenzene	100	NA	**0.34 J**	**0.7 J**	**0.68 J**	**8.1**	**7.7**
tert-Butylbenzene	100	NA	< 0.33	< 0.33	< 0.33	**1.2**	**1.1**
TIC VOCs (µg/l) (No Detects)							
Semivolatile Organic Compounds (µg/l)							
2,4-Dinitrotoluene	10	< 2	< 0.02	**0.12**	< 0.022	< 0.024	< 0.022
2-Methylnaphthalene	30	< 1	< 0.16	**2.6**	**2.7**	< 0.18	< 0.17
Acenaphthene	400	**0.147**	**0.087**	**0.55**	**0.58**	**1.5**	**1.6**
Acenaphthylene	100	< 0.1	**0.012 J**	**0.099**	**0.11**	**0.27**	**0.36**
Anthracene	2,000	< 0.1	**0.02 J**	**0.032 J**	**0.036 J**	NA	NA
Benzo(a)anthracene	0.1	< 0.1	**0.018 J**	< 0.017	< 0.018	< 0.019	< 0.018
Carbazole	100	< 1	< 0.12	**0.38 J**	**0.38 J**	< 0.13	< 0.13
Chrysene	5	< 0.1	**0.023 J**	< 0.017	< 0.018	< 0.019	< 0.018
Dibenzofuran	100	< 5	**0.13 J**	**0.59 J**	**0.62 J**	**3.1 J**	**3.1 J**
Diethyl phthalate	6,000	< 2	**1.3 J**	**1.9 J**	**1.1 J**	< 0.2	< 0.19
Di-n-butylphthalate	700	< 2	< 0.14	< 0.14	< 0.15	**0.21 J**	< 0.15
Fluoranthene	300	< 0.1	**0.074**	< 0.018	< 0.019	**0.039 J**	**0.04 J**
Fluorene	300	**0.475**	**0.21**	**0.79**	**0.83**	**4.3 J**	**5 J**
Naphthalene	300	< 0.1	**0.063 B**	**0.67**	**0.76**	**0.62 J**	**0.69**
Phenanthrene	100	< 0.1	**0.13**	**0.39**	**0.44**	**0.23 J**	**0.43 J**
Pyrene	200	< 0.1	**0.05**	**0.018 J**	< 0.016	**0.075**	**0.075**
TIC SVOCs (µg/l)							
Benzene, 1-methyl-3-(1-methyle	NLE	NA	NA	NA	NA	**8 J**	NA
TIC Unknown	NLE	NA	NA	NA	**4.3 J**	**12.3 JN**	**19.2 J**

Footnote:

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

NLE = no limit established.

ND = not detected

Chemical detections are bolded

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

J = estimated detected value due to a concentration 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.

JN = Tentatively identified compound, estimated concentration.

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

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

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

ATTACHMENT A

Previous FTMM-51 Correspondence

1. U.S. Army BRAC. 2015. *Subject: State of New Jersey Department of Environmental Protection Comments on the Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 dated February 2015 Fort Monmouth, Oceanport, Monmouth County.* November 23.
2. NJDEP letter to the Army dated June 16, 2016, *Re: Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 Dated February 2015. Fort Monmouth. Oceanport, Monmouth County. PI G000000032.*
3. NJDEP letter to the Army dated December 22, 2016, *Re: Revision 1 - Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 Dated November 2015. Fort Monmouth. Oceanport, Monmouth County. PI G000000032.*

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

November 23, 2015

Ms. Linda Range
New Jersey Department of Environmental Protection
Case Manager
401 East State Street, 5th Floor
PO Box 420
Trenton, NJ 08625-0028

Subject: State of New Jersey Department of Environmental Protection Comments on the Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 dated February 2015 Fort Monmouth, Oceanport, Monmouth County.
PI # G000000032

Dear Ms. Range,

Fort Monmouth (FTMM) and Parsons have reviewed the New Jersey Department of Environmental Protection (NJDEP) comments on the Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 as documented in your letter dated June 16, 2015. Responses to your comments are provided below in the order in which they were presented in the comment letter.

A. General

A1. COMMENT: Tables 3.1 and 3.2 also will require revision based upon the following comments.

A1. RESPONSE: Comment noted. Tables 3.1 and 3.2 have been revised based upon the comments and responses.

B. Parcel 34/Building 2567/FTMM-58:

B1. COMMENT: *Section 2.4.1, Page B4-line 2* – Although this office agrees with the statement "post excavation soil samples were collected…and analyzed for TPHCs, VOCs, and lead", review of historic information appears to indicate elevated levels of benzene remain in the soil in the area of the dispenser island south of Building 2567. See additional detail under Section 3.2, below.

B1. RESPONSE: Soil sampling data obtained by Weston in 1993 (which indicate elevated levels of benzene in soil) and additional soil data generated by FTMM in 2013 have been reviewed and summarized (in results tables) in the Work Plan Addendum, and an assessment of remaining data gaps has been provided. The additional sampling performed by FTMM in 2013 did not address the benzene in the vadose zone referred to in the comment; therefore, the Work Plan has been revised to include additional soil sampling. See additional details below in responses B2 and B3.

B2. COMMENT: *Section 2.5, Page B-7, line 21* – This statement regarding the removal of piping was amended via email to Wanda Green (copy to Rob Youhas and Joe Pearson) on June 18, 2013 1519 hrs. The report documenting the investigation of the piping, however, as you likely are aware, has not been received by this office.

B2. RESPONSE: The statement referred to in the comment is**: "…**they (NJDEP) stated that it is necessary to remove the piping and dispensing equipment/island." Due to personnel changes over the years this communication could not be located and reviewed. Please provide said communication so that the Army can respond to this comment.

In addition, soil sampling was performed by FTMM in 2013 to assess the potential for contamination along piping from the former fiberglass gasoline USTs (removed in 2008) to the fuel dispensers. The soil was not sampled until 2013 because the piping was used to dispense fuel from the replacement ASTs until Base closure in 2011. Seven soil samples (PSB-1 through PSB-7) were collected along the piping corridor at a depth of 2.5 to 3 feet bgs and analyzed for VOCs+TICs and lead. There were no exceedances of NJDEP direct contact soil remediation standards, and only one slight exceedance of the NJDEP Impact to Ground Water (IGW) screening level (SL) for benzene (0.011 mg/kg versus screening level of 0.005 mg/kg). This additional historical information documenting the investigation of the piping has been added to the ECP Work Plan Addendum (Appendix B).

B3. COMMENT: *Section 3.2 Sampling Plan* – Although it is agreed the proposal is appropriate for the TBA in ground water, the referenced submittal considers only the issue of TBA in ground water (the proposal for two annual sampling events of monitor wells 2567MW01 and 2567MW03 was approved on July 3, 2014). However, as briefly discussed in a conference call on June 12, 2015, a review of historic information appears to indicate levels of benzene above both the residential and non-residential criteria/standard remain in numerous locations in the vicinity of the dispenser area south of Building 2567. The information was obtained from the October 28, 2005 RIR/RAW, including Figure 2-1 dated 6/9/94, which indicates levels of benzene remain up to 85 ppm. The June 2010 RAPR appears to omit reference to analytical results from the post excavation soil sampling performed in 1993 during removal of USTs 42 through 45, stating only the samples were analyzed for TPHC, VOCs, and lead, however, a copy of the September 2, 2010 PBR Request contained within the submittal's Appendix B referenced benzene remaining to 45 ppm. Pages i, 3-5 and 6-1 of the June 2010 RAPR also indicate the "remaining original UST dispenser island areas" would undergo assessment upon BRAC closure. It is understood available information is currently being evaluated to determine the status of the soils in this area. At this time, however, this office considers the soil in the area an unaddressed area of concern in need of additional delineation.

B3. RESPONSE: A total of 23 post-excavation soil samples (exact depths unknown, but likely collected at approximately 4 feet bgs) were collected by Weston around the perimeter of the soil excavation for four USTs and the dispenser area in 1993. The samples were designated A through W. The UST removal report prepared by Weston (1995) states that groundwater observed at 4 feet bgs in nearby monitoring wells was not observed during the excavation; therefore the excavation was extended to 7 feet bgs "when necessary". The samples were analyzed for VOCs+TICs, TPHC, and lead. Benzene concentrations exceeded the current

RDCSRS and IGW SL at 9 and 11 locations, respectively. Ethylbenzene and xylenes exceeded the current IGW SL at 5 and 11 locations, respectively. Acetone was also detected above the IGW SL at one location, but was also detected in the associated blank sample and likely represents laboratory contamination. The maximum TPHC and lead concentrations in soil were 4,539 mg/kg and 129 mg/kg, respectively. None of the lead concentrations exceed the current RDCSRS of 400 mg/kg, and there is no NJDEP standard or screening value for total gasoline-range petroleum hydrocarbons. This historical information, including a sample location map and sampling results table, have been added to the ECP Work Plan Addendum (Appendix B).

Four new soil borings will be advanced at four excavation sidewall sample locations that had relatively high BTEX concentrations in 1993 in order to assess current concentrations. The borings will be advanced at the locations of the 1st, 2nd, 3rd, and 5th highest soil benzene concentrations detected in 1993 (locations Q, O, N, and G). Benzene concentrations at these four locations ranged from 14 to 85 J mg/kg. The location of the 4th highest benzene concentration (25 J mg/kg) will not be sampled because it was located approximately 6 feet from the 3rd highest concentration (27 mg/kg) and had a very similar concentration. Soil borings will be advanced to at least 5 feet below the water table (estimated to be present at approximately 4 feet bgs at this site), through and below any fuel smear zone bordering the water-table that may be present. Up to three samples per boring will be collected based on field observations of contamination and PID headspace screening. If there is no indication of contamination at a boring location, then one sample will be collected from 0.5 to 1.0 feet below the bottom of the pavement and one sample will be collected from the 6-inch interval just above the water table. If there is field evidence of contamination (visual, olfactory, PID screening) then the sample intervals will be: 1) the most contaminated 6-inch interval in the top 2 feet of the soil column based on field screening, 2) a 6-inch interval that is below any field evidence of contamination to delineate vertical extent, and 3) the most contaminated intermediate 6-inch interval encountered based on field evidence. Soil samples will be analyzed for VOCs+TICs including 1,2-DBA and 1,2-DCA. This proposed additional soil sampling has been added to Appendix B of the ECP Work Plan Addendum.

C. <u>Parcel 50</u>:

C1. COMMENT: *Section 2.2.1 - FTMM-54* - Page C-2 lines 39 & 42 reference the year of the eleven tank removals as 2003, while page C-3, line 17 indicates removal of the eleven tanks was 1993, which appears correct.

C1. RESPONSE: Comment noted, Page C-2 lines 39 & 42 have been updated to 1993.

C2. COMMENT: *Section 2.2.2 – FTMM-55 – Page C-5, line 11* – Waste oil UST No. 91533-193 is indicated as being NFA in a January 10, 2003 letter. Although the tanks referenced on line 15 were found on the January 10, 2003 NJDEP NFA letter, that letter does not appear to reference UST No. 91533-193; no record of a letter of no further action for that tank could be located.

C2. RESPONSE: The waste oil UST number stated in the referenced Appendix C text is 81533-193. A request for NFA for UST290C (81533-193) was submitted to the NJDEP on January 30, 2015 ("Underground Storage Task within Parcels 49 and 50, Fort Monmouth,

NJ"). NJDEP approved NFA in a letter dated November 16, 2015. The Work Plan text has been revised accordingly.

C3. COMMENT: *Section 3.2 Sampling Plan* – As noted on page C-6, line 37, levels of TPHC remained in soil at the former location of UST No. 81533-64 at 16,200 and 11,900 ppm, at samples A and B, both at a depth of 5.5-6'. The proposal indicates horizontal delineation sampling is to be performed at locations A (16,200 ppm) and F (9,670 ppm), which is acceptable. Vertical delineation is also required. It is unclear, however, why sampling is not proposed at sample location B, as it does not appear to be vertically delineated.

C3. Response: Comment noted. Vertical delineation is required at sample locations A, F and B; therefore a new soil boring will be advanced to at least five feet below the water table at the locations of samples A, F and B to assess current concentrations and vertical extent of EPH. Two soil samples will be collected from each boring. Samples will be collected from 5.5-6.0 feet and a deeper 6-inch interval that is below any field evidence of contamination to delineate vertical extent based on field evidence (visual, olfactory, PID screening). Appendix C of the Work Plan Addendum has been updated with this information.

C4. Comment: The Department's EPH Protocol, http://www.nj.gov/dep/srp/guidance/srra/eph protocol.pdf, is to be followed, with contingency samples collected/analyzed as required. As per EPH Methodology Version 3.0, the non-fractionation option is appropriate only if the EPH level is anticipated to be below 1,700 ppm. As this cannot be presumed, the "unfractionated EPH" does not appear to be the appropriate option.

C4. RESPONSE: The tank being investigated at Parcel 50 is a fuel oil tank and, based on our review of NJDEP *Protocol for Addressing Extractable Petroleum Hydrocarbons* (Version 5, August 2010), the appropriate category of discharge for this investigation is Category 1. According to the EPH protocols for this category, total EPH results are to be compared to a trigger value of 5,100 mg/kg. With regard to contingency analyses, if EPH is detected in any of the samples over 1,000 ppm then 25% of the samples where EPH exceeds 1,000 mg/kg collected at Parcel 50 will be analyzed for 2-methylnaphthalene and naphthalene. The NJDEP EPH protocol does not specify that the EPH samples related to a No. 2 fuel oil or diesel fuel oil tank (Category 1) need to be fractionated. Based on our reading of the EPH protocol, fractionation is only required for discharges that fall into a Category 2 where EPH is anticipated to be above 1,700 ppm.

D. Parcel 51:

D1. COMMENT: *Section 2.5, Page D-5, line 40 and Page D-6, line 4* - The submittal indicates the UST questions contained in this office's July 10, 2012 letter are to be addressed under the UHOT program. This office looks forward to submittal of same.

D1. RESPONSE: Comment noted. A summary of closure and site assessment data for the multiple USTs within Parcel 51 will be provided under separate cover.

D2. COMMENT: *Section 3.0* – With receipt of the additional clarification provided on page D-4, as well as the figure received on June 15, 2015, the questions noted in the Department's July 2012 letter relative to USTs 1123B and 1123C have been answered. It is

agreed no additional action is necessary for UST 1123B. However, it is not agreed there are no COCs at Parcel 51. As indicated on line 11, 2-methylnaphthalene was found in the ground water at P51-Gl2 above the Ground Water Quality Standards (GWQS), as reported in the July 2008 SI. TPHC (collected due to elevated field screening readings) was also found in soil at that location at 6-6.5' at 7,487 ppm. Additional sampling is necessary.

D2. RESPONSE: During the 2007 SI sampling, fuel-contaminated soil and groundwater were encountered at location P51-G12. A soil sample collected from 6-6.5 feet bgs contained approximately 7,500 mg/kg TPHC, and a groundwater sample collected using a HydroPunch contained 40.5 µg/L of 2-methylnaphthalene; the interim groundwater quality criterion for this SVOC is 30 µg/L. The groundwater grab sampling results for SI location P51-E12, located approximately 200 feet north of P51-G12, bound the groundwater contamination in the downgradient direction (no GWQS exceedances for VOCs or SVOCs). During review of the files associated with Parcel 51, additional information was located. The following is a summary of the new information and proposed sampling program.

<u>New Information</u>

A 2000-gallon No. 2 fuel oil UST (#81533-107) that was located adjacent to the northeast corner of Building 686 was removed in 1995 (*Closure and Site Investigation Report for Underground Storage Tanks in the 600 Area* [Versar, February 2002]). This UST was located approximately 60 feet south (hydraulically upgradient) of 2007 SI sampling location P51-G12. During tank removal, contaminated soil was excavated, and this tank was one of 68 USTs approved for No Further Action by NJDEP via letter dated January 10, 2003.

The following investigation work was performed by the Army at UST #81533-107 in approximately January 2010. Sampling locations are shown on Figure D2:

- Four soil borings (P51-SB-1, P51-SB-2, P51-SB-3, and P51-SB-4) were advanced to the water table near the former UST location; one boring was advanced on each side of the former UST. A single soil sample was collected from each boring at 7.0-7.5 feet bgs and analyzed for BN+15 and VOCs+10.
- One 2-inch diameter PVC temporary monitoring well, screened across the water table, was installed in boring P51-SB-2 and a second temporary well (51-TMP-1, screened from 5-10 feet bgs) was installed immediately north of the former UST; the groundwater samples from temporary well P51-SB-2 was analyzed for BN+15 and VOCs+10, and the groundwater sample from 51-TMP-1 was analyzed for BN+15.
- A soil sample was collected from a depth of 7-7.5 feet bgs during drilling of temporary well 51-TMP-1 and analyzed for BN+15.
- Existing permanent groundwater monitoring well 600MW01, installed in 1994, was sampled for BN+15.
- A new permanent groundwater monitoring well, 600MW04, was installed at the former fuel oil UST location (i.e., the contamination source area), but has not been sampled to date.

The results of the field investigation revealed that fuel hydrocarbon contamination was detected in soil samples from P51-SB-1 and P51-SB-2; naphthalene concentrations in samples from these borings ranged from 6.29 to 19.28 D mg/kg, exceeding the 6-mg/kg RDCSRS. There were no detections of target analytes in soil from P51-SB-3 or P51-SB-4; however, the total SVOC TIC

concentration detected in the soil sample from P51-SB-4 was 931.45J mg/kg. GWQS exceedances in the groundwater sample from temporary well P51-SB-2 included benzo(a)anthracene (0.152 µg/L), and 2-methylnaphthalene (139 µg/L); these concentrations exceeded the interim groundwater quality criteria of 0.1 µg/L and 30 µg/L, respectively. There were no exceedances of GWQS in the groundwater sample from permanent well 600MW01.

The SVOC 2-methylnaphthalene was detected in the groundwater sample from temporary well 51-TMP-1 at a concentration of 85.6 µg/L, which exceeds the NJDEP interim criterion of 30 µg/L. The soil sample collected at a depth of 7 – 7.5 feet bgs during drilling of temporary well 51-TMP-1 contained naphthalene at a concentration of 11.3 mg/kg, exceeding the current RDCSRS of 6 mg/kg, and 2-methylnaphthalene at a concentration of 34.1 mg/kg, exceeding the current IGW SL of 8 mg/kg.

The elevated TPHC concentration detected in soil at SI boring P51-G12 (6-6.5 feet bgs) in 2007 is bounded laterally to the north, south, and west by sampling results for other nearby SI borings installed in 2007, and is bounded above by the TPHC concentration in the sample collected from 4.5 to 5 feet (273 mg/kg) and the non-detect result for the sample from 0-0.5 feet. However, the TPHC contamination is not bounded below a depth of 6.5 feet; this depth interval was likely just above the water table given that the SI groundwater sampling interval for this location is shown as 5-10 feet in the SI report (U.S. Army BRAC, 2008). Deeper soil samples were not collected in 2007.

Proposed Sampling Program

The following new investigation/sampling activities are proposed in the ECP Work Plan Addendum based on the information summarized above:

- A new soil boring will be advanced to at least 5 feet below the water table at the location of P51-G12 to assess current concentrations and vertical extent of EPH. Three soil samples will be collected from this boring. Samples will be collected from 6-6.5 feet, 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 6-6.5 feet and the deeper vertical extent sample) based on field evidence (visual, olfactory, PID screening). Soil samples will be analyzed for fractionated EPH, and 25% of the samples having EPH detections exceeding 1,000 mg/kg will be analyzed for naphthalene and 2-methylnaphthalene.
- A second, step-out soil boring will be advanced approximately 50 feet east of P51-G12 to obtain lateral extent information in this direction. The boring, sampling, and analysis details for the step-out boring will be the same as for the boring that will be advanced at P51-G12.
- Existing permanent monitoring wells 600MW04 and 600MW01 will be sampled, with samples analyzed for VOCs+TICs and SVOCs+TICs. Depending on the length and saturation of the well screens, two samples from each well may be collected to obtain vertical profiling information.
- A new permanent monitoring well will be installed approximately 40 feet north of P51-G12 in the hydraulically downgradient direction to assess the northern extent of fuel hydrocarbon concentrations in groundwater exceeding GWQS. The well will have a 10-

foot-long screen that extends two feet above the water table. It will be developed and sampled for VOCs+TICs and SVOCs+TICs.

This proposed additional soil and groundwater sampling has been added to Appendix D of the ECP Work Plan Addendum.

D3. COMMENT: *Motor Pool Area* -Although information regarding the 750 Motor Pool is not contained within this submittal, concerns regarding the area include, but are not limited to, adequate investigation of;

- Building 750 – UST 191 (15,000 gallon diesel) & UST192 (8000 gallon unleaded gasoline)
- two outdoor service pits for draining vehicle oil, the pipes from which discharged to a former oil water separator (OWS), north of garage bays
- current wash rack previously connected to former OWS, then to new OWS
- Building 753 – three hydraulic lifts and floor drain
- Building 754 – floor drain

D3. RESPONSE: Comment noted. The Motor Pool Area will be addressed as part of a separate Work Plan.

D4. COMMENT: Is FTMM 68/Building 700 not considered within Parcel 51?

D4. RESPONSE: FTMM-68 is not within Parcel 51; as part of the upcoming property transfer it has been designated as Parcel 96. Environmental investigation at FTMM-68 is being performed under a separate RI/FS Work Plan (already reviewed and approved by NJDEP) that also includes FTMM-22, FTMM-53, and FTMM-59. The RI/FS field work for FTMM-68 was completed in November 2015.

E. <u>Parcel 52/FTMM-53/Building 699 Gas Station:</u>

E1. COMMENT: *Section 1.0, Page E-1, line 8* – As many of the parcel narratives include, a listing of NJDEP correspondence by year is provided, which refers the reader back to *Section 5 References* to ascertain which document is being referenced. It does not include, however, this office's January 8, 2014 response to the September 2013 RI/FS Workplan, nor the May 6, 2014 response to the Army's April 22, 2014 response to same, in which delineation sampling was discussed and the revised proposal accepted. Results of the investigation have not yet been received by this office.

E1. RESPONSE: Comment noted, the missing correspondence has been added to the references cited in the Work Plan.

E2. COMMENT: *Section 2.4, Previous Investigation and Historical Data* – No mention is made of the 2000 gallon #2 fuel UST, 0081533-112, given an NFA designation in January of 2003, nor more particularly, of waste oil UST 0081533-197, a 1000 gallon waste oil UST removed in January of 1992 from east of UST-112, at which analytical results indicate TPHC to 11,600 ppm remains in soil. As acceptably indicated in the Army's April 22, 2014 response letter, Response C4, additional sampling was to be performed.

E2. RESPONSE: Comment noted. The text in the 2nd paragraph of Section 2.4 has been revised to read: "Additionally, four 4,000-gallon steel gasoline USTs (tank Nos. 81533-235 through 238), one 2,000-gallon #2 fuel oil UST (tank No. 81533-112), one 1,000-gallon waste

oil UST (tank No. 81533-197) and their associated piping were removed in the 1990s. A NFA designation was granted by the NJDEP in the letter *UST Closure Reports – Closure Approvals, Fort Monmouth Army Base* dated January 10, 2003 for the gasoline and #2 Fuel Oil USTs (NJDEP, 2003). The waste oil UST has been investigated as described in the March 2015 *Final Remedial Investigation / Feasibility Study Work Plan For Sites FTMM-22, FTMM -53, FTMM -59 and FTMM -68* (Parsons, 2015).

E3. COMMENT: *Section 2.4, Page E-5, lines 21-27* – It appears "IASL" (indoor air screening levels) may have been inadvertently used in the narrative, on lines 22, 26 and 27. These lines reference sub-slab results, the measure of which is against the SGSLs (Soil Gas Screening Levels), accurately referenced on lines 18, 20, 23, 25 and 25.

E3. RESPONSE: Comment noted, Section 2.4, Page E-5, IASL found on lines 22, 26 and 27 have been revised to SGSLs.

E4. COMMENT: *Section 2.5 Synthesis of Results, Correspondence and Data Gaps* – As indicated above, the submittal does not appear to include the activities proposed in the September 2013 RI/FS Workplan, nor the followup communications.

E4. RESPONSE: Comment noted. The following text has been added to Section 2.5: "FTMM-53 is an IRP site and has recently been investigated as described in the *Remedial Investigation / Feasibility Study Work Plan For Sites FTMM-22, FTMM -53, FTMM -59 and FTMM -68* that was initially submitted to NJDEP on September 18, 2013. The objectives of the RI field work at FTMM-53 are as follows:

- Define the extent of soil contamination at the site to the north;
- Determine current concentrations of COPCs in areas where they were elevated in the past;
- Define the extent of chlorinated solvent contamination in shallow groundwater; and
- Determine the hydraulic conductivity of the shallow water-bearing zone that has been impacted by fuel-related contamination.

The RI/FS Work Plan was revised based on NJDEP comments dated May 16, 2014 and resubmitted on March 30, 2015. The revised RI/FS Work Plan was approved by the NJDEP on April 27, 2015. The RI/FS field work at FTMM-53 was completed in November 2015. ."

E5. COMMENT: *Section 3.2 Sampling Plan* – As indicated, above and through previous correspondence, additional delineation sampling is necessary.

E5. RESPONSE: Comment noted. The text in Section 3.2 has been revised as follows: "No additional sampling at Parcel 52 / FTMM-53 is proposed to be performed under this ECP Work Plan Addendum. FTMM-53 is an IRP site and has recently been investigated as described in the *Remedial Investigation / Feasibility Study Work Plan For Sites FTMM-22, FTMM-53, FTMM-59 and FTMM -68* that was approved by NJDEP on April 27, 2015."

ECP Parcel 66:

F1. COMMENT: *Section 1.0* & *Section 2.5, Page F-3, line 15* – No mention appears to be made among the listed correspondence between NJDEP and FTMM of the *August 1, 2012 Proposed Soil Sampling and Delineation Plan for Electrical Substations at Building 2700*

(Charles Wood Area) and Building 978 (Main Post), nor the September 10, 2012 NJDEP approval letter for delineation of the PCBs.

F1. RESPONSE: The correspondence referenced in the comment was located and is now referenced in the text in Section 2.5; however the delineation plan proposed in the ECP Work Plan Addendum will be followed.

F2. COMMENT: *Section 2.2, Page F-1, line 20 -typo* - It is believed FTMM-56 should read FTMM-66.

F2. RESPONSE: Comment noted. FTMM-56 has been changed to FTMM-66 in *Section 2.2, Page F-1, line 20.*

F3. COMMENT: *Section 2.2, Page F-2, lines 2-4* & *Section 2.5* – The submittal references the ECP Report's Appendix A, stating, "no release or disposal of hazardous substances or petroleum products has occurred at Parcel 66…", and that Parcel 66 was assigned an ECP Category of 1. This office does not agree with same, as PCBs are noted present up to 0.84 ppm.

F3. RESPONSE: As part of the upcoming property transfer from the Army to FMERA, the Building 978 electrical substation has now been designated as Parcel 97; this parcel includes the PCB detections. Therefore, Parcel 66 can remain as an ECP Category 1.

F4. COMMENT: *Section 3.2 Sampling Plan* – The sampling as proposed on pages F-3 and F-4 is acceptable. Please note that the NJDEP was informed that sampling of Parcel 97 (formerly Parcel 66) would occur in November 2015 via email dated October 22 by the Army because of the potential environmental impacts associated with this parcel may have an overall impact on the transfer of the FTMM property.

F4. RESPONSE: Comment noted.

Parcel 80:

G1. COMMENT: *Section 1.0, line 14* – For clarification, per the 2008 ECP Main Post map (Figure 19), FTMM-56 is also known as Parcel 84 (Building 80), a small ¼+ acre area designated within the larger Parcel 83.

G1. RESPONSE: The additional investigation work presented in the ECP Work Plan Addendum is intended to address Parcel 80, not FTMM-56. The line 14 statement "A RI Report for FTMM-56, including Parcel 80, has been approved by stakeholders and finalized." has been removed and replaced with "A Parcel 80 SI Report Addendum has been approved by stakeholders and finalized." All other references to FTMM-56 have been removed.

G2. COMMENT: *Section 2.4 Previous Investigations and Historical Data* – As previously indicated, the Weston report was not accepted by the Department as representative of background conditions at Fort Monmouth.

The section also references the July 10, 2012 letter, in which the NJDEP requested additional information regarding the basis for determination of the sample locations, i.e., were as-builts or other plans for the demolished buildings used to assist in locating former floor drains, septic systems, discharge points, etc, and therefore the boring locations. No rationale for sample location selection has been received; therefore a determination remains unavailable regarding the adequacy of the soil sampling performed.

G2. RESPONSE:

Due to the age of the buildings and the fact that they were demolished 25 years ago, as-builts including interior floor drains or other potential points of discharge for these buildings are no longer available. Therefore, in lieu of specific building plans, the original SI was set up to provide widespread coverage over the parcel. However two drawings have been located that depict historical operations at former Building 105. One drawing shows the rooms of former Building 105 and the print or photographic processes that occurred in each room. The other drawing shows the exterior sewer, water, and electrical connections associated with former Buildings 104 and 105. Both drawings are provided in Attachment G1.

During review of the files associated with former Buildings 106 and 105, additional information was located. The following is a summary of the new information and newly proposed sampling locations:

New Information

A 2002 Underground Storage Tank Closure and Site Investigation Report for Building 106 was reviewed. The report indicates that on February 2, 1998 during a UST investigation at former Building 106, a concrete-lined pit, suspected to be a former oil-water separator, was discovered and removed. It was determined that the oil-water separator was used in conjunction with a waste oil tank associated with Building 106. However, no evidence of the waste oil tank was observed during the investigation and it was assumed that the tank had been previously removed. The oil-water separator and approximately 246 cubic yards of visually impacted soils surrounding it were removed. While the UST was never located, 10 post-excavation soil samples were collected and submitted for TPH analysis. All 10 post-excavation soil samples were determined to be in compliance with NJDEP's then current cleanup standard for TPH of 10,000 mg/kg, as shown on Table 3 and Figure 3 in **Attachment G1**. TPH concentrations ranged from non detect to 1,517.36 mg/kg. Following receipt of all post-excavation soil sampling results, the excavation was backfilled-to grade.

According to the UST closure report, two groundwater samples were collected from one temporary well point installed within the excavation area, (specific location not documented) on June 8 and July 7, 2001 (Table 4, **Attachment G1**). The groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, and TAL metals. Both groundwater samples were in compliance with the NJDEP's GWQS for VOCs and SVOCs. Concentrations of the pesticides alpha-chlordane and gamma-chlordane exceeded the NJDEP GWQS of 0.5 micrograms per liter (µg/L), at 0.605 µg/L and 0.571 µg/L, respectively, during the June 8, 2001 groundwater sampling event. Total concentrations of the following metals also exceeded their NJDEP GWQS during the June 8, 2001 sampling event:

- Arsenic exceeded the GWQS of 3 µg/L at 24.6 µg/L.
- Aluminum exceeded the GWQS of 200 µg/L at 12,300 µg/L.
- Lead exceeded the NJDEP GWQS of 10 µg/L at 24.4 µg/L.
- Manganese exceeded the GWQS of 50 µg/L at 297 µg/L.

Concentrations of the pesticides alpha-chlordane and gamma-chlordane exceeded the NJDEP GWQS of 0.5 micrograms per liter (µg/L), at 1.71 µg/L and 1.79 µg/L, respectively, during the July 7, 2001 groundwater sampling event. Total concentrations of the following metals also exceeded their NJDEP GWQS during the July 7, 2001 sampling event:

- Arsenic exceeded the GWQS of 3 µg/L at 5.88 µg/L.
- Aluminum exceeded the GWQS of 200 µg/L at 3250 µg/L.
- Manganese exceeded the GWQS of 50 µg/L at 319 µg/L.

No further action was recommended for the former waste oil tank and oil water separator in the 2002 UST closure report. On January 10, 2003 the no further action request for the oil water separator and waste oil tank was granted by the NJDEP (Attachment G1).

In 2010, additional investigations were performed to address the beryllium detections in groundwater samples that exceeded the NJDEP GWQS at the 2007 SI location P80-SB/GW-1, as well as to investigate the source of the pesticides that were detected in groundwater samples collected as part of the Building 106 UST investigation. All 2010 data are provided in Attachment G1.

On January 7, 2010, a 2-inch diameter, PVC temporary monitoring point (0.010-inch slotted PVC screen) identified as TMP-1 was installed at the location of the former sampling point designated as P80-SB/GW-1. According to the scope of work documents prepared by the Army DPW the temporary monitoring point was screened across the water table. Both unfiltered and filtered water samples were collected from the temporary well for beryllium analysis. Beryllium was detected in the unfiltered and filtered groundwater samples at concentrations of 6.58 and 0.595 µg/L, respectively. The GWQS for beryllium is 1 µg/L.

To address the detections of pesticides in groundwater at the UST excavation in 2001, groundwater monitoring well ECP-80MW01 (aka 106MW06) was installed immediately north of the former excavation area in March 2010. In April 2010, the monitoring well was sampled for pesticides and TAL (total only) metals using low-flow methods. The following metals were determined to exceed the NJDEP GWQS: aluminum, arsenic, beryllium, cadmium, iron, lead, and manganese. All pesticides and the remaining metals not listed above were in compliance with the NJDEP GWQS.

On April 5, 2010, 10 soil samples were collected from five locations (CU-1 through CU-5) for analysis of pesticides and TAL metals. Samples were collected at 0.5-1.0 feet below ground surface (bgs) and at a one deeper depth from each location. Results indicate that chlordane and gamma chlordane exceeded the RDCSRS of 0.2 mg/kg at CU-1 (2.03 and 0.38 mg/kg, respectively at 0.5-1.0 feet and 0.32 mg/kg for chlordane at 2.5 to 3.0 feet bgs), CU-2 (0.3692 mg/kg at 0.5-1.0 feet bgs), and CU-4 (0.3584 mg/kg at 0.5-1.0 feet bgs). In addition, arsenic exceeded the RDCSRS of 19 mg/kg at CU-4 (24.8 mg/kg at 0.5-1.0 ft bgs), and vanadium exceeded the RDCSRS of 78 mg/kg at CU-3 (82.7 mg/kg at 3.0-3.5 bgs).

In November 2010, an additional 10 soil samples were collected from 5 locations (CU-6 through CU-10) to further delineate chlordane and arsenic in soil. Laboratory results show that chlordane was detected above the RDCSRS at CU-8 (2.9146 mg/kg) and CU-10 (2.5741mg/kg) within the 0.5-1 feet bgs interval. Arsenic was detected above the RDCSRS at CU-7 (23.3 mg/kg at 2.5 to 3.0 feet bgs).

Additional sampling completed in Parcel 80 includes two test pits (TP-7 and TP-8) that were excavated in 2001. The test pits were completed for an investigation associated with the new credit union which is located north of the parcel. At both test pits three soil samples were collected from the following depths: 0.5, 3.0, and 5.5 feet bgs. Soil samples were analyzed for VOCs, PAHs, and metals. Results show that the PAHs benzo(a)anthracene, benzo(a)pyrene,

benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were detected above the NJDEP RDCSRS in the 0-0.5 foot sample at TP-7. PAHs were not detected in the deeper samples from TP-7, suggesting that the PAH exceedances may be due to asphalt contamination due to its proximity to the road. Metal results show that arsenic and copper were detected above the RDCSRS in the 2.9-3.0 foot sample at TP-7. Additionally one groundwater sample was collected from each of the two test pits and analyzed for VOCs, SVOCs and metals. VOCs and SVOCs were not detected in groundwater at either test pit location. The following metals were detected above the GWQS at both test pit locations: aluminum, arsenic, barium, beryllium, cadmium, chromium, iron, lead, manganese, mercury, nickel and zinc. These samples were collected from a test pit (and are likely to have had elevated turbidities) and are not believed to be representative of the actual groundwater conditions. Test pit locations and data are provided in **Attachment G1**.

Newly Proposed Sampling Locations

Based on Parsons review of the results, the extents of the pesticide chlordane and the metals vanadium, arsenic and copper in soil have not been fully delineated at Parcel 80. However, all results from sampling for pesticides are consistent with levels that would be found from the regular use of properly applied pesticides. Additionally, there is no historic evidence of pesticide storage or a spill within Parcel 80. Therefore, there is no evidence of release of pesticides that is the responsibility of the Army.

Vanadium: Soil borings FTMM-80-SB-03, FTMM-80-SB-04 and FTMM-80-SB-05 will be advanced to delineate the extent of vanadium detected above the RDCSRS at sampling location CU-03. Soil samples will be collected for laboratory analysis at three 6-inch intervals (0.5-1.0 feet and 3.0-3.5 feet and 4.5-5.0 feet bgs). Samples collected at the 4.5-5.0 feet bgs interval at locations FTMM-80-SB-04 and FTMM-80-SB-05 will be submitted to the lab and placed on hold pending the results of the shallow samples. Soil samples will be analyzed for vanadium via method 6010C.

Arsenic and Copper: Soil borings FTMM-80-SB-06, FTMM-80-SB-07 and FTMM-80-SB-08 will be advanced to delineate arsenic and copper detections above the RDCSRS at sampling location CU-07 and TP-7. Soil samples will be collected for laboratory analysis at three 6-inch intervals (0.5-1.0 feet 2.5-3.0 feet and 4.0-4.5 feet bgs). Samples collected at the 4.0-4.5 feet bgs interval at locations FTMM-80-SB-07 and FTMM-80-SB-08 will be submitted to the lab and placed on hold pending the results of the shallow samples. Soil samples will be analyzed for arsenic and copper via method 6010C.

Groundwater: Groundwater samples collected previously from existing monitoring wells ECP-80MW01 (aka 106MW06), P80-SB/GW-1, and P80-SB/GW-2 provide information regarding groundwater quality conditions at this parcel; however, limited additional groundwater sampling is recommended to address data gaps. Historical beryllium exceedences in groundwater from ECP-80MW01 need to be re-evaluated. Therefore, in addition to the installation and sampling of a new monitoring well for beryllium as described in the Work Plan Addendum, existing well ECP-80MW01 will be re-sampled using the low-flow purge and sample methods (to obtain a low turbidity sample). The groundwater sample will be analyzed for total and dissolved concentrations of beryllium via method 6010C.

Sections 2.4, 2.5 and 3.0 of the ECP Work Plan Addendum (Appendix G) have been revised according to information provided above.

G3. COMMENT: *Section 3.2 Sampling Plan* – The proposal to further evaluate beryllium in ground water reported in the 2008 SI as indicated is acceptable.

G3. RESPONSE: Comment noted.

F. <u>Parcel 83</u>:

H1. COMMENT: In October of 2008, the NJDEP requested depiction of all areas of concern (AOCs) on a site figure. Although a structures figure was submitted, no figure designating AOCs has been received.

H1. RESPONSE: A preliminary identification of AOCs for this parcel will be developed by FTMM and reviewed by Counsel; FTMM will then advise NJDEP of the outcome. Depending on the determination of BRAC Environmental Law Division, a SI report will be issued to the Department for review or for information purposes only.

H2. COMMENT: *Section 2.4, Page H-4* – As previously indicated, the Weston "background" report was not accepted by the Department. As regarding the elevated levels of arsenic (SB10A, SB9A), as acknowledged in Section 3.1, this office at this time does not agree these levels of arsenic are representative of naturally occurring conditions. Arsenic is currently considered a contaminant of concern, based on analytical findings at P83-SB9&10. As the NJDEP July 10, 2012 correspondence stated, although Fort Monmouth site soils are often associated with elevated levels of naturally occurring arsenic, the parcel specific soil analytical results, the lead to arsenic ratio, and the decrease of arsenic with depth at those locations exhibiting an elevated level do not appear to indicate the exceedences are naturally occurring, and must be investigated and included in a remedy.

H2. RESPONSE: As stated in the 2nd to last paragraph of Section 3.2 (Appendix H) of the ECP Work Plan Addendum, the vertical extent of elevated concentrations of lead and arsenic at SI boring P83-SB9 (1-1.5 feet) and of arsenic at SI boring P83-SB10 (0-0.5 feet) were delineated in 2007 by deeper samples collected at SB9 (4.5-5 feet) and SB10 (5-5.5 and 6.5-7 feet). The current concentrations and lateral extent of elevated lead and arsenic concentrations detected in surface soil next to Building 279 at P83-SB9 in 2007 will be assessed by proposed new borings FTMM-83-SS-12, SS-13, and SS-14 that are already included in the Work Plan Addendum; this is described in the third paragraph of Section 3.2 in Appendix H. However, proposed new confirmation boring FTMM-83-SS-13 will be moved to within 5 feet of 2007 boring P83-SB9 since it will be used to confirm the current concentrations of arsenic and lead previously detected in surface soil at P83-SB9.

The lateral extent of the elevated arsenic concentration detected in surface soil next to Building 279 at P83-SB10 in 2007 will be assessed by proposed new boring FTMM-83-SS-12 that is already included in the Work Plan Addendum. One additional boring (FTMM-83-SS-15) will be added approximately 50 feet north of P83-SB10 to provide more complete lateral delineation information. A second additional boring (FTMM-83-SS-16) will be added between Building 279 and Riverside Avenue for the same purpose. Up to three soil samples from these borings (same as described for borings SS-12 through SS-14 in the Work Plan Addendum) will be analyzed for arsenic and lead. Appendix H of the Work Plan Addendum has been updated to include these additional soil borings.

H3. COMMENT: *Section 2.5, line 35* – The submittal indicates further information on the various USTs referenced in the July 10, 2012 letter are to be referred to the "UHOT Program". Although not familiar with same, this office looks forward to receipt of additional information regarding the USTs.

H3. RESPONSE: Noted.

H4. COMMENT: *Section 3.2 Sampling Plan* – Sampling at the former Building 72 area to better define PAH exceedances, as proposed, is acceptable.

H4. RESPONSE: Noted.

H5. COMMENT: *Section 3.2, lines 15, 16* – PCBs – Please ensure these delineation samples, include PCBs analyses, for delineation of the 0.8 ppm PCBs noted at P83-B5, 1-1.5'.

H5. RESPONSE: Soil samples from proposed delineation borings FTMM-83-SS-09, -10, and -11 will also be analyzed for PCBs. The surface soil samples collected from the 0-6 inch interval beneath the asphalt paving will be analyzed for PCBs. If PCBs are detected in any of the surface soil samples, the deeper samples collected at that location will also be analyzed for PCBs. Appendix H of the Work Plan Addendum has been updated to include the PCB analyses. In addition, the sampling plan for these three borings was revised to target lead rather than the full suite of TAL metals because lead was the only metal of concern at P83-B5 identified during the SI sampling in 2007.

H6. COMMENT: *Section 3.2* – Building 279 – Although the proposed sampling locations are acceptable, they are inadequate to complete delineation. Arsenic remains undelineated at P83SB10.It is anticipated elevated levels of lead may be present west of P83SB9; what efforts for delineation are planned? If location FTMM-83-SS-13 is considered a resample of P83SB9, it should be located within 10' feet of the original sample location.

H6. RESPONSE: See response to H2. Proposed new boring FTMM-83-SS-13 has been moved to within 10 feet of P83-SB9. In addition, soil data from SI borings P83-SB10 and P83-SB11, and proposed new borings FTMM-83-SS-12, -SS-14, –SS-15, and –SS16 will be used to delineate the lateral extent of lead at P83-SB9. If elevated lead concentrations are detected in soil west of Building 279 at proposed new boring FTMM-83-SS-16, then SI borings P83-SB14 and P83-SB15 can be used to delineate the lateral extent of lead west of Riverside Avenue.

Should you have any questions or require additional information, please contact me at (732) 383-5104 or by email at john.e.occhipinti.civ@mail.mil.

Regards,

John E. Occhipinti
Fort Monmouth Site Manager

cc: James Moore, USACE
Cris Grill, Parsons

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. 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

June 16, 2015

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

Re: *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83 dated February 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 March 2, 2015, prepared by Parsons Government Services Inc. (Parsons), on behalf of the U.S. Army Engineering and Support Center, Huntsville (USAESCH). As indicated in the report, activities are to be performed with the goal of Decision Document acceptance in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), 40 CFR Part 300, and "to the extent possible to meet the requirements of New Jersey Administrative Code (NJAC) 7:26E Technical Requirements for Site Remediation", as well as support closure of environmental sites to facilitate transfer of real property.

The workplan describes Site Investigation activities to be performed at the ECP Parcels referenced above. Comments and questions are as follows:

Tables 3.1 and 3.2 also will require revision based upon the following comments.

Parcel 34/Building 2567/FTMM-58

Section 2.4.1, Page B4-line 2 – Although this office agrees with the statement "post excavation soil samples were collected…and analyzed for TPHCs, VOCs, and lead", review of historic

information appears to indicate elevated levels of benzene remain in the soil in the area of the dispenser island south of Building 2567. See additional detail under Section 3.2, below.

Section 2.5, Page B-7, line 21 – This statement regarding the removal of piping was amended via email to Wanda Green (copy to Rob Youhas and Joe Pearson) on June 18, 2013 1519 hrs. The report documenting the investigation of the piping, however, as you likely are aware, has not been received by this office.

Section 3.2 Sampling Plan – Although it is agreed the proposal is appropriate for the TBA in ground water, the referenced submittal considers only the issue of TBA in ground water (the proposal for two annual sampling events of monitor wells 2567MW01 and 2567MW03 was approved on July 3, 2014). However, as briefly discussed in a conference call on June 12, 2015, a review of historic information appears to indicate levels of benzene above both the residential and non-residential criteria/standard remain in numerous locations in the vicinity of the dispenser area south of Building 2567. The information was obtained from the October 28, 2005 RIR/RAW, including Figure 2-1 dated 6/9/94, which indicates levels of benzene remain up to 85 ppm. The June 2010 RAPR appears to omit reference to analytical results from the post excavation soil sampling performed in 1993 during removal of USTs 42 through 45, stating only the samples were analyzed for TPHC, VOCs, and lead, however, a copy of the September 2, 2010 PBR Request contained within the submittal's Appendix B referenced benzene remaining to 45 ppm. Pages i, 3-5 and 6-1 of the June 2010 RAPR also indicate the "remaining original UST dispenser island areas" would undergo assessment upon BRAC closure. It is understood available information is currently being evaluated to determine the status of the soils in this area. At this time, however, this office considers the soil in the area an unaddressed area of concern in need of additional delineation.

Parcel 50

Section 2.2.1 - FTMM-54 - Page C-2 lines 39 & 42 reference the year of the eleven tank removals as 2003, while page C-3, line 17 indicates removal of the eleven tanks was 1993, which appears correct.

Section 2.2.2 – FTMM-55 - Page C-5, line 11 – Waste oil UST No. 91533-193 is indicated as being NFAed in a January 10, 2003 letter. Although the tanks referenced on line 15 were found on the January 10, 2003 NJDEP NFA letter, that letter does not appear to reference UST No. 91533-193; no record of a letter of no further action for that tank could be located.

Section 3.2 Sampling Plan – As noted on page C-6, line 37, levels of TPHC remained in soil at the former location of UST No. 81533-64 at 16,200 and 11,900 ppm, at samples A and B, both at a depth of 5.5-6'. The proposal indicates horizontal delineation sampling is to be performed at locations A (16,200 ppm) and F (9,670 ppm), which is acceptable. Vertical delineation is also required. It is unclear, however, why sampling is not proposed at sample location B, as it does not appear to be vertically delineated.

The Department's EPH Protocol, http://www.nj.gov/dep/srp/guidance/srra/eph_protocol.pdf, is to be followed, with contingency samples collected/analyzed as required. As per EPH Methodology Version 3.0, the non-fractionation option is appropriate only if the EPH level is anticipated to be below 1,700 ppm. As this cannot be presumed, the "unfractionated EPH" does not appear to be the appropriate option.

Parcel 51

Section 2.5, Page D-5, line 40 and Page D-6, line 4 - The submittal indicates the UST questions contained in this office's July 10, 2012 letter are to be addressed under the UHOT program. This office looks forward to submittal of same.

Section 3.0 – With receipt of the additional clarification provided on page D-4, as well as the figure received on June 15, 2015, the questions noted in the Department's July 2012 letter relative to USTs 1123B and 1123C have been answered. It is agreed no additional action is necessary for UST 1123B. However, it is not agreed there are no COCs at Parcel 51. As indicated on line 11, 2-methylnaphthalene was found in the ground water at P51-G12 above the Ground Water Quality Standards (GWQS), as reported in the July 2008 SI. TPHC (collected due to elevated field screening readings) was also found in soil at that location at 6-6.5' at 7,487 ppm. Additional sampling is necessary.

Motor Pool Area – Although information regarding the 750 Motor Pool is not contained within this submittal, concerns regarding the area include, but are not limited to, adequate investigation of;

- Building 750 – UST 191 (15,000 gallon diesel) & UST192 (8000 gallon unleaded gasoline)
- two outdoor service pits for draining vehicle oil, the pipes from which discharged to a former oil water separator (OWS), north of garage bays
- current wash rack previously connected to former OWS, then to new OWS
- Building 753 – three hydraulic lifts and floor drain
- Building 754 – floor drain

Is FTMM 68/Building 700 not considered within Parcel 51?

Parcel 52/FTMM-53/Building 699 Gas Station

Section 1.0, Page E-1, line 8 – As many of the parcel narratives include, a listing of NJDEP correspondence by year is provided, which refers the reader back to *Section 5 References* to ascertain which document is being referenced. It does not include, however, this office's January 8, 2014 response to the September 2013 RI/FS Workplan, nor the May 6, 2014 response to the Army's April 22, 2014 response to same, in which delineation sampling was discussed and

the revised proposal accepted. Results of the investigation have not yet been received by this office.

Section 2.4, Previous Investigation and Historical Data – No mention is made of the 2000 gallon #2 fuel UST, 0081533-112, given an NFA designation in January of 2003, nor more particularly, of waste oil UST 0081533-197, a 1000 gallon waste oil UST removed in January of 1992 from east of UST-112, at which analytical results indicate TPHC to 11,600 ppm remains in soil. As acceptably indicated in the Army's April 22, 2014 response letter, Response C4, additional sampling was to be performed.

Section 2.4, Page E-5, lines 21-27 – It appears "IASL" (indoor air screening levels) may have been inadvertently used in the narrative, on lines 22, 26 and 27. These lines reference sub-slab results, the measure of which is against the SGSLs (Soil Gas Screening Levels), accurately referenced on lines 18, 20, 23, 25 and 25.

Section 2.5 Synthesis of Results, Correspondence and Data Gaps – As indicated above, the submittal does not appear to include the activities proposed in the September 2013 RI/FS Workplan, nor the followup communications.

Section 3.2 Sampling Plan – As indicated, above and through previous correspondence, additional delineation sampling is necessary.

Parcel 66

Section 1.0 & Section 2.5, Page F-3, line 15 – No mention appears to be made among the listed correspondence between NJDEP and FTMM of the *August 1, 2012 Proposed Soil Sampling and Delineation Plan for Electrical Substations at Building 2700 (Charles Wood Area) and Building 978 (Main Post)*, nor the September 10, 2012 NJDEP approval letter for delineation of the PCBs.

Section 2.2, Page F-1, line 20 – typo - It is believed FTMM-56 should read FTMM-66.

Section 2.2, Page F-2, lines 2-4 & Section 2.5 – The submittal references the ECP Report's Appendix A, stating, "no release or disposal of hazardous substances or petroleum products has occurred at Parcel 66…", and that Parcel 66 was assigned an ECP Category of 1. This office does not agree with same, as PCBs are noted present up to 0.84 ppm.

Section 3.2 Sampling Plan – The sampling as proposed on pages F-3 and F-4 is acceptable.

Parcel 80

Section 1.0, line 14 – For clarification, per the 2008 ECP Main Post map (Figure 19), FTMM-56 is also known as Parcel 84 (Building 80), a small ¼+ acre area designated within the larger Parcel 83.

Section 2.4 Previous Investigations and Historical Data – As previously indicated, the Weston report was not accepted by the Department as representative of background conditions at Fort Monmouth.

The section also references the July 10, 2012 letter, in which the NJDEP requested additional information regarding the basis for determination of the sample locations, i.e., were as-builts or other plans for the demolished buildings used to assist in locating former floor drains, septic systems, discharge points, etc, and therefore the boring locations. No rationale for sample location selection has been received; therefore a determination remains unavailable regarding the adequacy of the soil sampling performed.

Section 3.2 Sampling Plan – The proposal to further evaluate beryllium in ground water reported in the 2008 SI as indicated is acceptable.

Parcel 83

In October of 2008, the NJDEP requested depiction of all areas of concern (AOCs) on a site figure. Although a structures figure was submitted, no figure designating AOCs has been received.

Section 2.4, Page H-4 - As previously indicated, the Weston "background" report was not accepted by the Department. As regarding the elevated levels of arsenic (SB10A, SB9A), as acknowledged in Section 3.1, this office at this time does not agree these levels of arsenic are representative of naturally occurring conditions. Arsenic is currently considered a contaminant of concern, based on analytical findings at P83-SB9&10. As the NJDEP July 10, 2012 correspondence stated, although Fort Monmouth site soils are often associated with elevated levels of naturally occurring arsenic, the parcel specific soil analytical results, the lead to arsenic ratio, and the decrease of arsenic with depth at those locations exhibiting an elevated level do not appear to indicate the exceedences are naturally occurring, and must be investigated and included in a remedy.

Section 2.5, line 35 – The submittal indicates further information on the various USTs referenced in the July 10, 2012 letter are to be referred to the "UHOT Program". Although not familiar with same, this office looks forward to receipt of additional information regarding the USTs.

Section 3.2 Sampling Plan – Sampling at the former Building 72 area to better define PAH exceedances, as proposed, is acceptable.

Section 3.2, lines 15, 16 – PCBs - Please ensure these delineation samples, include PCBs analyses, for delineation of the 0.8 ppm PCBs noted at P83-B5, 1-1.5'.

Section 3.2 – Building 279 – Although the proposed sampling locations are acceptable, they are inadequate to complete delineation. Arsenic remains undelineated at P83SB10. It is anticipated elevated levels of lead may be present west of P83SB9; what efforts for delineation

are planned? If location FTMM-83-SS-13 is considered a resample of P83SB9, it should be located within 10' feet of the original sample location.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

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

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. 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

December 22, 2015

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

Re: **Revision 1 -** *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66/97, 80 and 83* dated *November 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 November 24, 2015, prepared by Parsons Government Services Inc. (Parsons), on behalf of the U.S. Army Engineering and Support Center, Huntsville (USAESCH). As indicated in the report, activities are to be performed with the goal of Decision Document acceptance in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), 40 CFR Part 300, and "to the extent possible to meet the requirements of New Jersey Administrative Code (NJAC) 7:26E Technical Requirements for Site Remediation", as well as support closure of environmental sites to facilitate transfer of real property.

The workplan describes Site Investigation activities to be performed at the ECP Parcels as indicated above; based upon the revisions included in the referenced submittal, the workplan is approved. Comments, however, are as follows:

Review of the revised document would have been more efficient if all modifications had been made discernible within the submittal in some manner. Although the correspondence which accompanied the workplan did note many areas of modifications and amendments, many others were found during a "side by side" comparison of the workplans, significantly slowing the review process.

As has been noted in previous correspondence, all material, including tables, figures and maps to be utilized in the review of a submittal are to be included in paper form. Referencing the material as included on the CD is insufficient.

Maps/figures are to include not just sample locations, but also analytical results, in accordance with the Technical Requirements (e.g. Figures B1, G1). This, again, costs review time, as the previous results must be plotted during review to ensure adequate delineation locations/depths are proposed.

It is understood upcoming property transfer needs have necessitated the creation of additional parcel designations to address various areas of contamination while allowing other areas to transfer. A map of the site with each of the parcels noted has previously been received. A narrative description of each of these newly designated parcels would be very beneficial, however, including each parcel's size.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

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

ATTACHMENT B

Previous Work Plans and Reports

1. *Appendix D of the Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan Addendum for Parcels 34, 50, 51, 52, 66, 80 and 83, Final, Revision 1*.
2. Versar, 2002. *Closure and Site Investigation Report for Underground Storage Tanks in the 600 Area.* February.

APPENDIX D: Parcel 51 (Former Barracks) ECP Supplemental Phase II SI Work Plan Addendum

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 PURPOSE AND SCOPE

The purpose of this addendum document is to supplement the ECP Supplemental Phase II SI Work Plan, submitted under separate cover, in order to describe the tasks that will be completed at FTMM during the implementation of ECP supplemental Phase II SI activities for Parcel 51 (Former Barracks). This addendum document has been prepared to be responsive to the August 2014 PWS and NJDEP comments on the 2008 SI. The proposed tasks at each parcel also take into consideration subsequent correspondence between NJDEP and FTMM (NJDEP 2012b, 2012c, 2012d, 2012e, and 2013). The objective of the ECP portion of this project will be met when the following tasks have been accomplished:

- A work plan addendum has been prepared in accordance with the August 2014 PWS that references governing regulations and requirements, identifies appropriate field work for the SI, and defines and presents an effective approach to the planning and implementation of field work that will meet the requirements of the SI; and
- A RI Report for FTMM-53, including Parcel 51, has been approved by stakeholders and finalized.

The overall objective of this delivery order is to perform an ECP supplemental Phase II SI. Following completion of the field investigation phase, in accordance with the August 2014 PWS (**Appendix A**, included by reference only), findings and recommendations will be presented in the RI Report for FTMM-53, as described in Section 5.0. Reporting will be performed as part of the RI Report for FTMM-53, since FTMM-53 is adjacent to Parcel 51. The overall goal of this process is to obtain stakeholder concurrence on the Final RI Report for FTMM-53 (which will include Parcel 51), and if appropriate, provide sufficient data to recommend additional investigation or NFA.

2.0 SITE BACKGROUND

2.1 SITE LOCATION

As described in Appendix A of the ECP Report (U.S. Army BRAC, 2007), Parcel 51 is located in the central portion of the MP and includes the 750 Motor Pool; the area around Buildings 787, 788, and 789; the 600 Area Buildings; 500 Area Buildings; and Former Barracks along Semaphore Avenue (**Figure D1**).

2.2 SITE HISTORY

The following is excerpted from the U.S. Army BRAC 2005 Environmental Condition of Property Report (U.S. Army, 2007) and has been updated where more information is available. Parcel 51 was designated in the ECP Report as a Category 2 Parcel, indicating that it's an area where only release or disposal of petroleum products has occurred, and the contamination description indicates hazardous substance release, petroleum storage, and petroleum release.

As documented in the ECP report, per communications with facility personnel involved with the 750 Motor Pool construction project in the 1980s, multiple former USTs associated with Former Barracks in the area were removed during construction. Extensive soil sampling and three UST removals were conducted in the area of Buildings 787, 788, and 789 as part of

the U.S. Army's Residential Communities Initiative (RCI) and Enhanced Use Leasing (EUL) programs. Soil grid sampling was conducted throughout the area. Locations at which contaminated soil was identified above NJDEP RDCSCC were excavated and disposed offsite. Numerous UST removals and extensive investigation of the 600 Area were conducted under the 600 Area Work Plan that was approved by the NJDEP. A petroleum release was documented to have potentially occurred at 24 of the removed USTs in Parcel 51. The ECP Report states in Appendix A, that a NFA approval letter was obtained from the NJDEP for these 24 locations where evidence of a petroleum release was identified. Operations in the 600 Area included dry metal fabrication of vehicle equipment shelters (no solvents used). Small amounts of chemicals were used in this area, and lead acid batteries are present in association with emergency generators and uninterrupted power supplies.

The 750 Area, south of Echo Avenue, was used by the Directorate of Logistics as a storage area for the Installation's fleet vehicles. The facility was formerly the 513th Military Motor Pool from 1987 until the mid-1990s. The Motor Pool collectively included Buildings 750, 753, 754, and 756. Building 751 was previously associated with fuel dispensing operations in this area, but has since been demolished. Two USTs and four product dispensing pumps were also located at the site. The 15,000-gallon diesel fuel UST and the 8,000-gallon unleaded gasoline UST were removed in February 2005. In addition, a fuel tanker truck with a 1,200-gallon capacity would park at this facility when not engaged in making fuel deliveries. The vehicle was used to store diesel fuel that was used at various on-site emergency generators. A permanent secondary containment system for the fuel tanker truck was constructed.

In addition to being a storage area, complete automotive repairs were made to the vehicles at the 750 Area. Refrigerant R134 was used and chlorinated solvents were formerly utilized for automotive parts cleaning prior to converting to aqueous parts cleaning units. Two out of service outdoor service pits were present to the east of Building 750 from which oil was drained directly into pipes leading to the former oil/water separator that was present in the grassed area north of the service bays. The current wash rack facility was formerly connected to the OWS. The wash rack facility was upgraded several years ago and a new OWS system was added to the wash rack equipment (2006 visual site inspection observations and discussions with site personnel).

A small firearm repair shop is also located within Building 750 in which small amounts of solvents were utilized in firearms service and repair (2006 VSI observations and discussions with site personnel).

No site history information is available for the 500 Area Buildings and Former Barracks along Semaphore Avenue.

2.3 CURRENT AND PROJECTED LAND USE

Buildings within Parcel, 51 which are currently occupied based on correspondence with USACE (USACE 2013), include the following:

- Building 502: new FMERA administration, formerly the MP library;
- Buildings 750, 753, 754, 760, and 761: Monmouth County Department of Public Works (leased).

The remainder of Parcel 51 is currently unoccupied / not in use.

Parcel 51 is projected in both the 10 and 20 year plan in the Fort Monmouth Reuse and Redevelopment Plan (EDAW, 2008), to be developed for a mix of open space, low density residential, institutional, commercial, and office/R&D use.

2.4 PREVIOUS INVESTIGATIONS AND HISTORICAL DATA

A 2000-gallon No. 2 fuel oil UST (#81533-107) that was located adjacent to the northeast corner of Building 686 was removed in 1995 (*Closure and Site Investigation Report for Underground Storage Tanks in the 600 Area* [Versar, February 2002], provided in **Attachment D1**). This UST was located approximately 60 feet south (hydraulically upgradient) of SI sampling location P51-G12 (U.S. Army BRAC 2008), and is the probable source of contamination detected at P51-G12 during the SI. During tank removal, contaminated soil was excavated, and this tank was one of 68 USTs approved for No Further Action by NJDEP via letter dated January 10, 2003.

The following investigation work was performed by the Army at UST #81533-107 in approximately January 2010. Sampling locations are shown on **Figure D2**:

- Four soil borings (P51-SB-1, P51-SB-2, P51-SB-3, and P51-SB-4) were advanced to the water table near the former UST location; one boring was advanced on each side of the former UST. A single soil sample was collected from each boring at 7.0-7.5 feet bgs and analyzed for Base Neutrals (BN)+15 and VOCs+10.
- One 2-inch diameter PVC temporary monitoring well, screened across the water table, was installed in boring P51-SB-2 and a second temporary well (51-TMP-1, screened from 5-10 feet bgs) was installed immediately north of the former UST; the groundwater samples from temporary well P51-SB-2 was analyzed for BN+15 and VOCs+10, and the groundwater sample from 51-TMP-1 was analyzed for BN+15.
- A soil sample was collected from a depth of 7-7.5 feet bgs during drilling of temporary well 51-TMP-1 and analyzed for BN+15.
- Existing permanent groundwater monitoring well 600MW01, installed in 1994, was sampled for BN+15.
- A new permanent groundwater monitoring well, 600MW04, was installed at the former fuel oil UST location (i.e., the contamination source area), but has not been sampled to date.

The results of the field investigation revealed that fuel hydrocarbon contamination was detected in soil samples from P51-SB-1 and P51-SB-2; naphthalene concentrations in samples from these borings ranged from 6.29 to 19.28 D mg/kg, exceeding the 6-mg/kg RDCSRS. There were no detections of target analytes in soil from P51-SB-3 or P51-SB-4; however, the total semi-volatile organic compound (SVOC) TIC concentration detected in the soil sample from P51-SB-4 was 931.45J mg/kg. GWQS exceedances in the groundwater sample from temporary well P51-SB-2 included benzo(a)anthracene (0.152 µg/L), and 2-methylnaphthalene (139 µg/L); these concentrations exceeded the interim groundwater quality criteria of 0.1 µg/L and 30 µg/L, respectively. There were no exceedances of GWQS in the groundwater sample from permanent well 600MW01.

The SVOC 2-methylnaphthalene was detected in the groundwater sample from temporary well 51-TMP-1 at a concentration of 85.6 µg/L, which exceeds the NJDEP interim criterion of 30 µg/L. The soil sample collected at a depth of 7 – 7.5 feet bgs during drilling of temporary well 51-TMP-1 contained naphthalene at a concentration of 11.3 mg/kg, exceeding the current RDCSRS of 6 mg/kg, and 2-methylnaphthalene at a concentration of 34.1 mg/kg, exceeding the current IGW SL of 8 mg/kg.

The elevated TPHC concentration detected in soil at SI boring P51-G12 (6-6.5 feet bgs) in 2007 is bounded laterally to the north, south, and west by sampling results for other nearby SI borings installed in 2007, and is bounded above by the TPHC concentration in the sample collected from 4.5 to 5 feet (273 mg/kg) and the non-detect result for the sample from 0-0.5 feet. However, the TPHC contamination is not bounded below a depth of 6.5 feet; this depth interval was likely just above the water table given that the SI groundwater sampling interval for this location is shown as 5-10 feet in the SI report (U.S. Army BRAC, 2008). Deeper soil samples were not collected in 2007.

Numerous USTs associated with former and current buildings within the 500, 600, and 1100 Area have been removed under the FTMM UST program and are summarized within the FTMM ECP Report (U.S. Army, 2007). A review of documented UST removal locations versus the location of former buildings within Parcel 51 was conducted for the 2008 SI. Based on this review, it was determined that no UST removals have been documented at the locations of numerous former buildings within Parcel 51 including the 750 Area (current motor pool), within the northern portion of the 1100 Area, and around the east and south perimeter of the 600 Area.

The SI Report (U.S. Army BRAC, 2008) reports that a soil investigation and remedial action was conducted in portions of the 400, 700, and 800 Building areas. Tetra Tech reported the results of the investigation and remedial action in October 2005 in a Final Remedial Action Report for the 800, 700, and 400 Areas, U.S. Army Installation Fort Monmouth. The only portion of Parcel 51 that was included within this investigation was the southwestern corner of the parcel associated with Buildings 787, 788, and 789. No other information on the investigation is available.

A Ground Penetrating Radar (GPR)/Electromagnetic (EM) Survey (with multiple survey areas) was conducted at Parcel 51 during the 2008 SI. The survey areas are shown on **Figure D1**. The survey identified a total of 74 target EM anomalies in the 750 Area. Several areas in this parcel were scanned with the TW-6 instrument only due to interference of the GPS signal by nearby buildings and trees and the presence of parked cars during the EM survey. No anomalies indicative of USTs were located within the TW-6 scanned areas. The results of the GPR/TW-6 follow-up scanning are listed in Table 3.12-3 (**Attachment D1**). Targets located on the asphalt-covered portions within the 750 Area could not be scanned with the TW-6 due to suspected high metal content fill material; therefore, only GPR was used in these areas. In summary, GPR scanning of the 74 targets in the 750 Area revealed nine targets with the high-amplitude parabolic reflections indicating a possible UST. The suspected USTs match up with former Buildings 758, 759, 763, 764, 767, 768, 769, 771, and 790. These buildings reportedly served as schools/general instrument buildings (non-housing structures) until the end of their life cycles.

The geophysical surveys identified a total of 49 target EM anomalies in the 600 and 1100 Areas (**Figure D1)**. The SI Report (U.S. Army BRAC, 2008) stated that this area had been previously developed and the land surface reworked multiple times throughout its history. The findings of the geophysical survey (the density and small size of anomalies) are consistent with the site history. A total of 11 suspected USTs were identified within Parcel 51 (nine in the 750 Area and two in the 1100 Area); the locations of the suspected USTs are presented on **Figure D1**.

While the SI (U.S Army BRAC, 2008) discusses that a geophysical survey was conducted around the east and south perimeter of the 600 Area to investigate potential USTs not addressed under previous removals and investigations, it does not discuss results of this survey. Table 3.12-4 of the SI, provided in **Attachment D1** summarizes the GPR and metal detection follow-up survey results for the 600 and 1100 areas. All anomalies that were suspected to be USTs are shown on **Figure D1**.

A Geoprobe investigation was conducted under the 2008 SI, focused on the 11 suspected USTs identified above. Surface and subsurface soil samples were analyzed for TPHC. Corresponding surface and subsurface soil samples were collected for contingent VOC+TICs analysis. Groundwater samples were analyzed for VOC+TICs and B/N+15. No constituents were identified above the NJDEP NRDCSCC in soil and analytical results suggest that a release has not occurred. In light of the absence of evidence of a release to the environment, NFA for soil and the suspected USTs in Parcel 51 was recommended. One COC, 2-methylnaphthalene, was detected in one groundwater sample at a concentration exceeding the NJDEP Interim Specific GWQC. It was detected in P51-G12, on the eastern edge of the Parcel 51, and not detected in any other groundwater sample, including downgradient location P51-E12 (refer to Figure 3.12-1 provided in **Attachment D1**).

A letter to BRAC from the NJDEP dated July 10, 2012 *Re: March 2012 Army Response to NJDEP Correspondence Letter Dated October 28, 2008* stated that the geophysical survey and sampling performed at Parcel 51 was insufficient for determination of NFA for the USTs previously/currently located at the parcel. In response to the NJDEP letter, an investigation was conducted north of Building 750 that revealed anomalies that were investigated and determined to be USTs UHOT-1123B and 1123C (identified as P51_110 and P51_111, respectively, in the geophysical survey and on **Figure D1**). These USTs were subsequently removed along with affected soil.

A letter to NJDEP dated March 16, 2012 *Re: Army's Response to NJDEP correspondence (Dated October 28, 2008), Draft Site Investigation* (**Attachment D1**) contained an Unregulated Heat Oil Tank Summary for Parcels 14, 28, 51, 76, and 79 and an *Unregulated Heating Oil Tank Remedial Investigation and Closure Report, ECP Parcel 51* dated June 2011. The summary for Parcel 51 documented the investigation and closure of UHOTs 1123B and 1123C, stating that "the analytical results for post-remediation soil samples collected from the closure excavation at UHOTs No. 1123B and 1123C were below the NJDEP soil cleanup standards [NRDCSRS] for total organic contaminants and semi-volatile organic compounds."

NJDEP provided a response to the March 16, 2012 letter in July 2012, which stated that an NFA could not be granted for UHOT 1123B because, although the report states that all soil was over-excavated to ensure TPH concentrations remaining would be below the 1,000 mg/kg contingency analytical threshold, the report tables contained TPH concentrations exceeding the

threshold. NJDEP requested clarification with regard to the samples that exceed this threshold, which was not previously resolved. A review of the *Unregulated Heating Oil Tank Remedial Investigation and Closure Report, ECP Parcel 51, Main Post – Bldg. 1123* for tanks 1123B and 1123C (provided in **Attachment D1**) indicates that while three samples in the report table exceed this threshold, one on the east wall of the excavation of 1123B and the other two on the east and west walls of 1123C, additional sampling was performed to demonstrate compliance with the threshold. Clarification regarding the additional samples is provided here. While the original three samples were intended to be post-excavation samples, when the analytical results were found to exceed the excavation threshold, further excavation and sampling was performed (i.e., the original samples are not the final post-excavation samples). The sample at 1123B was taken on the east wall on September 16, 2009 and had a TPH concentration of 9,832.44 mg/kg; this sample was superseded by a sample collected two days later on September 18, 2009 following excavation activities, which had a concentration of 718.93 mg/kg. The samples taken on the east and west walls of 1123C on September 18, 2009 had concentrations of 1,526.93 and 1,532.25, respectively; these samples were also superseded following additional excavation activities on September 22, 2009 with samples that were both non-detect for TPH. Based on the sampling results clarification provided above, no further sampling or clarification is required, and NFA for UHOT 1123-B is appropriate as originally proposed. A NFA will be requested again from the NJDEP for this UST.

2.5 SYNTHESIS OF RESULTS, CORRESPONDENCE, AND DATA GAPS

A NJDEP comment letter dated October 28, 2008 *Re: Draft Site Investigation Report* states that the recommendation of NFA was not acceptable based on the USTs at Parcel 51. They stated that all suspected USTs must be investigated in accordance with N.J.A.C. 7:26E, and that all confirmed regulated USTs must be registered and closed in accordance with N.J.A.C. 7:14B.

As discussed above in Section 2.4, on March 16, 2012, the Army provided a response to comments to the NJDEP, *Re: Army's Response to NJDEP correspondence (Dated October 28, 2008), Draft Site Investigation* (Provided in **Attachment D1**). The army stated that it had performed complete investigations of the suspected USTs at Parcel 51, and provided a summary of the site in Attachment D to the response to comments.

On July 10, 2012, the NJDEP sent a letter *Re: March 2012 Army Response to NJDEP Correspondence Letter Dated October 28, 2008*. The letter stated that although the UST report states that soils were removed to below 1000 ppm TPH, Table 2 of the UST report indicates that soil on the East Wall contained TPH at 9832.44 ppm. As stated above, this sample was superseded by a sample collected two days later on September 18, 2009 following excavation activities, which had a concentration of 718.93 mg/kg. The samples taken on the east and west walls of 1123C on September 18, 2009 had concentrations of 1,526.93 and 1,532.25, respectively; these samples were also superseded following additional excavation activities on September 22, 2009 with samples that were both non-detect for TPH. Additionally, the July 10, 2012 letter requests clarifications on the other nine USTs/anomalies identified in the geophysical survey. As stated in the UHOT summary provided in Attachment D of the letter *Re: March 2012 Army Response to NJDEP Correspondence Letter Dated October 28, 2008*, following the identification of the 11 anomalies, they were investigated, and nine UHOTs were found and removed, two of the nine sites were cleaned and backfilled with clean soil, seven of

the nine tanks leaked and were remediated and backfilled with clean soil. The UHOT summary stated that in light of the absence of evidence of a release to the environment, NFA for soil and the suspected UHOTs in Parcel 51 is recommended.

The July 10, 2012 letter also calls out specific USTs which according to their records have not been investigated or closed. These USTs will be addressed under the UHOT program, and are not addressed here.

The elevated TPHC concentration detected in soil at SI boring P51-G12 (6-6.5 feet bgs) in 2007 is bounded laterally to the north, south, and west by sampling results for other nearby SI borings installed in 2007, and is bounded above by the TPHC concentration in the sample collected from 4.5 to 5 feet (273 mg/kg) and the non-detect result for the sample from 0-0.5 feet. However, the TPHC contamination is not bounded below a depth of 6.5 feet; this depth interval was likely just above the water table given that the SI groundwater sampling interval for this location is shown as 5-10 feet in the SI report (U.S. Army BRAC, 2008). Deeper soil samples were not collected in 2007. Therefore, vertical delineation and the eastern extent remain data gaps at P51-12.

The SVOC 2-methylnaphthalene was detected in a groundwater grab sample at P51-G12 at a concentration exceeding the interim groundwater quality criterion. Available data indicate that 2-methylnaphthalene in groundwater and TPHC in soil at this location are sourced at the former No. 2 fuel oil UST that was located near the northeast corner of Building 686, located south of P51-G12. The groundwater grab sampling results for SI location P51-E12, located approximately 200 feet north of P51-G12, bound the groundwater contamination in the downgradient direction (no GWQS exceedances for VOCs or SVOCs). The primary data gap for groundwater is the current magnitude of 2-methylnaphthalene concentrations in groundwater.

3.0 FIELD INVESTIGATION PLAN

3.1 CONCEPTUAL SITE MODEL

The 2008 SI included an EM/GPR survey, and extensive soil sampling and groundwater sampling as shown on Figure 3.12-1 in **Attachment D1**. USTs and soils contaminated with TPH have been removed, and the only groundwater contaminant detected is 2-methylnaphthalene which was detected in groundwater at concentrations above the GWQS in one groundwater sample on the eastern edge of the site, with no detections elsewhere on site, including downgradient locations. A soil sample collected near the water table at the same location had a TPHC concentration that exceeds the current EPH remediation criterion of 5,100 mg/kg. Available data indicate that 2-methylnaphthalene in groundwater and TPHC in soil at this location are sourced at the former No. 2 fuel oil UST that was located near the northeast corner of Building 686, located south of P51-G12. A summary of the CSM is provided in T**able 3.1** in the main text of this work plan addendum.

3.2 ECP Phase II SI Sampling Plan

Based on a review of the data collected during previous investigations (and the clarification provided), the following new investigation/sampling activities are proposed (see **Figure D2**):

- A new soil boring will be advanced to at least 5 feet below the water table at the location of P51-G12 to assess current concentrations and vertical extent of EPH. Three soil samples will be collected from this boring. Samples will be collected from 6-6.5 feet, 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 6-6.5 feet and the deeper vertical extent sample) based on field evidence (visual, olfactory, PID screening). Soil samples will be analyzed for fractionated EPH, and 25% of the samples having EPH detections exceeding 1,000 mg/kg will be analyzed for naphthalene and 2-methylnaphthalene.
- A second, step-out soil boring will be advanced approximately 50 feet east of P51-G12 to obtain lateral extent information in this direction. The boring, sampling, and analysis details for the step-out boring will be the same as for the boring that will be advanced at P51-G12
- Existing permanent monitoring wells 600MW04 and 600MW01 will be sampled, with samples analyzed for VOCs+TICs and SVOCs+TICs. Depending on the length and saturation of the well screens, two samples from each well may be collected to obtain vertical profiling information.
- A new permanent monitoring well will be installed approximately 40 feet north of P51-G12 in the hydraulically downgradient direction to assess the northern extent of fuel hydrocarbon concentrations in groundwater exceeding GWQS. The well will have a 10-foot-long screen that extends two feet above the water table. It will be developed and sampled for VOCs+TICs and SVOCs+TICs.

4.0 ENVIRONMENTAL PROTECTION PLAN

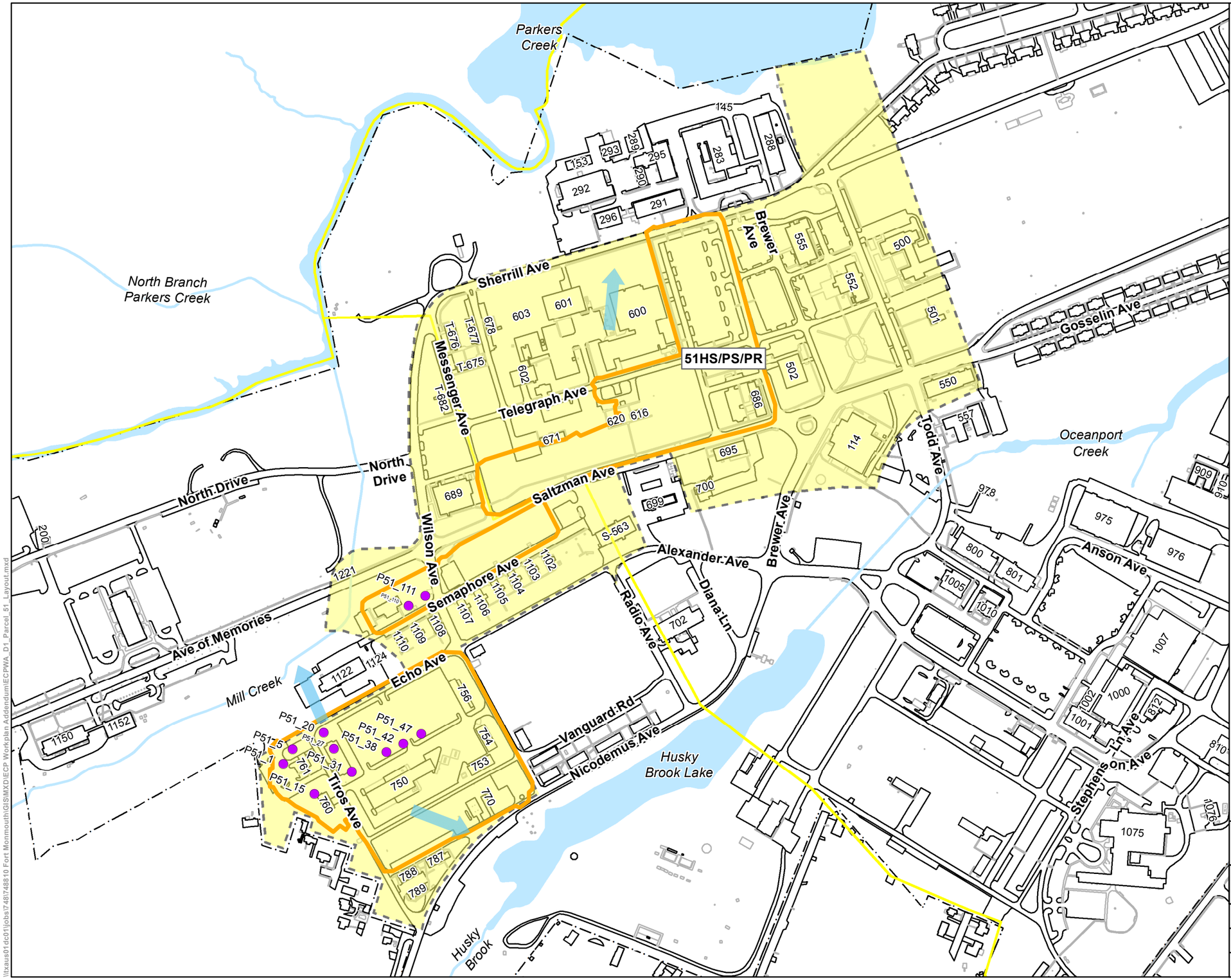
4.1 SENSITIVE ENVIRONMENTS

Parcel 51 is developed and urbanized, and located within the Atlantic Coastal region. The NJDEP Landscape Project Critical Wildlife Habitat database indicates that the western side of Parcel 51 is habitat Rank 2 (a habitat that has had one or more occurrences of a New Jersey Special Concern species) and is a foraging grounds to the Least Tern (species rank 4). Field investigation is not planned for this parcel under this work plan, and these areas will not be disturbed.

5.0 REPORTING

Reporting of the site history, work conducted under this delivery order, sampling results, and conclusions and recommendations will be performed as part of the RI Report for FTMM-53, since FTMM-53 is adjacent to Parcel 51.

FIGURES



Legend

- Suspected Steel UST
- Geophysical Investigation Area - Electromagnetic (EM) and Ground Penetrating Radar (GPR)
- Parcel 51 Boundary
- Municipal Boundary
- Surface Water Feature
- Installation Boundary
- Generalized Groundwater Flow Direction

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description: HS – Hazardous Substance Storage; HR – Hazardous Substance Release; PS – Petroleum Storage; PR – Petroleum Release; (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 400 feet

0 400 800 Feet

Source: FTMM Supplied CAD; Shaw Environmental 2008.

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth New Jersey**
Layout of Parcel 51	
CREATED BY: TS	REVIEWED BY: RF
DATE: January 2015	FIGURE NUMBER: Figure D1
PROJECT NUMBER: 748810.01000	FILE: ECPWA_D1_Parcel_51_Layout.mxd

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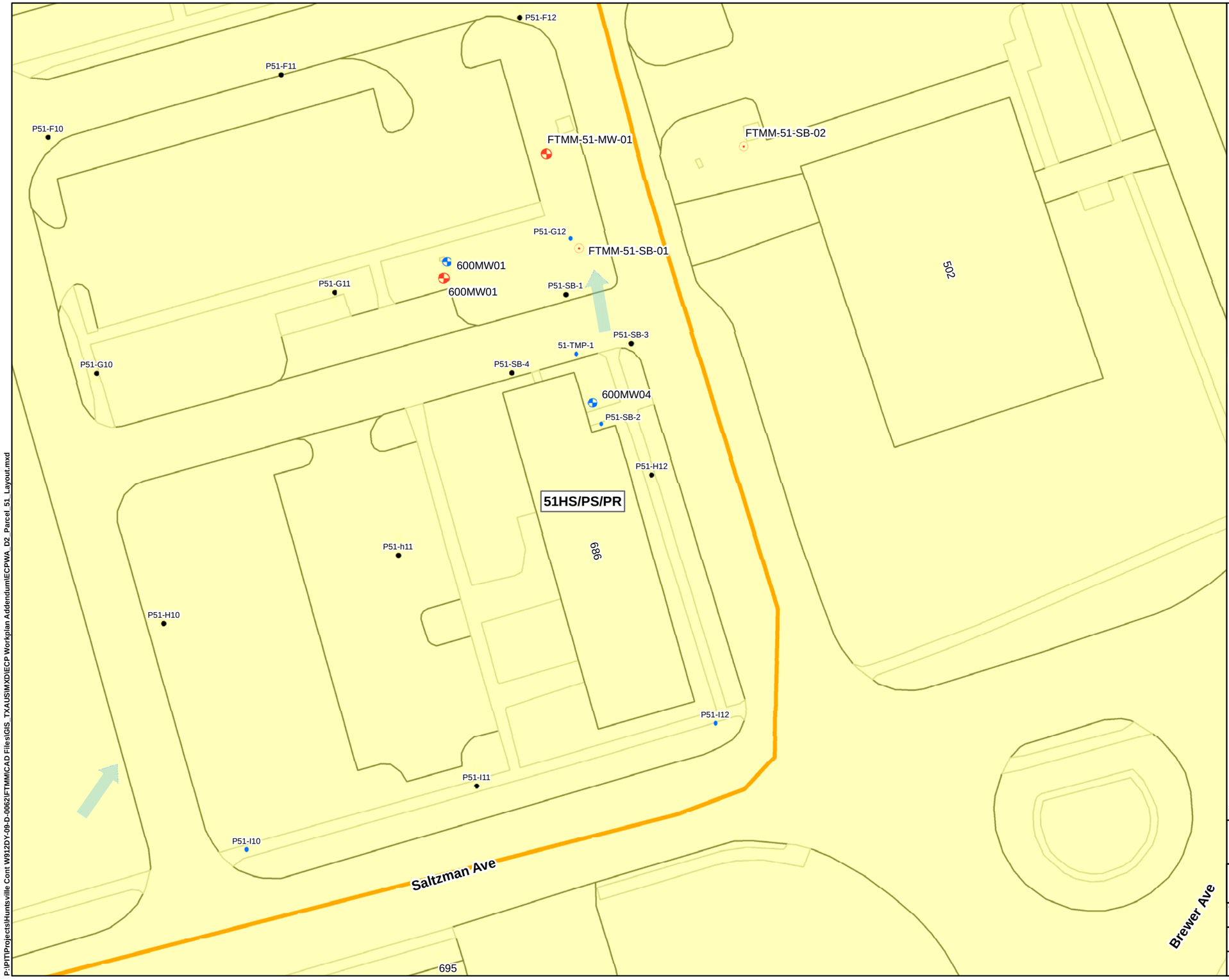

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LEGEND:

- Proposed Surface/Subsurface Soil Sample Location (for analysis of EPH with 25% of samples analyzed for 2-metyl-napthlene and napthlene)
- Proposed Shallow Monitoring Well
- Historic Geoprobe Soil Sample Location (2007, 2010)
- Historic Geoprobe Soil and Groundwater Sample Location (2007, 2010)
- Suspected Steel UST
- Shallow Monitoring Well
- Geophysical Investigation Area - Electromagnetic (EM) and Ground Penetrating Radar (GPR)
- Parcel 51 Boundary
- Municipal Boundary
- Surface Water Feature
- Installation Boundary
- Generalized Groundwater Flow Direction

BRAC Parcel Label Definitions

8(2)PS
- Contaminant Description: HS – Hazardous Substance Storage; HR – Hazardous Substance Release; PS – Petroleum Storage; PR – Petroleum Release; (P) – Possible Release or Disposal
- Category Number
- Parcel Number

N

1 inch = 40 feet

0 20 40 80 Feet

Source: FTMM Supplied CAD; Shaw Environmental 2008.

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

SAMPLING LOCATIONS AT PARCEL 51

CREATED BY: RR	REVIEWED BY: ME
DATE: NOV. 2015	FIGURE NUMBER: FIGURE D2
PROJECT NUMBER: 748810-01000	FILE: ECPWA_D2_Parcel_51_Layout.mxd

ATTACHMENTS

Attachment D1 Historical Information

3.12 Parcel 51 – 750 Area, 500 Area, 600 Area, 1100 Area – Former Buildings

3.12.1 Site Description

Parcel 51 is located in the central portion of the MP and encompasses the 500 Area, 600 Area, 750 Area, and 1100 Area former buildings. Plan No. 506, "Gas and Fuel Storage Tanks Distribution System" dated January 22, 1956 (**Appendix G**), was reviewed for the MP as part of the Phase I ECP. The plan depicts numerous fuel oil USTs that existed within Parcel 51 in 1956 in association with the former buildings. Additional information pertaining to this parcel can be found in Section 4.4.3.2, Section 4.4.4.2, Section 4.4.4.3, Section 5.1.1.2.1, Section 5.2.1.1, Section 5.4, Section 5.4.2, and Appendix G of the Phase I ECP (1).

3.12.2 Previous Investigations

Numerous USTs associated with former and current buildings within the 500, 600, and 1100 Area have been removed under the FTMM UST program and are summarized within the FTMM Phase I ECP Report (1). A review of documented UST removal locations versus the location of former buildings within Parcel 51 was conducted. Based on this review, it was determined that no UST removals have been documented at the locations of numerous former buildings within Parcel 51 throughout the 750 Area (current motor pool), within the northern portion of the 1100 Area, and around the east and south perimeter of the 600 Area.

A soil investigation and remedial action was recently conducted in portions of the 400, 700, and 800 Bldg areas. The only portion of Parcel 51 that was included within this investigation was the southwestern corner of the parcel associated with Bldgs 787, 788, and 789 (34).

3.12.3 Site Investigation Sampling

In order to determine the absence/presence of formerly utilized USTs and the potential release from the USTs, geophysical surveys, soil sampling, and groundwater sampling were conducted throughout the 750 Area (current motor pool), within the northern portion of the 1100 Area, and around the east and south perimeter of the 600 Area.

Geophysical Investigation

An EM survey was conducted throughout the three identified former buildings areas to determine if USTs are present. Follow-up GPR surveys were conducted at anomalies identified from the EM surveys. **Section 2.1** summarizes the methodologies utilized during the geophysical surveys.

Geoprobe® Investigation

Geoprobe® soil samples were collected in October and November 2007, and groundwater samples were collected in November 2007 in Parcel 51 in order to investigate potential releases from historic USTs associated with the former 600, 750, and 1100 Area buildings. A total of 122 surface soil and 136 subsurface soil (including 12 duplicate samples) were collected from 122 distinct Geoprobe® borings (**Figure 3.12-1**). Soil boring locations were conducted on 100-ft centers. Surface soil samples for non-VO analysis were collected from the 0- to 6-inch interval bgs. For borings located in paved areas, non-VO surface soil samples were collected from the 0- to 6-inch interval directly below the pavement sub-base. Surface soil samples collected for VO analysis were collected from the 18- to 24-inch bgs interval. Subsurface soil samples were collected from the 6-inch interval directly above the water table from each boring. Due to high water table conditions encountered at three boring locations (grid locations G11, I6, and K7), subsurface soil samples were collected from the 18- to 24-inch bgs interval. No additional VO sample was collected as the sample interval coincided with the 18- to 24-inch surface soil VO sampling interval. Field screening of the soil boring cores was conducted using a PID and FID meter. Olfactory evidence of impacted soil was noted 6 ft bgs at boring location P51-G12. Two additional soil samples were collected based on elevated results from field screening tests at boring location 51-G12.

A total of 26 groundwater samples (including four duplicate samples) were collected from 22 distinct temporary wells (**Figure 3.12-1**). Temporary wells were installed along the downgradient boundaries of the soil boring grids and constructed of PVC and 5 ft of factory-slotted screen.

Table 3.12-1 presents a summary of field activities, and sample locations are provided on **Figure 3.12-1**. A summary of the analytical and sampling program, including sample IDs, collection dates, and analytical parameters, is provided in **Table 3.12-2**.

Table 3.12-1
Parcel 51 Sampling Location, Rationale and Analytical

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
Former Buildings Areas (11 Acres)	A geophysical survey was conducted in three areas throughout the parcel to determine the presence/absence of USTs associated with former buildings. The geophysical investigations consisted of an EM survey followed by targeted GPR surveys of anomalies identified by the EM survey. One survey was conducted around the east and south perimeter of the 600 Area to investigate potential USTs not addressed under previous removals and investigations; one survey was conducted in the footprint of former buildings in the 1100 Area; and one survey was conducted in the footprint of former buildings in the 750 Area (current motor pool) not addressed as part of the 700 Residential Communities Initiative project.		

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
51SS-A10 through 51SS-I12 (51 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from Geoprobe® soil borings in a grid configuration (conducted on 100-ft center) to investigate the potential release from former heating oil USTs associated with the former buildings around the eastern and southern perimeter of the 600 Area. If the sample location was paved, the sample was collected from the 0- to 6-inch interval below the pavement sub-base.	TPHC, VO+10 (25% of TPHC > 1,000 mg/kg)
51SB-A10 through 51SB-I12 (57 samples – includes 4 duplicate samples)	Subsurface soil	Soil samples were collected from the 6-inch interval directly above the water table (ranging from 2.5 to 8 ft bgs) from each Geoprobe® soil boring in the grid (conducted on 100-ft centers) to investigate the potential release from former heating oil USTs associated with the former buildings around the eastern and southern perimeter of the 600 Area. Field screening of the entire Geoprobe® soil core was conducted using PID/FID meters.	TPHC, VO+10 (25% of TPHC > 1,000 mg/kg)
51SS-J1 through 51SS-K9 (18 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from Geoprobe® soil borings in a grid configuration (conducted on 100-ft center) to investigate the potential release from former heating oil USTs associated with the former buildings in the 1100 Area (former Bldgs 1111 through 1118). If the sample location was paved, the sample was collected from the 0- to 6-inch interval below the pavement sub-base.	TPHC, VO+10 (25% of TPHC > 1,000 mg/kg)
51SB-J1 through 51SB-K9 (20 samples – includes 2 duplicate samples)	Subsurface soil	Soil samples were collected from the 6-inch interval directly above the water table (ranging from 2.5 to 9 ft bgs) from each Geoprobe® soil boring in the grid (conducted on 100-ft centers) to investigate the potential release from former heating oil USTs associated with the former buildings in the 1100 Area (former Bldgs 1111 through 1118). Field screening of the entire Geoprobe® soil core was conducted using PID/FID meters.	TPHC, VO+10 (25% of TPHC > 1,000 mg/kg)
51SS-L1 through 51SS-R9 (53 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from Geoprobe® soil borings in a grid configuration (conducted on 100-ft center) to investigate the potential release from former heating oil USTs associated with the former buildings in the 750 Area. If the sample location was paved, the sample was collected from the 0- to 6-inch interval below the pavement sub-base.	TPHC, VO+10 (25% of TPHC > 1,000 mg/kg)
51SB-L1 through 51SB-R9 (59 samples – includes 6 duplicate samples)	Subsurface soil	Soil samples were collected from the 6-inch interval directly above the water table (ranging from 1 to 14.5 ft bgs) from each Geoprobe® soil boring in the grid (conducted on 100-ft centers) to investigate the potential release from former heating oil USTs associated with the former buildings southwest of Bldg 2700. Field screening of the entire Geoprobe® soil core was conducted using PID/FID meters.	TPHC, VO+10 (25% of TPHC > 1,000 mg/kg)

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
51GW-A10, A12, C12, E12, G12, I1, I3, I5, I10, I12, K1, K3, K5, K7, K9, L9, N9, P9, R3, R5, R7, R9 (26 samples – includes 4 duplicate samples)	Groundwater	Groundwater samples were collected from the specified Geoprobe® soil borings in the grid to investigate the potential release from former heating oil USTs associated with the former buildings.	VO+10, B/N+15

3.12.4 Site Investigation Results

Geophysical Survey Results

The EM survey identified a total of 74 target EM anomalies in the 750 Area. The survey areas are presented on **Figure 3.12-2**. This area was scanned with the EM-61 because of a large amount of surface metal, and the parking lots which comprise most of the area could only be cordoned off in small portions. The EM-61 towing rig was better suited for the necessary tight turns. Several areas in this parcel were scanned with the TW-6 only due to interference of the GPS signal by nearby buildings and trees and the presence of parked cars during the EM survey. No anomalies indicative of USTs were located within the TW-6 scanning areas. The results of the GPR/TW-6 follow-up scanning are listed in **Table 3.12-3**, and full results of the geophysical surveys are included in **Appendix A**. Targets located on the asphalt-covered portions within the 750 Area could not be scanned with the TW-6 due to suspected high metal content fill material; therefore, only GPR was utilized in these areas. In summary, GPR scanning of the 74 targets in the 750 Area revealed:

- Thirty-four targets that were associated with surface metal/debris (previously unaccounted for).
- Seven targets with moderate-amplitude near-surface point target reflections indicative of small buried debris; not indicative of USTs.
- Six targets with the moderate-amplitude parabolic scattered reflections indicative of scattered small debris.
- Three targets that are suspected to be associated with nearby utility features.
- Three targets with the characteristics of a utility.

- Eleven targets that could not be relocated with the TW-6 because the targets were too small to be re-occupied, and therefore are most likely scrap metallic debris, not USTs.

- One target scanned with GPR only, no GPR anomaly associated with EM anomaly.

- Nine targets with the high-amplitude parabolic reflections indicating a possible UST. The suspected USTs match up with former Bldgs 758, 759, 763, 764, 767, 768, 769, 771, and 790. Said buildings served as schools/general instrument buildings, non-housing structures, until the end of their life cycles. Supporting real property records are included in **Appendix I**.

The geophysical surveys identified a total of 49 target EM anomalies in the 600 and 1100 Areas. The survey areas are presented on **Figure 3.12-2**. Several locations were scanned with the TW-6 due to the presence of parked cars during the main EM survey; however, no TW-6 anomalies were detected. The results of the GPR/TW-6 follow-up scanning are listed in **Table 3.12-4**, and full results of the geophysical surveys are included in **Appendix A**. In summary, GPR scanning of the 49 targets revealed:

- Twenty-two targets that were associated with surface metal/debris (previously unaccounted for).

- Thirteen targets that could not be relocated with the TW-6 because the targets were terrain conductivity anomalies not associated with metallic objects, and therefore are not USTs.

- Six targets with the characteristics of a utility.

- Five targets with moderate-amplitude near-surface reflections indicative of small buried debris; not indicative of a UST.

- Two targets in the 1100 Area with the high-amplitude parabolic reflections indicating a possible UST. The suspected USTs match up with former Bldgs 1111 and 1112. Said buildings served as schools/general instrument buildings, non-housing structures, until the end of their life cycles. Supporting real property records are included in **Appendix I**.

- One target resulted from a parked car that was later scanned with TW-6 and with no resulting anomalies.

This parcel of FTMM has been previously developed and the land surface reworked multiple times throughout its history. The findings of the geophysical survey (the density and small size of anomalies) are consistent with the site history. A total of 11 suspected USTs were identified within Parcel 51 (nine in the 750 Area and two in the 1100 Area); the location of the suspected USTs is presented on **Figure 3.12-2**.

Geoprobe® Investigation Results

Surface and subsurface soil samples were analyzed for TPHC. Corresponding surface and subsurface soil samples were collected for contingent VO+10 analysis. Groundwater samples were analyzed for VO+10 and B/N+15.

Soil

In addition to the subsurface soil samples collected from the interval directly above the water table, two supplementary subsurface soil samples, P51-G12-D and P51-G12-D-DUP, were collected for TPHC and contingent VO analysis based on elevated field screening measurements. As shown in **Table 3.12-5**, TPHC was detected in 41 of the 122 surface soil samples and in 18 of the 137 subsurface soil samples. A total of six subsurface soil samples, P51-G12-D;DUP, P51-H12-C, P51-N3-C, and P51-O7-C;DUP, contained TPHC at concentrations greater than 1,000 mg/kg, and VO analysis was conducted (**Table 3.12-6**). No VOs or TPHC were detected in soil above the NJDEP NRDCSCC.

Groundwater

As presented in **Table 3.12-7**, a total of 11 VOs were detected at concentrations below NJDEP GWQC in groundwater samples collected from temporary wells at Parcel 51.

A total of eight B/Ns were detected in Parcel 51 groundwater samples. Of the eight B/Ns detected, two (2-methylnaphthalene and bis[2-ethylhexyl]phthalate) were detected at concentrations that exceeded NJDEP GWQC. 2-Methylnaphthalene was detected at a concentration exceeding the NJDEP GWQC of 30 μg/L in one groundwater sample (P51-G12) at a concentration of 40.51 μg/L and is considered a COC in groundwater. Bis(2-ethylhexyl)phthalate was detected at a concentration exceeding the NJDEP GWQC of 3 μg/L in three groundwater samples at concentrations ranging from 3.49 μg/L in P51-P9 to 4.47 μg/L in P51-K7. Bis(2-ethylhexyl)phthalate is present in a wide variety of plastic products, is commonly detected in field and laboratory QC samples, and was detected in the field blank associated with the Parcel 51 groundwater samples. Therefore, it is not considered a COC in groundwater at Parcel 51.

3.12.5 Summary and Conclusions

Eleven suspected USTs were identified during the geophysical survey. No constituents were identified above applicable NJDEP criteria in surface or subsurface soil. Soil and analytical results suggest that a release has not occurred. In light of the absence of evidence of a release to the environment, NFA for soil and the suspected USTs in Parcel 51 is recommended.

One COC, 2-methylnaphthalene, was detected in groundwater above the NJDEP GWQC. Further evaluation of 2-methylnaphthalene in groundwater is recommended.

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
BLANK	TRIP	TRIP BLANK-SO	10/31/07	-	--	--	X								
SOIL	GEOPROBE	Duplicate	10/31/07	-	--	--									Sample on chain, but not received by lab. No duplicate sample for this day.
SOIL	GEOPROBE	P51-I11-A	10/31/07	7:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-I11-B	10/31/07	7:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I11-C	10/31/07	8:05	3.5	4.0	X								
SOIL	GEOPROBE	P51-I9-A	10/31/07	8:25	0.0	0.5	X								
SOIL	GEOPROBE	P51-I9-B	10/31/07	8:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I9-C	10/31/07	8:30	3.5	4.0	X								
SOIL	GEOPROBE	P51-I8-A	10/31/07	9:35	0.0	0.5	X								
SOIL	GEOPROBE	P51-I8-B	10/31/07	9:35	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I8-C	10/31/07	9:40	3.5	4.0	X								
SOIL	GEOPROBE	P51-I7-A	10/31/07	9:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-I7-B	10/31/07	9:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I7-C	10/31/07	10:00	2.0	2.5	X								
SOIL	GEOPROBE	P51-I6-A	10/31/07	10:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-I6-B	10/31/07	10:50	1.5	2.0	X								
SOIL	GEOPROBE	P51-I4-A	10/31/07	11:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-I4-B	10/31/07	11:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I4-C	10/31/07	11:25	2.0	2.5	X								
SOIL	GEOPROBE	P51-I2-A	10/31/07	11:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-I2-B	10/31/07	11:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I2-C	10/31/07	11:45	5.5	6.0	X								
SOIL	GEOPROBE	P51-H12-A	10/31/07	13:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-H12-B	10/31/07	13:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H12-C	10/31/07	14:00	4.0	8.0	X	X							
SOIL	GEOPROBE	P51-H11-A	10/31/07	14:20	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-H11-B	10/31/07	14:20	1.5	2.0	NA								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-H11-C	10/31/07	14:30	4.5	5.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-H10-A	10/31/07	14:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-H10-B	10/31/07	14:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H10-C	10/31/07	15:00	3.5	4.0	X								
BLANK	FIELD	FIELD BLANK-SO	10/31/07	15:05	--	--	X	X							
SOIL	GEOPROBE	P51-H9-A	10/31/07	15:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-H9-B	10/31/07	15:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H9-C	10/31/07	15:25	5.0	5.5	X								
SOIL	GEOPROBE	P51-H8-A	10/31/07	15:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-H8-B	10/31/07	15:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H8-C	10/31/07	15:45	3.5	4.0	X								
SOIL	GEOPROBE	P51-H7-A	10/31/07	15:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-H7-B	10/31/07	15:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H7-C	10/31/07	16:00	3.0	3.5	X								
SOIL	GEOPROBE	P51-H6-A	10/31/07	16:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-H6-B	10/31/07	16:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H6-C	10/31/07	16:20	3.5	4.0	X								
BLANK	TRIP	TRIP BLANK-SO	11/01/07	-	--	--	NA								
SOIL	GEOPROBE	P51-H5-A	11/01/07	8:30	0.0	0.5	X								
SOIL	GEOPROBE	P51-H5-B	11/01/07	8:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H5-C	11/01/07	8:50	5.0	5.5	X								
SOIL	GEOPROBE	P51-H4-A	11/01/07	9:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-H4-B	11/01/07	9:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H4-C	11/01/07	9:20	5.0	5.5	X								
SOIL	GEOPROBE	P51-H3-A	11/01/07	9:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-H3-B	11/01/07	9:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H3-C	11/01/07	9:50	2.0	2.5	X								
SOIL	GEOPROBE	P51-H2-A	11/01/07	10:00	0.0	0.5	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-H2-B	11/01/07	10:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H2-C	11/01/07	10:10	5.5	6.0	X								
SOIL	GEOPROBE	P51-H1-A	11/01/07	11:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-H1-B	11/01/07	11:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-H1-C	11/01/07	11:25	3.0	3.5	X								
SOIL	GEOPROBE	P51-G11-A	11/01/07	13:25	0.0	0.5	X								
SOIL	GEOPROBE	P51-G11-B	11/01/07	13:25	1.5	2.0	X								
SOIL	GEOPROBE	P51-G10-A	11/01/07	13:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-G10-B	11/01/07	13:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-G10-C	11/01/07	14:00	3.5	4.0	X								
SOIL	GEOPROBE	P51-G9-A	11/01/07	14:05	0.0	0.5	X								
SOIL	GEOPROBE	P51-G9-B	11/01/07	14:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-G9-C	11/01/07	14:15	3.0	3.5	X								
SOIL	GEOPROBE	P51-G8-A	11/01/07	14:30	0.0	0.5	X								
SOIL	GEOPROBE	P51-G8-B	11/01/07	14:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-G8-C	11/01/07	14:40	4.5	5.0	X								
SOIL	GEOPROBE	P51-G7-A	11/01/07	15:05	0.0	0.5	X								
SOIL	GEOPROBE	P51-G7-B	11/01/07	15:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-G7-C	11/01/07	15:25	4.5	5.0	X								
SOIL	GEOPROBE	P51-G7-C DUPLICATE	11/01/07	15:25	4.5	5.0	X								
BLANK	FIELD	FIELD BLANK-SO	11/01/07	15:30	--	--	X								
BLANK	TRIP	TRIP BLANK-SO	11/02/07	-	--	--	NA								
SOIL	GEOPROBE	P51-F12-A	11/02/07	8:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-F12-B	11/02/07	8:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-F12-C	11/02/07	8:30	3.5	4.0	X								
SOIL	GEOPROBE	P51-F11-A	11/02/07	8:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-F11-B	11/02/07	8:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-F11-C	11/02/07	9:00	4.5	5.0	X								
SOIL	GEOPROBE	P51-F10-A	11/02/07	9:25	0.0	0.5	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-F10-B	11/02/07	9:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-F10-C	11/02/07	9:35	3.5	4.0	X								
SOIL	GEOPROBE	P51-F9-A	11/02/07	9:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-F9-B	11/02/07	9:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-F9-C	11/02/07	10:05	5.0	5.5	X								
SOIL	GEOPROBE	P51-F8-A	11/02/07	11:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-F8-B	11/02/07	11:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-F8-C	11/02/07	11:30	5.0	5.5	X								
SOIL	GEOPROBE	P51-F7-A	11/02/07	11:35	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-F7-B	11/02/07	11:35	1.5	2.0	NA								
SOIL	GEOPROBE	P51-F7-C	11/02/07	13:55	5.5	6.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-E11-A	11/02/07	14:25	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-E11-B	11/02/07	14:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-E11-C	11/02/07	14:40	6.0	6.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-E11-C DUPLICATE	11/02/07	14:40	6.0	6.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	FIELD	FIELD BLANK-SO	11/02/07	14:45	--	--	X								
SOIL	GEOPROBE	P51-E10-A	11/02/07	15:05	0.5	1.0	X								
SOIL	GEOPROBE	P51-E10-B	11/02/07	15:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-E10-C	11/02/07	15:10	3.5	4.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-D12-A	11/02/07	15:35	0.0	0.5	X								
SOIL	GEOPROBE	P51-D12-B	11/02/07	15:35	1.5	2.0	X								TPHC not necessary for this sample.

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-D12-C	11/02/07	15:40	2.0	2.5	X								
SOIL	GEOPROBE	P51-D11-A	11/02/07	15:55	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-D11-B	11/02/07	15:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-D11-C	11/02/07	16:20	5.5	6.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	TRIP	TRIP BLANK-SO	11/05/07	-	--	--	NA								
SOIL	GEOPROBE	P51-I12-A	11/05/07	8:30	0.0	0.5	X								
SOIL	GEOPROBE	P51-I12-B	11/05/07	8:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I12-C	11/05/07	8:40	3.0	3.5	X								
SOIL	GEOPROBE	P51-I10-A	11/05/07	9:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-I10-B	11/05/07	9:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I10-C	11/05/07	9:20	3.5	4.0	X								
SOIL	GEOPROBE	P51-I5-A	11/05/07	9:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-I5-B	11/05/07	9:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I5-C	11/05/07	9:55	3.5	4.0	X								
SOIL	GEOPROBE	P51-I3-A	11/05/07	10:35	0.0	0.5	X								
SOIL	GEOPROBE	P51-I3-B	11/05/07	10:35	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I3-C	11/05/07	10:40	2.5	3.0	X								
SOIL	GEOPROBE	P51-I1-A	11/05/07	10:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-I1-B	11/05/07	10:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-I1-C	11/05/07	11:05	6.0	6.5	X								
SOIL	GEOPROBE	P51-D10-A	11/05/07	11:30	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-D10-B	11/05/07	11:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-D10-C	11/05/07	11:40	6.0	6.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-C11-A	11/05/07	13:30	0.0	0.5	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-C11-B	11/05/07	13:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-C11-C	11/05/07	13:45	5.0	5.5	X								
SOIL	GEOPROBE	P51-C10-A	11/05/07	14:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-C10-B	11/05/07	14:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-C10-C	11/05/07	14:25	6.0	6.5	X								
BLANK	FIELD	FIELD BLANK-SO	11/05/07	14:30	--	--	X								
SOIL	GEOPROBE	P51-B12-A	11/05/07	15:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-B12-B	11/05/07	15:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-B12-C	11/05/07	15:35	5.0	5.5	X								
SOIL	GEOPROBE	P51-B12-C DUPLICATE	11/05/07	15:35	5.0	5.5	X								
SOIL	GEOPROBE	P51-B11-A	11/05/07	16:05	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-B11-B	11/05/07	16:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-B11-C	11/05/07	16:15	7.0	7.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	TRIP	TRIP BLANK-SO	11/06/07	-	--	--		X							
SOIL	GEOPROBE	P51-G12-A	11/06/07	8:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-G12-B	11/06/07	8:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-G12-C	11/06/07	8:35	4.5	5.0	X								
SOIL	GEOPROBE	P51-G12-D	11/06/07	8:55	6.0	6.5	X	X							TPHC collected due to elevated field screening results.
SOIL	GEOPROBE	P51-G12-D DUPLICATE	11/06/07	8:55	6.0	6.5	X	X							
SOIL	GEOPROBE	P51-E12-A	11/06/07	9:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-E12-B	11/06/07	9:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-E12-C	11/06/07	9:30	5.5	6.0	X								
SOIL	GEOPROBE	P51-C12-A	11/06/07	9:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-C12-B	11/06/07	9:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-C12-C	11/06/07	10:15	6.0	6.5	X								
SOIL	GEOPROBE	P51-A12-A	11/06/07	11:10	0.0	0.5	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-A12-B	11/06/07	11:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-A12-C	11/06/07	11:35	5.0	5.5	X								
SOIL	GEOPROBE	P51-A11-A	11/06/07	13:05	0.0	0.5	X								
SOIL	GEOPROBE	P51-A11-B	11/06/07	13:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-A11-C	11/06/07	13:20	6.0	6.5	X								
SOIL	GEOPROBE	P51-A10-A	11/06/07	13:45	0.0	0.5	X								
SOIL	GEOPROBE	P51-A10-B	11/06/07	13:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-A10-C	11/06/07	14:00	5.5	6.0	X								
SOIL	GEOPROBE	P51-B10-A	11/06/07	14:55	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-B10-B	11/06/07	14:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-B10-C	11/06/07	15:10	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	FIELD	FIELD BLANK-SO	11/06/07	15:25	--	--	X	X							
BLANK	TRIP	TRIP BLANK-AQ	11/06/07	8:00	--	--		X							
BLANK	FIELD	FIELD BLANK-AQ	11/06/07	11:00	--	--		X	X						
GW	GEOPROBE	P51-I1	11/06/07	11:30	5.0	10.0		X	X						
GW	GEOPROBE	P51-I3	11/06/07	12:00	3.0	8.0		X	X						
GW	GEOPROBE	P51-I3 DUPLICATE	11/06/07	12:00	3.0	8.0		X	X						
GW	GEOPROBE	P51-I5	11/06/07	12:30	3.0	8.0		X	X						
GW	GEOPROBE	P51-I10	11/06/07	13:00	3.0	8.0		X	X						
GW	GEOPROBE	P51-I12	11/06/07	13:30	3.0	8.0		X	X						
BLANK	TRIP	TRIP BLANK-SO	11/08/07	-	--	--	NA								
SOIL	GEOPROBE	P51-K1-A	11/08/07	8:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-K1-B	11/08/07	8:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K1-C	11/08/07	8:20	2.5	3.0	X								
SOIL	GEOPROBE	P51-K2-A	11/08/07	8:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-K2-B	11/08/07	8:40	1.5	2.0	NA								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-K2-C	11/08/07	8:45	2.5	3.0	X								
SOIL	GEOPROBE	P51-K3-A	11/08/07	9:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-K3-B	11/08/07	9:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K3-C	11/08/07	9:35	6.5	7.0	X								
SOIL	GEOPROBE	P51-K4-A	11/08/07	10:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-K4-B	11/08/07	10:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K4-C	11/08/07	10:20	5.5	6.0	X								
SOIL	GEOPROBE	P51-K5-A	11/08/07	10:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-K5-B	11/08/07	10:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K5-C	11/08/07	10:50	2.0	2.5	X								
SOIL	GEOPROBE	P51-K6-A	11/08/07	11:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-K6-B	11/08/07	11:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K6-C	11/08/07	11:20	6.5	7.0	X								
SOIL	GEOPROBE	P51-K6-C DUPLICATE	11/08/07	11:20	6.5	7.0	X								
BLANK	FIELD	FIELD BLANK-SO	11/08/07	13:30	--	--	X								
SOIL	GEOPROBE	P51-K7-A	11/08/07	14:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-K7-B	11/08/07	14:00	1.5	2.0	X								No C sample. High Water table.
SOIL	GEOPROBE	P51-K8-A	11/08/07	14:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-K8-B	11/08/07	14:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K8-C	11/08/07	14:55	6.5	7.0	X								
SOIL	GEOPROBE	P51-K9-A	11/08/07	15:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-K9-B	11/08/07	15:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-K9-C	11/08/07	15:30	6.5	7.0	X								
BLANK	TRIP	TRIP BLANK-AQ	11/08/07	7:00	--	--		X							
BLANK	FIELD	FIELD BLANK-AQ	11/08/07	9:30	--	--		X	X						
GW	GEOPROBE	P51-A10	11/08/07	12:00	5.0	10		X	X						
GW	GEOPROBE	P51-A12	11/08/07	11:30	5.0	10		X	X						
GW	GEOPROBE	P51-C12	11/08/07	11:00	5.0	10		X	X						
GW	GEOPROBE	P51-C12 DUPLICATE	11/08/07	11:00	5.0	10		X	X						

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
GW	GEOPROBE	P51-E12	11/08/07	10:30	5.0	10		X	X						
GW	GEOPROBE	P51-G12	11/08/07	10:00	5.0	10		X	X						
BLANK	TRIP	TRIP BLANK-SO	11/09/07	-	--	--	NA								
SOIL	GEOPROBE	P51-J1-A	11/09/07	8:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-J1-B	11/09/07	8:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J1-C	11/09/07	8:25	8.5	9.0	X								
SOIL	GEOPROBE	P51-J2-A	11/09/07	8:45	0.0	0.5	X								
SOIL	GEOPROBE	P51-J2-B	11/09/07	8:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J2-C	11/09/07	8:55	7.0	7.5	X								
SOIL	GEOPROBE	P51-J3-A	11/09/07	9:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-J3-B	11/09/07	9:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J3-C	11/09/07	9:35	6.5	7.0	X								
SOIL	GEOPROBE	P51-J4-A	11/09/07	9:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-J4-B	11/09/07	9:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J4-C	11/09/07	10:00	3.0	3.5	X								
SOIL	GEOPROBE	P51-J5-A	11/09/07	10:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-J5-B	11/09/07	10:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J5-C	11/09/07	10:25	7.0	7.5	X								
BLANK	FIELD	FIELD BLANK-SO	11/09/07	10:40	--	--	X								
SOIL	GEOPROBE	P51-J6-A	11/09/07	11:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-J6-B	11/09/07	11:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J6-C	11/09/07	11:15	7.0	7.5	X								
SOIL	GEOPROBE	P51-J6-C DUPLICATE	11/09/07	11:15	7.0	7.5	X								
SOIL	GEOPROBE	P51-J7-A	11/09/07	11:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-J7-B	11/09/07	11:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J7-C	11/09/07	11:45	7.0	7.5	X								
SOIL	GEOPROBE	P51-J8-A	11/09/07	13:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-J8-B	11/09/07	13:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J8-C	11/09/07	13:20	7.5	8.0	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-J9-A	11/09/07	13:45	0.0	0.5	X								
SOIL	GEOPROBE	P51-J9-B	11/09/07	13:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-J9-C	11/09/07	14:00	7.0	7.5	X								
BLANK	TRIP	TRIP BLANK-AQ	11/10/07	8:00	--	--		X							
BLANK	FIELD	FIELD BLANK-AQ	11/10/07	10:20	--	--		X	X						
GW	GEOPROBE	P51-K1	11/10/07	11:00	10.0	15.0		X	X						
GW	GEOPROBE	P51-K3	11/10/07	11:30	10.0	15.0		X	X						
GW	GEOPROBE	P51-K5	11/10/07	12:00	10.0	15.0		X	X						
GW	GEOPROBE	P51-K7	11/10/07	10:30	10.0	15.0		X	X						
GW	GEOPROBE	P51-K7 DUPLICATE	11/10/07	10:30	10.0	15.0		X	X						
GW	GEOPROBE	P51-K9	11/10/07	12:30	10.0	15.0		X	X						
BLANK	TRIP	TRIP BLANK-SO	11/13/07	-	--	--	NA								
SOIL	GEOPROBE	P51-L1-A	11/13/07	8:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-L1-B	11/13/07	8:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L1-C	11/13/07	9:10	5.5	6.0	X								
SOIL	GEOPROBE	P51-L2-A	11/13/07	9:25	0.0	0.5	X								
SOIL	GEOPROBE	P51-L2-B	11/13/07	9:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L2-C	11/13/07	9:35	5.0	5.5	X								
SOIL	GEOPROBE	P51-L3-A	11/13/07	10:05	0.0	0.5	X								
SOIL	GEOPROBE	P51-L3-B	11/13/07	10:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L3-C	11/13/07	10:20	5.5	6.0	X								
SOIL	GEOPROBE	P51-L4-A	11/13/07	10:55	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L4-B	11/13/07	10:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L4-C	11/13/07	11:05	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L5-A	11/13/07	13:15	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-L5-B	11/13/07	13:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L5-C	11/13/07	13:25	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L6-A	11/13/07	14:00	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L6-B	11/13/07	14:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L6-C	11/13/07	14:30	4.5	5.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L7-A	11/13/07	15:10	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L7-B	11/13/07	15:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L7-C	11/13/07	15:20	7.0	7.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L7-C DUPLICATE	11/13/07	15:20	6.0	6.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	FIELD	FIELD BLANK-SO	11/13/07	15:30	--	--	X								
SOIL	GEOPROBE	P51-L8-A	11/13/07	15:50	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-L8-B	11/13/07	15:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L8-C	11/13/07	16:00	4.0	4.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	TRIP	TRIP BLANK-SO	11/14/07	-	--	--	NA								
SOIL	GEOPROBE	P51-M1-A	11/14/07	7:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-M1-B	11/14/07	7:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M1-C	11/14/07	8:05	4.5	5.0	X								
SOIL	GEOPROBE	P51-M2-A	11/14/07	8:30	0.0	0.5	X								
SOIL	GEOPROBE	P51-M2-B	11/14/07	8:30	1.5	2.0	NA								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-M2-C	11/14/07	8:40	5.0	5.5	X								
SOIL	GEOPROBE	P51-M3-A	11/14/07	9:20	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M3-B	11/14/07	9:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M3-C	11/14/07	9:30	4.0	4.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M4-A	11/14/07	10:05	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M4-B	11/14/07	10:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M4-C	11/14/07	10:15	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M5-A	11/14/07	10:40	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M5-B	11/14/07	10:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M5-C	11/14/07	10:50	7.0	7.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M6-A	11/14/07	11:15	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M6-B	11/14/07	11:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M6-C	11/14/07	11:25	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M6-C DUPLICATE	11/14/07	11:25	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	FIELD	FIELD BLANK-SO	11/14/07	11:30	--	--	X								
BLANK	TRIP	TRIP BLANK-SO	11/15/07	-	--	--		X							

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-M7-A	11/15/07	7:45	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M7-B	11/15/07	7:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M7-C	11/15/07	8:00	7.5	8.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M8-A	11/15/07	8:25	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M8-B	11/15/07	8:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M8-C	11/15/07	8:35	7.0	7.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-M9-A	11/15/07	9:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-M9-B	11/15/07	9:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-M9-C	11/15/07	9:10	5.0	5.5	X								
SOIL	GEOPROBE	P51-N1-A	11/15/07	9:45	0.0	0.5	X								
SOIL	GEOPROBE	P51-N1-B	11/15/07	9:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N1-C	11/15/07	9:50	3.0	3.5	X								
SOIL	GEOPROBE	P51-N2-A	11/15/07	10:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-N2-B	11/15/07	10:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N2-C	11/15/07	10:20	6.5	7.0	X								
SOIL	GEOPROBE	P51-N3-A	11/15/07	10:35	0.0	0.5	X								
SOIL	GEOPROBE	P51-N3-B	11/15/07	10:35	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N3-C	11/15/07	10:40	5.5	6.0	X	X							
SOIL	GEOPROBE	P51-N4-A	11/15/07	11:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-N4-B	11/15/07	11:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N4-C	11/15/07	11:10	7.0	7.5	X								
SOIL	GEOPROBE	P51-N5-A	11/15/07	11:25	0.0	0.5	X								
SOIL	GEOPROBE	P51-N5-B	11/15/07	11:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N5-C	11/15/07	11:35	7.0	7.5	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-N5-C DUPLICATE	11/15/07	11:35	7.0	7.5	X								
SOIL	GEOPROBE	P51-N6-A	11/15/07	13:10	0.0	0.5	X								
SOIL	GEOPROBE	P51-N6-B	11/15/07	13:10	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N6-C	11/15/07	13:15	6.5	7.0	X								
SOIL	GEOPROBE	P51-N7-A	11/15/07	13:35	0.0	0.5	X								
SOIL	GEOPROBE	P51-N7-B	11/15/07	13:35	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N7-C	11/15/07	13:40	6.5	7.0	X								
SOIL	GEOPROBE	P51-N8-A	11/15/07	14:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-N8-B	11/15/07	14:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-N8-C	11/15/07	14:05	3.0	3.5	X								
BLANK	FIELD	FIELD BLANK-SO	11/15/07	14:10	--	--	X	X							
BLANK	TRIP	TRIP BLANK-SO	11/16/07	-	--	--	NA								
SOIL	GEOPROBE	P51-R3-A	11/16/07	8:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-R3-B	11/16/07	8:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R3-C	11/16/07	8:35	14.0	14.5	X								
SOIL	GEOPROBE	P51-R5-A	11/16/07	8:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-R5-B	11/16/07	8:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R5-C	11/16/07	9:15	11.0	11.5	X								
SOIL	GEOPROBE	P51-R7-A	11/16/07	10:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-R7-B	11/16/07	10:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R7-C	11/16/07	10:30	9.5	10.0	X								
SOIL	GEOPROBE	P51-R9-A	11/16/07	11:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-R9-B	11/16/07	11:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R9-C	11/16/07	11:15	11.5	12.0	X								
SOIL	GEOPROBE	P51-P9-A	11/16/07	12:45	0.0	0.5	X								
SOIL	GEOPROBE	P51-P9-B	11/16/07	12:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-P9-C	11/16/07	13:00	5.0	5.5	X								
SOIL	GEOPROBE	P51-N9-A	11/16/07	13:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-N9-B	11/16/07	13:40	1.5	2.0	NA								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-N9-C	11/16/07	13:55	7.5	8.0	X								
SOIL	GEOPROBE	P51-L9-A	11/16/07	14:15	0.0	0.5	X								
SOIL	GEOPROBE	P51-L9-B	11/16/07	14:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-L9-C	11/16/07	14:30	3.5	4.0	X								
BLANK	FIELD	FIELD BLANK-SO	11/16/07	14:45	--	--	X								
SOIL	GEOPROBE	P51-O1-A	11/16/07	15:00	0.0	0.5	X								
SOIL	GEOPROBE	P51-O1-B	11/16/07	15:00	1.5	2.0	NA								
SOIL	GEOPROBE	P51-O1-C	11/16/07	15:15	11.0	11.5	X								
SOIL	GEOPROBE	P51-O1-C DUPLICATE	11/16/07	15:15	11.0	11.5	X								
BLANK	TRIP	TRIP BLANK-SO	11/17/07	-	--	--	NA								
SOIL	GEOPROBE	P51-R4-A	11/17/07	7:40	0.0	0.5	X								
SOIL	GEOPROBE	P51-R4-B	11/17/07	7:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R4-C	11/17/07	8:10	11.5	12.0	X								
SOIL	GEOPROBE	P51-R6-A	11/17/07	8:25	0.0	0.5	X								
SOIL	GEOPROBE	P51-R6-B	11/17/07	8:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R6-C	11/17/07	8:30	5.0	5.5	X								
SOIL	GEOPROBE	P51-R8-A	11/17/07	8:45	0.0	0.5	X								
SOIL	GEOPROBE	P51-R8-B	11/17/07	8:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-R8-C	11/17/07	9:05	0.5	1.0	X								
SOIL	GEOPROBE	P51-Q3-A	11/17/07	9:20	0.0	0.5	X								
SOIL	GEOPROBE	P51-Q3-B	11/17/07	9:20	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q3-C	11/17/07	9:45	11.0	11.5	X								
SOIL	GEOPROBE	P51-Q4-A	11/17/07	9:55	0.0	0.5	X								
SOIL	GEOPROBE	P51-Q4-B	11/17/07	9:55	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q4-C	11/17/07	10:35	13.0	13.5	X								
SOIL	GEOPROBE	P51-Q5-A	11/17/07	10:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-Q5-B	11/17/07	10:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q5-C	11/17/07	10:55	4.0	4.5	X								
SOIL	GEOPROBE	P51-Q6-A	11/17/07	11:15	0.0	0.5	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-Q6-B	11/17/07	11:15	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q6-C	11/17/07	11:30	4.5	5.0	X								
BLANK	FIELD	FIELD BLANK-SO	11/17/07	11:25	--	--	X								
SOIL	GEOPROBE	P51-Q7-A	11/17/07	11:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-Q7-B	11/17/07	11:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q7-C	11/17/07	12:00	7.5	8.0	X								
SOIL	GEOPROBE	P51-Q7-C DUPLICATE	11/17/07	12:00	7.5	8.0	X								
SOIL	GEOPROBE	P51-Q8-A	11/17/07	12:25	0.0	0.5	X								
SOIL	GEOPROBE	P51-Q8-B	11/17/07	12:25	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q8-C	11/17/07	12:30	5.0	5.5	X								
SOIL	GEOPROBE	P51-Q9-A	11/17/07	12:40	0.5	1.0	X								
SOIL	GEOPROBE	P51-Q9-B	11/17/07	12:40	1.5	2.0	NA								
SOIL	GEOPROBE	P51-Q9-C	11/17/07	12:50	5.5	6.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	TRIP	TRIP BLANK-AQ	11/17/07	7:30	--	--		X							
BLANK	FIELD	FIELD BLANK-AQ	11/17/07	8:00	--	--		X	X						
GW	GEOPROBE	P51-R3	11/17/07	8:30	15.0	20.0		X	X						
GW	GEOPROBE	P51-R3 DUPLICATE	11/17/07	8:30	15.0	20.0		X	X						
GW	GEOPROBE	P51-R5	11/17/07	9:00	11.0	16.0		X	X						
GW	GEOPROBE	P51-R7	11/17/07	9:30	10.0	15.0		X	X						
GW	GEOPROBE	P51-R9	11/17/07	10:00	11.0	16.0		X	X						
GW	GEOPROBE	P51-P9	11/17/07	10:30	5.0	10.0		X	X						
GW	GEOPROBE	P51-N9	11/17/07	11:00	7.0	12.0		X	X						
GW	GEOPROBE	P51-L9	11/17/07	11:30	3.0	8.0		X	X						
BLANK	TRIP	TRIP BLANK-SO	11/19/07	-	--	--		X							
SOIL	GEOPROBE	P51-O2-A	11/19/07	7:50	0.0	0.5	X								
SOIL	GEOPROBE	P51-O2-B	11/19/07	7:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-O2-C	11/19/07	8:00	5.5	6.0	X								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-O3-A	11/19/07	8:30	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O3-B	11/19/07	8:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-O3-C	11/19/07	8:40	8.0	8.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O7-A	11/19/07	9:05	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O7-B	11/19/07	9:05	1.5	2.0	NA								
SOIL	GEOPROBE	P51-O7-C	11/19/07	9:10	4.0	4.5	X	X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O7-C DUPLICATE	11/19/07	9:10	4.0	4.5	X	X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O7-D	11/19/07	9:25	8.0	8.5	X								TPHC collected due to elevated field screening results. Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O8-A	11/19/07	9:50	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O8-B	11/19/07	9:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-O8-C	11/19/07	10:05	7.0	7.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-O9-A	11/19/07	10:30	0.0	0.5	X								
SOIL	GEOPROBE	P51-O9-B	11/19/07	10:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-O9-C	11/19/07	10:40	6.5	7.0	X								
SOIL	GEOPROBE	P51-P3-A	11/19/07	11:00	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P3-B	11/19/07	11:00	1.5	2.0	NA								

Table 3.12-2
Parcel 51 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P51-P3-C	11/19/07	11:25	9.5	10.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P4-A	11/19/07	11:50	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P4-B	11/19/07	11:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-P4-C	11/19/07	12:00	6.5	7.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P5-A	11/19/07	12:45	0.5	1.0	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P5-B	11/19/07	12:45	1.5	2.0	NA								
SOIL	GEOPROBE	P51-P5-C	11/19/07	12:55	7.0	7.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P6-A	11/19/07	13:30	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P6-B	11/19/07	13:30	1.5	2.0	NA								
SOIL	GEOPROBE	P51-P6-C	11/19/07	13:35	3.0	3.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	FIELD	FIELD BLANK-SO	11/19/07	13:40	--	--	X	X							
SOIL	GEOPROBE	P51-P7-A	11/19/07	13:50	1.0	1.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P51-P7-B	11/19/07	13:50	1.5	2.0	NA								
SOIL	GEOPROBE	P51-P7-C	11/19/07	13:55	4.0	4.5	X								Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.

NA = Not Analyzed. Sample was collected for VOC analysis in the event TPHC results in the 0.0-0.5 ft bgs interval exceeded 1,000 mg/kg. TPHC results were less than 1,000 mg/kg in the 0.0-0.5 ft bgs interval, therefore no VOC analysis was required.
X = Sample analyzed for the indicated analytical parameter suite

Table 3.12-3
Parcel 51 – 750 Area Ground Penetrating Radar and Metal Detection Follow-up Survey Results

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_1	Differential	Yes	6 x 15	4 x 11	High-amplitude parabolic anomaly characteristic of UST.	617154	537902
P51_2	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617182	537825
P51_3	Differential	No	N/A	N/A	Surface metal.	617182	537885
P51_4	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617187	537802
P51_5	Differential	Yes	6 x 15	4 x 11	High-amplitude parabolic anomaly characteristic of UST.	617192	537962
P51_6	Differential	No	N/A	N/A	Surface metal.	617207	537986
P51_7	Differential	No	N/A	N/A	Surface metal.	617217	537891
P51_8	Differential	No	N/A	N/A	Surface metal.	617219	537902
P51_9	Differential	Yes	N/A	N/A	No MD anomaly found associated with EM anomaly.	617227	537805
P51_10	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617256	537805
P51_11	Differential	No	N/A	N/A	Surface metal.	617265	537979
P51_12	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617269	537792
P51_13	Differential	Yes	N/A	N/A	Surface metal.	617272	537949
P51_14	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617273	537831
P51_15	Differential	Yes	6 x 10	4 x 6	High-amplitude parabolic anomaly characteristic of UST.	617278	537782
P51_16	Differential	No	N/A	N/A	Surface metal.	617287	538023
P51_17	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617293	537927
P51_18	Differential	No	N/A	N/A	Surface metal.	617304	537902

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_19	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617305	538014
P51_20	Differential	Yes	7 x 14	5 x 12	High-amplitude parabolic anomaly characteristic of UST.	617321	538033
P51_21	Differential	No	see notes	see notes	Area scanned with GPR only; no GPR anomaly associated with EM anomaly.	617324	537892
P51_22	Differential	Yes	4 x 4	see notes	Moderate-amplitude scattered near surface anomalies, possible debris.	617331	538023
P51_23	Differential	No	N/A	N/A	Surface metal.	617338	537852
P51_24	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617340	538040
P51_25	Differential	No	N/A	N/A	Surface metal.	617351	537985
P51_26	Differential	No	N/A	N/A	Surface metal.	617360	537904
P51_27	Differential	Yes	6 x 10	4 x 7	High-amplitude parabolic anomaly characteristic of UST.	617362	537965
P51_28	Differential	No	N/A	N/A	Surface metal.	617364	537861
P51_29	Differential	No	N/A	N/A	Surface metal.	617368	537877
P51_30	Differential	No	N/A	N/A	Surface metal.	617389	538069
P51_31	Differential	Yes	6 x 10	4 x 7	High-amplitude parabolic anomaly characteristic of UST.	617432	537873
P51_32	Differential	No	N/A	N/A	Surface metal.	617469	537675
P51_33	Differential	Yes	see notes	see notes	Metal associated with P51_32 (surface metal).	617471	537682
P51_34	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617509	538069
P51_35	Differential	No	N/A	N/A	Surface metal.	617530	537612
P51_36	Differential	No	N/A	N/A	Surface metal.	617532	537564
P51_37	Differential	No	N/A	N/A	Surface metal.	617534	537577
P51_38		No	N/A	5 x 10	High-amplitude parabolic anomaly characteristic of UST.	617574	537953

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_39	Differential	Yes	10 x 15	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	617574	537573
P51_40	Differential	Yes	15 x 15	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	617605	537498
P51_41	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617643	538043
P51_42	Differential	No	N/A	5 x 11	High-amplitude parabolic anomaly characteristic of UST.	617647	537986
P51_43	Differential	Yes	see notes	see notes	Metal associated with P51_44(surface metal).	617667	537671
P51_44	Differential	No	N/A	N/A	Surface metal.	617671	537662
P51_45	Differential	No	N/A	N/A	Surface metal.	617698	538233
P51_46	Differential	Yes	5 x 7	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	617713	537636
P51_47	Differential	No	N/A	9 x 15	High-amplitude parabolic anomaly characteristic of UST.	617716	538029
P51_48	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617718	537627
P51_49	Differential	Yes	N/A	N/A	Suspected utility.	617720	538218
P51_50	Differential	Yes	N/A	N/A	Suspected utility.	617733	537754
P51_51	Differential	No	N/A	N/A	Surface metal.	617737	538258
P51_52	Differential	No	N/A	N/A	Surface metal.	617740	537696
P51_53	Differential	Yes	N/A	N/A	Suspected utility.	617745	538178
P51_54	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617749	537842
P51_55	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617754	537803
P51_56	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617758	537662
P51_57	Differential	No	N/A	N/A	Surface metal.	617770	537684

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_58	Differential	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617771	537773
P51_59	Differential	Yes	see notes	see notes	Suspected utility vault associated with P51_57(surface metal).	617774	537698
P51_60	Differential	No	N/A	N/A	Surface metal.	617778	538100
P51_61	Differential	No	N/A	N/A	Surface metal.	617783	537729
P51_62	Differential	Yes	7 x 10	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	617820	537691
P51_63	Differential	No	N/A	N/A	Surface metal.	617843	537765
P51_64	Differential	No	N/A	N/A	Surface metal.	617852	537594
P51_65	Differential	Yes	15 x 15	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	617862	538247
P51_66	Differential	No	N/A	N/A	Surface metal.	617882	538092
P51_67	Differential	No	N/A	N/A	Surface metal.	617892	538321
P51_68	Differential	No	N/A	N/A	Surface metal.	617927	538225
P51_69	Differential	No	N/A	N/A	Surface metal.	617938	538092
P51_70	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617943	538232
P51_71	Differential	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude point target/anomaly, possible debris.	617960	538163
P51_72	Differential	No	N/A	N/A	Surface metal.	617977	538134
P51_73	Differential	No	N/A	N/A	Surface metal.	618033	538058
P51_74	Differential	No	N/A	N/A	Surface metal.	618080	537918

Table 3.12-4
Parcel 51 – 600 and 1100 Area Ground Penetrating Radar and Metal Detection Follow-up Survey Results

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_75	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618115	539165
P51_76	Both	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618191	539094
P51_77	Both	Yes	10 x 10	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	618244	539055
P51_78	Both	No	N/A	N/A	Surface metal.	618310	539068
P51_79	Both	No	N/A	N/A	Surface metal.	618321	539082
P51_80	Inphase	No	N/A	N/A	Surface metal.	618357	539123
P51_81	Both	No	N/A	N/A	Surface metal.	618385	539098
P51_82	Both	No	N/A	N/A	Surface metal.	618398	539103
P51_83	Conductivity	Yes	N/A	N/A	Suspected utility.	618446	539190
P51_84	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618674	539404
P51_85	Conductivity	No	N/A	N/A	Surface metal.	618691	539404
P51_86	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618697	539327
P51_87	Both	No	N/A	N/A	Surface metal.	618703	539206
P51_88	Inphase	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618717	539278
P51_89	Both	No	N/A	N/A	Surface metal.	618723	539418
P51_90	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly; suspected utility.	618768	539314
P51_91	Both	Yes	N/A	N/A	Suspected utility.	618823	539867
P51_92	Both	No	5 x 10	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	618852	539731
P51_93	Both	No	N/A	N/A	Surface metal.	618861	539699
P51_94	Both	Yes	N/A	N/A	Suspected utility.	618887	539739

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_95	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618889	539363
P51_96	Both	No	see notes	see notes	Parked cars. Area later scanned with TW-6; no anomalies detected.	618893	539627
P51_97	Both	Yes	11 x 12	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	618903	539700
P51_98	Inphase	Yes	< 3 x 3	< 3 x 3	Moderate-amplitude scattered near-surface anomalies, possible debris.	618930	539676
P51_99	Both	No	N/A	N/A	Surface metal.	618963	539731
P51_100	Inphase	Yes	12 x 15	see notes	Moderate-amplitude scattered near-surface anomalies, possible debris.	618964	539686
P51_101	Both	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	619003	539480
P51_102	Conductivity	Yes	N/A	N/A	Suspected utility.	619009	539329
P51_103	Inphase	No	N/A	N/A	Surface metal.	619022	539568
P51_104	Both	No	N/A	N/A	Surface metal.	619031	539750
P51_105	Both	No	N/A	N/A	Surface metal.	619041	539629
P51_106	Both	No	N/A	N/A	Surface metal.	619044	539351
P51_107	Both	No	N/A	N/A	Surface metal.	619082	539605
P51_108	Both	No	N/A	N/A	Surface metal.	619094	539605
P51_109	Both	No	N/A	N/A	Surface metal.	617658	538510
P51_110	Inphase	Yes	7 x 12	5 x 10	High-amplitude parabolic anomaly characteristic of UST.	617676	538548
P51_111	Both	Yes	7 x 12	5 x 11	High-amplitude parabolic anomaly characteristic of UST.	617745	538585
P51_112	Both	No	N/A	N/A	Surface metal.	617759	538680
P51_113	Both	No	N/A	N/A	Surface metal.	617765	538558
P51_114	Both	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	617813	538597
P51_115	Both	No	N/A	N/A	Surface metal.	617836	538586

Anomaly	Anomaly Type:	Anomaly Re-Acquired by Small Area Metal Detection	Metal Detection (MD) Anomaly Size (feet)	GPR Anomaly Size (feet)	Description	Easting	Northing
P51_116	Both	No	N/A	N/A	Surface metal.	617850	538613
P51_117	Inphase	No	N/A	N/A	Suspected utility.	617867	538712
P51_118	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618012	538708
P51_119	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618077	538740
P51_120	Both	No	N/A	N/A	Surface metal.	618090	538851
P51_121	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618147	538779
P51_122	Both	No	N/A	N/A	Suspected utility.	618215	538944
P51_123	Conductivity	No	N/A	N/A	No MD anomaly found associated with EM anomaly.	618219	538815

Table 3.12-5
Fort Monmouth Phase II Site Investigation, Parcel 51
Summary of TPHC Detected in Soil (mg/kg)

Sample ID	Lab ID	Sample Date	Depth (ft. bgs)	Result	MDL	NJDEP NRDCSCC[2] (mg/kg)	NJDEP IGWSCC[3] (mg/kg)
P51-B11-A	7044131	11/05/07	1.0-1.5	648	74	10000	10000
P51-C10-A	7044124	11/05/07	0.0-0.5	741	73	10000	10000
P51-C10-C	7044126	11/05/07	6.0-6.5	103	82	10000	10000
P51-C11-A	7044121	11/05/07	0.0-0.5	433	74	10000	10000
P51-D10-A	7044118	11/05/07	0.5-1.0	243	73	10000	10000
P51-D11-A	7043831	11/02/07	0.5-1.0	857	71	10000	10000
P51-D11-C	7043833	11/02/07	5.5-6.0	115	80	10000	10000
P51-D12-A	7043828	11/02/07	0.0-0.5	149	71	10000	10000
P51-E10-C	7043827	11/02/07	3.0-3.5	568	75	10000	10000
P51-E11-A	7043821	11/02/07	0.5-1.0	213	73	10000	10000
P51-F7-A	7043818	11/02/07	1.0-1.5	496	71	10000	10000
P51-G12-C	7044405	11/06/07	4.5-5.0	273	75	10000	10000
P51-G12-D	7044406	11/06/07	6.0-6.5	7487	83	10000	10000
P51-G12-D DUP	7044402	11/06/07	6.0-6.5	7524	82	10000	10000
P51-H10-A	7043029	10/31/07	0.0-0.5	150	73	10000	10000
P51-H11-A	7043026	10/31/07	1.0-1.5	200	75	10000	10000
P51-H11-C	7043028	10/31/07	4.5-5.0	98	71	10000	10000
P51-H12-A	7043023	10/31/07	0.0-0.5	99	77	10000	10000
P51-H12-C	7043025	10/31/07	4.0-8.0	3973	74	10000	10000
P51-H7-A	7043039	10/31/07	0.0-0.5	82	73	10000	10000
P51-H9-C	7043035	10/31/07	5.0-5.5	201	78	10000	10000
P51-I2-A	7043020	10/31/07	0.0-0.5	115	74	10000	10000
P51-I2-C	7043022	10/31/07	5.5-6.0	123	75	10000	10000
P51-I4-A	7043017	10/31/07	0.0-0.5	86	71	10000	10000
P51-I4-C	7043019	10/31/07	2.0-2.5	105	73	10000	10000
P51-I5-C	7044111	11/05/07	3.5-4.0	94	71	10000	10000
P51-I6-A	7043015	10/31/07	0.0-0.5	110	73	10000	10000
P51-I6-B	7043016	10/31/07	1.5-2.0	106	71	10000	10000
P51-I7-A	7043012	10/31/07	0.0-0.5	100	73	10000	10000
P51-I7-C	7043014	10/31/07	2.0-2.5	149	71	10000	10000
P51-I8-A	7043009	10/31/07	0.0-0.5	298	76	10000	10000
P51-I8-C	7043011	10/31/07	3.5-4.0	126	71	10000	10000
P51-I9-C	7043008	10/31/07	3.5-4.0	148	75	10000	10000
P51-J1-A	7045403	11/09/07	0.0-0.5	83	73	10000	10000
P51-J4-A	7045412	11/09/07	0.0-0.5	106	74	10000	10000
P51-J5-A	7045415	11/09/07	0.0-0.5	280	73	10000	10000
P51-K1-A	7044603	11/08/07	0.0-0.5	144	71	10000	10000
P51-K2-A	7044606	11/08/07	0.0-0.5	338	70	10000	10000
P51-K3-A	7044609	11/08/07	0.0-0.5	487	72	10000	10000
P51-K4-A	7044612	11/08/07	0.0-0.5	497	73	10000	10000
P51-K5-A	7044615	11/08/07	0.0-0.5	400	71	10000	10000
P51-K6-A	7044618	11/08/07	0.0-0.5	338	72	10000	10000
P51-K7-A	7044622	11/08/07	0.0-0.5	701	71	10000	10000

Table 3.12-5
Fort Monmouth Phase II Site Investigation, Parcel 51
Summary of TPHC Detected in Soil (mg/kg)

Sample ID	Lab ID	Sample Date	Depth (ft. bgs)	Result	MDL	NJDEP NRDCSCC[2] (mg/kg)	NJDEP IGWSCC[3] (mg/kg)
P51-K7-B	7044623	11/08/07	1.5-2.0	90	72	10000	10000
P51-K8-A	7044624	11/08/07	0.0-0.5	465	71	10000	10000
P51-K9-A	7044627	11/08/07	0.0-0.5	540	71	10000	10000
P51-L4-A	7045912	11/13/07	1.0-1.5	166	72	10000	10000
P51-L5-A	7045915	11/13/07	1.0-1.5	82	72	10000	10000
P51-L6-A	7045918	11/13/07	1.0-1.5	97	75	10000	10000
P51-L7-A	7045921	11/13/07	1.0-1.5	98	74	10000	10000
P51-L8-A	7045925	11/13/07	1.0-1.5	147	71	10000	10000
P51-M3-A	7046309	11/14/07	1.0-1.5	119	74	10000	10000
P51-M6-A	7046318	11/14/07	1.0-1.5	98	74	10000	10000
P51-M7-A	7046703	11/15/07	1.0-1.5	118	70	10000	10000
P51-M8-A	7046706	11/15/07	1.0-1.5	320	70	10000	10000
P51-N3-C	7046720	11/15/07	5.5-6.0	1498	74	10000	10000
P51-O7-C DUP	7047411	11/19/07	4.0-4.5	1188	71	10000	10000
P51-O7-C	7047402	11/19/07	4.0-4.5	1367	71	10000	10000
P51-R4-A	7047203	11/17/07	0.0-0.5	156	70	10000	10000

[1] NJDEP Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) per NJAC 7:26D, 1999.

[2] NJDEP Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) per NJAC 7:26D, 1999.

[3] NJDEP Impact to Groundwater Soil Cleanup Criteria (IGWSCC) per NJAC 7:26D, 1999.

DUP = Duplicate sample.

ft. bgs = Feet below ground surface.

MDL = Method detection limit

mg/kg = milligram per kilogram.

Table 3.12-6
Fort Monmouth Phase II Site Investigation, Parcel 51
Summary of Analytical Parameters Detected in Soil (mg/kg)

			Analytical Results				
		Sample ID:	P51-G12-D	P51-G12-D DUP	P51-N3-C	P51-O7-C	P51-O7-C DUP
		Lab ID:	7044406	7044402	7046720	7047411	7047402
		Date Sampled:	11/6/2007	11/6/2007	11/15/2007	11/19/2007	11/19/2007
		Depth (ft. bgs):	6.0-6.5'	6.0-6.5'	5.5-6.0'	4.0-4.5'	4.0-4.5'
Chemical	NRDCSCC[2]	IGWSCC[3]	Result	Result	Result	Result	Result
Volatiles							
Acetone	1,000	100	0.360 U	0.320 U	**0.110 J**	**0.480 B**	**0.520 B**
Ethylbenzene	1,000	100	**0.730**	**0.560**	0.300 U	0.250 U	0.270 U
Xylenes (Total)	1,000	67	**1.900**	**1.400**	0.980 U	**0.096 J**	**0.095 J**

[1] NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[2] NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

[3] NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.
(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

Table 3.12-7
Fort Monmouth Phase II Site Investigation, Parcel 51
Summary of Analytical Parameters Detected in Groundwater (µg/L)

		Analytical Results										
	Sample ID:	P51-A10	P51-A12	P51-C12	P51-C12 DUP	P51-E12	P51-G12	P51-I3	P51-I3 DUP	P51-I5	P51-I10	P51-K1
	Lab ID:	7044704	7044705	7044706	7044703	7044707	7044708	7044305	7044303	7044306	7044307	7045504
	Date Sampled:	11/8/2007	11/8/2007	11/8/2007	11/8/2007	11/8/2007	11/8/2007	11/6/2007	11/6/2007	11/6/2007	11/6/2007	11/10/2007
	Screened Interval (ft. bgs):	5-10'	5-10'	5-10'	5-10'	5-10'	5-10'	3-8'	3-8'	3-8'	3-8'	10-15'
Chemical	Quality Criteria[1]	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles												
Acetone	6000	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	**6.78**	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U
Benzene	1	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	**0.10 J**	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Carbon disulfide	700	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Chloroform	70	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Chloromethane (Methyl chloride)	NLE	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
Ethylbenzene	700	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	**1.74**	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Methyl ethyl ketone (2-Butanone)	300	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
Methyl tertiary butyl ether (MTBE)	70	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
Tertiary butyl alcohol	100	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U
Toluene	600	0.27 U	**1.03**	**0.65**	**0.54**	**1.07**	**2.00**	**0.37**	**0.82**	**0.29**	**0.38**	**0.53**
Xylenes (Total)	1000	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	**2.15**	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
Semi-Volatiles												
2-Methylnaphthalene	30*	**3.28**	1.01 U	1.01 U	1.01 U	1.01 U	**40.51**	1.01 U	1.01 U	1.01 U	1.01 U	1.01 U
bis(2-Ethylhexyl)phthalate	3	1.28 U	1.28 U	1.28 U	1.28 U	**0.95 J**	1.28 U	1.28 U	1.28 U	1.28 U	**2.55**	**1.42**
Dibenzofuran	NLE	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Di-n-butylphthalate	700	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
Fluorene	300	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	**1.97**	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Naphthalene	300	**1.00**	0.76 U	0.76 U	0.76 U	0.76 U	**23.40**	0.76 U	0.76 U	**4.01**	0.76 U	0.76 U
n-Nitrosodiphenylamine	10	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	**2.89**	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Phenanthrene	NLE	**1.94**	0.81 U	0.81 U	0.81 U	0.81 U	**3.75**	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U

[1] Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criterion (GWQC) per NJAC 7:9-6, 2005 (* Interim GWQC).

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

NT = Not tested.

NLE = No limit established.

Bold = Analyte was detected.

Shaded = Concentration exceeds Quality Criteria.

µg/L = micrograms per liter.

Table 3.12-7
Fort Monmouth Phase II Site Investigation, Parcel 51
Summary of Analytical Parameters Detected in Groundwater (µg/L)

		Analytical Results										
	Sample ID:	P51-K3	P51-K5	P51-K7	P51-K7 DUP	P51-K9	P51-L9	P51-N9	P51-P9	P51-R3	P51-R3 DUP	P51-R9
	Lab ID:	7045505	7045506	7045507	7045503	7045508	7047110	7047109	7047108	7047104	7047103	7047107
	Date Sampled:	11/10/2007	11/10/2007	11/10/2007	11/10/2007	11/10/2007	11/17/2007	11/17/2007	11/17/2007	11/17/2007	11/17/2007	11/17/2007
	Depth (ft. bgs):	10-15'	10-15'	10-15'	10-15'	10-15'	3-8'	7-12'	5-10'	15-20'	15-20'	11-16'
Chemical	Quality Criteria[1]	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles												
Acetone	6000	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	**9.31 B**	0.85 U	**1.99 B**	**1.12 B**	0.85 U	**3.56 B**
Benzene	1	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Carbon disulfide	700	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	**0.17 J**	0.44 U	**0.50**	0.44 U	0.44 U	**0.23 J**
Chloroform	70	**0.74**	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Chloromethane (Methyl chloride)	NLE	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	**0.34 J**
Ethylbenzene	700	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Methyl ethyl ketone (2-Butanone)	300	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	**1.58**	0.14 U	0.14 U	0.14 U	0.14 U	**0.76**
Methyl tertiary butyl ether (MTBE)	70	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	**4.31**	**33.79**	0.23 U	0.23 U	**15.92**
Tertiary butyl alcohol	100	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U	**4.03**	1.82 U	1.82 U	1.82 U	1.82 U	1.82 U
Toluene	600	**0.35**	**0.77**	0.27 U	0.27 U	**0.22 J**	**0.45**	**0.25 J**	**0.69**	0.27 U	0.27 U	0.27 U
Xylenes (Total)	1000	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
Semi-Volatiles												
2-Methylnaphthalene	30*	1.01 U	**2.61**	1.01 U	1.01 U	1.01 U	1.01 U	1.01 U	1.01 U	1.01 U	1.01 U	1.01 U
bis(2-Ethylhexyl)phthalate	3	1.28 U	1.28 U	**4.47**	**3.53**	1.28 U	1.28 U	1.28 U	**3.49**	1.28 U	1.28 U	1.28 U
Dibenzofuran	NLE	0.69 U	**0.30 J**	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Di-n-butylphthalate	700	0.92 U	**0.41 J**	**0.25 J**	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
Fluorene	300	0.71 U	0.71 U	**0.42 J**	**0.51 J**	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U	0.71 U
Naphthalene	300	0.76 U	**18.24**	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U	0.76 U
n-Nitrosodiphenylamine	10	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
Phenanthrene	200	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U

[1] Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criterion (GWQC) per NJAC 7:9-6, 2005.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

JB = The concentration should be considered estimated due to blank contamination.

UB = The presence of the analyte in the sample is negated due to blank contamination.

NT = Not tested.

NLE = No limit established.

Bold = Analyte was detected.

Shaded = Concentration exceeds Quality Criteria.

µg/L = micrograms per liter.

Sample ID	Media	Depth (ft bgs)	Compound	Concentration (ug/L)	Criteria	Criteria Value (ug/L)
P51-G12	GW	5-10'	2-Methylnaphthalene	40.51	NJ GWQC	30

51(2)HS/PS/PR

LEGEND

- Geoprobe Soil Sample Location
- Geoprobe Soil & Groundwater Sample Location
- Generalized Groundwater Flow Direction. Direction of Generalized Groundwater Flow derived from qualitative evaluation of surface topography, surface water features, and pre-existing IRP site groundwater potentiometric maps where available.
- Geophysical Investigation Area - Electromagnetic (EM) and Ground Penetrating Radar (GPR)
- Building
- Installation Boundary

ECP PARCEL CATEGORY DEFINITIONS

2 Areas where only release or disposal of petroleum products has occurred.

N

SCALE: 0 150 300 600 Feet

BRAC PARCEL LABEL DEFINITIONS

8(2)PS
- CONTAMINATION DESCRIPTION: HS - Hazardous Substance Storage; HR - Hazardous Substance Release; PS - Petroleum Storage; PR - Petroleum Release; (P) - Possible Release or Disposal
- CATEGORY NUMBER
- PARCEL NUMBER

Base Realignment and Closure 2005

U.S. Army Corps of Engineers

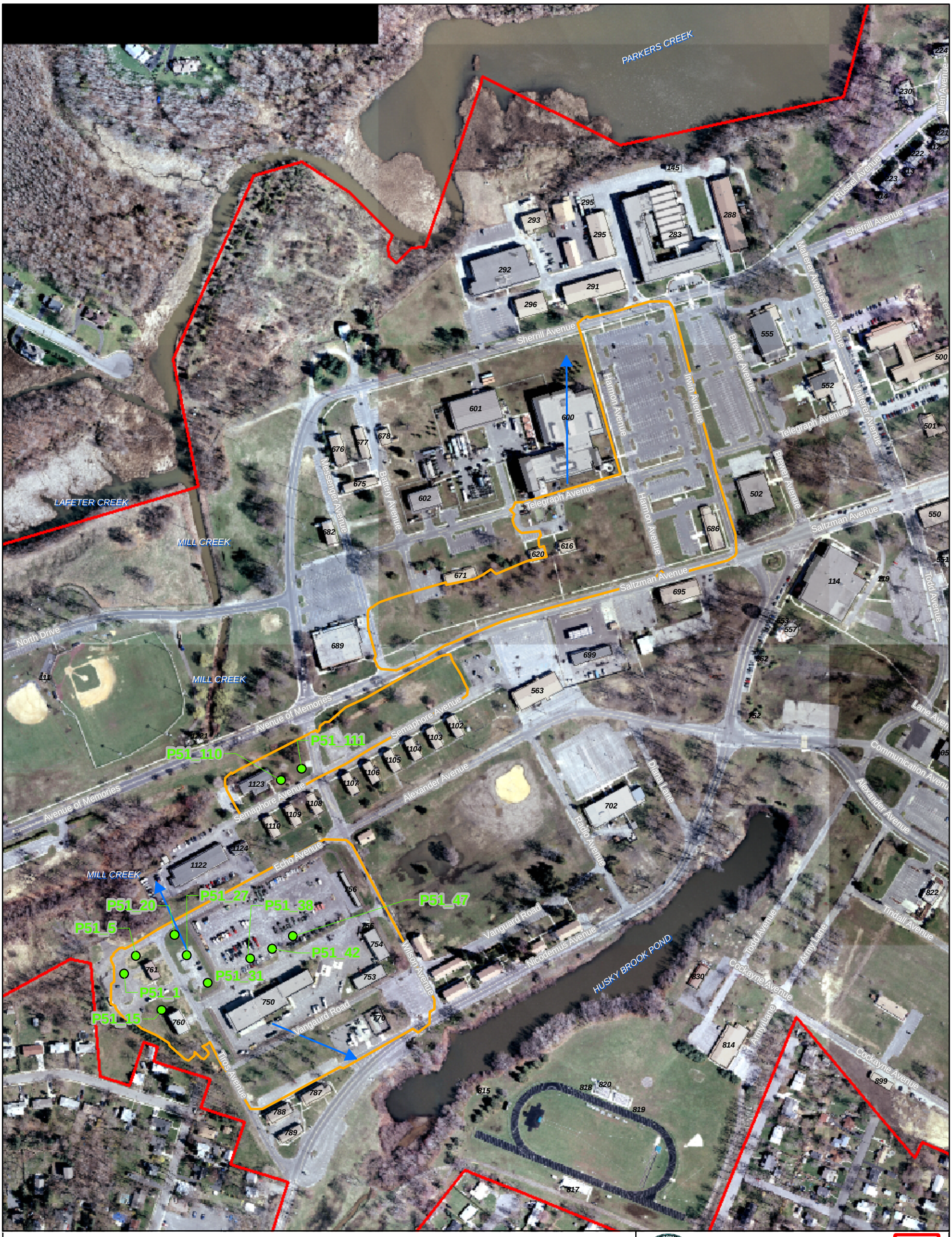
Shaw® Shaw Environmental, Inc.

FIGURE 3.12-1
FORT MONMOUTH ECP
SITE INVESTIGATION

PARCEL 51 SAMPLE LOCATIONS AND CONSTITUENTS OF CONCERN

MAIN POST
FORT MONMOUTH
NEW JERSEY

ArcGIS File: MP_Fig3_12-1_SI_P51_Exceeds_SampLoc.mxd (7/14/2008 12:49:34 PM)



LEGEND

- Subsurface Metallic Object (Suspected UST)
- Generalized Groundwater Flow Direction. Direction of Generalized Groundwater Flow derived from qualitative evaluation of surface topography, surface water features, and pre-existing IRP site groundwater potentiometric maps where available.
- Geophysical Investigation Area - Electromagnetic (EM) and Ground Penetrating Radar (GPR)
- Building
- Installation Boundary

N

SCALE:
0 150 300 600
Feet

Base Realignment and Closure 2005

U.S. Army Corps of Engineers

Shaw® Shaw Environmental, Inc.

FIGURE 3.12-2
FORT MONMOUTH ECP
SITE INVESTIGATION

PARCEL 51
SUSPECTED UST LOCATIONS

MAIN POST
FORT MONMOUTH
NEW JERSEY

3-212

ArcGIS File: MP_Fig3_12-2_SI_P51_Geophysics.mxd (7/14/2008 12:52:32 PM)

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

March 16, 2012

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: Army's Response to NJDEP correspondence (Dated October 28, 2008), Draft Site Investigation
Fort Monmouth, NJ

Attachments:

A. Letter from NJDEP dated October 28, 2008, regarding the Draft Site Investigation Report.
B. Letter from Army dated April 28, 2009, regarding the initial response to the NJDEP letter dated October 28, 2008.
C. Letter from the Army dated November 16, 2011, regarding the Army's response to NJDEP's comments for Parcel 15.
D. Unregulated Heat Oil Tank Brief Summary and Closure Reports for Parcels 14, 28, 51, 76, and 79.
E. Letters from NJDEP, regarding UST Closure Approval/NFA, dated July 10, 1998; February 24, 2000; April 20, 2001; and January 10, 2003.
F. Parcel 28 Map – Septic Tank
G. Site Plan depicting form buildings 105 and 106 off of Riverside Drive.
H. Parcel 83 former Structures Map.

Dear Ms. Range:

The U.S. Army Fort Monmouth has reviewed the subject comments as submitted by the NJDEP on 28 October 2008, in regards to the Draft Site Investigation Report dated July 21, 2008 by Shaw Environmental Inc. Referenced below is a line by line response in bold print, to each comment and request for an "No Further Action" (NFA) determination where appropriate.

General Comments

1. USTs at Parcels 14, 28, 51, 76, and 79. The recommendation of no further action (NFA) for the suspected underground storage tanks (USTs) is not acceptable to the NJDEP. The suspected USTs are subject to New Jersey regulations N.J.A.C. 7:26E *Technical Requirements for Site Remediation* (the Technical Requirements). Under the *Technical*

Requirements, Fort Monmouth is required to do at least the following in regard to the suspected USTs:
a) Verify the tank contents and collect a sample of any contents for analysis as specified at 7:26E-3.9(a)3.iii,
b) Collect and analyze at least 4 soil samples within 2 feet of each tank as specified at 7:26E-3.9(a)3.i,
c) Conduct a site investigation for ground water in accordance with 7:26E-3.7 and 3.4,
d) Implement remedial action and tank closure in accordance with 7:26E-6.3(b),

The soil and ground water sampling conducted during the Army's Site Investigation (SI) are a good starting point. However, since suspected USTs have been identified by geophysical surveys, the specific sampling requirements of 7:26E-3.4, 3.7, and 3.9 must now be followed.

The suspected USTs are also subject to N.J.A.C. 7:14B - Underground Storage Tanks. Under 7:14B-1.4(b)3, tanks of any size used to store heating oil for onsite consumption in a residential building (such as a barracks) are exempted from the requirements of the UST regulations. However, all other hazardous substance USTs of any size are regulated due to the aggregate volume provision found in the definition of "Tank capacity" in 7:14B-1.6. All confirmed regulated USTs at Fort Monmouth must be registered and closed in accordance with 7:14B.

The Army performed complete investigations of the suspected USTs at Parcels 14, 28, 51, 76 and 79. A summary of each site can be found at Attachment D.

2. Septic System at Parcel 28. Similarly, the recommendation of NFA for the septic tank, septic box, and septic piping at Parcel 28 is also unacceptable. The septic system components must be sampled as specified at 7:26E - 3.9(e)3 and the ground water sampling requirements of 7:26E-3.7 must also be followed.

According to the Parcel 28 Summary and Conclusions section of Shaw's July 21, 2008 SIR (Section 3.5.5 , page 3-96):

"The locations of a suspected UST, a suspected former septic holding tank, a suspected septic distribution box, and suspected supply piping associated with the suspected septic distribution box were identified from a geophysical survey. Soil and groundwater analytical results suggest that a release has not occurred. In light of the absence of evidence of a release to the environment, NFA for the suspected UST, suspected former septic holding tank, suspected septic distribution box, and suspected supply piping associated with the suspected septic distribution box is recommended."

The Army contends that a satisfactory remedial investigation was performed for the former septic system at Parcel 28, in accordance with N.J.A.C. 7:26E - 3.9(e)3 and 7:26E-3.7. To evaluate known and/or suspected former septic system components, the Army conducted a remedial investigation consisting of a geophysical survey, collection of sediment samples, and collection of soil and ground water samples from Geoprobe®

borings and test pits. All soil, sediment, and ground water sampling locations were chosen in reference to the findings of the geophysical survey. The soil, sediment, and ground water analytical results from the Army's remedial investigation of the former septic system confirmed that no release to environment occurred. Thus, the Army contends that NFA for the former septic system at Parcel 28 is warranted.

3. Action Levels, page 2-14. Analytical results were compared to NJDEP criteria, specifically the non-residential direct contact soil cleanup criteria (NRDCSCC) and the impact-to-ground water soil cleanup criteria (IGWSCC). Subsequent to the start of the site investigation, NJDEP has promulgated new Soil Remediation Standards (SRS). The NJDEP has provided for a phase-in period for the new SRS. If a Remedial Action Work Plan (RAW) is submitted to the Department on or before December 2, 2008 (6 months after the June 2, 2008 promulgation date) then the subsequent cleanup may be conducted using the previous SCC. However, any remedial actions not approved by NJDEP by the December 2, 2008 deadline must follow the new SRS. Detailed guidance can be found at the following website: http://www.nj.gov/dep/srp/guidance/rs/.

The Army will apply the June 2, 2008 NJDEP Soil Remediation Standards to all Fort Monmouth sites that did not have a NJDEP-approved RAW in place prior to June 2, 2008.

4. Sediments at Parcels 15, 27, 28, 39, 43, 49, 61, and 69. NJDEP concurs with the recommendations to further evaluate sediments at these Parcels as part of a facility-wide baseline ecological evaluation.

Sediments at Parcels 15, 27, 28, 39, 43, 49, 61, and 69 were sampled, evaluated, and discussed in the Baseline Ecological Evaluation Report submitted to the NJDEP in May 2011.

5. Indoor Air at Parcels 15, 34, 43, 50, and 52. NJDEP concurs with the recommendations to conduct one additional round of indoor air sampling at these Parcels.

The Army evaluated the requirements for additional vapor intrusion assessment in accordance with the NJDEP's October 2005 *Vapor Intrusion Guidance* (VIG) and *Technical Requirements*. For the parcels referenced above, the Army plans to conduct follow-up vapor intrusion investigations at Parcel 15 (Building 2700), Parcel 52 (Site 699), and Parcel 50 [FTMM-61 (Site 283)]. Based on the most recent ground water sampling results, no additional vapor intrusion assessments are required for the following parcels: Parcel 34 (Site 2567), Parcel 43 (Site 1122), and Parcel 50 [IRP Sites FTMM-54 (Site 296) and FTMM-55 (Site 290)]. In addition, the following sites were added to the Vapor Intrusion Survey Work Plan: Buildings 602, 700, and 1001.

6. Section 4.1.2, Surface and Subsurface Soil Investigations. This section discusses the results of soil sampling at multiple areas of concern (AOCs) relative to the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC). Further evaluation of soil contamination is recommended at some, but not all, soil AOCs.

The future use of most Parcels at Fort Monmouth is not yet certain. Since future residential use is possible, all areas of soil contamination must be delineated to the Residential Direct Contact Soil Cleanup Criteria (RDCSCC). Remediation of soils by the Army to the NRDCSCC prior to property transfer would be acceptable, but deed notices would be required to document remaining soil contamination above the RDCSCC, and appropriate engineering controls must be implemented and documented.

For Fort Monmouth sites without a NJDEP-approved RAW in place prior to June 2, 2008, the Army will delineate soil to the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS). For Fort Monmouth sites with an approved RAW in place prior to June 2, 2008, the Army will delineate soil to the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC).

The Army plans to remediate sites to current usage – i.e. residential areas will be remediated to comply with NJDEP residential soil criteria; non-residential areas will be remediated to comply with NJDEP non-residential soil criteria.

Parcel-Specific Comments

Parcel 13 - Former Banacks (Buildings 2004-2016)

1. The recommendations of NFA for soil and ground water are acceptable based upon the sampling results and the results of the geophysical survey.

The Army acknowledges the NJDEP's approval of NFA for soil and ground water for Parcel 13.

2. The Report states that no suspected USTs were located by the geophysical surveys, however it further indicates that no UST removals have been documented at the locations of numerous former barracks within Parcel 13. The Report should provide a possible explanation(s) for why no USTs were found.

Regarding the NJDEP's request for a possible explanation for why no USTs were discovered at Parcel 13, the Army believes that all USTs at Parcel 13 were removed during demolition of the barracks, circa 1963.

Parcel 14 - Northwest Portion of CWA

1. See General Comment #1 above.

See response to General Comment #1 above, at Attachment C.

Parcel 15 - Building 2700

1. The Report states that no suspected USTs were located by the geophysical surveys, however it further indicates that no UST removals have been documented at the locations of numerous former barracks within Parcel 15. The Report should provide a possible explanation(s) for why no USTs were found.

See response to General Comment #1 above, at Attachment C.

2. It is unclear why an NFA for ground water is being recommended when ground water remediation is currently being implemented for the CW-1 area. If the Army wants to identify individual AOCs within Parcel 15 for an NFA designation, they should make that case for those individual AOCs.

See response to General Comment #1 above, at Attachment C.

3. The recommendation of NFA for soil is acceptable based upon the sampling results and the results of the geophysical survey.

The Army acknowledges the NJDEP's approval of NFA for soil for Parcel 15 (Building 2700).

4. The report states that well UST-2337-65 could not be located. If the well has been surveyed, an attempt shall be made to locate the well using the State Plane Coordinates.

See response to General Comment #1 above, at Attachment C.

Parcel 27 - Southwestern Corner CWA

1. The report states that numerous USTs were removed from this parcel and are summarized in the Phase I ECP Report. Appendix A of that document states that the Department sent UST closure approval letters for 7 of the 12 USTs that were removed, and that the Army is waiting for Department approval of the remaining 5 UST closures.

This answer is included in the answer to Comment #2 below.

2. NFA for soil and ground water cannot be approved until documentation on all 12 USTs, including the closure reports for the remaining 5 USTs, are reviewed by the NJDEP project team. NJDEP requests that the Army provide a brief summary of the 7 USTs that received Department approval. This summary should include a figure showing the former UST locations and the soil and ground water sampling locations and results.

The information found in the ECP Phase I- Appendix A regarding 12 UST with 5 of the 12 sites pending NJDEP review, is incorrect. Figure- 16 of the ECP Phase I, is a map which depicts the location of 19 UST that were removed in the Parcel 27 area. When cross referencing the UST from the Figure-16 map with Appendix G, there were 2 of the 19 UST that was noted for pending an approval for closure from NJDEP. The two UST sites are, UST 2707-47 and UST 2707-51. However, this information is also incorrect. The NJDEP submitted a NFA letter for these two sites, on January 10, 2003. See Attachment E of this letter all NJDEP NFA approval letters. The UST's removed from Parcel 27 are listed below:

PARCEL 27 USTs REMOVED

UST Label #	Building	UST Removal Date	NJDEP UST Closure Approval Date
UST 2500-52	2500	3/25/1993	4/20/2001
UST 2500-53	2500	3/25/1993	4/20/2001
UST 2500-54	2500	3/25/1993	4/20/2001
UST 2500-55	2500	3/25/1993	4/20/2001
UST 2500-56	2500	3/25/1993	4/20/2001
UST 2502-13	2502	4/23/1996	8/29/2000
UST 2503-14	2503	4/23/1996	7/10/1998
UST 2504-15	2504	9/20/1995	10/23/2000
UST 2504-16	2504	5/13/1997	7/10/1998
UST 2506-17	2506	6/12/1997	7/10/1998
UST 2507-18	2507	6/5/1997	7/10/1998
UST 2508-19	2508	4/19/1996	7/10/1998
UST 2624-34	2624	3/25/1993	7/23/1993
UST 2624-57	2624	3/25/1993	9/21/1995
UST 2624-58	2624	3/25/1993	9/21/1995
UST 2624-59	2624	3/25/1993	9/21/1995
UST 2707-40	2707	8/10/1998	2/24/2000
UST 2707-47	2707	9/15/1998	1/10/2003
UST 2707-51	2707	8/26/1998	10/10/2003

Parcel 28 - Former Eatontown Laboratory

1. See General Comment #2 above.

Please refer to the Army's response to the NJDEP's General Comment #2 provided above.

2. Former installation plans and figures show three separate septic tanks and leach fields and one underground transformer vault. These potential AOCs must be shown on Figure 3.5-1 to allow comparison with sample locations.

A figure depicting the approximate locations of former structures at Parcel 28, including the three septic tanks, associated leach fields, and the subsurface transformer vault is provided at Attachment F.

3. Figure 3.5-2 shows that only one suspected septic tank, one suspected septic distribution tank, and one suspected pipe were found. The Report should provide a possible explanation(s) for why the suspected three septic tanks and leach fields and one underground transformer vault weren't located.

Regarding the NJDEP's request for a possible explanation for why three suspected septic tanks, their associated leach fields, and one underground transformer vault were not able located at Parcel 28, the Army believes that all septic system and transformer vault components were removed during renovation of the buildings associated with the Eatontown Laboratories, circa 1951.

4. There is no recommendation or proposal for the former storage areas and possible former tank pads.

As detailed in Shaw's July 21, 2008 SIR, analytical results for soil samples collected from the near-surface as well as within six inches of the ground water table confirmed that no release to the environmental occurred at Parcel 28. Former above-ground storage areas and tank pads were removed and/or reconfigured during renovation of the buildings associated with the Eatontown Laboratories, circa 1951.

Parcel 34 - Building 2567

No specific comments. NJDEP hopes to review the Remedial Investigation Report and Remedial Action Work Plan (dated 10-28-05) on Building 2567 in the coming months.

Regarding Site 2567, the Army acknowledges receipt of NJDEP comments dated March 18, 2011. The NJDEP's March 18, 2011 comments do not require a response from the Army.

Parcel 38 - Former Outdoor Pistol Range (1940-1955)

1. The NFA proposal is not acceptable. Since the site may have been re-worked, the surface soil sampling results are not a reliable indicator of potential ground water contamination, and a site investigation for ground water must be performed in accordance with 7:26E-3.7. Ground water samples should be analyzed for lead.

The Army plans to conduct a temporary well point investigation at Parcel 38, with collection and analysis of ground water samples for lead. The Army will submit the results of this ground water investigation in a future letter report to the NJDEP.

Parcel 39 - Building 1150 (Vail Hall)

1. The report states that no metal contaminants were detected in soil above the NJDEP NRDCSCC. The recommendation of NFA for soil is acceptable, however, soil contaminants must be compared to and delineated to the RDCSCC, so that a deed notice can be filed when necessary.

The Army will review all soil data for Parcel 39 and prepare a revised Soil Sample Location Map that depicts RDCSCC delineation boundaries. The Army plans to submit the revised Soil Sample Location Map, along with a proposed deed notice, as deemed necessary, prior to transfer of ownership of Parcel 39.

Parcel 43 - Building 1122 (Do-it-yourself Auto Repair)

No specific comments. NJDEP recently provided comments on reports specific to Building 1122.

The Army acknowledges receipt of NJDEP comments for FTMM-59 (Site 1122) dated August 27, 2008 and March 18, 2011. The NJDEP's March 18, 2011 comments do not require a response from the Army.

Parcel 49 - Former Squier Laboratory Complex

1. NJDEP concurs with the recommendations to conduct additional sampling of surface soils to delineate contaminants above NJDEP criteria.

Analytical results for Aroclor 1260 and BNs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd) pyrene] exceeded NJDEP NRDCSRS in surface soil samples collected directly beneath the asphalt pavement at Parcel 49. The BNs that were detected at concentrations above the NRDCSCC are constituents of asphalt and are commonly detected in soil directly beneath asphalt pavement. Thus, the Army does not plan to collect additional soil samples at Parcel 49 for BN analysis. The Army plans to re-sample the location where Arcolor 1260 was detected at a concentration exceeding NJDEP NRDCSRS and provide the results to the NJDEP in a future letter report.

Arsenic was detected at concentrations exceeding the NJDEP NRDCSRS of 20 mg/kg in four subsurface soil samples collected at Parcel 49 at concentrations ranging from 21.5 mg/kg in souk sample P49-SB5-C to 24.3 mg/kg in soil sample P49-SB2-C. The presence of arsenic in soil is attributed to naturally-occurring background conditions. Thus, the Army does not plan to collect additional soil samples at Parcel 49for metals analysis.

2. The proposal to add benzene and bromodichloromethane to the proposed CEA for the M-18 Landfill should be included in a future CEA proposal.

Since benzene is considered a contaminant of concern (COC) at the M-18 Landfill, the Army plans to include benzene in a proposed CEA.

On December 8, 2007, in a ground water sample collected from temporary well point P49-GW-2, bromodichloromethane was detected at a concentration of 1.35 µg/L, exceeding the NJDEP Ground Water Quality Standard (GWQS) of 1 µg/L. Bromodichloromethane has never been detected in M-18 Landfill monitoring wells, both prior to and subsequent to the December 8, 2007 temporary well point investigation. Thus, bromodichloromethane is not considered a COC and the Army does not plan to include it in a proposed CEA for the M-18 Landfill.

3. The SI Report must include some discussion regarding the source of the VOC contaminants in ground water or the remediation of the contamination, as required by N.J.A.C. 7:26E-3.13(b)4ii(1) and N.J.A.C. 7:26E-3.13(b)4ii(4).

Further discussion of volatile organic compounds detected in ground water monitoring wells at the M-18 Landfill will be discussed in a Remedial Investigation Report (RIR) currently being prepared by the Army. The RIR will detail remedial activities conducted from 2nd Quarter 2001 – 3rd Quarter 2010.

Parcel 50, IRP Sites FTMM-54, FTMM-55 and FTMM-61

No specific comments. The comments previously provided by NJDEP on the M-18 Landfill, Building 296, and Building 290 sites in a letter dated August 14, 2007 need to be addressed.

The Army acknowledges receipt of NJDEP comments for Parcel 50 (IRP Sites FTMM-54, FTMM-55, and FTMM-61) dated August 14, 2007. The August 14, 2007 NJDEP letter will be addressed in Remedial Investigation Report Addendums currently being prepared for IRP Sites FTMM-54 (Site 296), FTMM-55 (Site 290), and FTMM-61 (Site 283).

Parcel 51 - 750 Area, 500 Area, 600 Area, 1100 Area - Former Buildings.

1. See General Comment # 1 above.

See response to the General Comment #1 at Attachment D.

Parcel 52 - Building 699 - Army Exchange Services Gas Station

No specific comments. NJDEP hopes to begin reviewing the available Remedial Action Progress Reports on Building 699 in the coming months.

The Army acknowledges receipt of NJDEP comments for FTMM-53 (Site 699) dated March 13, 2009, February 23, 2011, and March 18, 2011. The NJDEP's March 18, 2011 comments do not require a response from the Army.

Parcel 57 - Former Coal Storage and Railroad Unloading - 800 Area

1. NJDEP concurs with the general recommendation to conduct additional soil and ground water sampling. A remedial investigation (RI) of ground water is required pursuant to NJ.A.C. 7:26E-4.4. A RI work plan for all proposed investigation work shall be submitted for NJDEP approval.

Results of the Shaw SI found that base neutral compounds (BNs) were detected in shallow soil samples at concentrations exceeding NJDEP NRDCSRS. In addition, several metals were detected in ground water samples at concentrations exceeding NJDEP GWQS.

All soil samples where BNs concentrations exceeded NJDEP NRDCSCC were collected from the 0-6 -inch interval below the asphalt pavement sub-base. The four BNs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and benzo[k]fluoranthene) that were detected at concentrations exceeding NJDEP NRDCSRS are constituents of asphalt and are commonly detected in soil directly beneath asphalt pavement. Thus, the Army does not plan to collect additional soil samples at Parcel 57/800 area for BN analysis.

Ten metals (aluminum, arsenic, beryllium, cadmium, cobalt, iron, lead, manganese, nickel, and sodium) were detected in ground water samples collected from two temporary well points at concentrations exceeding NJDEP GWQS. The presence of these metals is attributed to naturally-occurring background conditions. Metals detected in ground water are due to a combination of a natural, dissolved component along with input from sample turbidity. Thus, the Army does not plan to collect additional soil samples at Parcel 57/800 area for metals analysis.

2. Previous NJDEP comments requested that the analytical parameters for soils include PCBs, due to reported historical coal storage and fuel unloading activities. The requested PCB analyses were not performed. Soil sample collection and analysis for PCBs must be included in the RI work plan.

Historical operations at Parcel 57/800 area (coal storage/railroad unloading) did not involve usage or disposal of PCB-containing products. Thus, the Army did not analyze for PCBs in soil samples collected in the Parcel 57/800 area. The Army does not plan to collect additional soil samples for PCB analysis.

<u>Parcel 61 - Building 1075 - Patterson Health Clinic</u>

1. NJDEP concurs with the recommendations to conduct additional soil sampling to evaluate base neutral contamination.

The three BNs [benzo(a)anthracene, benzo(b)fluoranthene, and benzo(a)pyrene) detected in one surface soil sample (P61-SS1) at concentrations exceeding NJDEP NRDCSRS are constituents of asphalt and are commonly detected in soil directly beneath asphalt pavement. Soil sample P61-SS1 was collected from the 18-24-inch interval; asphalt sub-base was observed to be present in the soil sample. Thus, the Army does not plan to collect additional soil samples at Parcel 61/Building 1075 for BN analysis.

2. Previous NJDEP comments requested that the analytical parameters for soils include PCBs, due to reported historical coal storage and fuel unloading activities. The requested PCB analyses were not performed. Soil samples must be re-collected and analyzed for PCBs.

Historical operations at Parcel 61/Building 1075 area (Patterson Health Clinic) did not involve usage or disposal of PCB-containing products. Thus, the Army did not analyze for PCBs in soil samples collected in the Parcel 61/1075 area. The Army does not plan to collect additional soil samples for PCB analysis.

Parcel 69 - Building 900 Former Vehicle Repair/Motor Pool

1. The proposed NFA for soil is not acceptable. Sample analysis at this AOC should have included analysis for PCBs, due to the former waste oil tank, as stated in previous NJDEP comments. Soil samples must be re-collected and analyzed for PCBs.

Historical operations at Building 900 (tactical motor pool/vehicle repair) did not involve usage of PCB-containing products and PCBs are not suspected to have been disposed of in the former waste oil above-ground storage tank (AST) at Building 900. Thus, the Army did not analyze for PCBs in the soil samples that were collected. In addition, there is no evidence that a historical release occurred from the waste oil AST at Building 900. Thus, the Army does not plan to collect additional soil samples for PCB analysis.

2. All sediment samples collected adjacent to Parcel 69 must include PCB analysis.

The nearest surface water body to Parcel 69 is Oceanport Creek, which is 250 feet to the north of Building 900. As part of the Baseline Ecological Evaluation (BEE) report prepared by Shaw Environmental, Inc. and submitted to NJDEP on May 2011, one surface water sample was collected from Oceanport Creek and analyzed for PCBs, plus additional parameters. PCB concentrations were non-detect in the surface water sample. The findings of the BEE indicated that PCBs were not a Contaminant of Potential Ecological Concern (COPEC) at Parcel 69/Building 900. Historical operations at Building 900 did not involve usage of PCB-containing products and PCBs are not suspected to have been disposed of in the former waste oil AST at Building 900. Thus, the Army does not plan to collect additional sediment samples from Oceanport Creek for PCB analysis.

3. NJDEP concurs with the recommendations to further evaluate ground water. Pursuant to N.J.A.C. 7:26E-4.4, a remedial investigation of ground water is required. An investigation work plan must be submitted for NJDEP review and approval.

Based on PCE concentrations detected in excess of the NJDEP GWQS (1.0 µg/L) in ground water samples collected from temporary well point P69GW-1 (1.02 µg/L) during the Shaw SI, the Army plans re-sample ground water at the location of temporary well point P69GW-1. Results of the temporary well point re-sampling will be provided to the NJDEP in a future letter report.

Parcel 70 – Building 551 - Former Photoprocessing

1. NJDEP concurs with the recommendations for no further action (NFA).

The Army acknowledges the NJDEP's approval of NFA for Parcel 70 (Building 551).

Parcel 76 - 200 Area, 300 Area - Former Barracks

1. See General Comment #1 above.

See response to the General Comment #1 at Attachment D.

Parcel 79 - 400 Area Former Barracks

1. See General Comment # 1 above.

See response to the General Comment #1 at Attachment D.

Parcel 80 - Former Buildings 105 and 106 – Photoprocessing

1. The footprint of the former building 105 and 106 should be shown on Figure 3.20-1. On the current Figure, it cannot be determined where the former buildings were located in relation to the Geoprobe borings, so NFA for soil cannot be approved.

A figure depicting the approximate locations of former buildings 105 and 106 in relation to the soil borings is attached at Attachment G.

2. The NJDEP concurs with the recommendation for further evaluation of ground water. Pursuant to N.J.A.C. 7:26E-4.4, a remedial investigation of ground water is required. An RI work plan must be submitted for NJDEP review and approval.

On December 14, 2007, four metals (aluminum, beryllium, iron, and manganese) were detected at concentrations exceeding NJDEP GWQS in ground water samples collected from two temporary well points. The presence of these metals is attributed to naturally-occurring background conditions. Metals detected in ground water are due to a combination of a natural, dissolved component along with input from sample turbidity.

No VOCs or base neutral compounds were detected at concentrations exceeding NJDEP GWQS in the temporary ground water samples.

Based on the absence of COCs in ground water at Parcel 80, NFA for ground water is warranted.

Parcel 83 - Northeast MP

1. Former structures, buildings, and other areas of concern are discussed in the text and in the tables but are not indicated on the Figure 3.21-1. All areas of concern, whether existing or former structures, must be depicted on the site figures.

A figure depicting the approximate locations of former structures at Parcel 83 is provided at Attachment H. This map can also be found in the ECP Phase I – Appendix O.

2. The NFA proposal for ground water is acceptable, based on the ground water sampling results presented in the report.

The Army acknowledges the NJDEP's approval of NFA for ground water for Parcel 83.

Sanitary Sewer System

No comments.
The Army acknowledges the NJDEP's response regarding the sanitary sewer system.
Electrical Substations

1. As discussed in General Comment #6, a Deed Notice and engineering controls are required at the two locations where PCBs were found above the RDCSCC of 0.49 ppm.

In December 2007, Aroclor 1260 concentrations exceeded the RDCSRS of 0.50 mg/kg in soil samples 978SS-2 (0-6") and 2700SS-D2 (0-6") at 0.84 mg/kg and 0.65 mg/kg, respectively. Both soil samples were in compliance with the NJDEP NRDCSRS of 1.0 mg/kg. The Army plans to re-sample these two locations to confirm the detected concentrations. The Army plans to provide the results to the NJDEP in a future letter report.

Should you have any questions or require additional information, please contact Ms. Wanda Green at (732)380-7064 or by email at wanda.s.green2.civ@mail.mil.

Sincerely,

John E. Occhipinti
BRAC Transition Coordinator

cf: Wanda Green, BRAC Environmental Coordinator

ATTACHMENT D

Unregulated Heat Oil Tank Summary for Parcels 14, 28, 51, 76, and 79.

Unregulated Heating Oil Tank (UHOT)
Summary

PARCEL 14
SUMMARY:

- **1 anomaly was investigated.**
- **No UHOTs were found**

PARCEL 28
SUMMARY:

- **1 anomaly was investigated.**
- **1 UHOT (550 gallon) was found and removed.**
- **No contamination was found.**
- **Site was backfilled and clean soil.**

On April 28, 2009, a single wall steel unregulated heating oil tank (UHOT) was closed by removal in accordance with the Directorate of Public Works (DPW) UHOT Management Plan for the U.S. Army Garrison, Fort Monmouth, New Jersey. The UHOT was located in an open field to the south east of Building 2525 at the Charles Wood area of Fort Monmouth. It was identified during a geophysical investigation of suspected underground anomalies conducted as part of the Phase II Environmental Condition of Property (ECP). The UHOT was a 550-gallon No. 2 heating oil tank. The fill port, vent pipe and associated supply/return piping were not present in the excavation. The tank closure and removal were performed by TECOM-Vinnell Services, Inc. (TVS).

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 UHOT was inspected for holes. Holes were not noted in the UHOT and no contaminated soils were observed surrounding the tank.

Post removal samples were all less than NJDEP soil clean up criteria and as such demonstrated that no discharge had occurred.

Following receipt of the soil sampling results, the excavation was backfilled to grade with 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.

Based on the post-remediation soil sampling results, there are no soils with TPH concentrations exceeding the NJDEP health based criterion of 5,100 mg/kg for total organic contaminants in the former location of the UHOT.

No Further Action is proposed in regard to the closure and site assessment of the UHOT at Bldg. 2525.

PARCEL 51

SUMMARY:

- **11 anomalies investigated.**
- **9 UHOTs were found and removed.**
- **2 of the 9 sites were cleaned and backfilled with clean soil.**
- **7 of the 9 tanks were leakers.**
- **The 7 areas were investigated, remediated and backfilled with clean soil**
- **4 new groundwater monitoring wells were installed. A total of 9 new wells will be installed.**

In order to determine the absence/presence of formerly utilized UHOTs and the potential release from the UHOTs, geophysical surveys, soil sampling, and groundwater sampling were conducted throughout the 750 Area (former motor pool), within the northern portion of the 1100 Area, and around the east and south perimeter of the 600 Area.

An electromagnetic (EM) survey was conducted throughout the three identified former buildings areas to determine if UHOTs were present. Follow-up ground penetrating radar (GPR) surveys were conducted at anomalies identified from the EM surveys. The Geophysical investigation was performed by Enviroscan. The entire geophysical report can be found as an appendix to the ECP Phase II.

The EM survey identified a total of 74 targeted EM anomalies in the part of the 750 area and several anomalies in the vicinity of 1123. The area was scanned with the EM-61 because of a large amount of surface metal, and the parking lots which comprise most of the area could only be cordoned off in small portions. The EM-61 towing rig was better suited for the necessary tight turns. Several areas in this parcel were scanned with the TW-6 only due to interference of the GPR signal by nearby buildings and trees and the presence of parked cars during the EM survey.

No anomalies indicative of UHOTs were located within the TW-6 scanning areas. Targets located on the asphalt-covered portions within the 750 Area could not be scanned with the TW-6 due to suspected high metal content fill material; therefore, only GPR was utilized in these areas.

Eleven suspected UHOTs were identified during the geophysical survey. No constituents were identified above applicable NJDEP criteria in surface or subsurface soil. Soil and analytical results suggest that a release has not occurred. In light of the absence of evidence of a release to the environment, NFA for soil and the suspected UHOTs in Parcel 51 is recommended. One COC, 2-methylnaphthalene, was detected in groundwater above the NJDEP GWQS. Further evaluation of 2-methylnaphthalene in groundwater is recommended. The 2-methylnaphthalene was detected in a well but the well is not located in the vicinity of Bldg. 750.

The analytical results for all of post-remediation soil samples collected from the closure excavation at UHOTs No. 1123 B & 1123 C were below the NJDEP soil cleanup standards for total organic contaminants and semi-volatile organic compounds. As part of Fort Monmouth's

soil remediation program, soils are to be excavated to below 1,000 mg/kg. This ensures that the contingency analysis is not performed and eliminates any potential of chasing one of the surrogate fuel oil base/neutral compounds, thus reducing the volume soils excavated and cost of UHOT removals. No post remedial samples collected from the individual UHOT removals were in excess of the contingency value of 1,000 mg/kg necessary for additional base/neutral analysis.

The findings of glauconite sands and clays at the excavations coincide with lithological data at other borings and excavations post wide. A more detailed and in depth discussion of the underlying glauconite will be presented to NJDEP at a later time.

Based upon the analytical data from the post excavation samples for 1123B & 1123C, No Further Action (NFA) is proposed in regard to the closure and remedial investigation of UHOT No.1123B & 1123 C at Building 1123, ECP Parcel 51.

PARCEL 76

SUMMARY:

- **8 anomalies investigated.**
- **7 UHOTs were found and removed.**
- **5 of the 7 tanks removed were leakers.**
- **4 GW monitoring wells were installed.**

The suspected UHOT locations were gridded and flagged out. Based upon the GPS locations, test trenches were excavated. The UHOTs were found between three and five feet below ground surface, with the typical depth of the excavation to approximately nine feet.

UHOTs 538, 541, 542, 540, 544, 543, and 539 were removed in accordance with established protocol, if any discharges were noted, the Army notified NJDEP. In all cases, post excavation samples were collected. If releases were noted they were collected after the removal of visible petroleum impacted soils.

UHOTs 540 and 544 were removed without any observed releases or discharges. A test trench was excavated at 537 in an attempt to locate a potential UHOT as indicated by the geophysical survey. No UHOT was found to be present at this location. Five of the seven UHOTs were found to be leaking into the surrounding soils.

Following receipt of all post-excavation soil sampling analytical results, each excavation was backfilled to grade with a combination of uncontaminated excavated soil, bank run clean sands, and crushed stone. The excavation site was then restored to its original condition with top soil and grass seed.

Groundwater was encountered in the excavations and upon completion of backfilling four monitoring wells were installed to ascertain any impact to groundwater as a result of the discharges from the UHOTs. Two consecutive rounds of groundwater samples were collected in a 30 day period to demonstrate on adverse impact of the groundwater in the vicinity of the leaking UHOTs.

Prior to the installation of the monitoring wells associated with the UHOT excavations, one upgradient and one downgradient well was installed. The initial round of groundwater sampling indicated that three VOCs were detected in the upgradient well (200MW01). Of the three compounds, one was in excess of GWQS. Bromodichloromethane was found to be in excess of the standard. This compound in excess of the GWQS is a trihalomethane. Trihalomethanes are associated with drinking water disinfection. An investigation of drinking water lines in proximity to the upgradient well found one of the drinking water supply lines to be leaking. The DPW ordered the line repaired and in subsequent lab analysis, the trihalomethanes were not-detected (ND) in the monitoring well.

Analytical data from the post excavation samples and groundwater samples demonstrated that there were no compounds in excess of the total organic compound values for soil or the groundwater quality standards.

PARCEL 79

SUMMARY:

- **8 anomalies were investigated.**
- **8 tanks were found and removed.**
- **7 of the 8 tanks were leakers.**
- **The 8 areas were investigated, remediated and backfilled with clean soil.**

The UHOTs were identified during a geophysical survey conducted by Enviroscan of several ECP Parcels where USTs and/or UHOTs may be present.
The re-evaluation of the Environmental Condition of Property (ECP) Parcel 79 Area (400 - Area) was completed by examining the locations of the previously identified USTs. A determination was made from historic aerial photos and documents where four USTs, if present, were most likely to be located. Enviroscan then mobilized a Geonics EM- 61 MK2 metal detector to collect background data, including areas known to contain targets previously labeled “Possible USTs” and to scan the area most likely to contain the undelineated UST.

The areas where the potential unregulated heating oil tanks (UHOTs) were marked out based up the data from the geophysical report. In the 400 – Area (ECP Parcel 79), four potential anomalies were identified. The suspected UHOT locations were gridded and flagged out. Based upon the GPS locations test trenches were excavated. The UHOTs were found between three and five feet below ground surface, with the typical depth of the excavation to approximately nine feet. Based on other available information, three additional UHOTs were identified and removed. One was masked by the electronic noise of subsurface utilities, the other was masked by the footprint of a building, and the third was mischaracterized as a subsurface anomaly.

UHOTs 450, 444, 448, 440, 437, 441, 451 and 445 were removed in accordance with established protocol, if any discharges were noted, it was reported to the US Army and in turn they were called into NJDEP, at the tank removal locations; in all cases post excavation samples were collected. If releases were noted they were collected after the removal of visible petroleum impacted soils.

Following receipt of all post-excavation soil sampling analytical results, each excavation was backfilled to grade with a combination of uncontaminated excavated soil, bank run clean sands,

and crushed stone. The excavation site was then restored to its original condition with top soil and grass seed.

Groundwater was encountered in the excavations and upon completion of backfilling. The DPW is currently in the process of having monitoring wells installed to ascertain the affects that the diesel fuel releases had on the local groundwater conditions.

UHOT 445 contained approximately 75 gallons of material, and when removed from the ground, no breaches, holes or signs of release were observed by the subsurface evaluator.

At Bldg. 449, no UHOT was found; however, olfactory and visual evidence of a release was evident. Samples were collected and the results indicated that TPH were in excess of the NJDEP health based soil criteria. NJDEP was notified of the release.

Following receipt of all post-excavation soil sampling Total Petroleum Hydrocarbon (TPH) results, the excavations were backfilled to grade with a combination of uncontaminated overburden soil, clean bank run sand, and crushed stone. The crushed stone was placed at depth below the water table; sand was placed on top of the stone and non-contaminated overburden was placed over the sand. The excavation sites were then restored to its original condition top soil and grass seed.

Based on the post-excavation soil sampling results, soils present are below the NJDEP health based criteria for total organic compounds and there are no detected semi-volatile organic compounds (SVOCs) that exceed the NJDEP Residential Direct Contact Soil Cleanup Standards.

Decommissioning activities for the UHOTs 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 UHOTs were conducted by a NJDEP licensed US ARMY employee.

Approximately 6,900 gallons of liquid was pumped out of the UHOTs by Lorco Petroleum Services, Inc. of Elizabeth, New Jersey into a tank truck and transported to their NJDEP-approved petroleum recycling and disposal facility.

After the UHOTs were removed from the excavations, they were staged on an impervious surface, labeled and examined for holes. Holes in the tank were observed during the inspection by the Subsurface Evaluator. Soils surrounding the UHOTs were screened both visually and with an OVM for evidence of petroleum contamination. Where soil staining and an odor of petroleum hydrocarbons were observed; it was determined that remedial soil excavation would be conducted prior to post excavation sampling.

U.S. Army Garrison

Fort Monmouth, New Jersey

Unregulated Heating Oil Tank Remedial Investigation and Closure Report

ECP Parcel 51

Main Post – Bldg. 1123

NJDEP UST Registration No. 1123B & 1123C
NJDEP Spill No.: 09-09-1611-16/09-09-21-1213-31

June 2011

UNDERGROUND STORAGE TANK CLOSURE AND REMEDIAL INVESTIGATION REPORT

ECP PARCEL 51

MAIN POST – BLDG. 1123
NJDEP UST REGISTRATION NO.: 1123B &1123C
NJDEP SPILL NO.: 09-09-1611-16/09-09-1213-13

JUNE 2011

PREPARED FOR:

U.S. ARMY GARRISON, FORT MONMOUTH, NJ

DIRECTORATE OF PUBLIC WORKS
BUILDING 173
FORT MONMOUTH, NJ 07703

PREPARED BY:

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

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

Parcel 51 is located in the central portion of the Main Post and encompasses the 500 Area, 600 Area, 750 Area, and 1100 Area former buildings. Plan No. 506, "Gas and Fuel Storage Tanks Distribution System" dated January 22, 1956, was reviewed for the Main Post as part of the Phase I Environmental Condition of Property (ECP). The plan depicts numerous fuel oil UHOTs that existed within Parcel 51 in 1956 in association with the former buildings.

Numerous UHOTs associated with former and current buildings within the 500, 600, and 1100 Area have been removed under the FTMM UST program and are summarized within the FTMM Phase I ECP Report. A review of documented UST removal locations versus the location of former buildings within ECP Parcel 51 was conducted.

Based on this review, it was determined that no UHOT removals have been documented at the locations of numerous former buildings within Parcel 51 throughout the 750 Area (current motor pool), within the northern portion of the 1100 Area, and around the east and south perimeter of the 600 Area. At the time of the generation of the FTMM Phase II ECP Report, a soil investigation and remedial action was recently conducted in portions of the 400, 700, and 800 Bldg areas. The only portion of Parcel 51 that was included within this investigation was the southwestern corner of the parcel associated with Bldgs 787, 788, and 789.

In order to determine the absence/presence of formerly utilized UHOTs and the potential release from the UHOTs, geophysical surveys, soil sampling, and groundwater sampling were conducted throughout the 750 Area (current motor pool), within the northern portion of the 1100 Area, and around the east and south perimeter of the 600 Area.

An electromagnetic (EM) survey was conducted throughout the three identified former buildings areas to determine if UHOTs were present. Follow-up ground penetrating radar (GPR) surveys were conducted at anomalies identified from the EM surveys. The Geophysical investigation was performed by Enviroscan. The entire geophysical report can be found as an appendix to the ECP Phase II.

The EM survey identified a total of 74 targeted EM anomalies in the part of the 750 area and several anomalies in the vicinity of 1123. The area was scanned with the EM-61 because of a large amount of surface metal, and the parking lots which comprise most of the area could only be cordoned off in small portions. The EM-61 towing rig was better suited for the necessary tight turns. Several areas in this parcel were scanned with the TW-6 only due to interference of the GPR signal by nearby buildings and trees and the presence of parked cars during the EM survey.

No anomalies indicative of UHOTs were located within the TW-6 scanning areas. Targets located on the asphalt-covered portions within the 750 Area could not be scanned with the TW-6 due to suspected high metal content fill material; therefore, only GPR was utilized in these areas.

Geoprobe® soil samples were collected in October and November 2007, and groundwater samples were collected in November 2007 in Parcel 51 in order to investigate potential releases from historic USTs associated with the former 600, 750, and 1100 Area buildings. A total of 122 surface soils and 136 subsurface soil (including 12 duplicate samples) were collected from 122 distinct Geoprobe® borings. Soil boring locations were conducted on 100-ft centers. Surface soil samples for non-Volatile Organic (VOC) analysis were collected from the 0- to 6-inch interval bgs. For borings located in paved areas, non-VOC surface soil samples were collected from the 0- to 6- inch interval directly below the pavement sub-base.

Surface soil samples collected for VOC analysis were collected from the 18- to 24-inch bgs interval. Subsurface soil samples were collected from the 6-inch interval directly above the water table from each boring. Due to high water table conditions encountered at three boring locations, subsurface soil samples were collected from the 18- to 24-inch bgs interval. No additional VOC sample was collected as the sample interval coincided with the 18- to 24-inch surface soil VOC sampling interval.

Field screening of the soil boring cores was conducted using a PID and FID meter. Two additional soil samples were collected based on elevated results from field screening tests. A total of 26 groundwater samples (including four duplicate samples) were collected from 22 distinct temporary wells. Temporary wells were installed along the downgradient boundaries of the soil boring grids and were constructed of PVC with a minimum of 5 ft of factory-slotted screen (0.01mm).

Surface and subsurface soil samples were analyzed for Total Petroleum Hydrocarbons (TPHC). Corresponding surface and subsurface soil samples were collected for contingent volatile organic compound (VOC) +10 analyses. Groundwater samples were analyzed for VOC+10 and Base/Neutral+15 (B/N+15).

In addition to the subsurface soil samples collected from the interval directly above the water table, two supplementary subsurface soil samples were collected for TPHC and contingent VO analysis based on elevated field screening measurements. TPHC was detected in 41 of the 122 surface soil samples and in 18 of the 137 subsurface soil samples. A total of six subsurface soil samples contained TPHC at concentrations greater than 1,000 mg/kg, and VOC analysis was conducted. No VOCs or TPHC were detected in soil above the NJDEP Non-Residential Direct Contact Soil Clean-up Criteria (NRDCSCC).

A total of 11 VOCs were detected at concentrations below NJDEP Groundwater Quality Standard (GWQS) in groundwater samples collected from temporary wells at Parcel 51. A total of eight B/Ns were detected in Parcel 51 groundwater samples.

Bis([2-ethylhexyl]phthalate) was detected at a concentration exceeding the NJDEP GWQC of 3.0 µg/L in three groundwater samples. Bis([2-ethylhexyl]phthalate) is present in a wide variety of plastic products, is commonly detected in field and laboratory QC samples, and was detected in the field blank associated with the Parcel 51 groundwater samples. Therefore, it is not considered a COC in groundwater at Parcel 51.

Eleven suspected UHOTs were identified during the geophysical survey. No constituents were identified above applicable NJDEP criteria in surface or subsurface soil. Soil and analytical results suggest that a release has not occurred. In light of the absence of evidence of a release to the environment, NFA for soil and the suspected UHOTs in Parcel 51 is recommended. One COC, 2-methylnaphthalene, was detected in groundwater above the NJDEP GWQS. Further evaluation of 2-methylnaphthalene in groundwater is recommended. The 2-methylnaphthalene was detected in a well but the well is not located in the vicinity of Bldg. 750 and as such will not be addressed in this report.

In June of 2009, Fort Monmouth's Base Operations Contractor, TECOM-Vinnell Services (TVS), using the information developed in the Environmental Condition of Property (ECP) Phase II, began to investigate the area just to the north of Building 750 (motor pool) for the presence of potential unregulated heating oil tanks (UHOTs) as indicated by the geophysical survey conducted earlier by Enviroscan (The geophysical subcontractor responsible for the Geophysical findings in the EPC Phase II). The UHOTs located at Bldg. 750 are addressed under separate cover.

The areas where the potential UHOTs had been were marked out and based up the data from the geophysical report as series of test trenches were excavated in an attempt to locate the buried UHOTs. The suspected UHOT locations were gridded out and based upon the GPS locations test trenches were excavated.

Tanks 1123B &1123C were found in the locations identified by the geophysical survey and removed in accordance with established protocol, discharges were noted, reported to the US Army and in turn they were called into NJDEP. In all cases post excavation samples were collected after the removal of visibly petroleum impacted soils.

Following receipt of all post-excavation soil sampling analytical results, each excavation was backfilled to grade with a combination of uncontaminated excavated soil and/or crushed stone. The excavation site was then restored to its original condition with four inches of top soil and grass seed.

Ground water was not encountered in either excavation and no impact to groundwater was anticipated due to the high content of glauconitic clay.

Analytical data from the post excavation samples demonstrated that there were no compounds in excess of the total organic compound values for soil quality standards.

1.0 Underground Storage Tank Decommissioning Activities

1.1 Overview

In June of 2009, Fort Monmouth's Base Operations Contractor, TECOM-Vinnell Services (TVS), using the information developed in the Environmental Condition of Property (ECP) Phase II, began to investigate the area just to the north of Building 750 (motor pool) for the presence of potential unregulated heating oil tanks (UHOTs) as indicated by the geophysical survey conducted earlier by Enviroscan (The geophysical subcontractor responsible for the Geophysical findings in the EPC Phase II).

The areas where the potential UHOTs had been were marked out and based up the data from the geophysical report as series of test trenches were excavated in an attempt to locate the buried UHOTs. At Building 1123, two potential anomalies were identified. The suspected UHOT locations were gridded out and based upon the GPS locations test trenches were excavated.

On September 16-22, 2009, two-single wall steel unregulated heating oil tanks (UHOTs) were located and subsequently 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 UHOTs were located in the grass medium directly behind Building 1123 as indicated by the geophysical investigation.

UHOT No. 1123B was a 1,000-gallon No. 2 heating oil tank. 1123B was the first of the two (2) UHOTs to be found and subsequently removed in this area. The fill port, vent pipe and associated supply/return piping were not present in the excavation. Both tanks were deep in the ground with the tops of the tanks found at five (5) below ground surface.

The site assessment was performed by TECOM-Vinnell Services (TVS) personnel in accordance with the New Jersey Department of Environmental Protection (NJDEP) *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual.* Soils surrounding the tanks were screened visually and with a calibrated hand held Mini-Rae® Photo-Ionization air monitoring instrument for evidence of contamination. Following removal, the UST was inspected for holes. Holes were noted in the UHOT and potentially contaminated soils were observed surrounding the tank.

All sampling was performed by a NJDEP Certified Subsurface Evaluator according to the methods described in the NJDEP *Field Sampling Procedures Manual* (August 2005 edition- updated 15 February 2008). Sampling frequency and parameters analyzed complied with the NJDEP document *Technical*

Requirements for Site Remediation, 7:26E-3.9 (December 17, 2007 and revisions dated June 2, 2008) which was the applicable regulation at the date of the closure.

UHOTs 1123B & 1123C were removed in accordance with established protocol, discharges were noted at the following tank removal locations; upon the investigation of the UHOT (1123B), several holes were noted and approximately 12 cubic yards of petroleum impacted soils were removed from the excavation. Following the removal of the second UHOT (1123C) several holes were noted in the exterior and approximately 25 cubic yards of petroleum impacted soils were removed to the soil staging area at Bldg. 108.

Groundwater was not observed in either of the excavations. No groundwater sample was warranted or required.

Following receipt of all post-excavation soil sampling Total Petroleum Hydrocarbon (TPH) results, the excavations were backfilled to grade with a combination of uncontaminated excavated soil and crushed stone. The excavation sites were then restored to its original condition with four inches of asphalt and/or top soil and grass seed.

Based on the post-excavation soil sampling results, soils present are below the NJDEP health based criteria for total organic compounds and as such there are no detected semi-volatile organic compounds (SVOCs) exceeding the NJDEP Residential Direct Contact Soil Cleanup Standards.

Decommissioning activities for the UHOTs 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 UHOTs were conducted by a NJDEP licensed US ARMY employee.

This UST Closure and Remedial Investigation Report (RIR) has been prepared by TVS to assist the US Army Garrison DPW in complying with the NJDEP - Underground Storage Tanks (USTs) 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 provides a summary of the UHOT decommissioning activities. Section 2 describes the site 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 1123 is located in the central portion of the Main Post area of Fort Monmouth, as shown on Figure 1. The UHOTs were located to the South of Building 1123. The areas to the immediate north of the structure are two landfill areas which are not addressed or are a part of this document. The physical location of Building 1123 and its surrounding environs can be found on Figure 2.

The fill ports and appurtenant piping were not encountered in the excavations during the tank removal phase. The piping was removed prior to the excavation of the tanks during the demolition of the previous structures. A site map is provided as Figure 2.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the Bldg. 1123. 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.

Fort Monmouth lies within the Outer Coastal Plain subprovince of the New Jersey section of the Atlantic Coastal Plain physiographic province, which generally consists of a seaward-dipping wedge of unconsolidated sediments including interbedded clay, silt, sand, and gravel. To the northwest is the boundary between the Outer and Inner Coastal Plains, marked by a line of hills extending southwest, from the Atlantic Highlands overlooking Sandy Hook Bay, to a point southeast of Freehold, New Jersey, and then across the state to the Delaware Bay. These formations of clay, silt, sand, and gravel formations were deposited on Precambrian and lower Paleozoic rocks and typically strike northeast-southwest, with a dip that ranges from 10 – 60 feet per mile. Coastal Plain sediments date from the Cretaceous through the Quaternary Periods and are predominantly derived from deltaic, shallow marine, and continental shelf environments.

The property is located within the outer fringe of the Atlantic Coastal Plain Physiographic Province, of New Jersey, approximately 20 miles south of Raritan Bay. This province is characterized by a wedge-shaped mass of unconsolidated to semi-consolidated marine, marginal marine and non-marine deposits of clay, silt, sand, and gravel. These sediments range in age from Cretaceous to Holocene and lie unconformably on pre-Cretaceous bedrock consisting of metamorphic schists and gneiss, with local occurrences of basalts, sandstone, and shale (Zapecza, 1984). These sediments trend northeast-southwest and dip southeast toward the Atlantic Ocean. These sediments thicken southeastward from the Piedmont-Coastal Plain Province boundary to approximately 4,500 feet near Atlantic City, New Jersey. During the Cretaceous and Tertiary time period, sediments were deposited alternately in flood plains and in marine environments during sea transgression and sea regression periods. The formations record several major transgressive/regressive cycles and contain units that 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).

Regressive upward coarsening deposits, such as Englishtown and Kirkwood Formations and the Cohansey Sand are usually aquifers, while transgressive deposits, such as the Merchantville, Marshalltown, and Navesink Formations, act as confining units. The thicknesses of these units vary greatly, ranging from several feet to several hundred feet, and thicken to the southeast.

The eastern half of the Main Post is underlain by the Red Bank Formation, ranging in thickness from 20-30 feet, while the western half is underlain by the Homerstown Formation, ranging in thickness from 20-30 feet. Sand and gravel deposited in recent geologic times lie above these formations. Interbedded sequences of clay serve as semi-confining units for groundwater. The mineralogy ranges from quartz to glauconite.

Udorthents-Urban land is the primary classification of soils on Fort Monmouth, which have been modified by excavating or filling. Soils at the Main Post include Freehold sandy loam, Downer sandy loam, and Kresson loam. Freehold and Downer are somewhat well drained, while Kresson is a poorly drained soil. The Charles Wood Area has sandy loams of the Freehold, Shrewsbury, and Holmdel types. Shrewsbury is a hydric soil; Kresson and Holmdel are hydric due to inclusions of Shrewsbury. Downer is not generally hydric, but can be.

Local Geology

Fort Monmouth lies in the Atlantic and Eastern Gulf Coastal Plain groundwater region and is underlain by underformed, unconsolidated to semi-consolidated sedimentary deposits. The chemistry of the water near the surface is variable with generally low dissolved solids and high iron concentrations. In areas underlain by glauconitic sediments, the water chemistry is dominated by calcium, magnesium, and iron (*e.g.* Red Bank and Tinton sands). The sediments in the vicinity of Fort Monmouth were deposited in fluvial-deltaic to nearshore environments. The water table is generally shallow (ranging in depth from 3 – 12') and in certain areas fluctuates with the tidal action in Parkers and Oceanport creeks at the Main Post.

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. 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. The Hornerstown Formation acts as an upper boundary of the Red Bank aquifer, but it might yield enough water within its outcrop to supply individual household needs. The Red Bank outcrops along the northern edges of the Installation, and contains two members, an upper sand member and a lower clayey sand member. The upper sand member functions as the aquifer and is probably present on some of the surface of the Main Post. The Hornerstown and Red Bank formations overlay the larger Wenonah-Mount Laurel aquifer.

The area of Bldg. 1123 is located approximately 400 feet southeast of Parkers Creek. Based on the Main Post groundwater model, groundwater in this section of the Main Post is flowing north toward Parkers Creek.

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-ionization detector: Thermo Instruments Organic Vapor Monitor (OVM) – Model #580-B The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA. All work areas were properly vented to insure that there were no contaminants present in the breathing zone above applicable permissible exposure limits (PEL's).

1.4 REMOVAL OF UNREGULATED HEATING OIL TANK

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 OVM for evidence of contamination. Any 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 Unregulated Heating Oil Tank Excavation

During decommissioning activities, surficial soil was carefully removed to expose the UHOTs. The tanks were emptied of all liquids prior to removal from the ground. Approximately 800 gallons of liquid was pumped out of the UHOTs 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. See the bill of lading in Section C of this document.

After the UHOTs were removed from the excavations, they were staged on an impervious surface, labeled and examined for holes. Holes in the tank were observed during the inspection by the Subsurface Evaluator. Soils surrounding the UHOTs were screened visually and with an OVM for evidence of contamination. Soil staining and an odor of petroleum hydrocarbons were observed and approximately 40 yards of petroleum impacted soils were removed from the excavation. Post-excavation samples were collected after the tank inspection and the inspection of the excavation.

1.5 UNREGULATED HEATING OIL TANK DECOMMISSIONING AND DISPOSAL

Subsequent to disposal, the UHOTs were purged with air to remove residual vapors prior to cutting. A 4-foot by 3-foot access hole was made in each UHOT 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 Fort 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, Auto Wreckers, Red Bank, NJ for disposal in compliance with all applicable regulations and laws. Refer to Appendix C for UHOT disposal certificate.

Any liquid content of the individual UHOTs discovered was pumped out and transported to the LORCO Petroleum Services facility in Elizabeth, NJ. Copies of the bills of lading can be found in Appendix B of this document.

The Subsurface Evaluator labeled the UHOT 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

Overburden soils were used as fill materials. Clean bank run sands and/or crushed stone were used as fill material when additional soils were required at each of the individual UHOT excavations.

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 (FTMEL), 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 (2005). Sampling frequency and parameters analyzed complied with the NJDEP document *Technical Requirements for Site Remediation, 7:26E-3.9* (December 17, 2007 and revisions dated June 2, 2008) 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 (FTETL)
  Contact Person: Dean Tardiff
  Phone Number: (732) 532-4359
  NJDEP Laboratory Certification No.: 13461

- Hazardous Waste Hauler: Lorco Petroleum Services, Inc., Elizabeth, NJ
  Contact Person: Dan MacKay
  Phone Number: (908) 820-8800
  Manifest No.: NHZ-33887/33888
  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 the individual UHOTs until no evidence of contamination remained.

2.3 SOIL SAMPLING

The post-excavation soil sample results were compared to the NJDEP health based criterion of 4,800 mg/kg for total organic contaminants (December 17, 2007 and revisions dated June 2, 2008). Each excavation was over excavated to ensure TPH concentrations remaining would be below the 1,000 mg/kg contingency analytical threshold. A summary of the analytical results and comparison to the NJDEP soil cleanup standards are provided on Table 1 and Table 2. The soil analytical data packages, including associated quality control data, are provided in Appendix E.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

Post excavation samples were collected from the individual UIHOT excavations (1123B &1123C) to evaluate soil conditions following removal of the UHOTs.

All samples were analyzed for TPH. The post-remediation soil sample results were compared to the NJDEP health based criterion of 5,100 mg/kg for total organic contaminants (December 17, 2007 and revisions dated June 2, 2008). 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 D.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all of post-remediation soil samples collected from the closure excavation at UHOTs No. 1123 B & 1123 C were below the NJDEP soil cleanup standards for total organic contaminants and semi-volatile organic compounds. As part of Fort Monmouth's soil remediation program, soils are to be excavated to below 1,000 mg/kg. This ensures that the contingency analysis is not performed and eliminates any potential of chasing one of the surrogate fuel oil base/neutral compounds, thus reducing the volume soils excavated and cost of UHOT removals. No post remedial samples collected from the individual UHOT removals were in excess of the contingency value of 1,000 mg/kg necessary for additional base/neutral analysis.

The findings of glauconite sands and clays at the excavations coincide with lithological data at other borings and excavations post wide. A more detailed and in depth discussion of the underlying glauconite will be presented to NJDEP at a later time.

Based upon the analytical data from the post excavation samples for 1123B & 1123C, No Further Action (NFA) is proposed in regard to the closure and remedial investigation of UHOT No.1123B & 1123 C at Building 1123, ECP Parcel 51.

TABLE 1

SUMMARY OF LABORATORY ANALYSIS
FT. MONMOUTH, BUILDING 1123B & 1123C
September 2009

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE DATE	SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD
1123B PX1 Bottom	9038301	9/16/09	Soil	TPH	OQA-QAM-25
1123B PX2 South Wall	9038302	9/16/09	Soil	TPH	OQA-QAM-25
1123B PX3 East Wall	9038303	9/16/09	Soil	TPH	OQA-QAM-25
1123B PX4 West Wall	9038304	9/16/09	Soil	TPH	OQA-QAM-25
11123B PX5 North Wall	9038305	9/16/09	Soil	TPH	OQA-QAM-25
1123C PX1 North Wall	9038801	9/18/09	Soil	TPH	OQA-QAM-25
1123C PX2 South Wall	9038802	9/18/09	Soil	TPH	OQA-QAM-25
1123C PX3 East Wall	9038803	9/18/09	Soil	TPH	OQA-QAM-25
1123C PX4 West Wall	9038804	9/18/09	Soil	TPH	OQA-QAM-25
1123C PX5 Bottom	9038805	9/18/09	Soils	TPH	OQA-QAM-25
1123B PX6 East Wall	9038901	9/18/09	Soils	TPH	OQA-QAM-25
1123C PX 6 East Wall	9039501	9/22/09	Soils	TPH	OQA-QAM-25
1123C PX 7 West Wall	9039502	9/22/09	Soils	TPH	OQA-QAM-25

ABBREVIATIONS:

TPH = Total Petroleum Hydrocarbons, Method NJDEP OQA-QAM-25

TABLE 2
SUMMARY OF LABORATORY ANALYTICAL RESULTS
FT. MONMOUTH, BUILDING 1123B & 1123C, September 2009
TOTAL PETROLEUM HYDROCARBONS (results in mg/kg)

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE LOCATION	SAMPLE DEPTH (in feet)	MATRIX	TPH RESULTS
1123B PX1	9038301	Bottom	10-10.5'	Soil	912.49
1123B PX2	9038302	South Wall	8.5-90.'	Soil	ND
1123B PX3	9038303	East Wall	8.5-9.0'	Soil	9832.44
1123B PX4	9038304	West Wall	8.5-9.0'	Soil	430.84
1123B PX5	9038305	North Wall	8.5-9.0'	Soil	628.40
1123C PX1	9038801	North Wall	8.0-8.5'	Soil	ND
1123C PX2	9038802	South Wall	8.0-8.5'	Soil	322.72
1123C PX3	9038803	East Wall	8.0-8.5'	Soil	1526.93
1123C PX4	9038804	West Wall	8.0-8.5'	Soil	1532.25
1123C PX5	9038805	Bottom	9.0-9.5'	Soil	ND
1123B PX6	9038806	East Wall	8.5-9.0'	Soil	718.93
1123C PX6	9039501	East Wall	8.5-9.0	Soil	ND
1123C PX7	9039502	West Wall	8.5-9.0	Soil	ND

ABBREVIATIONS:
mg/kg = milligrams per kilogram = parts per million
ND = Compound Not Detected

APPENDIX A

CERTIFICATIONS

APPENDIX B

WASTE MANIFEST

APPENDIX C

UST DISPOSAL CERTIFICATE

APPENDIX D

PHOTO - DOCUMENTATION

APPENDIX E

SOIL ANALYTICAL DATA PACKAGES

FIGURES

Bibliography

Roy F. Weston May 1994, *Underground Storage Tank System Piping Closure and Site Investigation Report Building 750*

NJDEP, *Findings and Recommendations for Remediation of Historic Pesticide Contamination, Historic Pesticide Contamination Task Force, Final Report March 1999*

Environment Canada, Air Pollution Prevention Directorate, Oil, Gas, and Energy Branch, May 2002, *Research Strategies Relevant to Heating Oil Specifications: Fuel Oil Sulfur Aspects Literature Review*

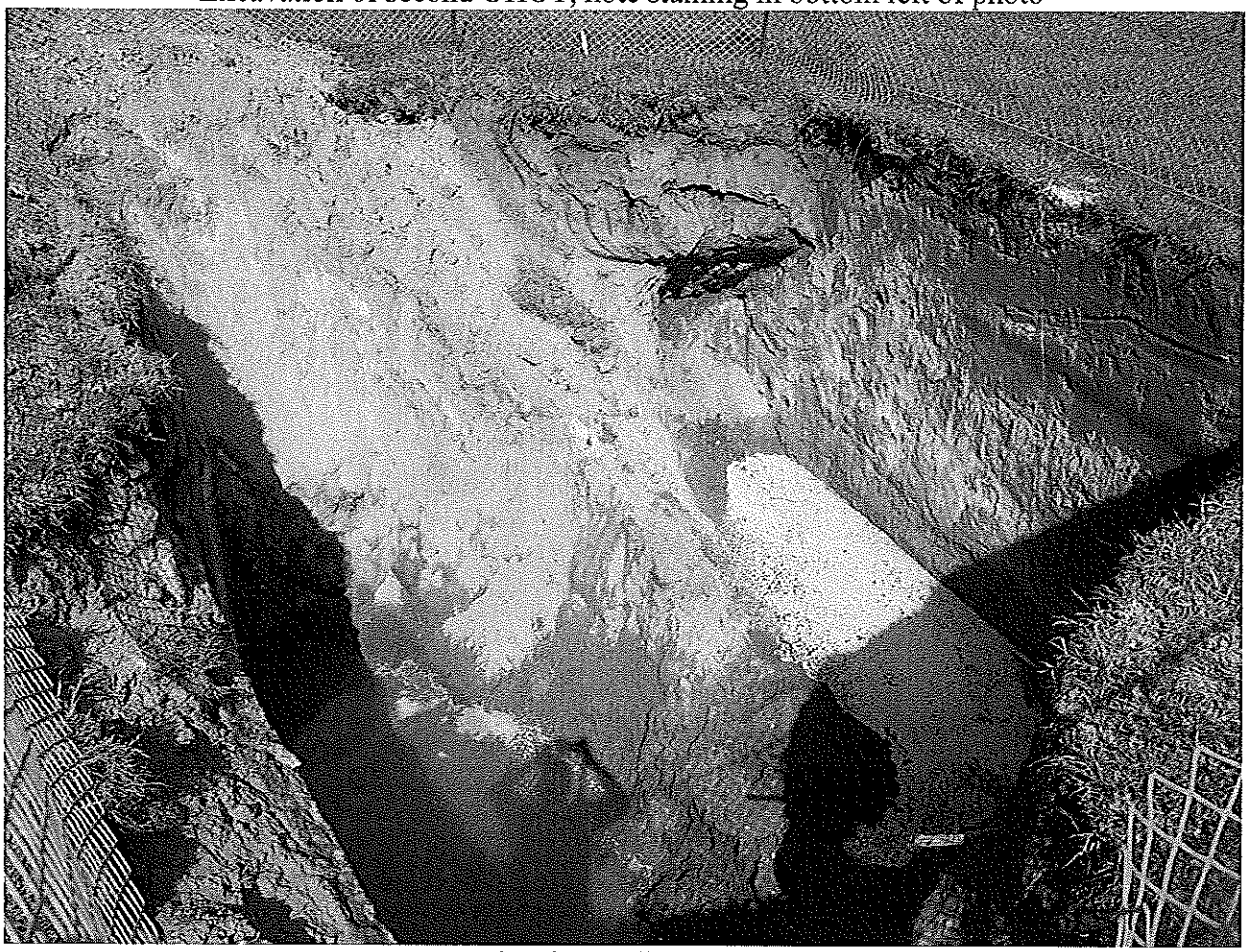
UHOT at Bldg. 1123

UHOT removed from excavation

Historical discharge visible

Second UHOT removed from Bldg. 1123

Excavation of second UHOT, note staining in bottom left of photo



Completed remediation at 1123

United States Army
Fort Monmouth, New Jersey

Closure and Site Investigation Report for Underground Storage Tanks In the 600 Area

Main Post-West Area

February 2002

CLOSURE AND SITE INVESTIGATION REPORT FOR UNDERGROUND STORAGE TANKS IN THE 600 AREA

USTs IN THE 600 AREA:
600A, 600B, 611, 615,618, 619, 621, 634 638, 639-2, 640, 641, 644, 664, 666, AND 686

MAIN POST-WEST AREA

FEBRUARY 2002

PREPARED FOR:

UNITED STATES ARMY, FORT MONMOUTH, NEW JERSEY
DIRECTORATE OF PUBLIC WORKS
BUILDING 167
FORT MONMOUTH, NJ 07703

PREPARED BY:

VERSAR, INC.
2558 PEARL BUCK ROAD, SUITE 1
BRISTOL, PA 19007-6894

TABLE OF CONTENTS

LIST OF TABLES

FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Versar, Inc. (Versar) was contracted by the United States (U.S.) Army Fort Monmouth (Fort Monmouth), Directorate of Public Works (DPW), Fort Monmouth, New Jersey to prepare UST closure reports at sixty (60) sites at Fort Monmouth, New Jersey. Sixteen (16) of the sites, 600A, 600B, 611, 615, 618, 619, 621, 634, 638, 639-2, 640, 641, 644, 664, 666, and 686, are in the vicinity of Building 600 on the Main Post West Area. These sites cover a relatively small area surrounding Building 600, which has a high level of security. This report summarizes the combined investigation results for these 16 sites. This investigation was conducted in accordance with the Workplan for the 600 Area, which was verbally approved by the NJDEP during a meeting at Fort Monmouth in August 2001.

1.1 Background

Fort Monmouth is located in the central-eastern portion of New Jersey in Monmouth County, approximately 45 miles south of New York City and 70 miles northeast of Philadelphia. In addition to the Main Post, the installation includes two subposts, the Charles Wood Area and the Evans Area. The Main Post (Figure 1) encompasses approximately 630 acres and is generally bounded by State Highway 35, Parkers Creek, Lafetra Brook, the New Jersey Transit Railroad, and a residential area to the south. The post was established during WW I, in 1918, as an Army Signal Corps training center. The Main Post currently provides supporting administrative, training, and housing functions, as well as many of the community facilities for Fort Monmouth. The primary mission of Fort Monmouth is to provide command, administrative, and logistical support for Headquarters, U.S. Army Communications and Electronics Command (CECOM). CECOM is a major subordinate command of the U.S. Army Materiel Command (AMC) and is the host tenant at Fort Monmouth. The sites in the vicinity of Building 600 encompass an area of approximately 20 acres. Figure 2 shows the layout of the area and the location of the individual sites in relation to each other.

1.2 Objective

The objective of this report is to summarize the work previously performed in the 600 Area and present the results of the new investigations. The purpose of the investigations was to close the remaining 16 UST sites in the 600 Area.

This report includes:

- A description of soil and groundwater sampling activities conducted during the closure investigation;
- The presentation and summary of the results of previously and newly collected soil samples collected from UST sites in the 600 Area; and

- The presentation and summary of the results of previously and newly collected groundwater samples collected from existing monitoring wells and new geoprobe locations in the 600 Area.

2.0 SITE SETTING

2.1 Site Description

Figure 2 illustrates the 600 Area and the UST sites within the area. Each of the 16 UST sites is associated with a former building in the area. The approximate location of each of the buildings and associated USTs was determined from historical photographs and figures. The USTs each contained No. 2 Fuel Oil for heating the former buildings. The tanks were removed throughout 1994.

The 600 Area is bordered by Saltzman Avenue to the south, Sherrill Avenue to the north, Messenger Avenue to the west, and Irwin Avenue to the east. The area covers approximately 20 acres. The site contains a large military office building with a high level of security that is surrounded by well-groomed landscaping and fencing on three sides. Beyond the immediate Building 600 grounds are paved parking lots, several small support buildings, and secondary roadways. Topography at the site is relatively flat, but is centered over a topographic high, sloping gradually to the northwest.

2.2 Regional Geology

As reported in the RAWA (GES, 1999), Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain Physiographic province. The site is 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, and gravel. The mineralogy ranges from quartz to glauconite. The New Jersey Coastal Plain formations record several major transgressive/regressive cycles and contain units, which are generally thicker to the southeast and reflect a deeper water environment. Over twenty (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, Marshaltown, and Navesink Formations). The individual thickness for these units varies greatly (i.e., from several ft. to several hundred ft.). The lithologies observed in borings installed within the Main Post area have reportedly consisted of fine-to-medium grained sands, with occasional lenses or lamentations of gravel silt and/or clay.

Based on past drilling, the depth to bedrock is greater than twenty (20) ft. A generalized stratigraphic sequence at the site (progressing upward) includes a lower (Sandy Hook) and upper (Shrewsbury) member of the Red Bank sand. The lower member is a dark gray to black, medium-to-fine grained sand with abundant clay, mica, and glauconite. The

upper is a yellowish-gray to reddish brown clayey, medium-to-coarse grained sand that contains abundant rock fragments, minor mica, and glauconite.

2.3 Hydrogeology

Groundwater has been encountered at depths between two (2) and fourteen (14) ft. below ground surface (bgs) in the 600 area. During soil sampling in the area, unsaturated soils were reportedly encountered up to twelve (12) ft. bgs. Seasonal water table fluctuations are expected to be limited to two (2) to three (3) ft. Fluctuations may also be due to tidal influence (based on proximity to the Atlantic Ocean, rivers, tributaries), the nature of fill material, presence of clay and silt lenses in the overburden, and local recharge areas (streams and lakes). The interbedded sequences of sand and clay transmit water under both confined and unconfined conditions. The intermittent clay strata serve as semi-confining beds, where present. The 600 area is located on a topographic mound, generally causing the groundwater to flow away from Building 600 in all directions.

3.0 SITE CHARACTERIZATION

Soil samples were collected at several of the former UST sites when the tanks were originally removed. Illustrations of each site and analytical data are presented in Figures 4-1 through 4-16. The soil sampling data is also summarized in Table 3-1. Table 3-3 summarizes groundwater sample data collected from wells and by Geoprobe sampling in the area.

3.1 Previous Soil Sampling Summary

Soil samples were collected and analyzed for total petroleum hydrocarbons (TPH) at six of the UST sites in the 600 Area, 600B, 611, 618, 619, 621, and 686. Results of the soil sample analyses are summarized in Table 3-1. This section describes the results in detail.

Six soil samples were collected from the excavation walls at 600B on November 10, 1993. Concentrations of TPH in the six samples ranged from 1,020 mg/kg to 13,000 mg/kg. Two of the locations, A and F, exceeded the Residential Direct Contact Soil Cleanup Criteria (RDCSCC) of 10,000 mg/kg for total organic compounds. On November 15, 1993, soil samples were collected at locations A and F and were analyzed for VOCs. Sample A contained acetone, ethylbenzene, and xylenes. Sample F contained methylene chloride and xylenes. None of the VOCs were detected at concentrations that exceed the RDCSCC.

Two post-excavation samples collected during the August 18, 1994 removal of the UST at Building 611 contained 27.6 and 2,450 mg/kg TPH. Geoprobe samples collected on September 6, 1994 contained up to 2,831 mg/kg TPH. Additional excavation was conducted on December 16, 1994. Samples collected following the excavation activities ranged from no detectable TPH to 57.8 mg/kg TPH. All concentrations were below the guidance concentration.

Soil samples collected on September 6, 1994 from six locations surrounding the former UST excavation at Building 618 contained concentrations of TPH ranging from 1,000 to 5,360 mg/kg. Additional soil removal was conducted on September 22, 1994. Soil samples were collected in six locations correlating to the original six sample locations. Two of soil samples still contained concentrations of TPH above the guidance concentration. On September 27, 1994, following additional soil removal, these two locations were sampled a third time, and one of the locations still had a TPH concentration of 2,920 mg/kg. Additional remediation and sampling was conducted on January 4, 1995 at sample location 618-A. The final post-excavation soil sample contained only 35 mg/kg TPH.

Six soil samples were collected August 25, 1994 from the extent of the UST excavation at former Building 619, and TPH concentrations ranged from 70.6 to 3,060 mg/kg. Additional soil removal was conducted in three areas of the excavation where samples

exceeded the guidance concentration. Results of the second round of soil sampling conducted September 9, 1994 ranged from 45.1 to 543 mg/kg, which is below the 1,000 mg/kg guidance concentration.

Soil samples were collected from the walls of the UST excavation at former building 621 on August 26, 1994. The highest concentration of TPH detected was 174.3 mg/kg. Most of the samples contained non-detectable concentrations of TPH.

On January 18, 1995, six soil samples were collected from the area of the former UST at the former Building 686. The concentrations of TPH detected in these samples ranged from 79.6 to 14,700 mg/kg. Following additional excavation activities on January 27, 1994, soil samples were collected from four locations that exceeded the cleanup criteria. The concentration of TPH was still above cleanup criteria at one location. No additional excavation activities were performed.

3.2 Previous Groundwater Sampling Summary

Six monitoring wells were installed in the vicinity of the 600 area in association with unrelated investigations. Three of the wells, M5-MW15, M5-MW16, and M5-MW25, are located in the northwest corner of the 600 area. Three wells, 699-MW2, 699-MW15, and 616-MW1 are located in the southeast corner of the area. Quarterly samples have been collected from these wells since the time of their installation. Samples were analyzed for volatile and semi-volatile compounds. Because groundwater generally flows away from the center of the 600 area, analytical data collected from these wells located at the edge of the area may be indicative of any impact the former USTs may have had on groundwater quality in the area. The groundwater data is summarized in Table 3-3. This section discusses the data in detail.

Quarterly samples collected from 616-MW1 between April 1997 and December 2001 contained small concentrations of xylenes below NJDEP groundwater quality criteria (GWQC) of 40 ug/L. No other volatile or semi-volatile compounds were detected in this well. Two of the quarterly samples collected from 699-MW15 between November 1995 and December 2001 contained concentrations of methylene chloride below the GWQC of 2 ug/L. Benzene was detected during the June 19, 2001 sample round at a concentrations of 1.33, which exceeds the GWQC. However, benzene was not detected in the two subsequent quarterly sampling rounds. Toluene was also detected in the June 19, 2001 sample at a concentration of 1.82 ug/L, which is below the GWQC.

The first sample collected from 699-MW2 in May 1995 contained several compounds including benzene at a concentration of 3.7 ug/L, which is above the GWQC of 0.2 ug/L. Benzene was detected in only one subsequent sample collected June 19, 2001 and was not detected in the two most recent rounds. Acetone, t-butyl alcohol, methylene chloride, methyl ethyl ketone, toluene, ethyl benzene, and total xylenes were each detected, at low concentrations, during one or more sample rounds. Acetone and methylene chloride are common laboratory contaminants and are not believed to be indicative of site conditions.

Quarterly samples collected from M5-MW25 between April 1999 and September 2001 contained no volatile or semi-volatile compounds except one, chloroform, which was detected during one round at a concentration of 1.47 ug/L, below the GWQC of 6 ug/L. Groundwater collected in September 1999 from M5-MW15 contained tetrachloroethylene at a concentration of 2.15 ug/L, which is greater than the GWQC of 0.4 ug/L. That compound has not been detected in subsequent sample rounds. No other compounds were detected at M5-MW15. Tetrachloroethylene was detected at concentrations ranging from 8.35 ug/L to 639.7 ug/L, each exceeding the GWQC, in samples collected from M5-MW16 between April 1999 and September 2001. No other compounds were detected at M5-MW16.

4.0 SOIL AND GROUNDWATER SAMPLING

Soil samples were collected from each of the 10 former UST excavation areas that either had not yet been investigated, or that required additional investigation. Geoprobe groundwater samples were collected from five locations across the 600 area. The following sections provide the details of the field activities conducted to facilitate closure of all 16 sites in the 600 area.

4.1 Soil Sampling

There were ten UST sites, 600A, 615, 634, 638, 639, 640, 641, 644, 664, and 666, that had not yet been investigated. The historical files for former UST site 600A were unavailable for review. Because the exact location of the former UST is unknown, five soil samples were collected from locations on the north, east, and west sides of the former building 600. The south side of the building has been investigated because it is the location of the former UST 600B. At each of the other nine sites where the former UST location is known, soil samples were collected from the four sides and in the center of each former tank excavation. Soil samples were collected at the depth of the bottom of the former excavation or if the depth is unknown, at the deepest unsaturated depth interval.

Additional sampling was conducted at three of the six sites that were previously investigated. At 600B and 686, previous sample locations contained TPH concentrations that exceed the soil guidance concentration of 1,000 mg/kg. None of the TPH results at 619 exceeded the guidance criteria, however, the two soil samples with the highest concentrations were resampled in order to assess the current conditions at that site. All of the new samples were analyzed for both TPH and VOC.

Prior to soil sampling activities, all sites were marked-out for clearance from underground and overhead utilities. Soil samples were collected using the Geoprobe soil sampling system. All soil samples were screened using a PID in the field and then submitted to the laboratory and analyzed for TPH. Select samples were also analyzed for VOC based on field observations. Soil samples were labeled with the site number followed by consecutive numbers starting with the number 1. Figures labeled 4-1 through 4-16 illustrate the sample locations and sample results at each site.

4.2 Groundwater Sample Collection

Quarterly groundwater monitoring was conducted per usual at the six existing wells in the area, M5-MW15, M5-MW16, M5-MW25, 616-MW1, 699-MW2, and 699-MW15. Groundwater was also collected using the Geoprobe sampling method at five locations strategically located across the 600 Area to complement the existing groundwater quality

data. The Geoprobe groundwater sample locations and existing monitoring well locations are illustrated on Figure 2.

Groundwater samples were submitted for laboratory analysis of VOCs and SVOCs. Geoprobe locations were resampled a minimum of 30 days after the initial round of sampling.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Soil Sampling Results

On November 15, 2001, five soil samples were collected at 600A located at the former Building 600. TPH was only detected in one of the samples, 600A-5, at a concentration of 381.15 mg/kg. The former UST 600B, also located at former Building 600, was investigated at the time of its removal in November 1993. One of the samples, 600B-1, exceeded the cleanup criteria with a TPH concentration of 13,000 mg/kg. The samples collected November 15, 2001 did not exceed the cleanup criteria, but two of the samples did exceed the guidance criteria of 1,000 mg/kg. Therefore, the soil samples were analyzed for VOCs. Like all of the soil samples collected in the 600 Area, the VOC samples collected at 600B only contained methylene chloride, a common laboratory contaminant.

On September 6, 1994, at the time of the UST removal, three samples collected at 611 contained TPH concentrations above the guidance criteria. Additional soil removal was conducted and subsequent samples collected from 611 on December 16, 1994 contained very low levels of TPH ranging from undetected to 57.80 mg/kg.

None of the five samples collected at each of the former buildings 615, 638, 639, 664, and 666 contained detectable concentrations of TPH.

On September 9, 1994, six samples were collected at 618. None of the samples exceeded the cleanup criteria but they all exceeded the guidance criteria of 1,000 mg/kg. The results ranged from 1,000 to 5,360 mg/kg TPH. Additional soil removal was conducted and new post-excavation samples were collected on September 22, 1994. Only two samples from the subsequent round exceeded the guidance criteria, yet further remediation was conducted and subsequent samples 618A and 618D, collected on September 27, 1994 contained 2,920 mg/kg and non detectable TPH, respectively. After additional excavation, soil from sample location 618A was sampled again on January 4, 1995 and contained only 35 mg/kg TPH.

Site 619 was investigated at the time of the UST removal. Two of the soil samples collected on August 25, 1994 contained concentrations of TPH above the guidance criteria. Samples 619B and 619F contained 1,450 and 3,060 mg/kg TPH, respectively. Additional soil removal was conducted and four of the sample locations were resampled on September 9, 1994. The results of the second round of sampling ranged from 45.10 to 543 mg/kg TPH. The two locations, E and F, that contained the highest concentration of TPH in the 1994 sampling round were resampled and analyzed for TPH and VOC in order to assess current site conditions. Locations E and F contained 701.82 and 295.13 mg/kg TPH, respectively. Both samples contained low levels of chloroform. No other VOCs were detected.

On August 25, 1994, soil samples were collected at 621 when the UST was removed. The sample concentrations ranged from undetectable to 174.30 mg/kg TPH. No additional investigation was necessary at this site.

Soil samples were collected at the former location of the UST at 634 on November 19, 2001. The results ranged from undetectable to 1,079.28 mg/kg TPH, just barely above the guidance criteria. Therefore, the samples were also analyzed for VOCs. The only compound detected was methylene chloride.

Five samples collected from the excavation of former UST 640 on November 8, 2001, contained TPH concentrations ranging from 262.25 to 2,922.48 mg/kg except for location 640-1, which contained 10,757.05 mg/kg. The samples were analyzed for VOCs and only contained low levels of the laboratory contaminant, methylene chloride, found in all other samples.

Soil samples were collected at 641 on October 26, 2001. Only two of the samples contained detectable levels of TPH. The sample locations, 641-2 and 641-5, contained 1,585.49 and 347.79 mg/kg TPH. The two samples were analyzed for VOCs and contained no detectable compounds.

Soil samples were collected at 644 on January 3, 2002. Samples contained between 4,616.22 and 8,903.10 mg/kg TPH. One of the sample locations, 644-1, was analyzed for VOCs and contained no volatile compounds.

Six post-excavation soil samples were collected from 686 at the time of UST removal. Results ranged from 79.60 to 14,700 mg/kg TPH. Following additional soil removal four of the locations were resampled and contained TPH concentrations ranging from 236 at 686-E to 1,400 mg/kg at 686-F. The location 686-F was resampled on November 15, 2001 for TPH and VOC analyses. Soil sample F contained 337.76 mg/kg TPH and no detectable VOCs.

5.2 Groundwater Sample Results

The results of the long term monitoring are summarized in section 3.2: Previous Groundwater Sampling Summary. Five of the six wells contain no compounds above GWQC. MW5-MW16 has exceeded the GWQC for tetrachloroethylene in every round collected between April 1999 and September 2001. No other compounds have been detected in groundwater from that well.

Geoprobe groundwater samples were collected at five locations, 600GW-1 through 600GW-5, throughout the 600 area on January 3, 2002 and February 5, 2002. Samples collected at 600GW-1 contained no compounds above method detection limits. The first sample collected at 600GW-2 contained three compounds, naphthalene, 2-methylnaphthalene, and dibenzofuran at concentrations of 89.36 ug/L, 35.38ug/L, and 1.37 ug/L, respectively. The second round collected at 600GW-2 contained acenaphthene

at 1.03 ug/L. Groundwater collected at 600GW-3 contained no detectable compounds during the first sample round and four compounds, 3.58 ug/L of naphthalene, 29.64 ug/L of 2-methylnaphthalene, 1.11 ug/L of acenaphthene, and 2.19 ug/L of phenanthrene, during the second round. There were no compounds detected in the first round collected at 600GW-4. The second round collected from 600GW-4 contained 1.11 ug/L 1,4-dichlorobenzene and 1.92 ug/L 1,2-dichlorobenzene. Several compounds were detected at 600GW-5 during the first round of sample collection, but no compounds were detected at that location during the second round. None of the compounds detected in the geoprobe groundwater samples during either round of sampling exceeded GWQC. The sample results are summarized in Table 3-3.

5.3 Recommendations

Based on soil sampling results, there was only one soil sample collected in the 600 Area that exceeds NJDEP soil cleanup criteria. Sample location 640-1 contained 10,757.05 mg/kg TPH. However, this sample was analyzed for VOCs and contained only one volatile compound, methylene chloride, at very low concentrations that did not exceed the soil cleanup criteria. Methylene chloride is a common laboratory contaminant that is not considered indicative of site conditions. Given that the concentration of TPH detected at 640-1 only slightly exceeded the soil cleanup criteria and the given absence of VOCs in the sample, we respectfully recommend that further action is not necessary at this location. Therefore, no further action is recommended at the 16 individual UST sites in the 600 Area.

Based on groundwater sample results, groundwater collected at the five Geoprobe sample locations has not been impacted by the presence of the former USTs in the 600 Area. Groundwater at one well, MW5-MW16, contains one compound of concern that exceeds the NJDEP GWQC. However, this well is being continuously monitored in association with the investigation at Area M5. Therefore, no further action is recommended for the former USTs in the 600 Area.

(12/97) **New Jersey Department of Environmental Protection**

Site Remediation Program

UST Site/Remedial Investigation Report Certification Form

A. Facility Name : U.S. Army Fort Monmouth New Jersey

Facility Street Address : Directorate of Public Works Building 173

Municipality: Oceanport County : Monmouth

Block: Lot(s): Telephone Number : 732-532-6224

B. Owner (RP)'s Name:

Street Address: City :

State: Zip: Telephone Number :

C. (Check as appropriate)

___ Site Investigation Report (SIR) $500 Fee

___ Remedial Investigation Report (RIR) $1000 Fee

_X_ NA – Federal Agreement

D. (Complete all that apply)

- Assigned Case Manager : Ian Curtis, Federal Case Manager

Facility Location	UST Registration Number	Incident Report Number
600A	81533-83	
600B	81533-212	93-11-9-0923-00
611	81533-212	94-8-18-1613-35
615	81533-89	
618	81533-91	94-8-19-1612-06
619	81533-92	94-08-24-1320-18
621	81533-94	94-08-25-1302-00
634	(NA)	94-10-21-0841-16
638	(NA)	94-10-21-0841-16
639	(NA)	
640	(NA)	94-10-21-0841-16
641	(NA)	94-10-21-0841-16
644	(NA)	
664	(NA)	
666	(NA)	
686	81533-107	94-12-08-1040-10

- Tank Closure Number : Federal Case Manager

E. Certification by the Subsurface Evaluator:

The attached report conforms to the specific reporting requirements of N.J.A.C. 7:26E .....Yes No

Name: Dinker Desai Signature: _____ UST Cert. No.: 10173

Firm: U.S. Army, Fort Monmouth Firm's UST Cert. Number: 10173

Firm Address: Bldg. 173 City: Fort Monmouth

State: NJ Zip: 07703 Telephone Number : (732) 532-1475

(NOTE: Certification numbers required only if work was conducted on USTs regulated per N.J.S.A. 58:10A-21 et seq.)

F. Certification by the Responsible Party(ies) of the Facility:

The following certification shall be signed [according to the requirements of N.J.A.C. 7:14B-1.7(b)]as follows:

1. For a Corporation by a person authorized by a resolution of the board of directors to sign the document. A copy of the resolution, certified as a true copy by the secretary of the corporation, shall be submitted along with the certification; or
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, federal or other public agency by either a principal executive officer or ranking elected Official.

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

Name (Print or Type): James Ott Title: Directorate of Public Works

Signature: _____

Company Name: U.S. Army Fort Monmouth Date: 05/24/02

Tables

Table 3-1
Summary of Soil Sampling Results for TPH Analysis

Sample Site ID	Sample Date	Sample ID	TPH Concentration (mg/kg)
600A	11/15/01	1	ND
	11/15/01	2	ND
	11/15/01	3	ND
	11/15/01	4	ND
	11/15/01	5	381.15
	11/15/01	DUP	ND
600B	11/10/93	A	13,000.00
	11/10/93	B	1,020.00
	11/10/93	C	2,600.00
	11/10/93	D	4,020.00
	11/10/93	E	2,480.00
	11/10/93	F	7,200.00
	11/15/01	1	840.17
	11/15/01	2	3,521.65
	11/15/01	3	ND
	11/15/01	4	ND
	11/15/01	5	401.04
	11/15/01	6	6,137.04
	11/15/01	DUP	ND
611	08/18/94	P-1	2,450.00
	08/18/94	P-2	27.60
	09/06/94	A	ND
	09/06/94	B	2,831.00
	09/06/94	C	1,160.00
	09/06/94	D	348.00
	09/06/94	E	554.00
	09/06/94	F	752.00
	09/06/94	G	47.30
	09/06/94	G (dup)	143.50
	09/06/94	H	1,030.00
	12/16/94	A1	9.52
	12/16/94	B1	29.40
	12/16/94	C1	57.80
	12/16/94	G1	ND
	12/16/94	H1	15.90
615	11/19/01	1	ND
	11/19/01	2	ND
	11/19/01	3	ND
	11/19/01	4	ND
	11/19/01	5	ND
	11/19/01	DUP	ND

Table 3-1
Summary of Soil Sampling Results for TPH Analysis

Sample Site ID	Sample Date	Sample ID	TPH Concentration (mg/kg)
618	09/06/94	A	3,940.00
	09/06/94	B	1,000.00
	09/06/94	C	1,240.00
	09/06/94	D	4,390.00
	09/06/94	E	5,360.00
	09/04/94	F	4,860.00
	09/22/94	A	1,050.00
	09/22/94	B	214.00
	09/22/94	C	164.00
	09/22/94	D	2,810.00
	09/22/94	E	15.90
	09/22/94	F	33.00
	09/27/94	A	2,920.00
	09/27/94	D	ND
	01/04/95	A	35.00
619	08/25/94	A	154.00
	08/25/94	B	1,450.00
	08/25/94	C	70.60
	08/25/94	D	555.00
	08/25/94	E	858.00
	08/25/94	F	3,060.00
	09/09/94	B1	84.00
	09/09/94	C1	45.10
	09/09/94	E1	543.00
	09/09/94	F1	113.00
	10/12/01	E	701.82
	10/12/01	F	295.13
621	08/25/94	A	ND
	08/25/94	B	ND
	08/25/94	C	ND
	08/25/94	D	ND
	08/25/94	E	42.30
	08/25/94	F	ND
	08/25/94	G (dup of A)	36.50
	08/25/94	H	174.30

Table 3-1
Summary of Soil Sampling Results for TPH Analysis

Sample Site ID	Sample Date	Sample ID	TPH Concentration (mg/kg)
634	11/19/01	1	ND
	11/19/01	2	ND
	11/19/01	3	713.28
	11/19/01	4	ND
	11/19/01	5	721.34
	11/19/01	DUP	1,079.28
638	10/13/01	1	ND
	10/13/01	2	ND
	10/13/01	3	ND
	10/13/01	4	ND
	10/13/01	5	ND
	10/13/01	DUP	ND
639	10/13/01	1	ND
	10/13/01	2	ND
	10/13/01	3	ND
	10/13/01	4	ND
	10/13/01	5	ND
	10/13/01	DUP	ND
640	11/08/01	1	10,757.05
	11/08/01	2	287.44
	11/08/01	3	2,478.86
	11/08/01	4	240.79
	11/08/01	5	262.25
	11/08/01	DUP	2,922.48
641	10/26/01	1	ND
	10/26/01	2	1,585.49
	10/26/01	3	ND
	10/26/01	4	ND
	10/26/01	5	347.79
	10/26/01	DUP	ND

Table 3-1
Summary of Soil Sampling Results for TPH Analysis

Sample Site ID	Sample Date	Sample ID	TPH Concentration (mg/kg)
644	10/12/01	1	1,297.72
	10/12/01	2	3,203.55
	10/12/01	3	308.93
	10/12/01	4	5,166.71
	10/12/01	5	ND
	01/03/02	1	8,903.10
	01/03/02	2	6,921.76
	01/03/02	3	7,243.03
	01/03/02	4	7,616.32
	01/03/02	5	4,616.22
664	11/14/01	1	ND
	11/14/01	2	ND
	11/14/01	3	ND
	11/14/01	4	ND
	11/14/01	5	ND
	11/14/01	DUP	ND
666	11/14/01	1	ND
	11/14/01	2	ND
	11/14/01	3	ND
	11/14/01	4	ND
	11/14/01	5	ND
	11/14/01	DUP	ND
686	01/18/95	A	79.60
	01/18/95	B	14,700.00
	01/18/95	C	174.00
	01/18/95	D	4,400.00
	01/18/95	E	2,900.00
	01/18/95	F	3,200.00
	01/18/95	G (dup of F)	1,600.00
	01/27/95	B	667.00
	01/27/95	D	342.00
	01/27/95	E	236.00
	01/27/95	F	1,400.00
	11/15/01	piping	256.62
	11/15/01	686/8'	337.76

ND = Not detected above method detection limits.

Table 3-2
Summary of Soil Sampling Results for VOCs

Sample Site ID	Sample Date	Sample ID	Acetone	Chloroform	Ethyl-benzene	Methylene Chloride	Total Xylenes
RDCSCC			1000	19	1000	49	410
600B	11/15/93	A2	**0.28**	ND	**4.50**	ND	**17.40**
	11/15/93	F2	ND	ND	ND	**0.20**	**0.41**
	11/15/01	1	ND	ND	ND	**1.20**	ND
	11/15/01	2	ND	ND	ND	**0.66**	ND
	11/15/01	3	ND	ND	ND	**0.36**	ND
	11/15/01	4	ND	ND	ND	**0.34**	ND
	11/15/01	5	ND	ND	ND	ND	ND
619	10/12/01	E	ND	**0.87**	ND	ND	ND
	10/12/01	F	ND	**6.8**	ND	ND	ND
634	11/19/01	1	ND	ND	ND	ND	ND
	11/19/01	2	ND	ND	ND	**0.28**	ND
	11/19/01	3	ND	ND	ND	**0.29**	ND
	11/19/01	4	ND	ND	ND	**0.33**	ND
	11/19/01	5	ND	ND	ND	**0.40**	ND
640	11/08/01	1	ND	ND	ND	**1.50**	ND
	11/08/01	2	ND	ND	ND	**0.69**	ND
	11/08/01	3	ND	ND	ND	**0.49**	ND
	11/08/01	4	ND	ND	ND	**0.40**	ND
	11/08/01	5	ND	ND	ND	**0.33**	ND
641	10/26/01	2	ND	ND	ND	ND	ND
	10/26/01	5	ND	ND	ND	ND	ND
644	10/26/01	1	ND	ND	ND	ND	ND
	10/26/01	2	ND	ND	ND	ND	ND
	10/26/01	3	ND	ND	ND	ND	ND
	10/26/01	4	ND	ND	ND	ND	ND
	10/26/01	5	ND	ND	ND	ND	ND
686	11/15/01	686	ND	ND	ND	ND	ND

All results reported in mg/kg.
RDCSCC =NJDEP Residential Direct Contact Soil Celanup Criteria (mg/kg)

Table 3-3
Summary of Groundwater Data in the 600 Area

Monitoring Well	Sample Date	t-butyl alcohol	acetone	methylene chloride	MEK	benzene	toluene	ethyl-benze	total xylenes
616-MW1	04/02/97	ND	ND	ND	ND	ND	ND	ND	ND
	04/02/97	ND	ND	ND	ND	ND	ND	ND	ND
	07/16/97	ND	ND	ND	ND	ND	ND	ND	ND
	07/16/97	ND	ND	ND	ND	ND	ND	ND	ND
	10/07/97	ND	ND	ND	ND	ND	ND	ND	ND
	10/07/97	ND	ND	ND	ND	ND	ND	ND	ND
	01/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	01/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	06/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	06/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	07/29/98	ND	ND	ND	ND	ND	ND	ND	ND
	07/29/98	ND	ND	ND	ND	ND	ND	ND	ND
	12/30/98	ND	ND	ND	ND	ND	ND	ND	ND
	12/30/98	ND	ND	ND	ND	ND	ND	ND	ND
	03/09/99	ND	ND	ND	ND	ND	ND	ND	ND
	06/28/99	ND	ND	ND	ND	ND	ND	ND	**3.91**
	09/24/99	ND	ND	ND	ND	ND	ND	ND	**19.8**
	11/30/99	ND	ND	ND	ND	ND	ND	ND	**6.95**
	03/29/00	ND	ND	ND	ND	ND	ND	ND	ND
	06/16/00	ND	ND	ND	ND	ND	ND	ND	**2.27**
	09/07/00	ND	ND	ND	ND	ND	ND	ND	**3.00**
	12/28/00	ND	ND	ND	ND	ND	ND	ND	**4.35**
	03/21/01	ND	ND	ND	ND	ND	ND	ND	ND
	06/19/01	ND	ND	ND	ND	ND	ND	ND	ND
	08/30/01	ND	ND	ND	ND	ND	ND	ND	**1.17**
	12/13/01	ND	ND	ND	ND	ND	ND	ND	ND
699-MW15	11/21/95	ND	ND	**0.8**	ND	ND	ND	ND	ND
	11/21/95	ND	ND	**0.8**	ND	ND	ND	ND	ND
	02/20/96	ND	ND	**0.7**	ND	ND	ND	ND	ND
	02/20/96	ND	ND	**0.7**	ND	ND	ND	ND	ND
	05/22/96	ND	ND	NA	ND	ND	NA	ND	ND
	05/22/96	ND	ND	NA	ND	ND	NA	ND	ND
	10/01/96	ND	ND	NA	ND	ND	NA	ND	ND
	10/01/96	ND	ND	NA	ND	ND	NA	ND	ND
	01/13/97	ND	ND	NA	ND	ND	NA	ND	ND
	01/13/97	ND	ND	NA	ND	ND	NA	ND	ND
	04/02/97	ND	ND	ND	ND	ND	ND	ND	ND
	04/02/97	ND	ND	ND	ND	ND	ND	ND	ND
	07/16/97	ND	ND	ND	ND	ND	ND	ND	ND
	07/16/97	ND	ND	ND	ND	ND	ND	ND	ND
	10/07/97	ND	ND	ND	ND	ND	ND	ND	ND
	10/07/97	ND	ND	ND	ND	ND	ND	ND	ND
	01/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	01/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	06/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	06/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	07/29/98	ND	ND	ND	ND	ND	ND	ND	ND
	07/29/98	ND	ND	ND	ND	ND	ND	ND	ND
	12/30/98	ND	ND	ND	ND	ND	ND	ND	ND
	12/30/98	ND	ND	ND	ND	ND	ND	ND	ND
	03/09/99	ND	ND	ND	ND	ND	ND	ND	ND
	06/28/99	ND	ND	ND	ND	ND	ND	ND	ND
	09/24/99	ND	ND	ND	ND	ND	ND	ND	ND
	11/30/99	ND	ND	ND	ND	ND	ND	ND	ND
	03/29/00	ND	ND	ND	ND	ND	ND	ND	ND
	06/16/00	ND	ND	ND	ND	ND	ND	ND	ND
	09/07/00	ND	ND	ND	ND	ND	ND	ND	ND
	12/28/00	ND	ND	ND	ND	ND	ND	ND	ND
	03/12/01	ND	ND	ND	ND	ND	ND	ND	ND
	06/19/01	ND	ND	ND	ND	**1.33**	**1.82**	ND	ND
	08/30/01	ND	ND	ND	ND	ND	ND	ND	ND
	12/13/01	ND	ND	ND	ND	ND	ND	ND	ND
Standards:		5	700	2	300	0.2	1000	700	40

Table 3-3
Summary of Groundwater Data in the 600 Area

Monitoring Well	Sample Date	t-butyl alcohol	acetone	methylene chloride	MEK	benzene	toluene	ethyl-benze	total xylenes
699-MW2	05/24/95	**2.0**	NA	**1.0**	ND	**3.7**	**16**	**4.3**	**24**
	05/24/95	**2.0**	NA	**1.0**	ND	**3.7**	**16**	**4.3**	**24**
	08/16/95	ND	NA	**1.7**	ND	ND	ND	ND	ND
	08/16/95	ND	NA	**1.7**	ND	ND	ND	ND	ND
	11/20/95	ND	NA	**0.8**	ND	ND	ND	ND	ND
	11/20/95	ND	NA	**0.8**	ND	ND	ND	ND	ND
	02/21/96	ND	NA	**0.8**	ND	ND	ND	ND	ND
	02/21/96	ND	NA	**0.8**	ND	ND	ND	ND	ND
	05/22/96	NA	NA	NA	ND	NA	NA	NA	NA
	05/22/96	NA	NA	NA	ND	NA	NA	NA	NA
	10/01/96	NA	NA	NA	ND	NA	NA	NA	NA
	10/01/96	NA	NA	NA	ND	NA	NA	NA	NA
	01/13/97	NA	NA	NA	ND	NA	NA	NA	NA
	01/13/97	NA	NA	NA	ND	NA	NA	NA	NA
	04/02/97	ND	ND	ND	ND	ND	ND	ND	ND
	04/02/97	ND	ND	ND	ND	ND	ND	ND	ND
	07/16/97	ND	ND	ND	ND	ND	ND	ND	ND
	07/16/97	ND	ND	ND	ND	ND	ND	ND	ND
	10/07/97	ND	ND	ND	ND	ND	ND	ND	ND
	10/07/97	ND	ND	ND	ND	ND	ND	ND	ND
	01/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	01/09/98	ND	ND	ND	ND	ND	ND	ND	ND
	06/08/98	ND	**8.40**	ND	ND	ND	ND	ND	ND
	06/08/98	ND	**8.40**	ND	ND	ND	ND	ND	ND
	07/29/98	ND	ND	ND	**3.72**	ND	ND	ND	ND
	07/29/98	ND	ND	ND	**3.72**	ND	ND	ND	ND
	12/30/98	ND	ND	ND	ND	ND	ND	ND	ND
	12/30/98	ND	ND	ND	ND	ND	ND	ND	ND
	03/10/99	ND	ND	ND	ND	ND	ND	ND	ND
	06/28/99	ND	ND	ND	ND	ND	ND	ND	ND
	09/25/99	ND	ND	ND	ND	ND	ND	ND	ND
	11/30/99	ND	ND	ND	ND	ND	ND	ND	ND
	03/29/00	ND	ND	ND	ND	ND	ND	ND	ND
	06/16/00	ND	ND	ND	ND	ND	ND	ND	ND
	09/07/00	ND	ND	ND	ND	ND	ND	ND	ND
	12/28/00	ND	ND	ND	ND	ND	ND	ND	ND
	03/12/01	ND	ND	ND	ND	ND	ND	ND	ND
	06/19/01	ND	ND	ND	ND	**4.77**	**24.25**	**4.29**	**18.31**
	08/30/01	ND	ND	**1.84**	ND	ND	ND	ND	ND
	12/13/01	ND	ND	ND	ND	ND	ND	ND	ND
Standards:		5	700	2	300	0.2	1000	700	40

Figures

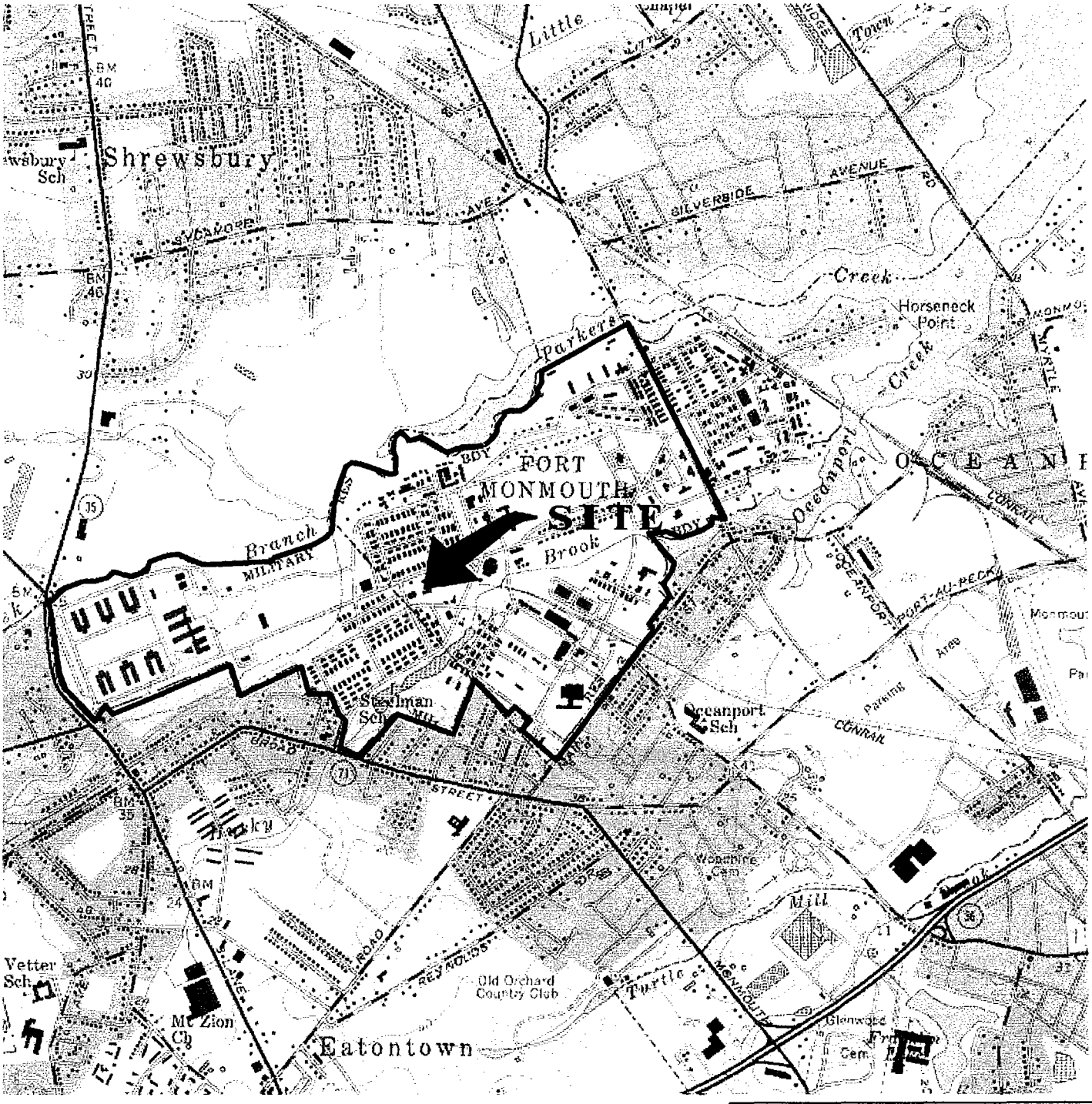


FIGURE 1

LOCATION MAP
Building 600 Area
Main-Post West
Fort Monmouth Army Base
Monmouth County, NJ

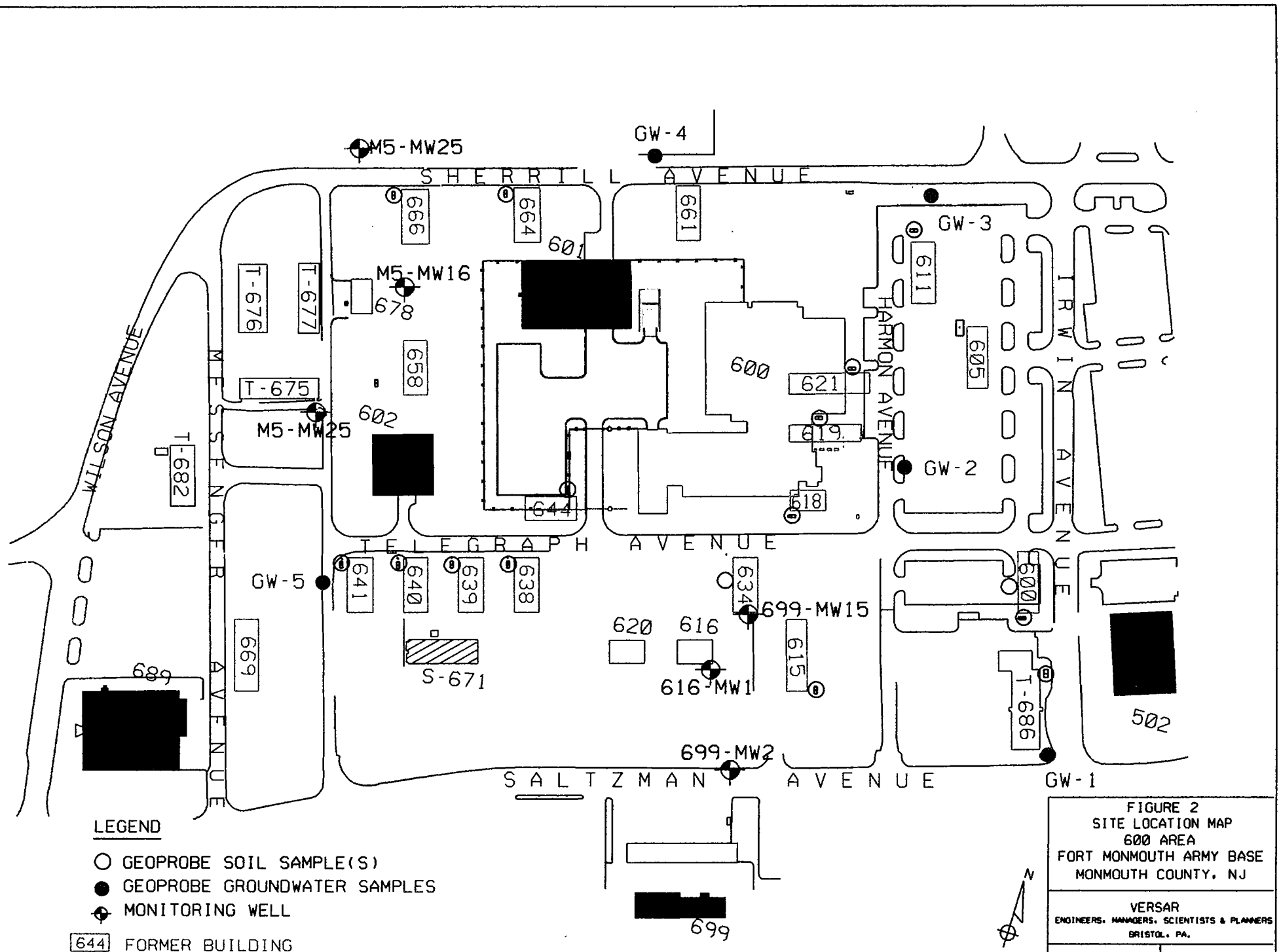
VERSAR
Engineers, Managers, Scientists, & Planners
Bristol, PA

Scale: 1" = 2000'	Date: FEB 2002

LONG BRANCH, N. J.
40073-C8-TF-024
1954
PHOTOREVISED 1981
DMA 6164 I SE-SERIES V822

NEW JERSEY
QUADRANGLE LOCATION

Mapped, edited and published by the Geological Survey


M5-MW25
GW-4
SHERRILL AVENUE
666
664
661
601
GW-3
611
M5-MW16
678
T-676
T-677
658
600
621
605
IRWIN AVENUE
HARMON AVENUE
T-675
M5-MW25
602
619
GW-2
T-682
WILSON AVENUE
MESSENGER AVENUE
644
618
TELEGRAPH AVENUE
GW-5
641
640
639
638
634
699-MW15
600
620
616
615
669
689
S-671
616-MW1
T-686
502
699-MW2
SALTZMAN AVENUE
GW-1
699
LEGEND
GEOPROBE SOIL SAMPLE(S)
GEOPROBE GROUNDWATER SAMPLES
MONITORING WELL
644 FORMER BUILDING
N
FIGURE 2
SITE LOCATION MAP
600 AREA
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ
VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.
SCALE: 1"=200'
DATE: FEB 2002

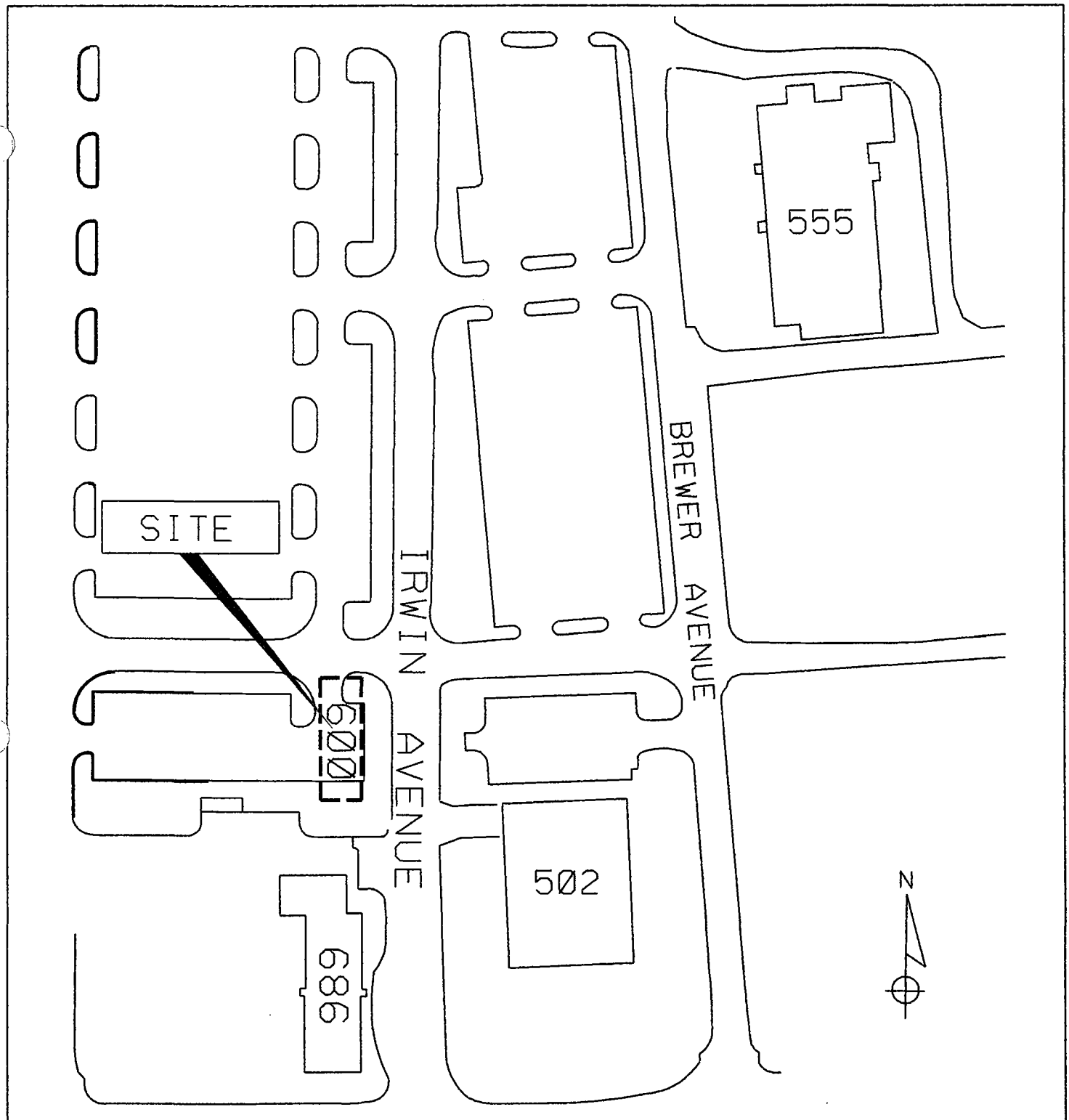


FIGURE 3-1
SITE MAP
BUILDING 600A
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

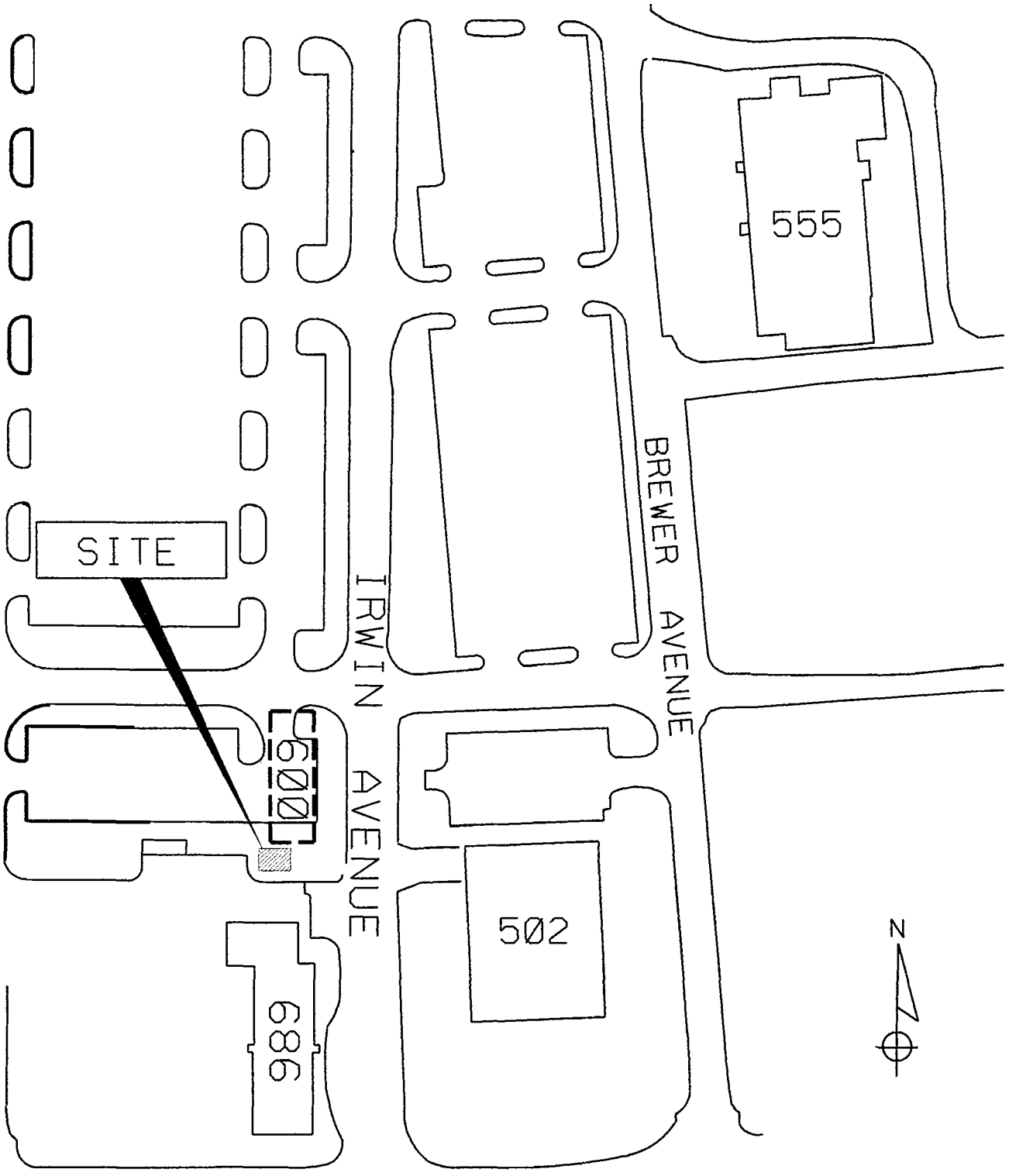


FIGURE 3-2
SITE MAP
BUILDING 600B
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

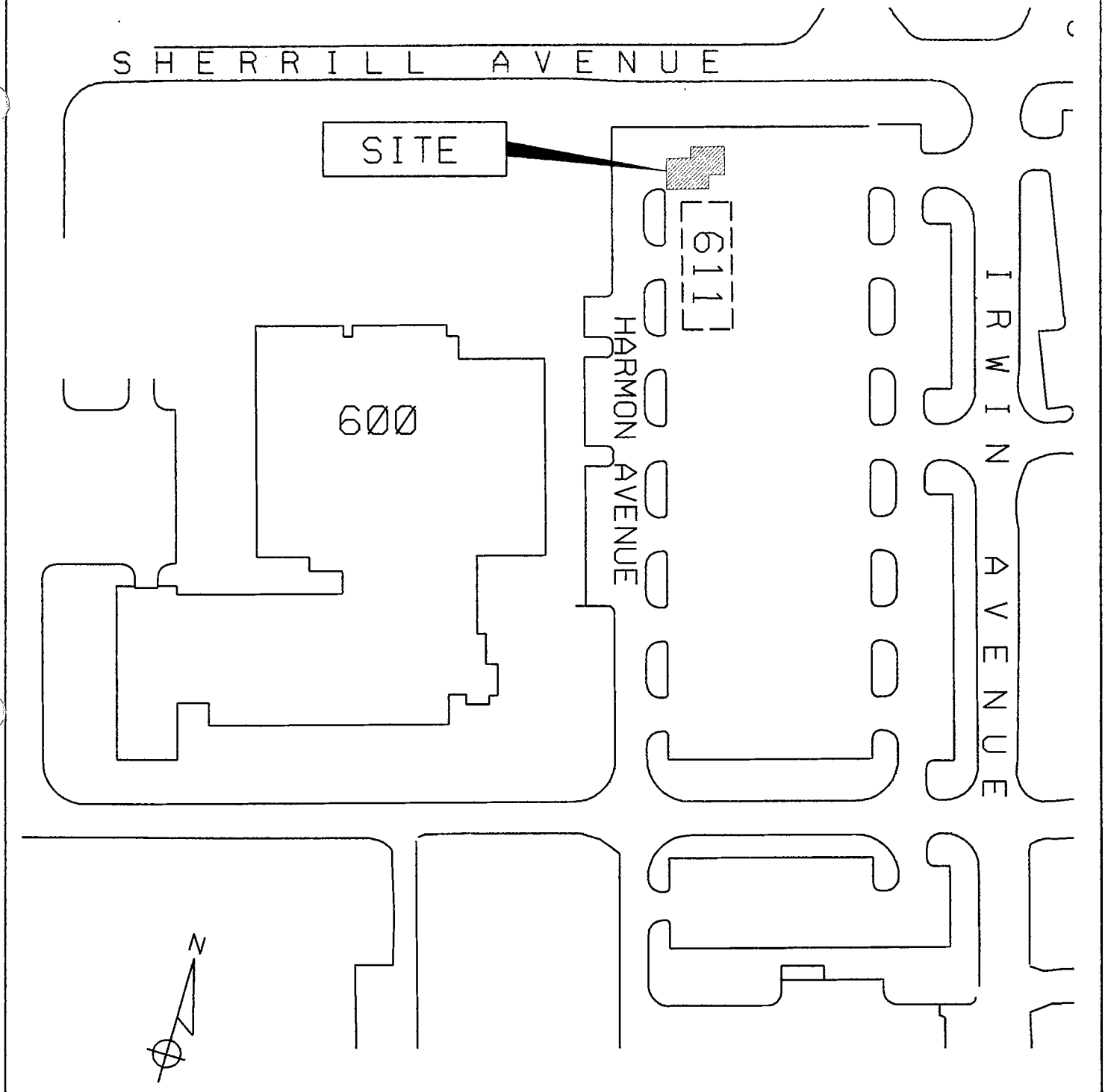


FIGURE 3-3
SITE MAP
BUILDING 611
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

611 F

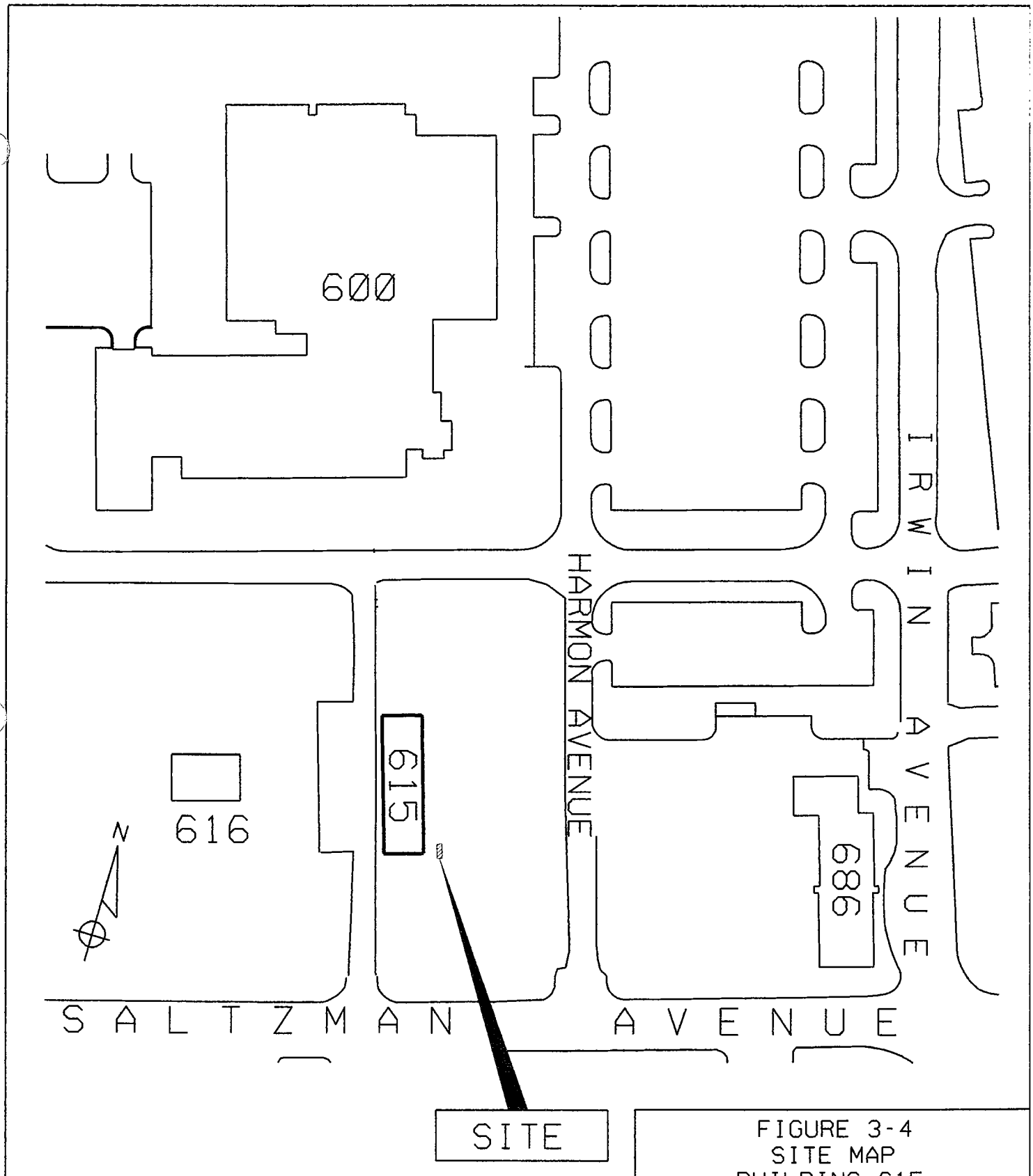


FIGURE 3-4
SITE MAP
BUILDING 615
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

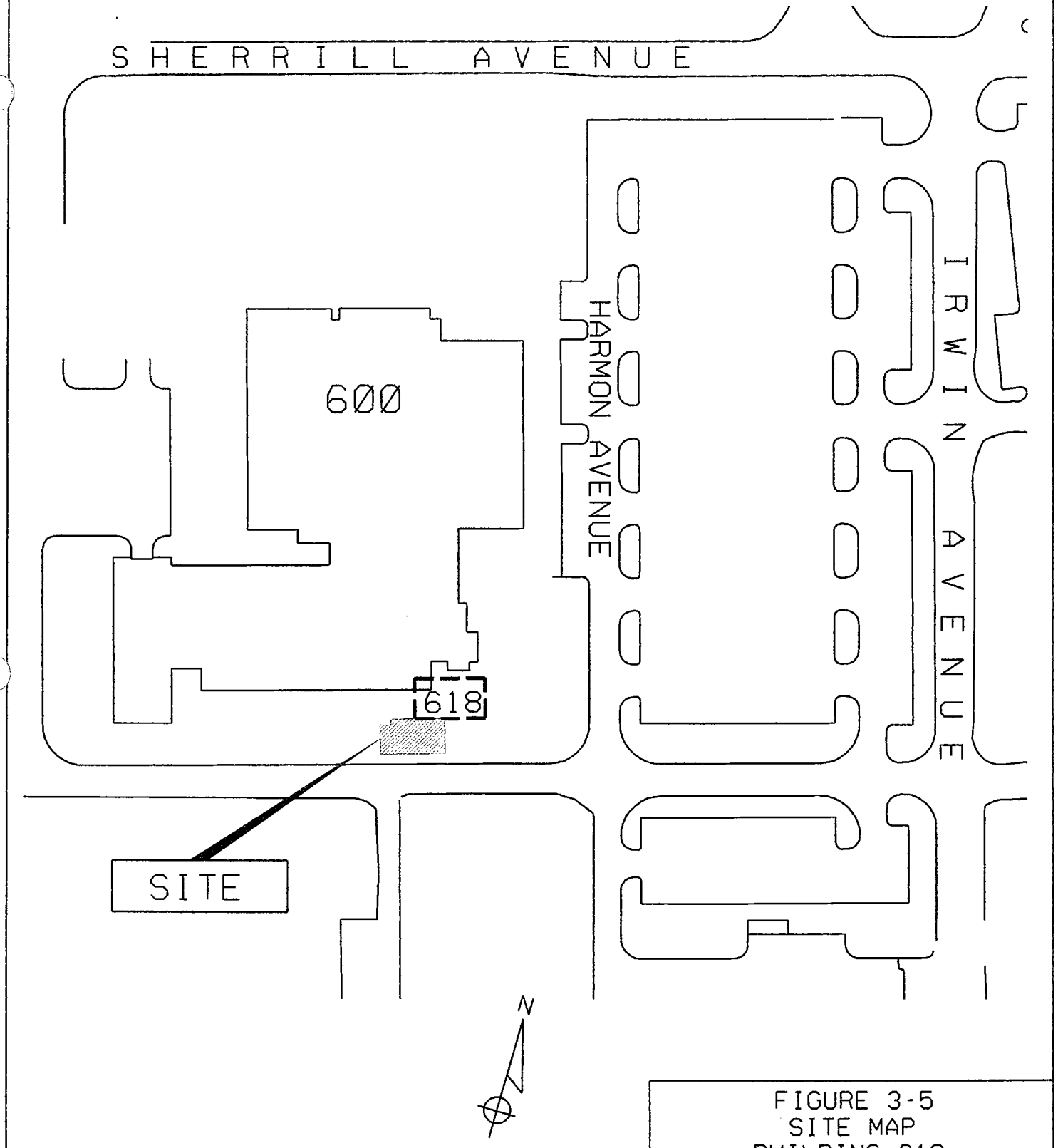


FIGURE 3-5
SITE MAP
BUILDING 618
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

618 F

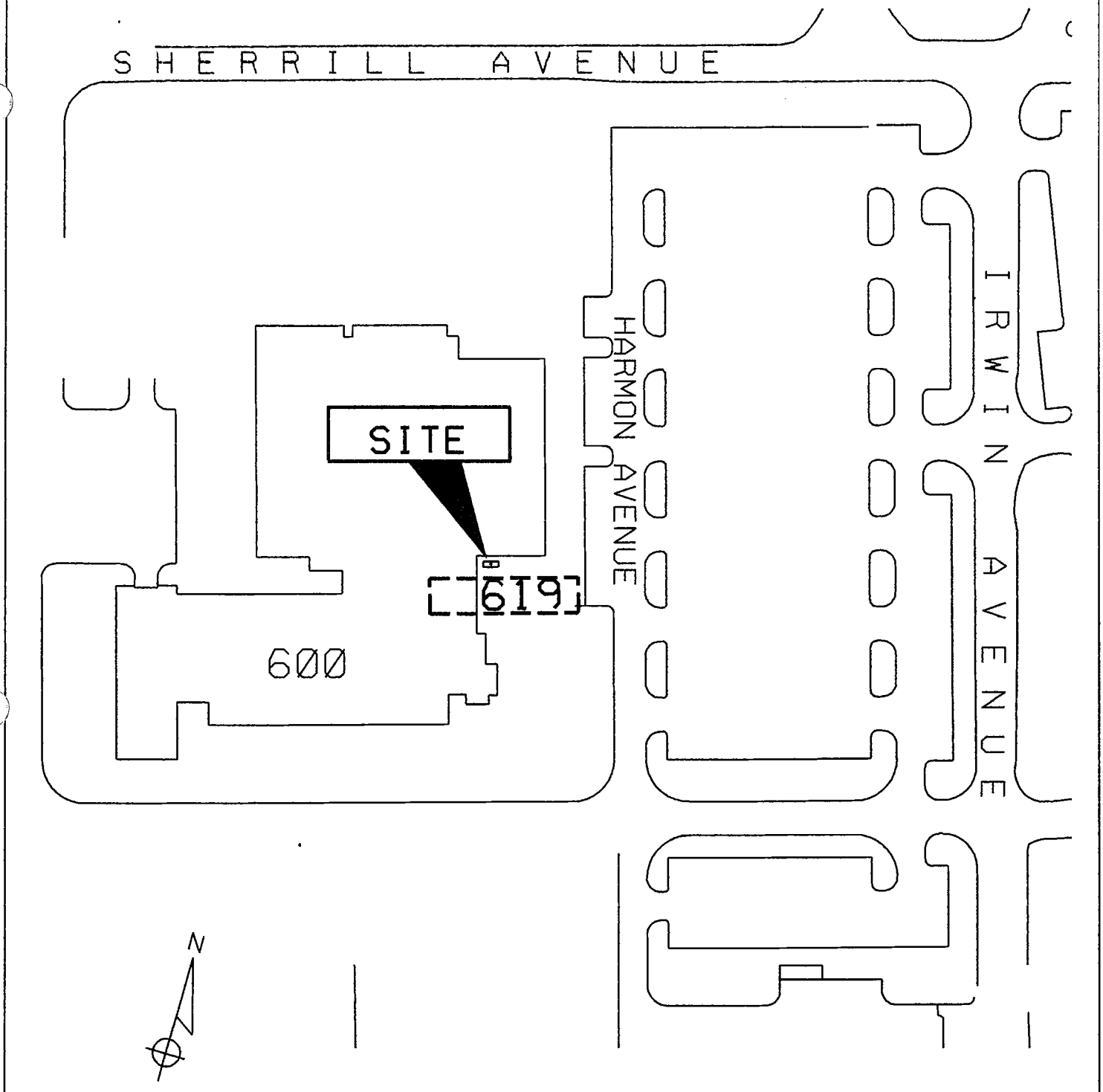


FIGURE 3-6
SITE MAP
BUILDING 619
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

619 F

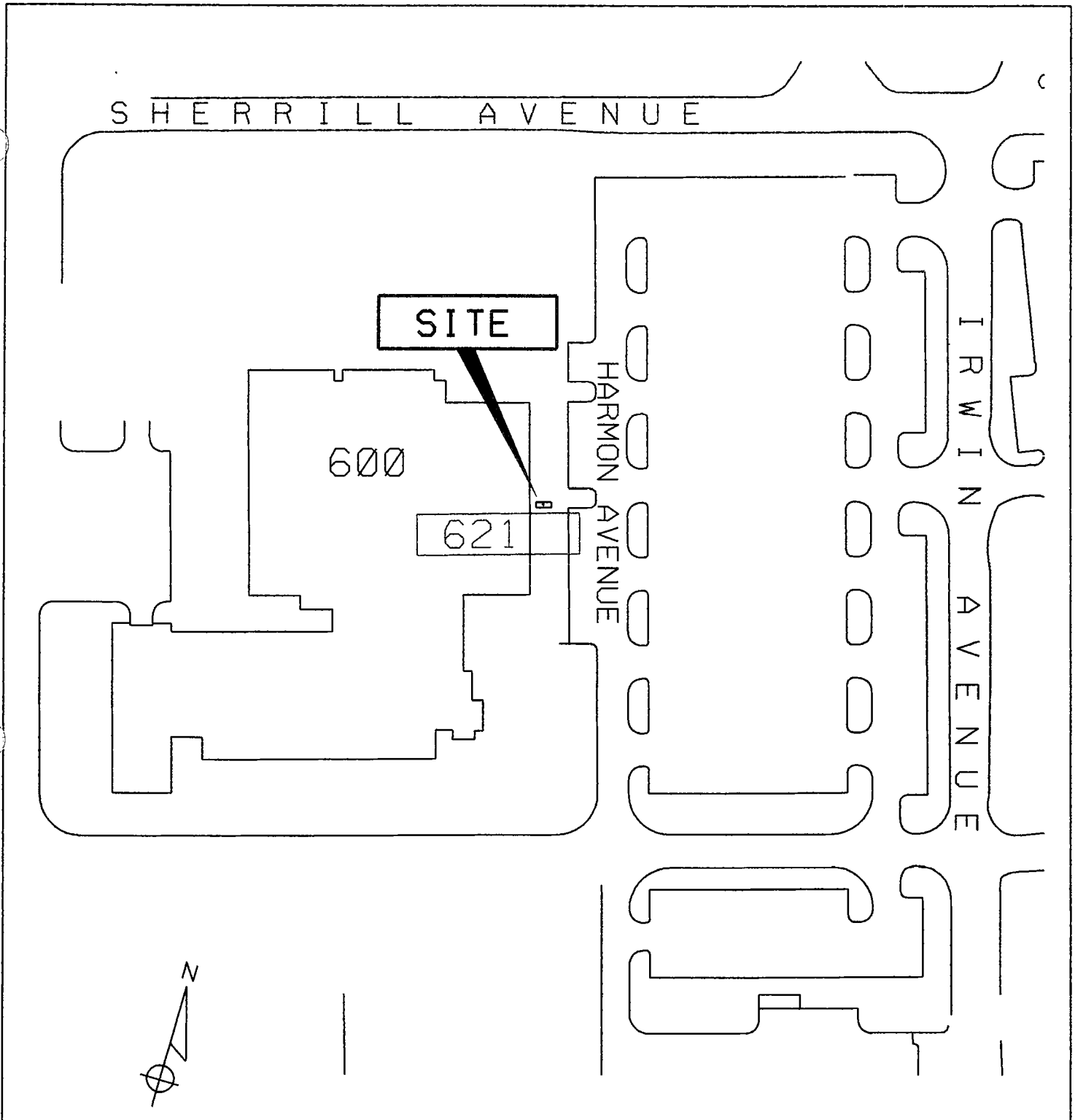


FIGURE 3-7
SITE MAP
BUILDING 621
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

621 F

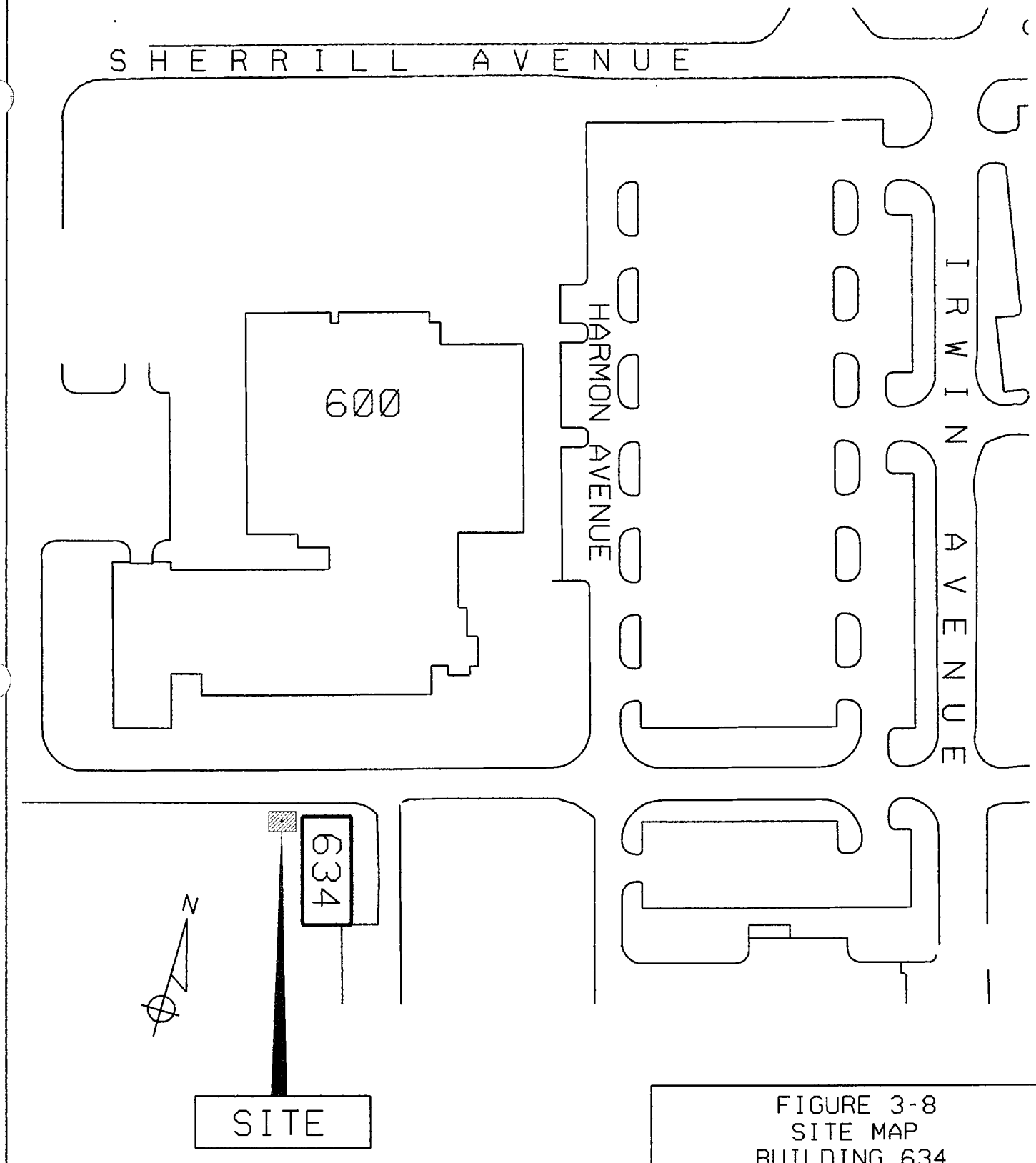


FIGURE 3-8
SITE MAP
BUILDING 634
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

634 F

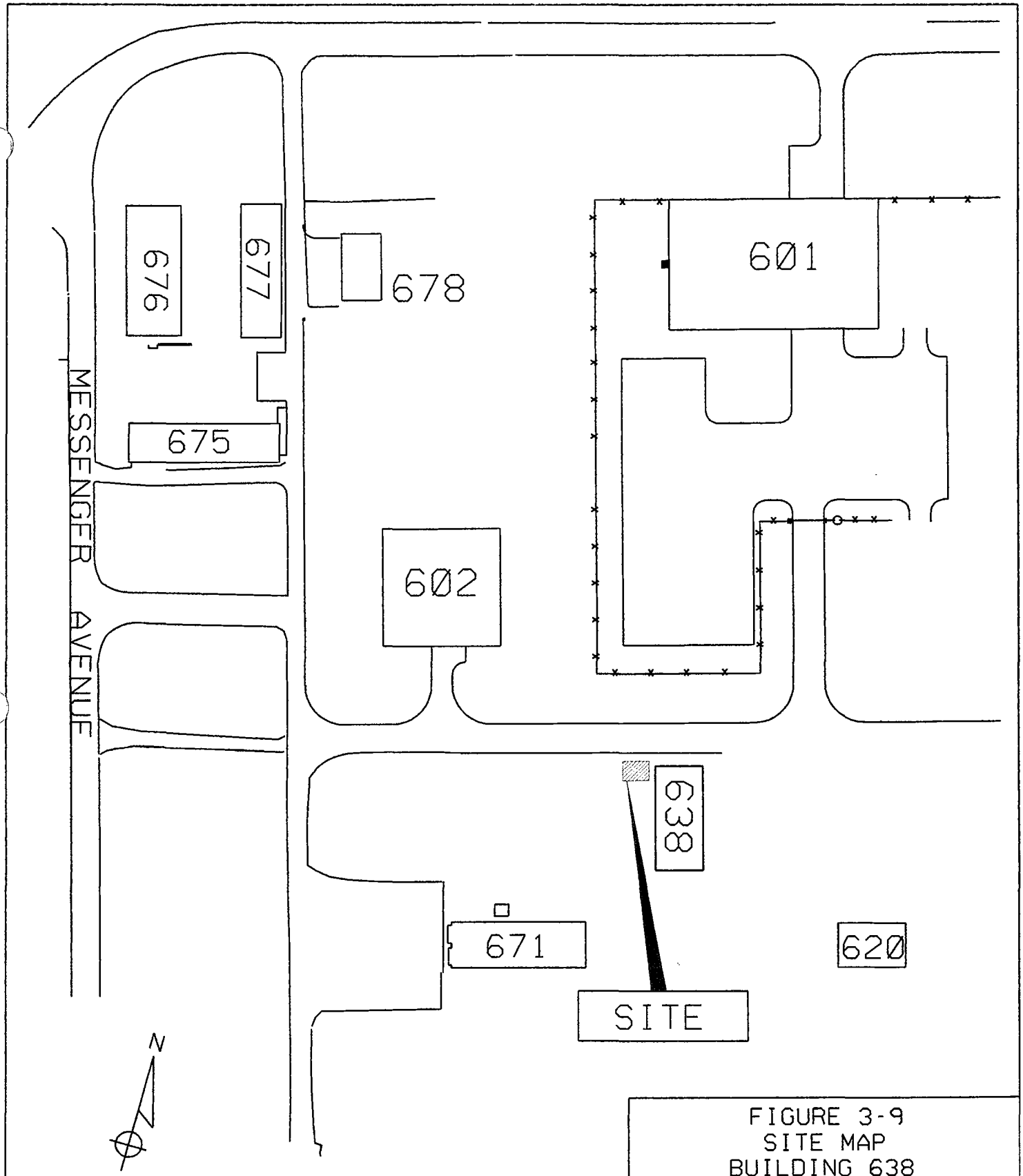


FIGURE 3-9
SITE MAP
BUILDING 638
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

638 F

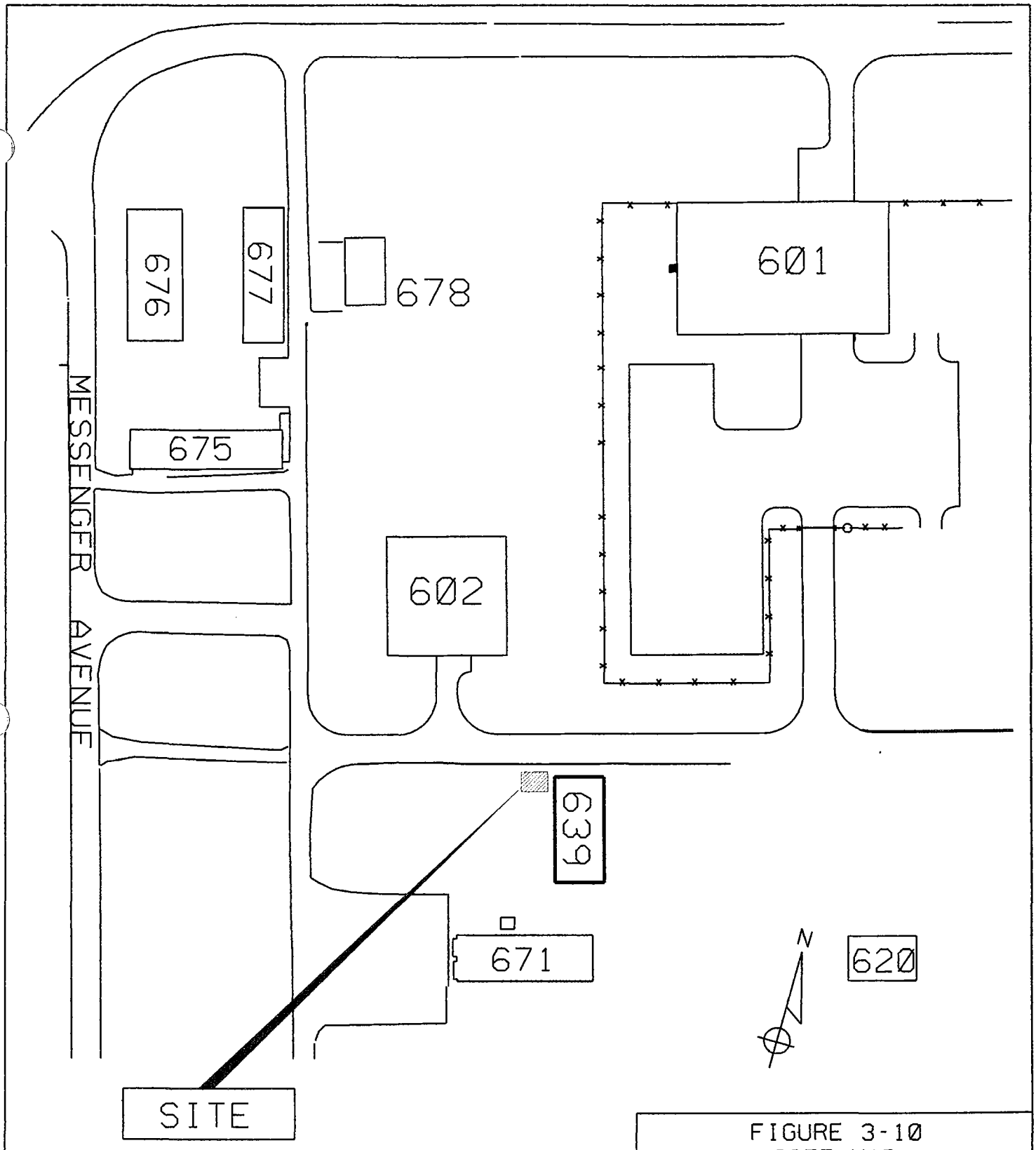


FIGURE 3-10
SITE MAP
BUILDING 639
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

639

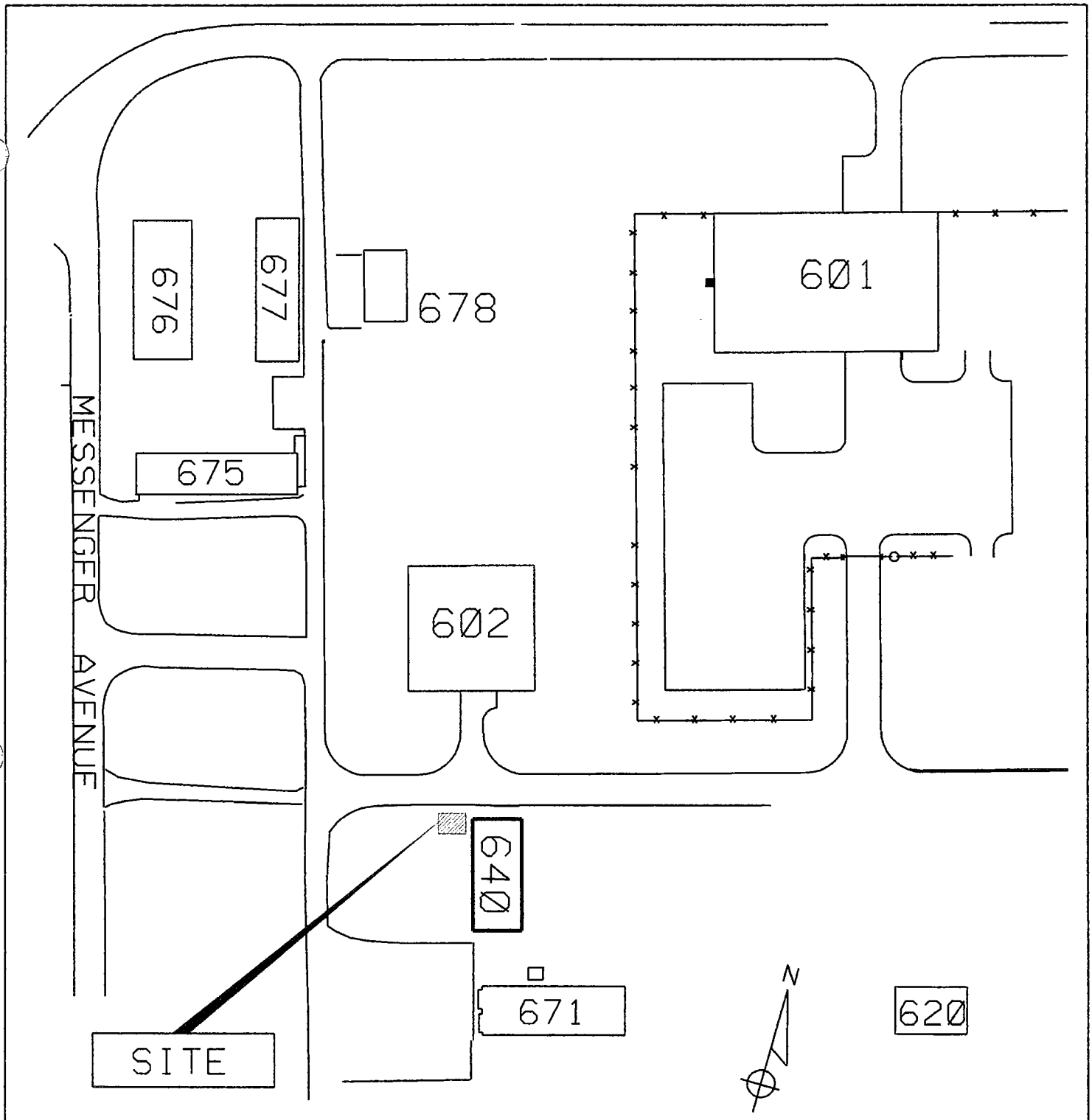


FIGURE 3-11
SITE MAP
BUILDING 640
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

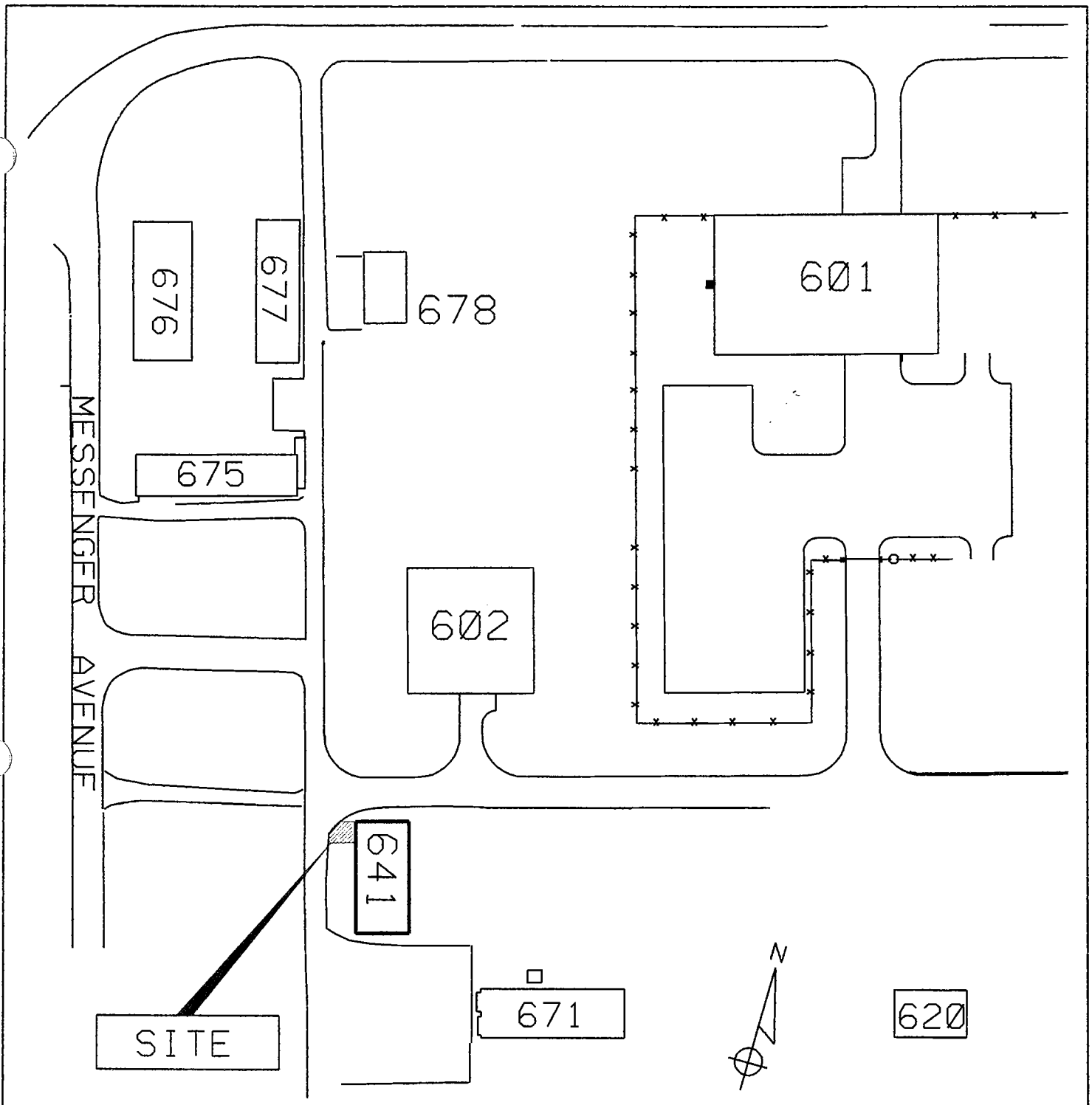


FIGURE 3-12
SITE MAP
BUILDING 641
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=100' | DATE: FEB 2002

641 H

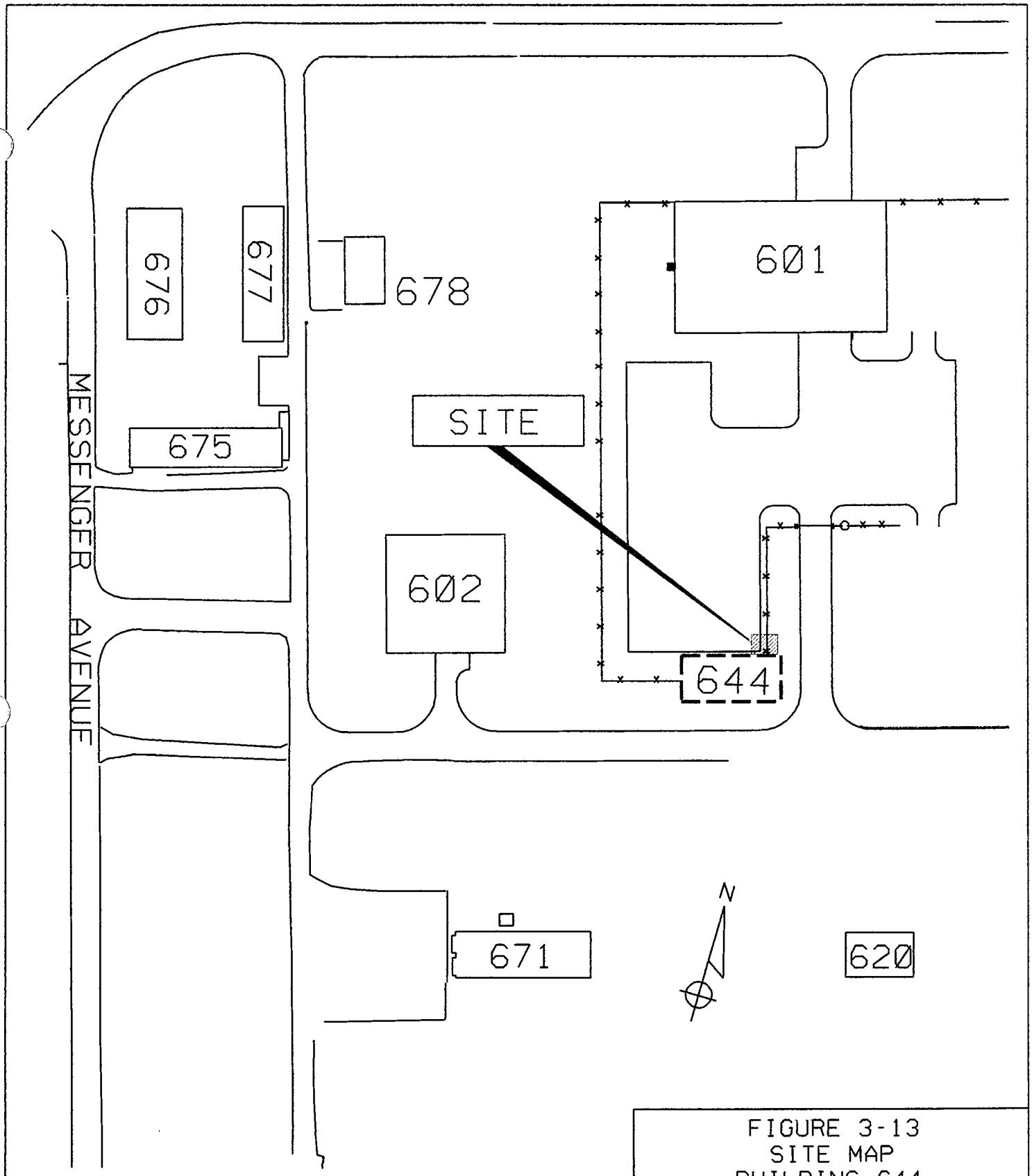


FIGURE 3-13
SITE MAP
BUILDING 644
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

D44 F

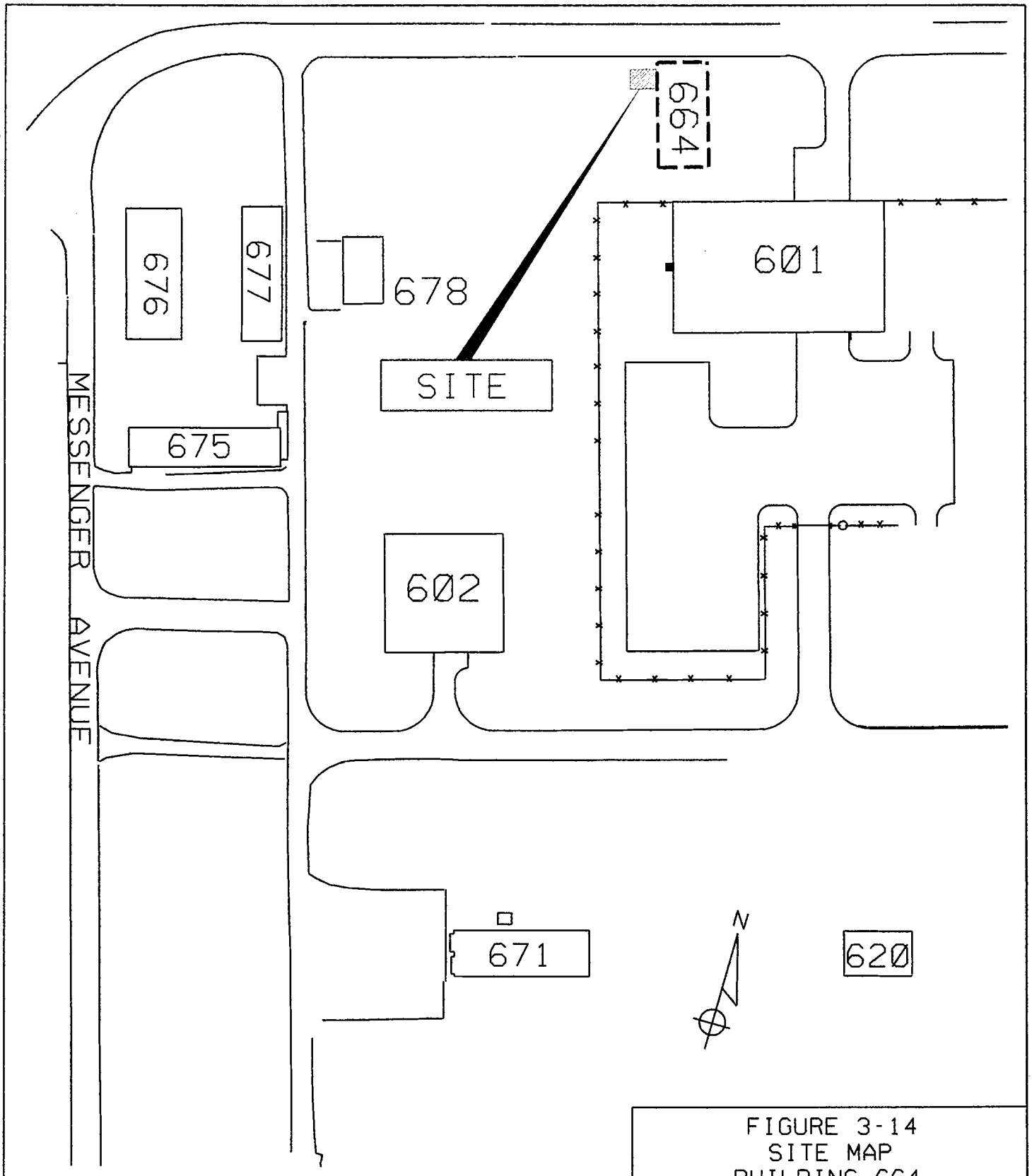


FIGURE 3-14
SITE MAP
BUILDING 664
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100' | DATE: FEB 2002

644 F.02

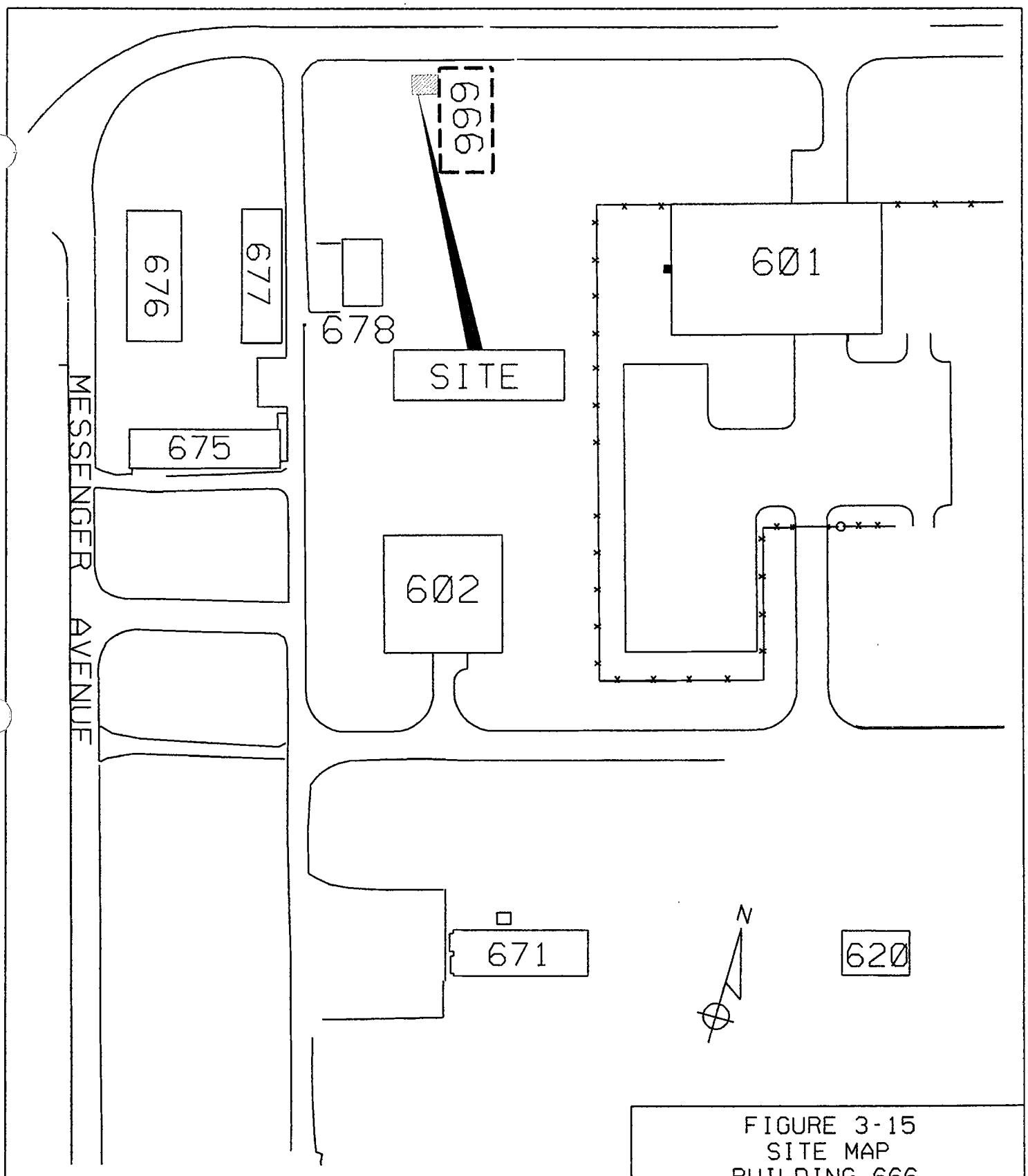


FIGURE 3-15
SITE MAP
BUILDING 666
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002

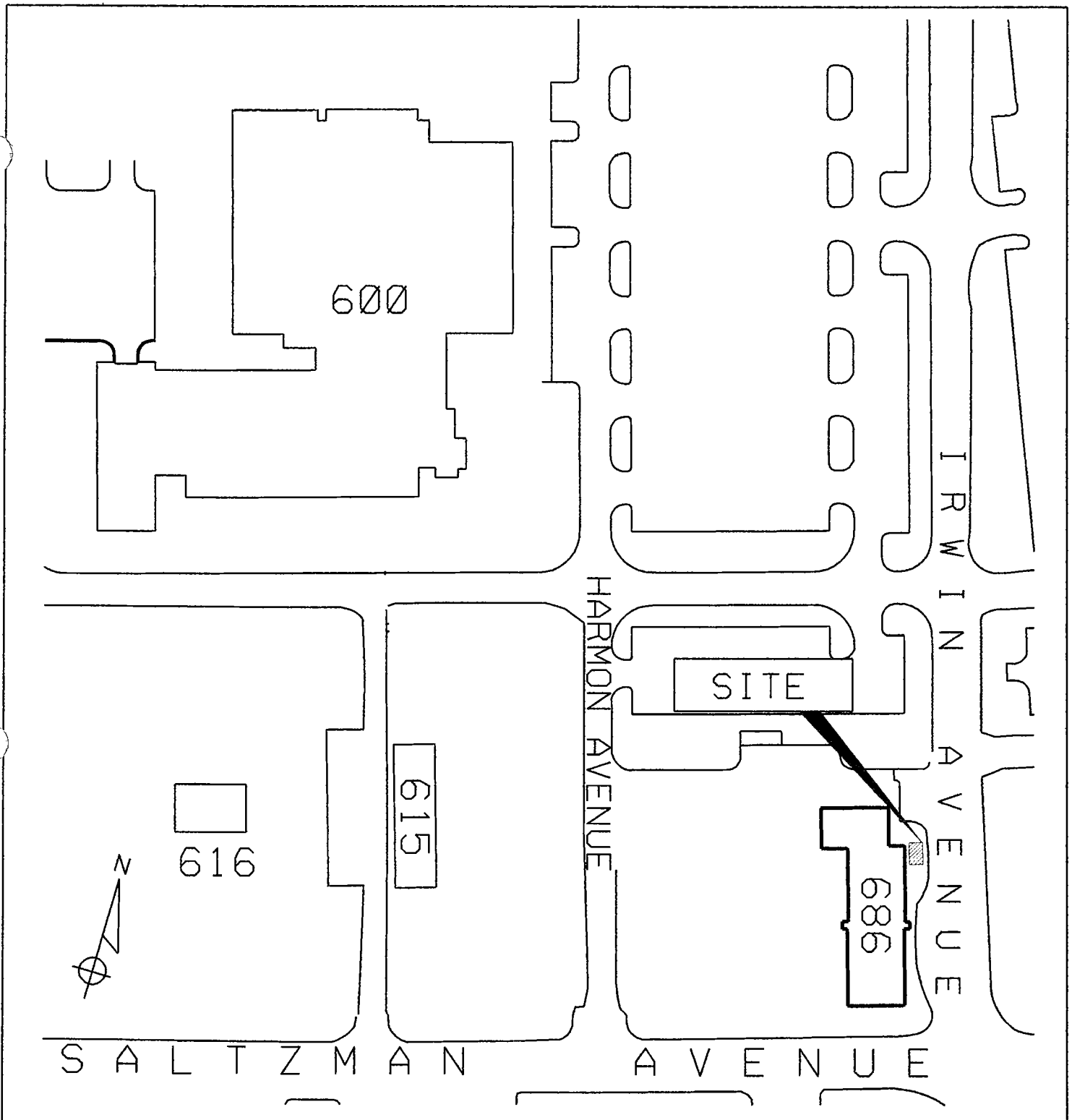
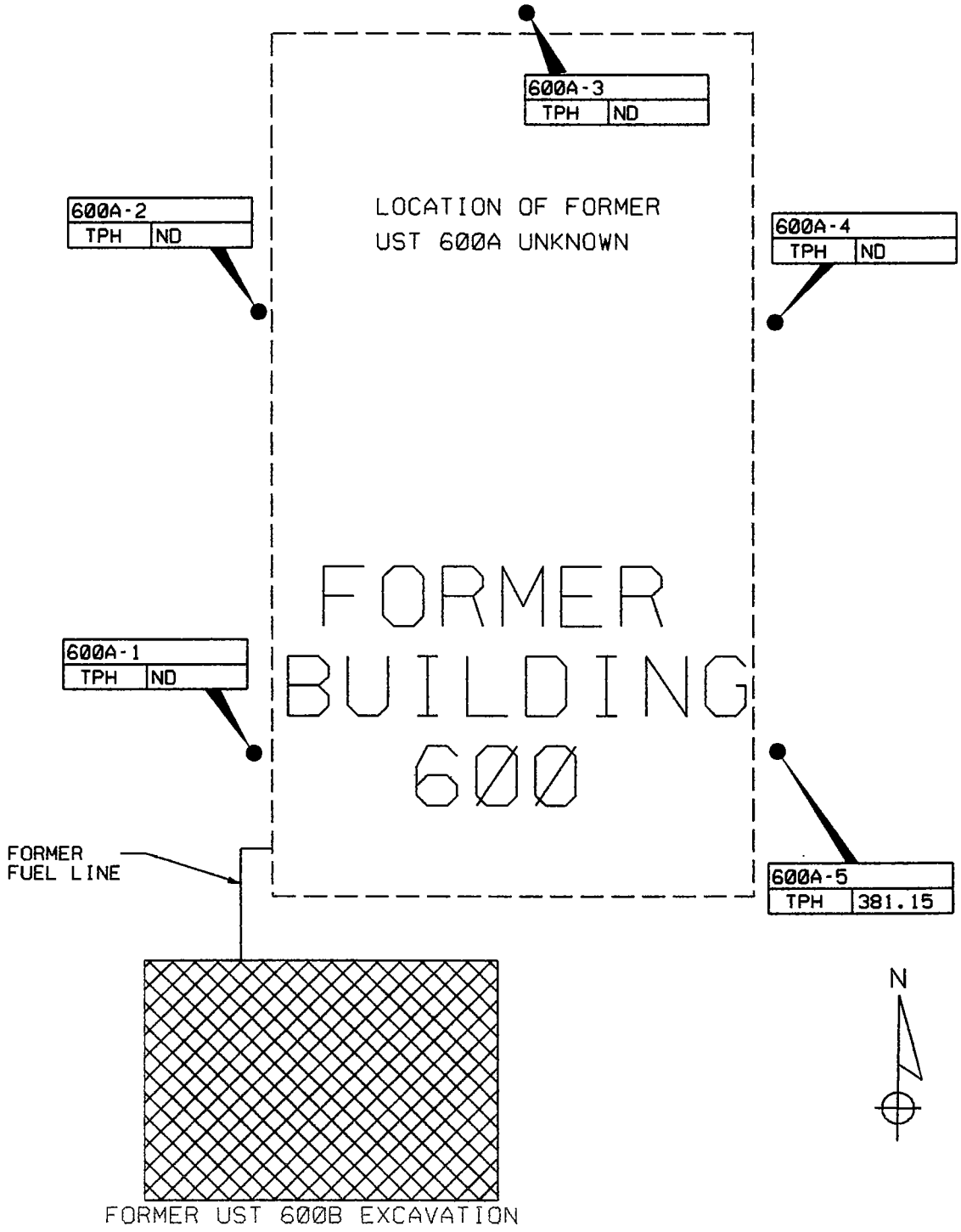


FIGURE 3-16
SITE MAP
BUILDING 686
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 100'

DATE: FEB 2002



LEGEND

- SOIL SAMPLE LOCATION (NOVEMBER 15, 2001)
- LIMIT OF EXCAVATION AT 600B

NOTES:

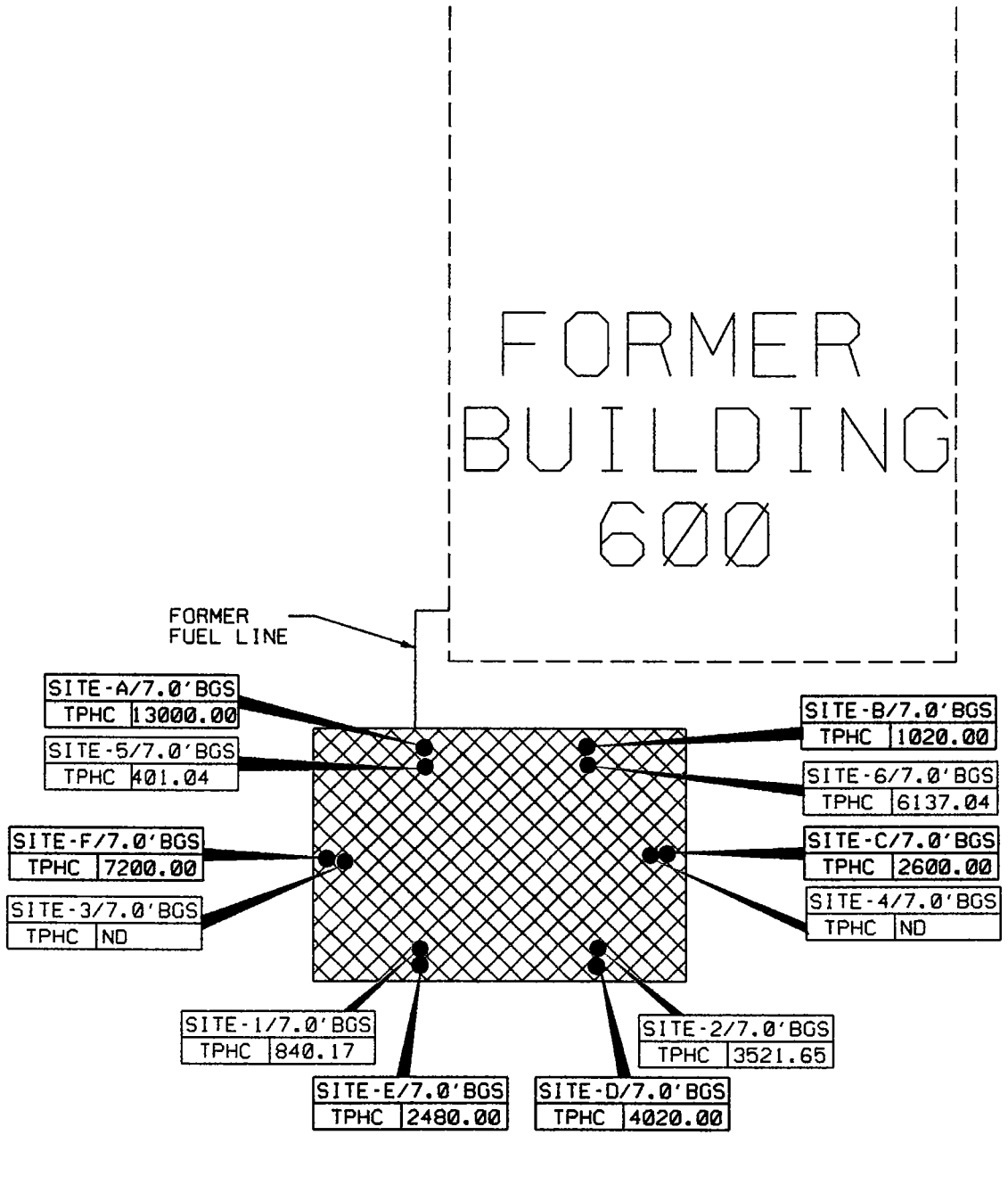
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-1
SOIL SAMPLING LOCATION MAP
BUILDING 600A
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

600B



LEGEND

- SOIL SAMPLE LOCATION (NOVEMBER 10, 1993)
- SOIL SAMPLE LOCATION (NOVEMBER 15, 2001)
- LIMIT OF EXCAVATION (NOVEMBER 15, 1993)

NOTES:

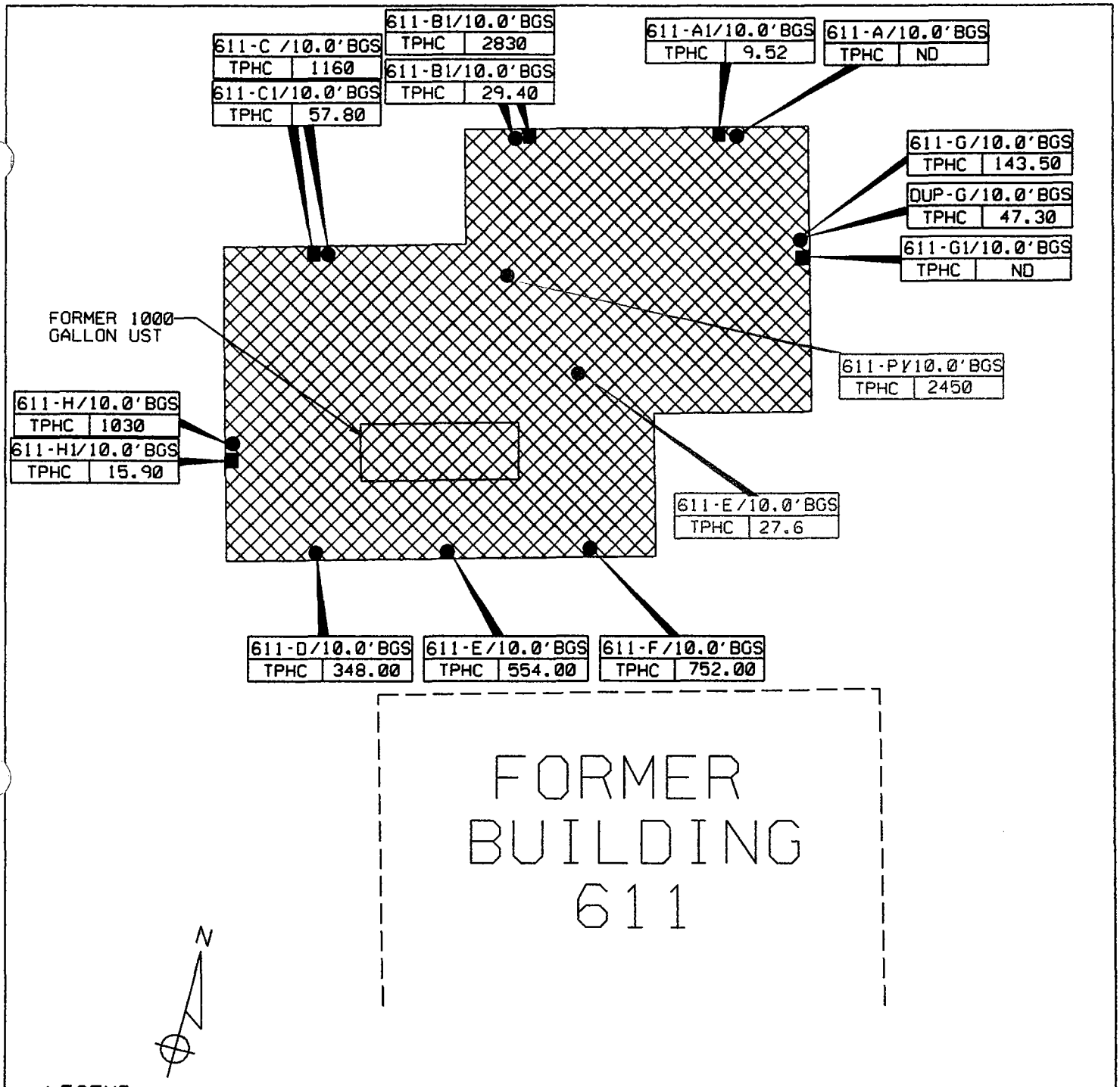
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-2
SOIL SAMPLING LOCATION MAP
BUILDING 600B
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 10' | DATE: FEB 2002

600B F



LEGEND

- SOIL SAMPLE LOCATION (AUGUST 18, 1994)
- SOIL SAMPLE LOCATION (SEPTEMBER 6, 1994)
- SOIL SAMPLE LOCATION (DECEMBER 16, 1994)
- LIMIT OF EXCAVATION (AUGUST 18, 1994)

NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS = BELOW GROUND SURFACE

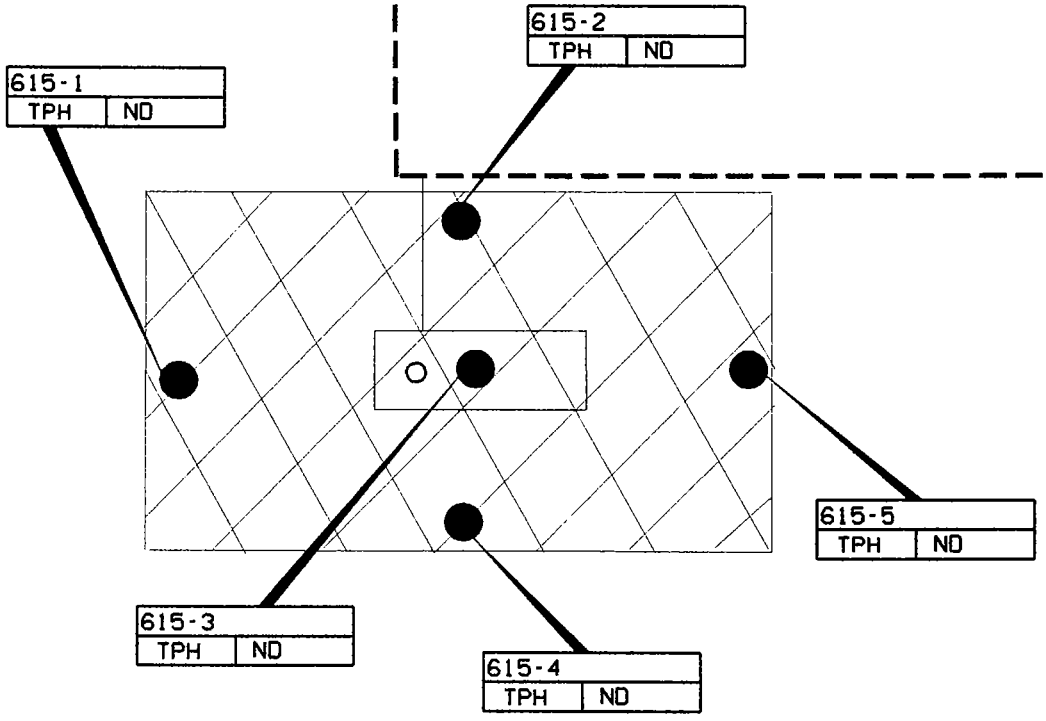
FIGURE 4-3
SOIL SAMPLING LOCATION MAP
BUILDING 611
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

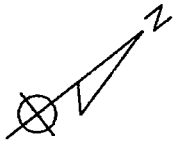
VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 10'

DATE: FEB 2002

611 f





LEGEND

- SOIL SAMPLE LOCATION (NOVEMBER 19, 2001)
- APPROXIMATE LIMIT OF EXCAVATION

NOTES:

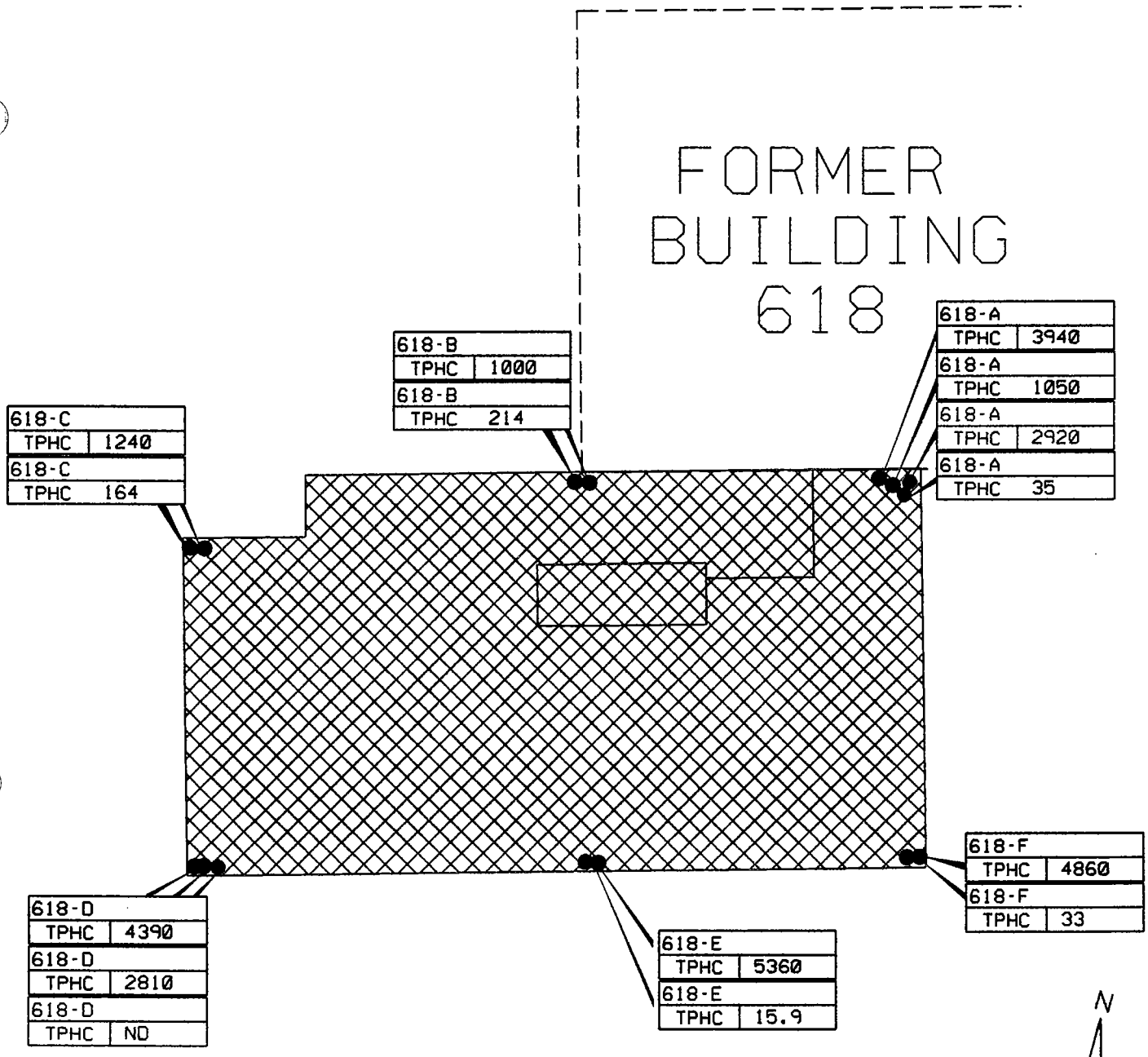
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-4
SAMPLE LOCATION MAP
BUILDING 615
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

619 F



LEGEND

- SOIL SAMPLE LOCATION (SEPTEMBER 6, 1994)
- SOIL SAMPLE LOCATION (SEPTEMBER 22, 1994)
- SOIL SAMPLE LOCATION (SEPTEMBER 27, 1994)
- SOIL SAMPLE LOCATION (JANUARY 4, 1995)
- LIMIT OF EXCAVATION

NOTES:

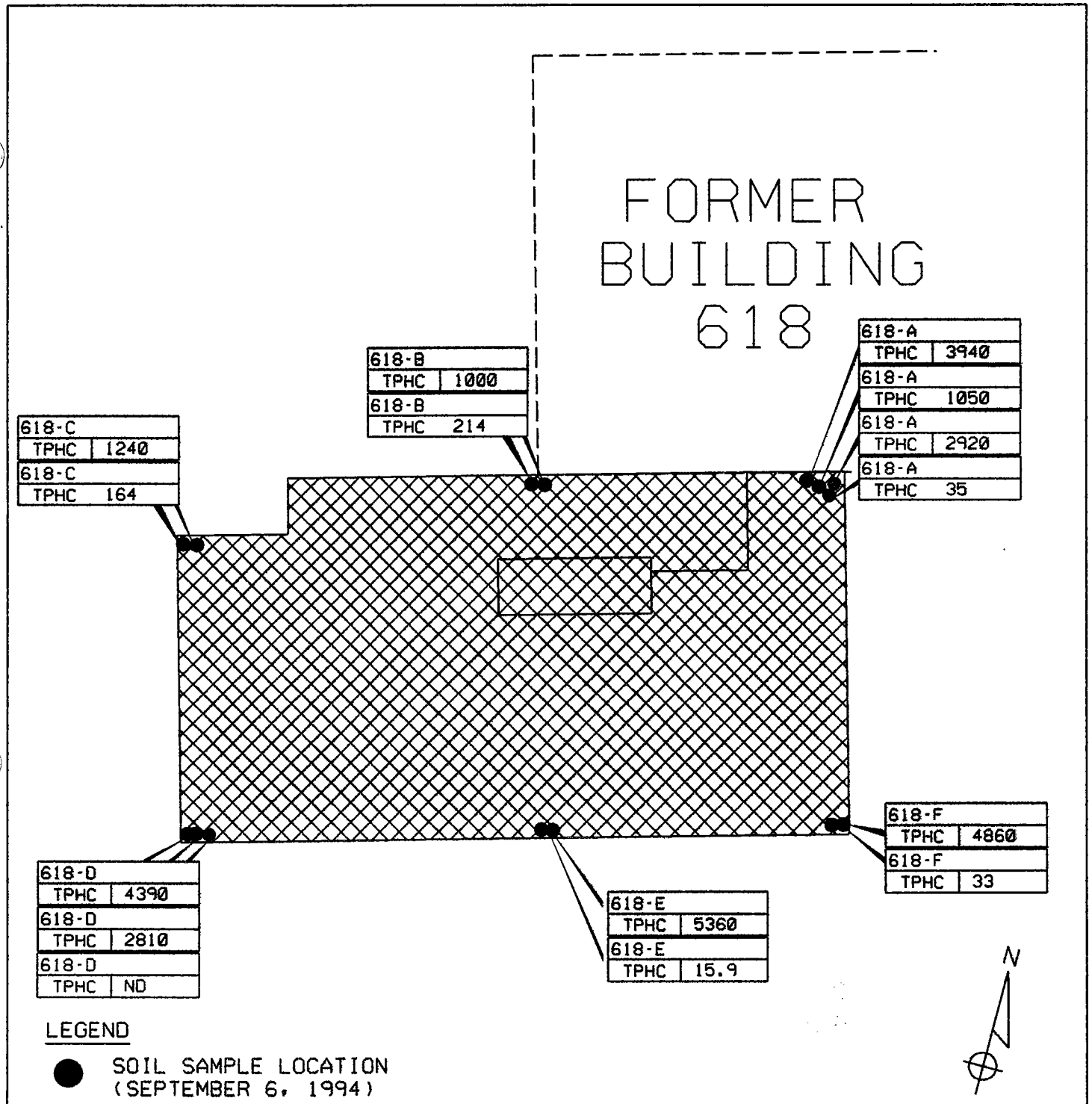
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-5
SOIL SAMPLING LOCATION MAP
BUILDING 618
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

618 FI



LEGEND

- SOIL SAMPLE LOCATION (SEPTEMBER 6, 1994)
- SOIL SAMPLE LOCATION (SEPTEMBER 22, 1994)
- SOIL SAMPLE LOCATION (SEPTEMBER 27, 1994)
- SOIL SAMPLE LOCATION (JANUARY 4, 1995)
- LIMIT OF EXCAVATION

NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

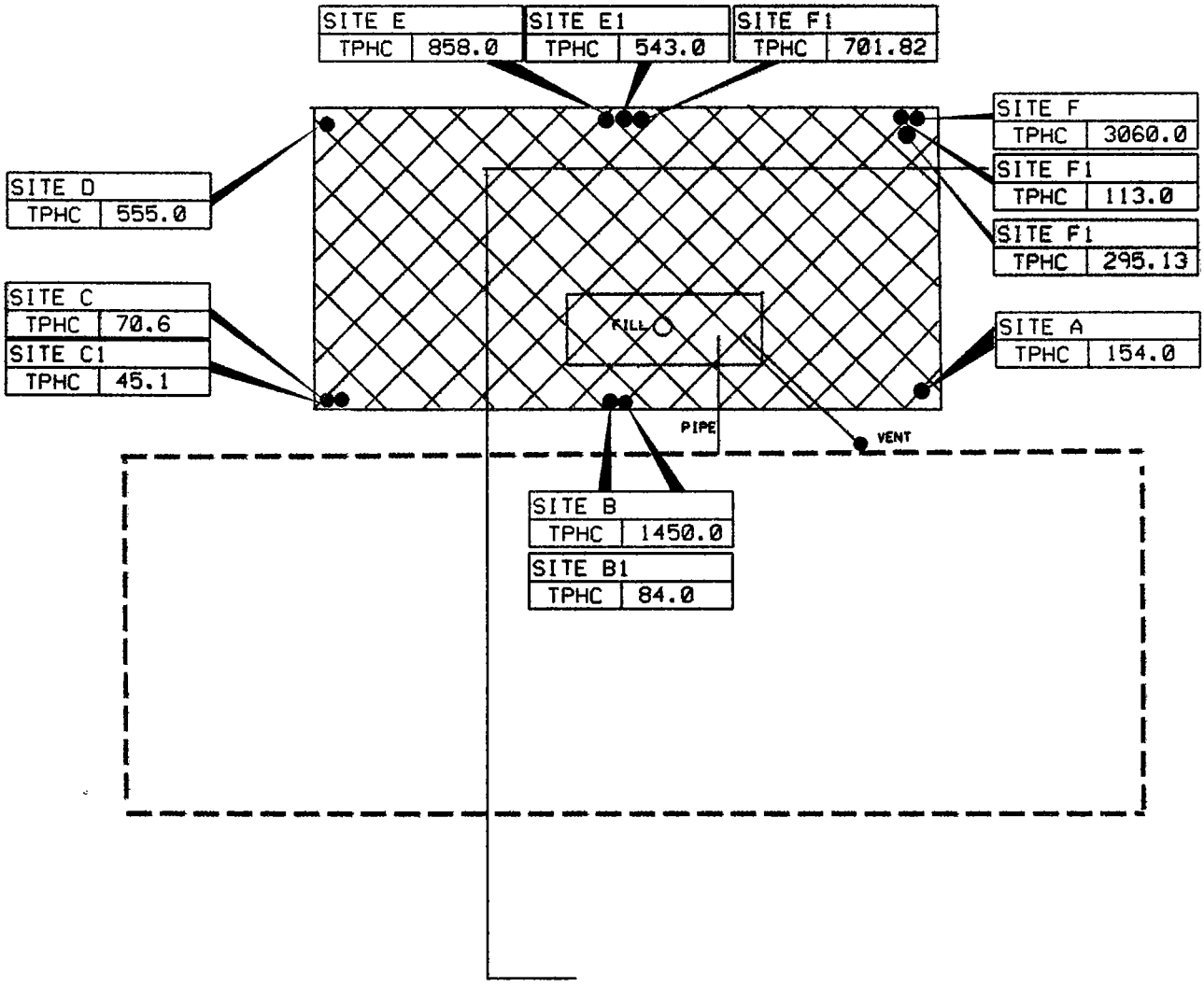
FIGURE 4-5
SOIL SAMPLING LOCATION MAP
BUILDING 618
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 10'

DATE: FEB 2002

618 F...



LEGEND

- SOIL SAMPLE LOCATION (AUGUST 25, 1994)
- SOIL SAMPLE LOCATION (SEPTEMBER 9, 1994)
- SOIL SAMPLE LOCATION (OCTOBER 12, 2001)
- LIMIT OF EXCAVATION (DECEMBER 16, 1994)

NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

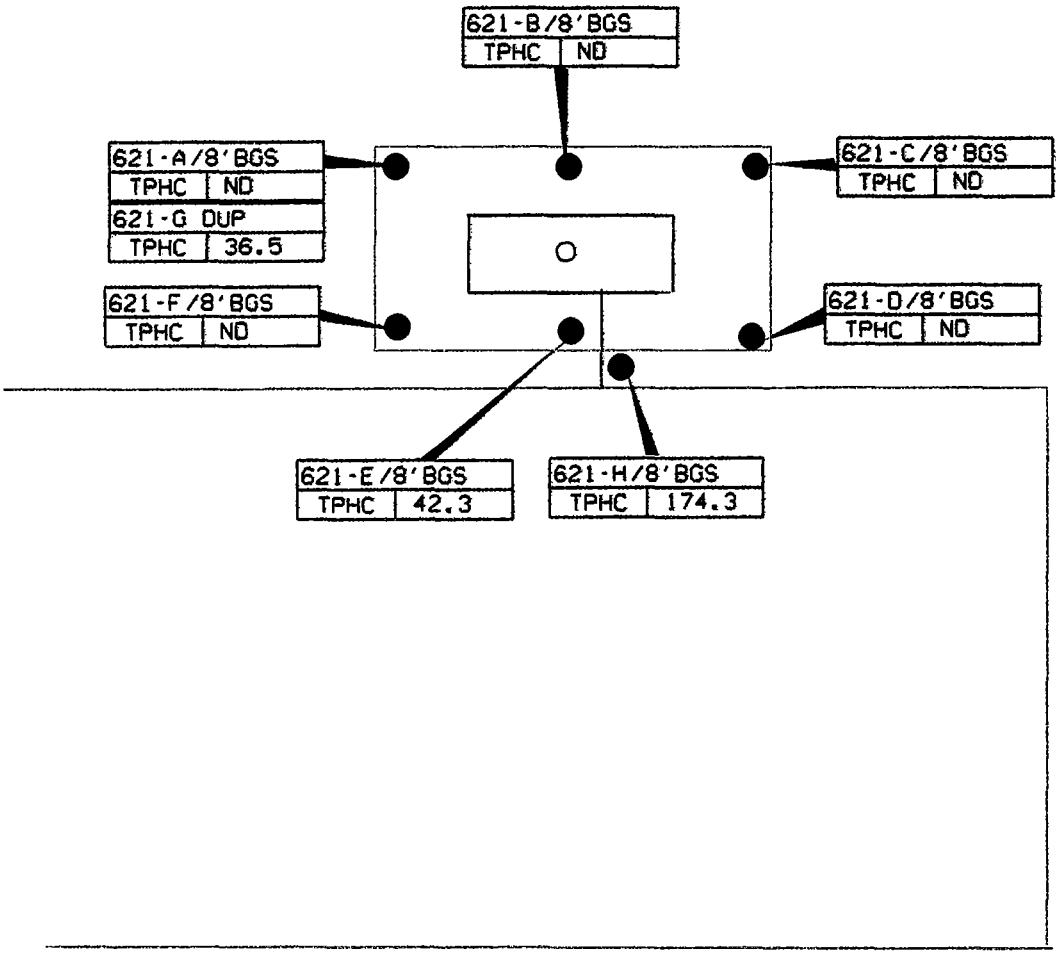
FIGURE 4-6
SOIL SAMPLING LOCATION MAP
BUILDING 619
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 10'

DATE: FEB 2002

619 F1



LEGEND

● SOIL SAMPLE LOCATION (AUGUST 25, 1994)

□ LIMIT OF EXCAVATION

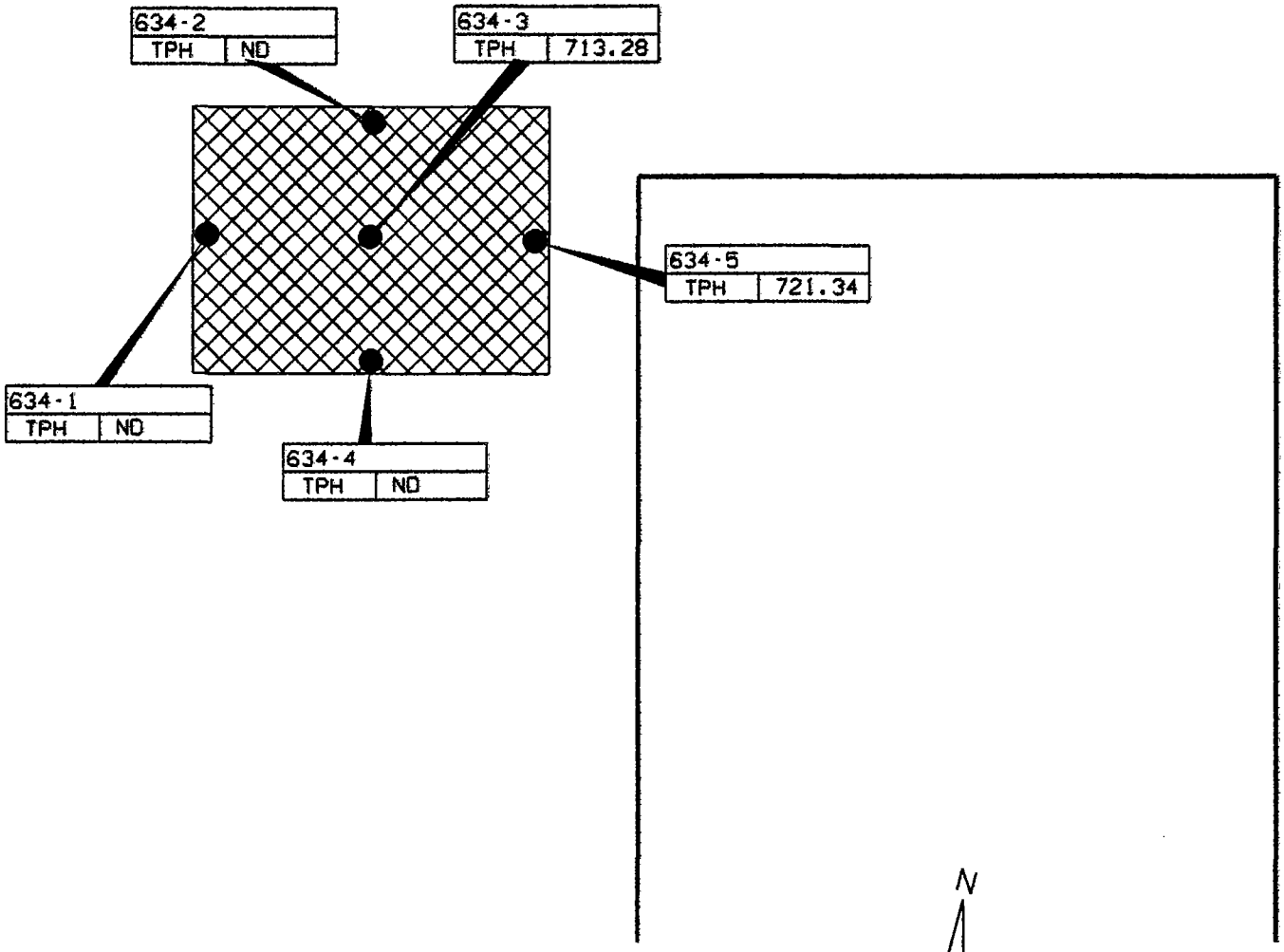
NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS = BELOW GROUND SURFACE

FIGURE 4-7
SOIL SAMPLING LOCATION MAP
BUILDING 621
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002



LEGEND

- SOIL SAMPLE LOCATION (NOVEMBER 19, 2001)
- LIMIT OF EXCAVATION

NOTES:

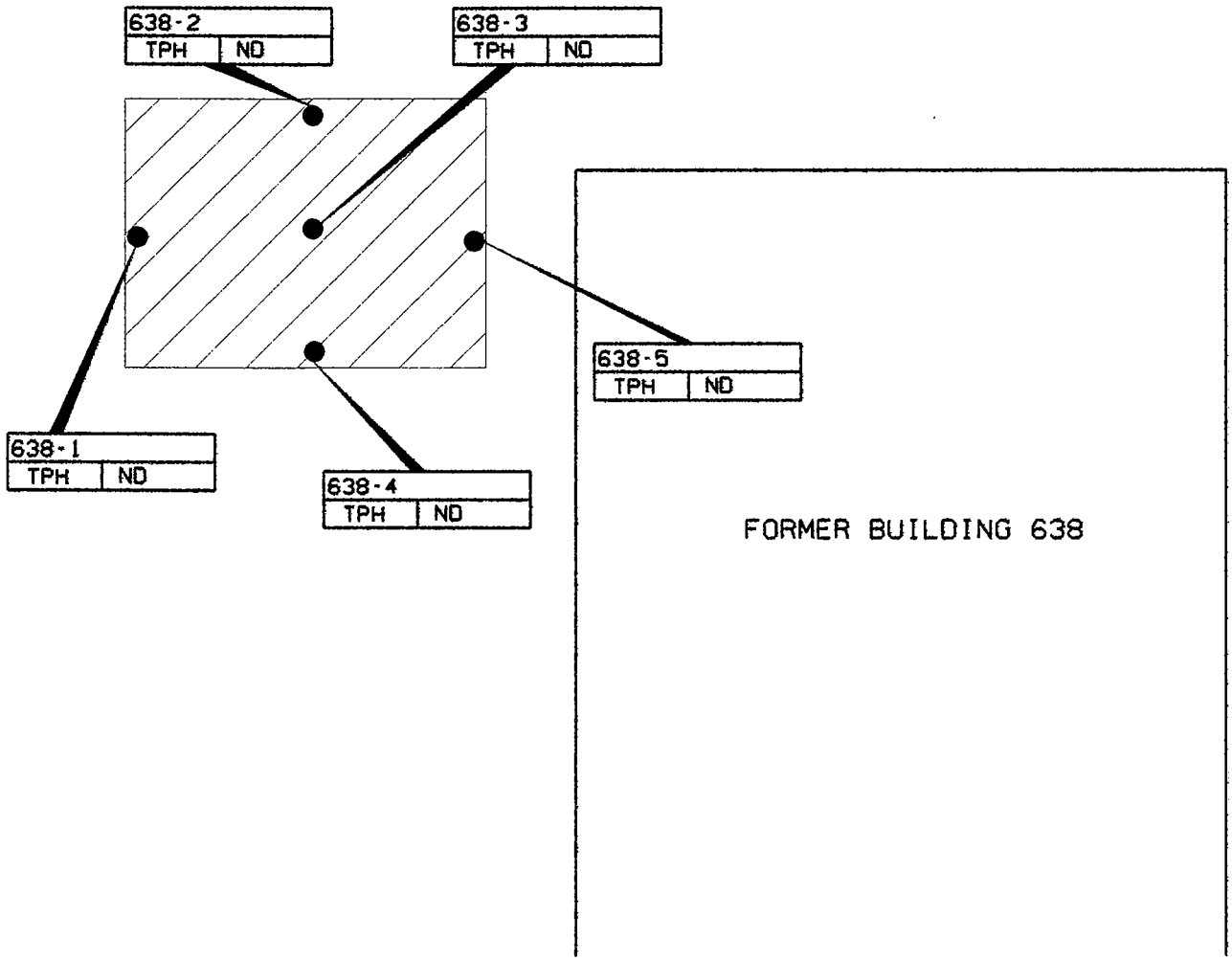
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-8
SOIL SAMPLING LOCATION MAP
BUILDING 634
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

634 F1



LEGEND

- SOIL SAMPLE LOCATION (OCTOBER 13, 2001)
- LIMIT OF EXCAVATION

NOTES:

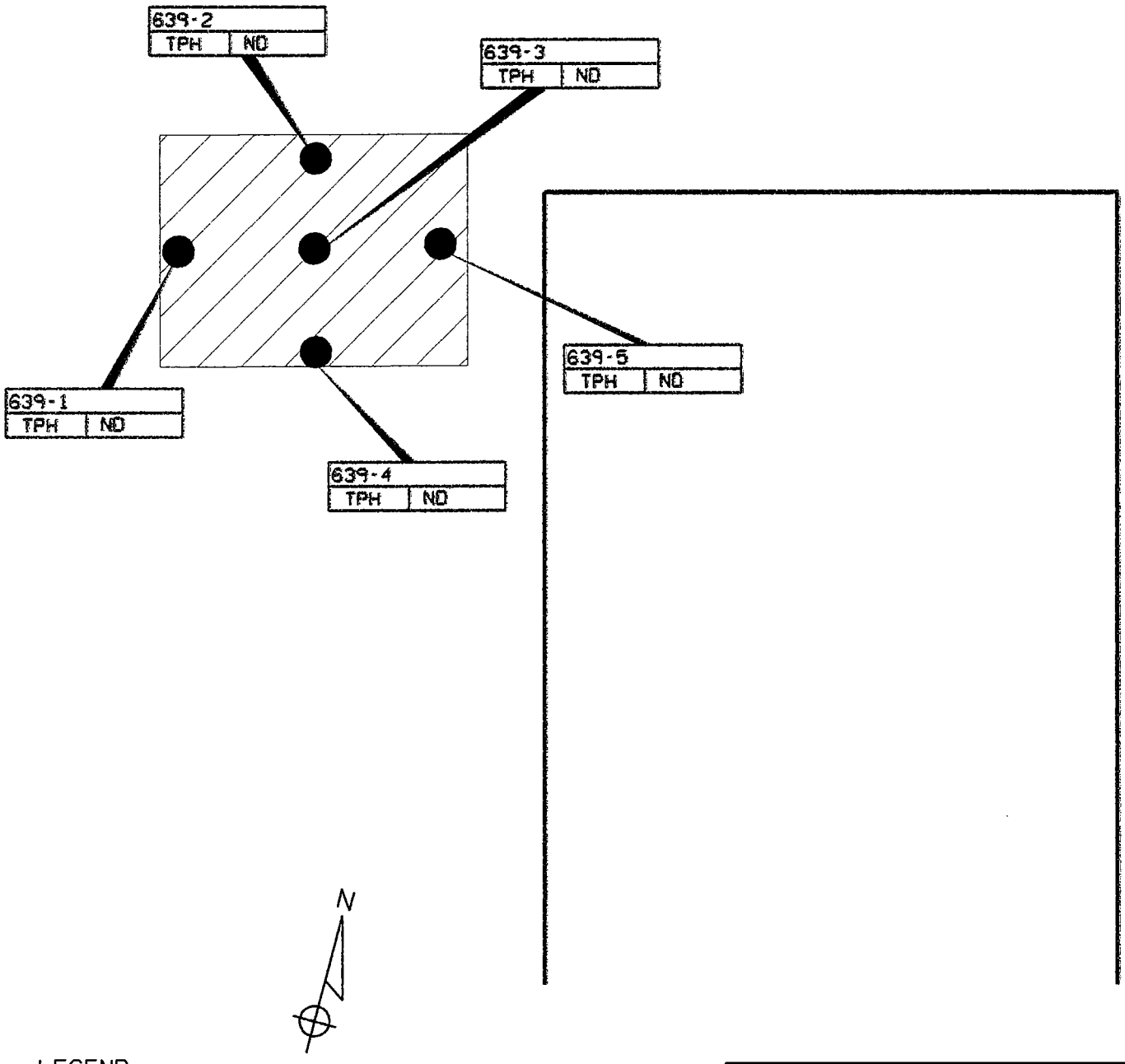
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-9
SOIL SAMPLING LOCATION MAP
BUILDING 638
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

638 F



LEGEND

● SOIL SAMPLE LOCATION (OCTOBER 13, 2001

▨ LIMIT OF EXCAVATION

NOTES:

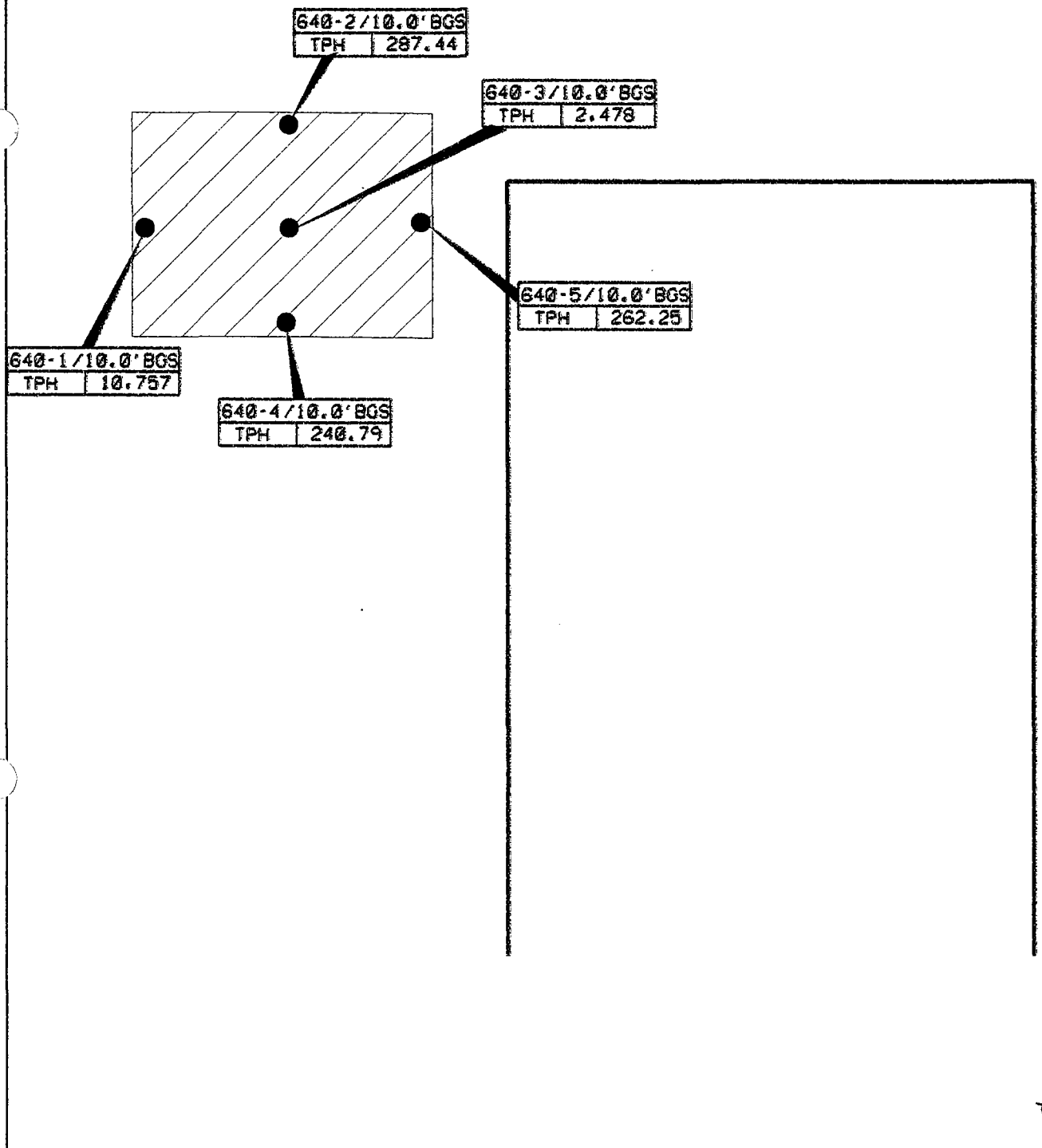
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-10
SOIL SAMPLING LOCATION MAP
BUILDING 639
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

638 F1



LEGEND

- SOIL SAMPLE LOCATION (NOVEMBER 8, 2001)
- LIMIT OF EXCAVATION

NOTES:

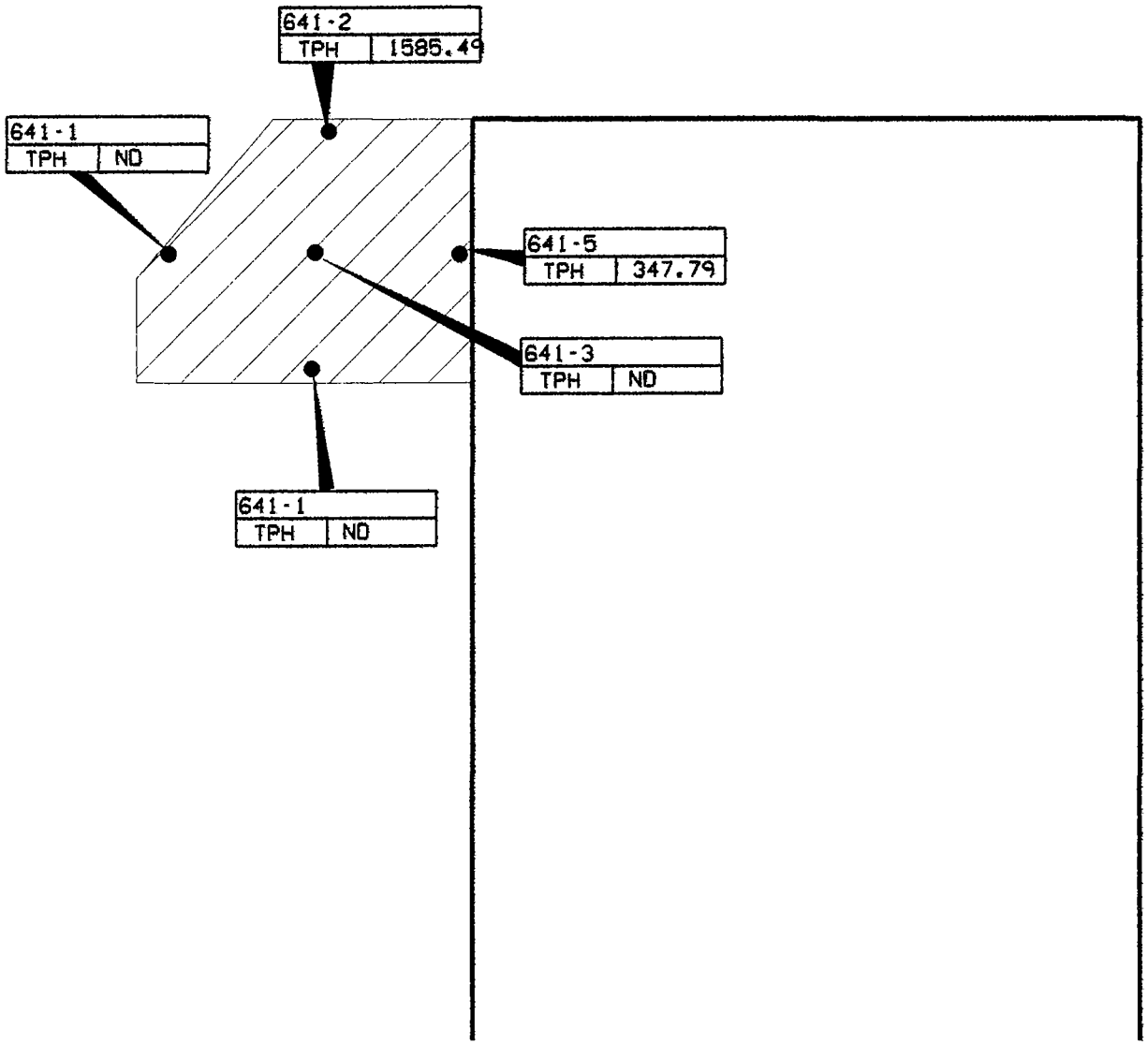
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-11
SOIL SAMPLING LOCATION MAP
BUILDING 640
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

640 F



LEGEND

- SOIL SAMPLE LOCATION (OCTOBER 26, 2001)
- LIMIT OF EXCAVATION (DECEMBER 16, 1994)

NOTES:

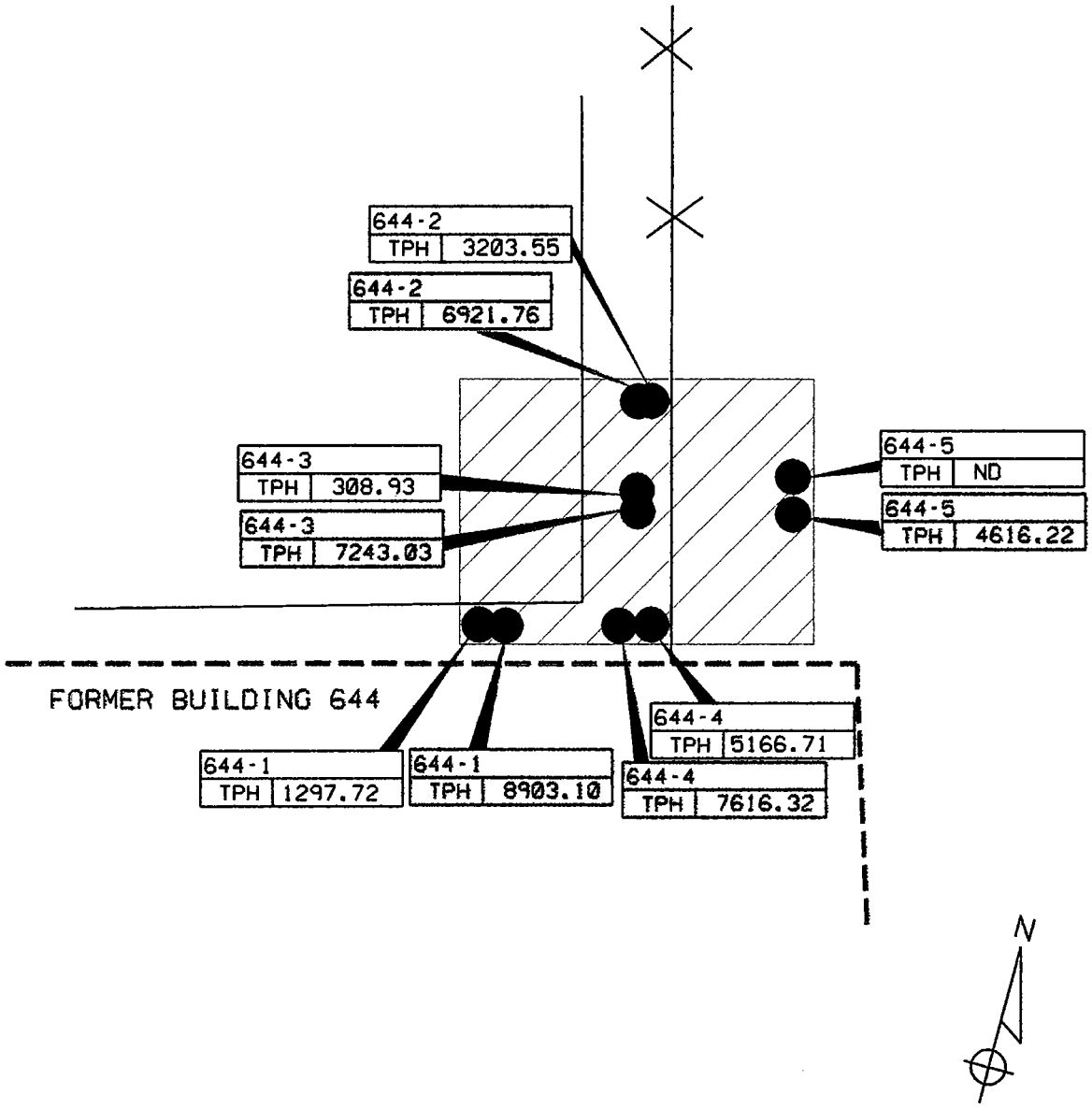
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-12
SOIL SAMPLING LOCATION MAP
BUILDING 641
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002

641 F-1



LEGEND

- SOIL SAMPLE LOCATION (OCTOBER 12, 2001)
- SOIL SAMPLE LOCATION (JANUARY 3, 2002)
- APPROXIMATE LIMIT OF EXCAVATION

NOTES:

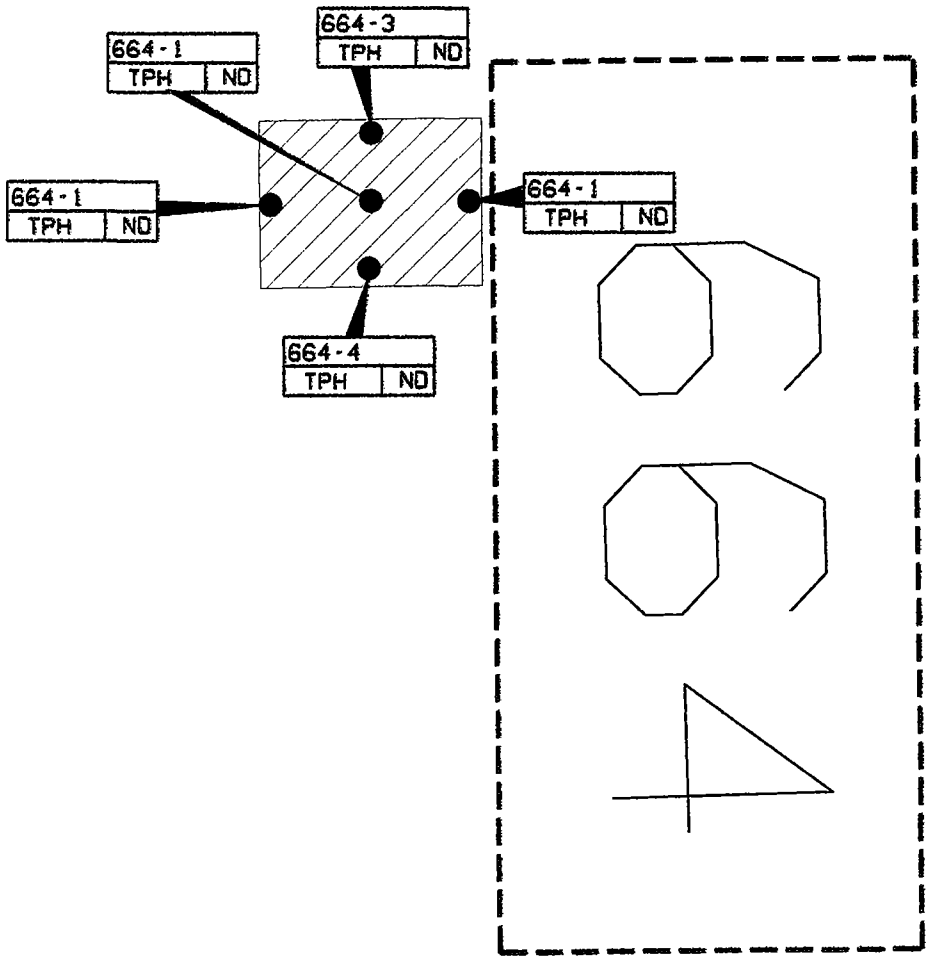
1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-13
SOIL SAMPLING LOCATION MAP
BUILDING 644
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1" = 10'

DATE: FEB 2002



LEGEND

● SOIL SAMPLE LOCATION (NOVEMBER 14, 2001)

LIMIT OF EXCAVATION

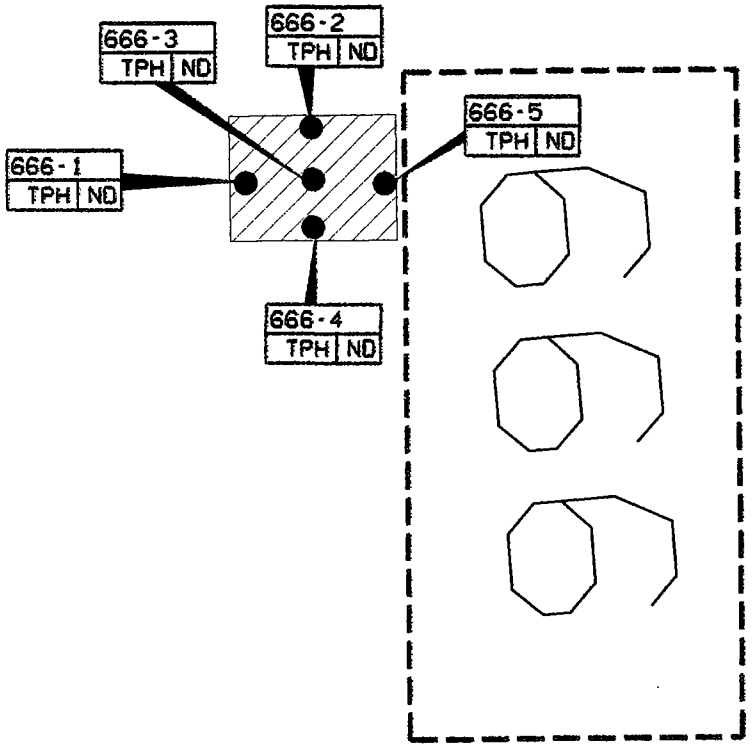
NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-14
SOIL SAMPLING LOCATION MAP
BUILDING 664
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002



LEGEND

● SOIL SAMPLE LOCATION (NOVEMBER 14, 2001)

LIMIT OF EXCAVATION

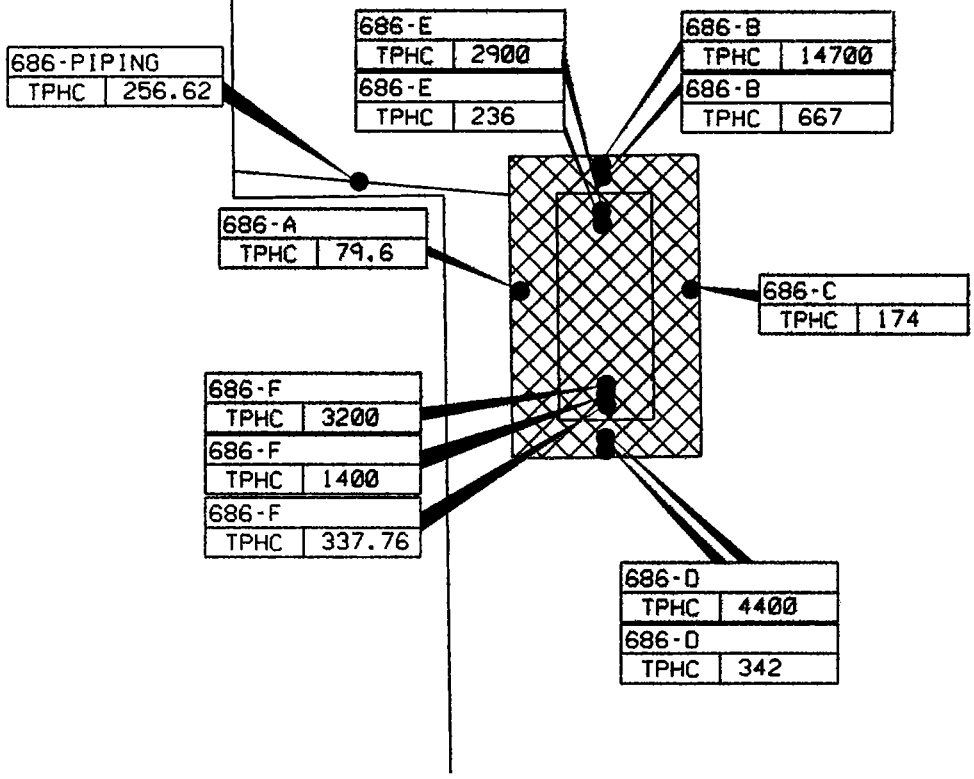
NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-15
SOIL SAMPLING LOCATION MAP
BUILDING 666
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2002



LEGEND

- SOIL SAMPLE LOCATION (JANUARY 18, 1995)
- SOIL SAMPLE LOCATION (JANUARY 27, 1995)
- SOIL SAMPLE LOCATION (NOVEMBER 15, 2001)

LIMIT OF EXCAVATION

NOTES:

1. ALL RESULTS IN MG/KG.
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS - BELOW GROUND SURFACE

FIGURE 4-16
SOIL SAMPLING LOCATION MAP
BUILDING 686
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

VERSAR
ENGINEERS, MANAGERS, SCIENTISTS & PLANNERS
BRISTOL, PA.

SCALE: 1"=10' | DATE: FEB 2001

I-4 686

ATTACHMENT C
Field Notes from the Excavation of UST 81533-107

UNDERGROUND STORAGE TANK (UST)
CLOSURE CERTIFICATION

BUILDING NO. 686

NJDEP UST REGISTRATION NO. 81533-107

DATE TANK REMOVED 12/8/94

LIO / CONTRACT NUMBER 91-0148

I CERTIFY UNDER PENALTY OF LAW THAT TANK DECOMMISSIONING ACTIVITIES WERE PERFORMED IN COMPLIANCE WITH NJAC 7:14B-9.2(b)3. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE, INACCURATE, OR INCOMPLETE INFORMATION, INCLUDING FINES AND/OR IMPRISONMENT.

NAME (Print or Type) George Bernotsky

SIGNATURE

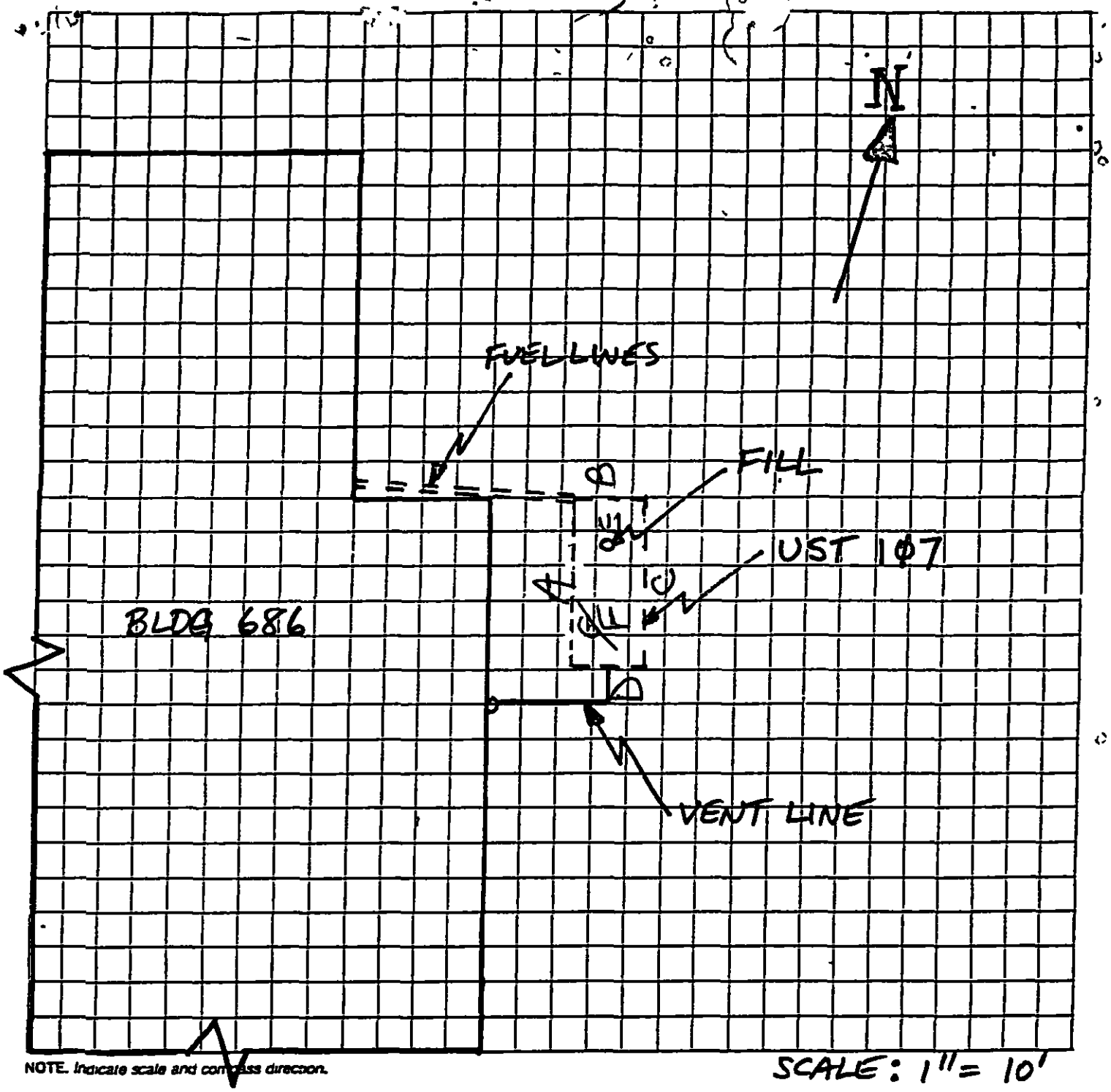
NJDEP UST CLOSURE CERTIFICATE NO. 0003249

COMPANY PERFORMING TANK DECOMMISSIONING CUTE Inc

NJDEP UST CLOSURE CORPORATE CERTIFICATE NO. 0200128

DATE OF SUBMITTAL 1/13/95

PROPOSED SITE PLAN



NOTE. *Indicate scale and compass direction.*

SCALE: 1" = 10'

REMARKS

TANK LOCATION

BLDG# 686

TANK # 00081533-107

TANK SIZE 2000 GALLONS

TANK CONTENTS NO. 2 HEATING OIL

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEPE Certification # 13461

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 1782.1-.7
Sample Rec'd: 01/18/95
Analysis Start: 01/19/95
Analysis Comp: 01/20/95

Analysis: 418.1 (TPH)
Matrix: Soil
Analyst: S. Hubbard
Ext. Meth: 3540A

NJDEPE UST Reg.#: **81533-107**
Closure #:
DICAR #: **94-12-8-1040-10**
Location #: **Bldg. 686**

Lab ID.	Description		%Solid	Result (mg/Kg)	MDL
1782.1	Site A, W. Sidewall	OVA=ND	87	79.6	8.2
1782.2	Site B, N. Sidewall	OVA=ND	88	14700.	100
1782.3	Site C, E. Sidewall	OVA=ND	85	174.	8.4
1782.4	Site D, S. Sidewall	OVA=1.	88	4400.	53.
1782.5	Site E, N. Floor	OVA=ND	82	2900.	55.
1782.6	Site F, S. Floor	OVA=ND	86	3200.	57.
1782.7	Site G, Dup		81	1600.	8.1
M. Bl.	Method Blank		100	ND	3.3

Notes: ND = Not Detected, MDL = Method Detection Limit
* = Silica Gel Added, NA = Not Applicable
1782.3S= 115%, 1782.3SD= 113%, RPD= 2.1% 1782.3 Dup= 35%
Cal. Check = 103%
QC Limits: Recovery= +/-28%, RPD=19.7%

Brian K. McKee
Laboratory Director

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEPE Certification # 13461

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 1790.1-.4
Sample Rec'd: 01/27/95
Analysis Start: 02/03/95
Analysis Comp: 02/04/95

Analysis: 418.1 (TPH)
Matrix: Soil
Analyst: S. Hubbard
Ext. Meth: 3540A

NJDEPE UST Reg.#: **81533-107**
Closure #:
DICAR #: **94-12-8-1040-10**
Location #: **Bldg. 686**

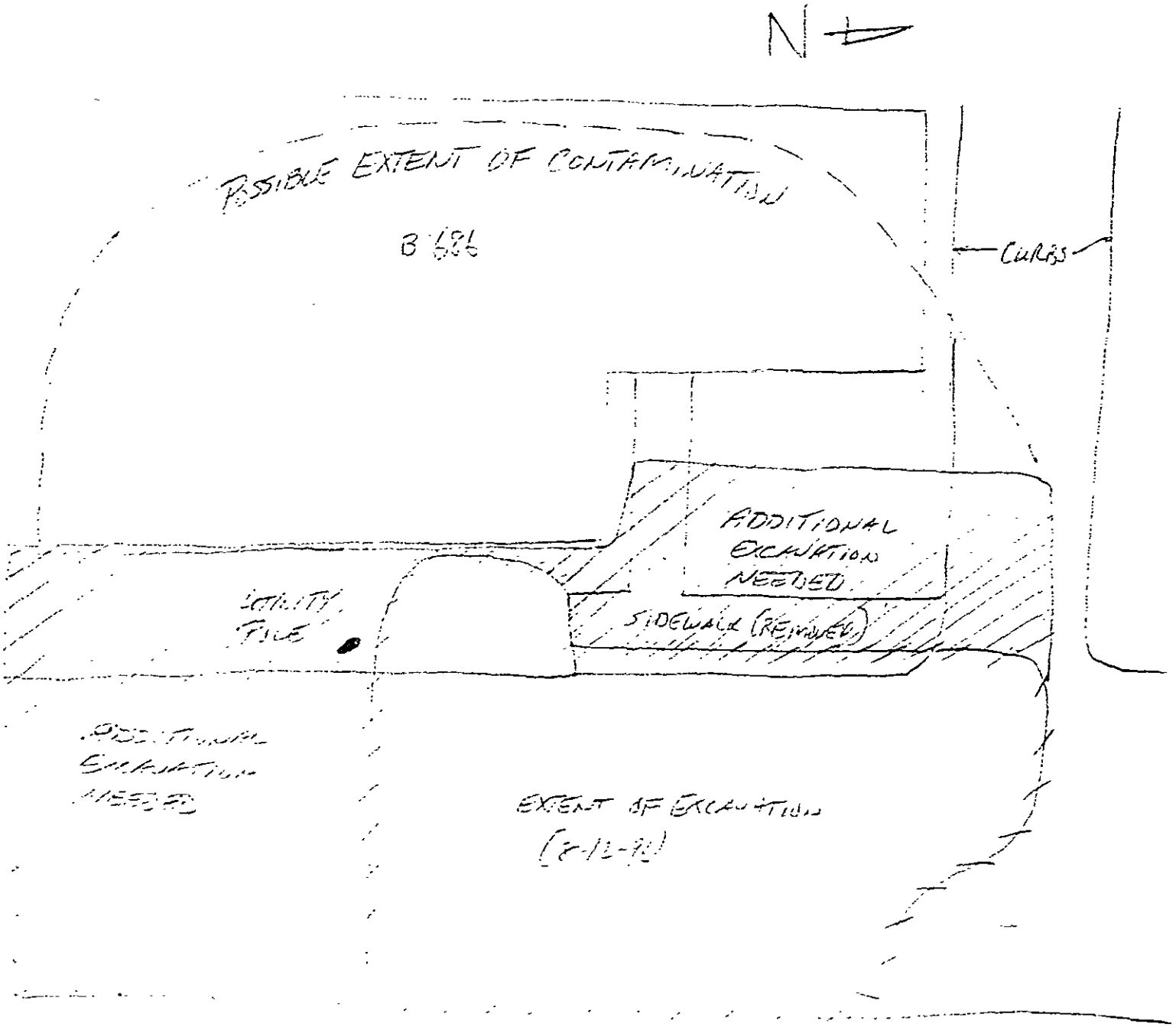
Lab ID.	Description		%Solid	Result (mg/Kg)	MDL
1790.1	Site D1	OVA=	81	342.	16.
1790.2	Site B1	OVA=	85	667.	7.8
1790.3	Site E1	OVA=	87	236.	8.1
1790.4	Site F1	OVA=	86	1400.	7.7
M. Bl.	Method Blank		100	ND	3.3

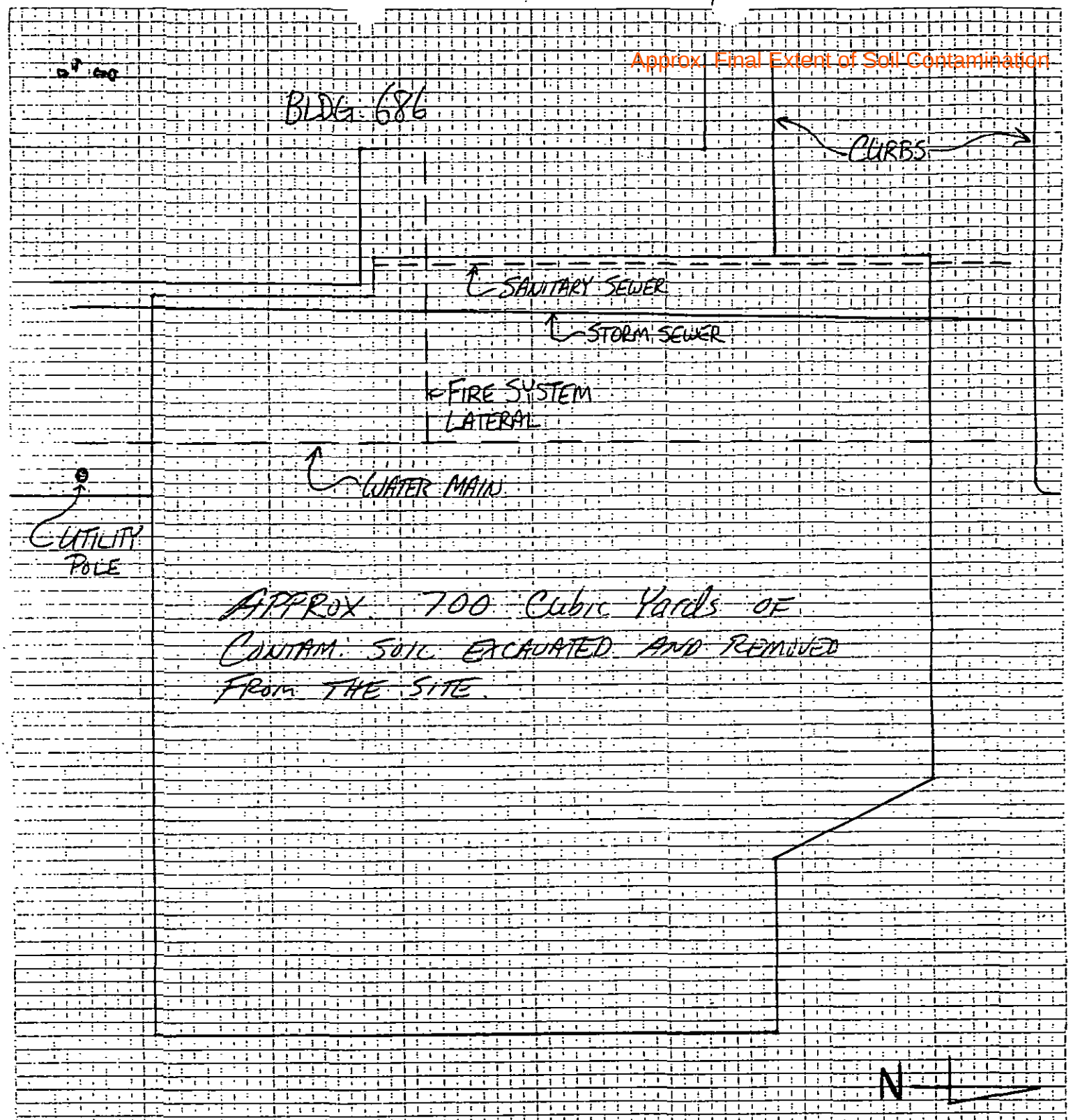
Notes: ND = Not Detected, MDL = Method Detection Limit
* = Silica Gel Added, NA = Not Applicable
1790.1S= 124%, 1790.1SD= 134%, RPD= 7.9% 1790.1 Dup=100%
Cal. Check = 107%
QC Limits: Recovery = 60% to 140% and RPD = 15.75% at 2 Std. Dev.

Brian K. McKee
Laboratory Director

Predicted Extent of Soil Contamination

BASED IN S.E CONDITIONS, THE FOLLOWING IS A PREDICTION OF WHAT THE FINAL EXCAVATION WILL BE LIKE AND EXTENT OF THE CONTAMINATION.





BUILDING NO. 686-REMEDIATION

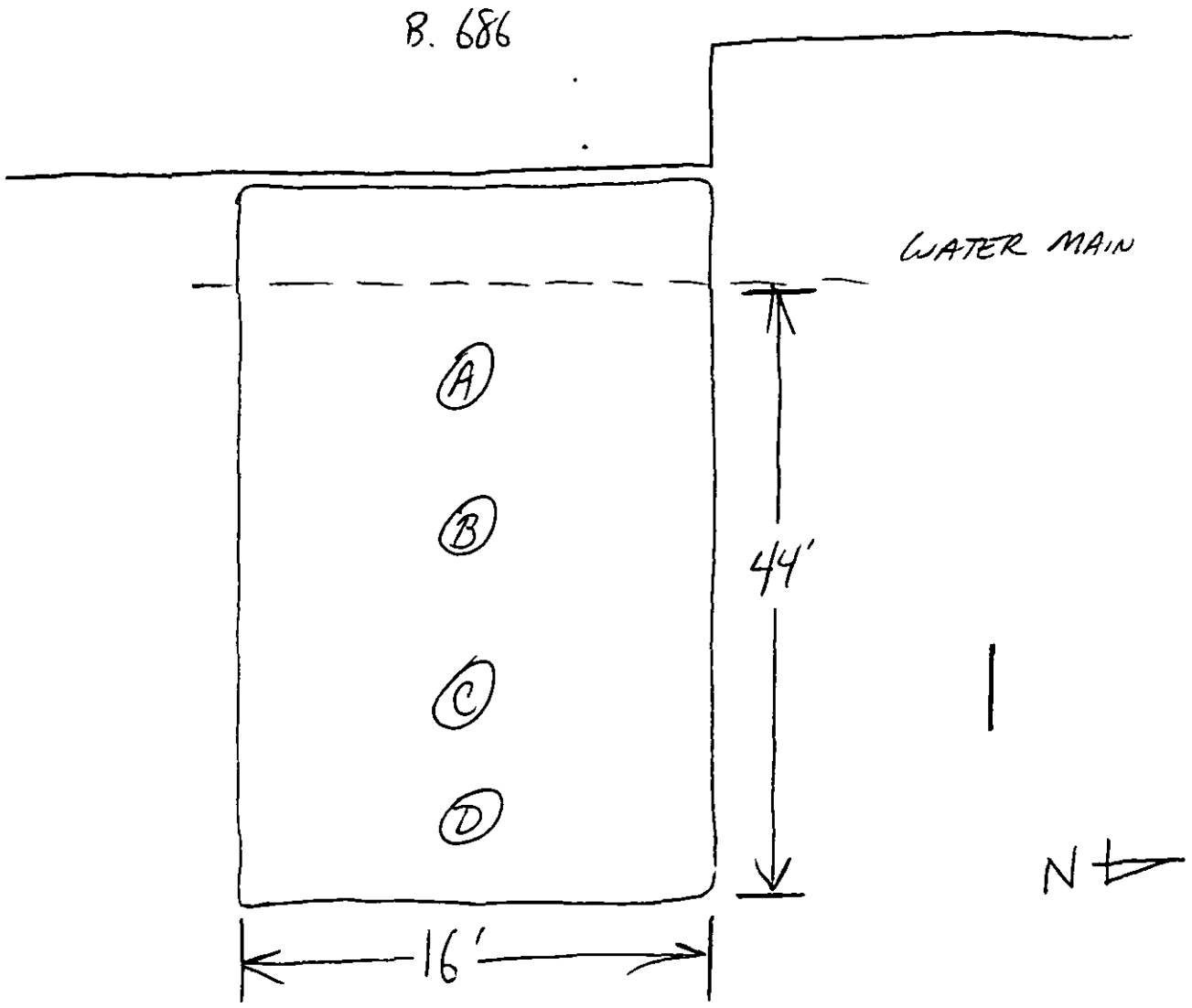
TANK NO.

TANK SIZE:

TANK CONTENTS:

REMARKS:
SCALE: 1" = 10' (APPROX.)

7-2-96 SAMPLING EVENT



FLOOR SAMPLES @ 8'
DUP = A

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2108.1-.5
Sample Rec'd: 07/02/96
Analysis Start: 07/02/96
Analysis Comp: 07/03/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: D. Wright
Ext. Meth: Shake

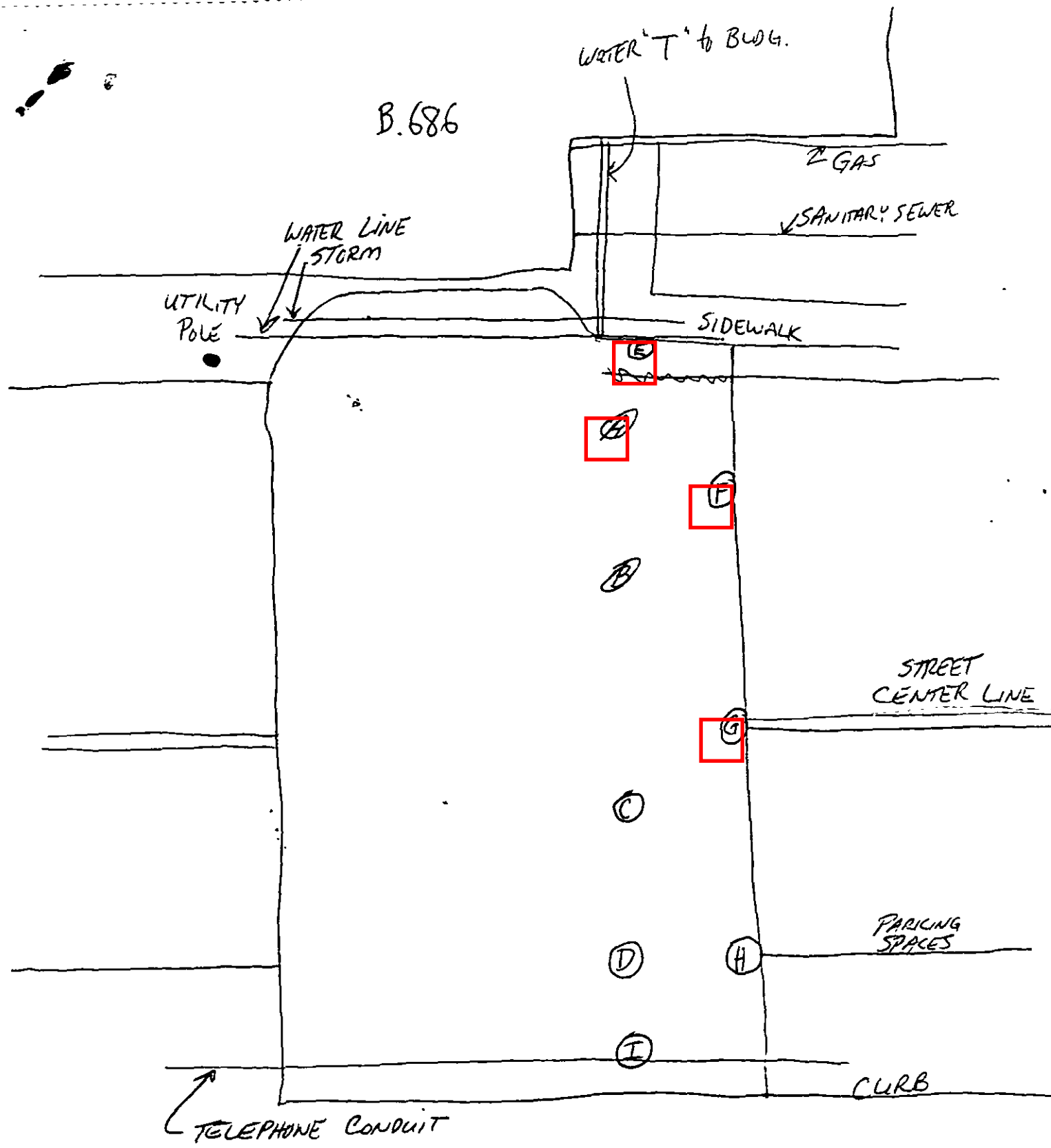
NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-A(Exc. Floor @ 9')	10	96.6	200	64.5	ND
686-B	2	83.2	200	104.7	350
686-C	11	82.1	200	57.0	ND
686-D	1	80.6	200	83.7	ND
686-DUP (Field Dup)	-	86.2	200	62.7	ND
Method Blank	NA	100	200	87.5	ND

QC: 2097.1S= 97%, 2097.1SD= 79%, RPD=20.0%, 2097.1dup=100% @ ND
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director



7-11-96 SAMPLING EVENT
GW@7'
F=DUP

NL

Indicates that TPH > 1000 mg/kg

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2115.1-.10
Sample Rec'd: 07/12/96
Analysis Start: 07/17/96
Analysis Comp: 07/18/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: D. Wright
Ext. Meth: Shake

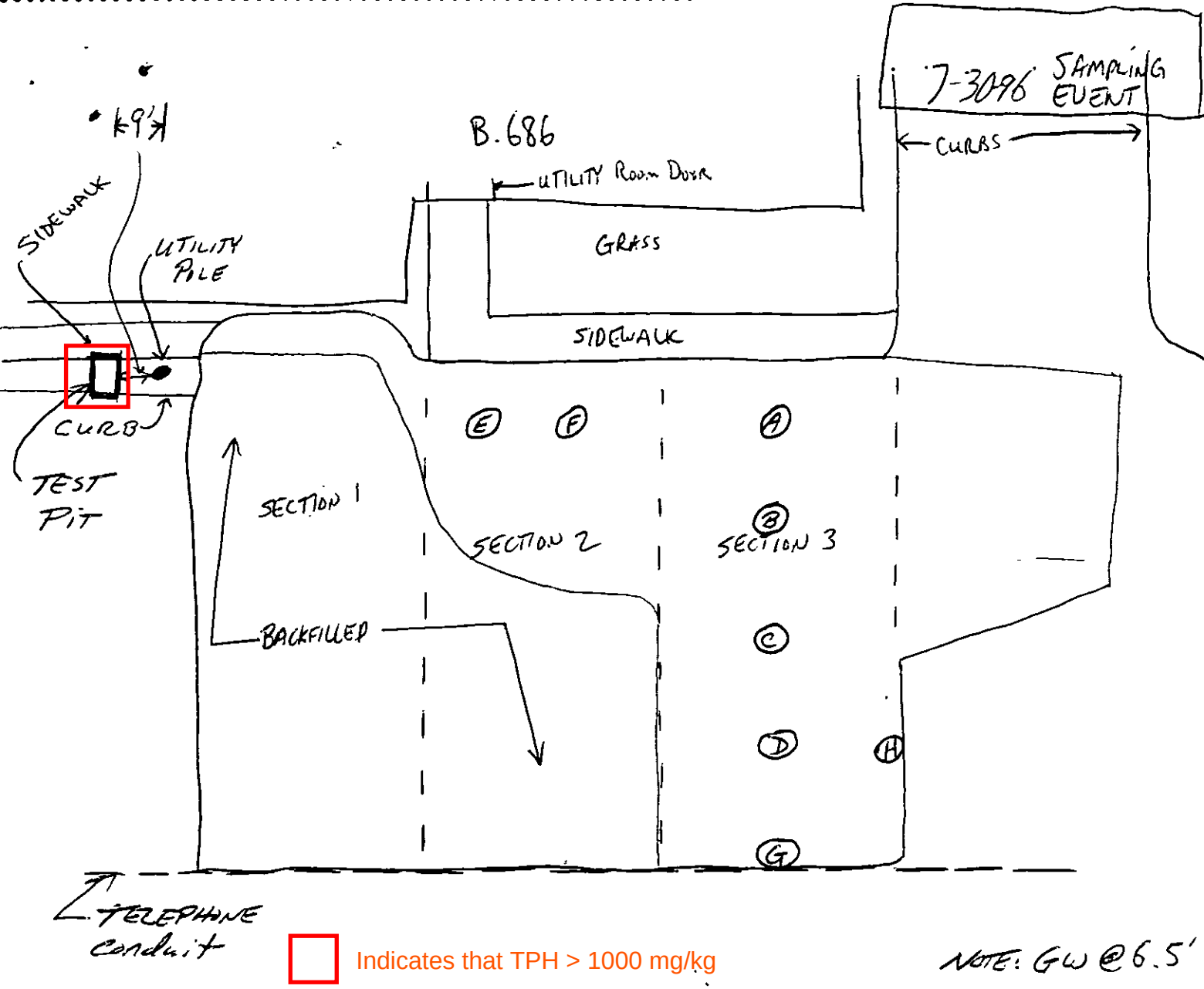
NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-A(EXC. FLOOR@9')	ND	79.8	200	84.5	8570
686-B	ND	79.7	200	121.2	ND
686-C	ND	80.7	200	142.0	ND
686-D	-	75.3	200	109.2	ND
686-E(SIDEWALL@6.5')		86.5	200	62.5	6480
686-F		86.9	200	95.2	6780
686-G		88.1	200	98.0	8640
686-H		85.8	200	115.0	ND
686-I		86.8	200	122.2	700
686-DUP(FIELD DUP.)		87.8	200	76.0	8100
Method Blank	NA	100	200	123.2	ND

QC: 2115.4S=124%, 2115.4SD=115%, RPD=7.5%, 2115.4 DUP=100% @ ND
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director



Indicates that TPH > 1000 mg/kg

NOTE: GW @ 6.5'

OVA CAL. 1436 ON 7-30-96
CHECKED @ 0824 ON 7-31-96

N

	FIELD ID	DATE	TIME	DESCRIPTION	OVA
	~~686-TP/A~~	7-30-96	1447	TEST PIT @ 3.5'	100
(DUP)	686-TP/B	"	1452	" @ 6.0'	50
→	686-TP/C	"	1501	" @ 8.5'	50
	686-A	7-31-96	915	E.F. @ 9'	40
	B		906		60
	C		853		10
	D		842		10
	E		932	E.F. @ 10.5'	50
	F		945	"	50
	G		832	S.W. @ 6'	4
	H		836	"	ND

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2125.1-.12
Sample Rec'd: 07/31/96
Analysis Start: 07/31/96
Analysis Comp: 08/01/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: D. Wright
Ext. Meth: Shake

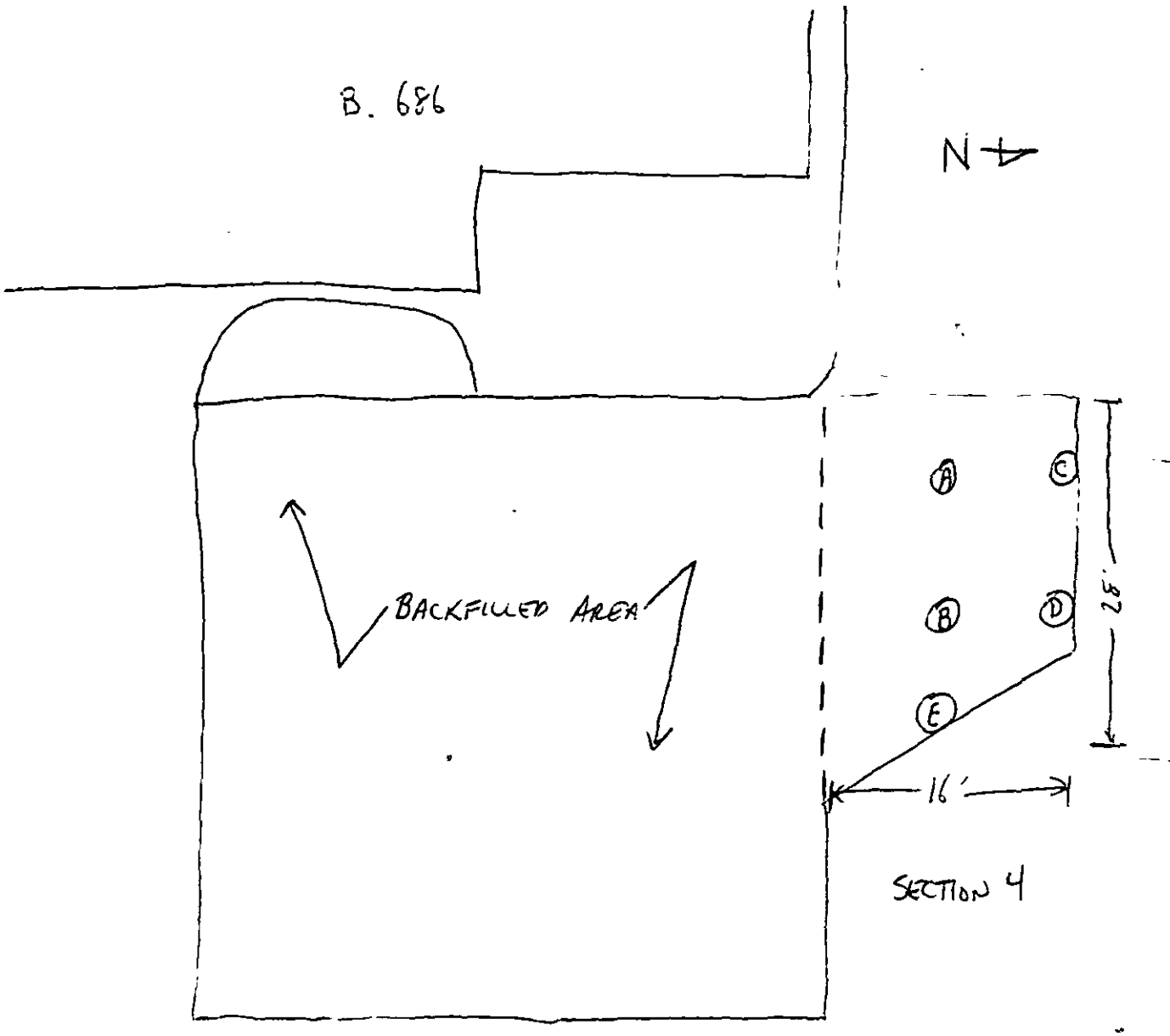
NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-TP/A-TESTPIT@3.5'	100	76.5	200	137.5	2020
686-TP/B-TESTPIT@6'	50	87.6	200	142.5	12500
686-TP/C-TESTPIT@8.5'	50	79.2	200	73.8	7380
686-A-EXC FLOOR@9'	40	79.2	200	107.5	ND
686-B	60	80.0	200	102.7	ND
686-C	10	77.1	200	99.2	ND
686-D	10	77.1	200	111.2	ND
686-E-EXCFL.@10.5'	50	74.0	200	103.2	ND
686-F	50	87.3	200	99.3	ND
686-G-SIDEWALL@6'	4	85.7	200	103.0	ND
686-H-SIDEWALL@6'	ND	82.4	200	108.0	ND
686-DUP(FIELD DUP)	--	85.6	200	65.2	6500
Method Blank	NA	100	200	60.5	ND

QC: *2125.12S=0%, *2125.12SD=0%, 2125.12DUP=80% @ 5210
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director



8-15-96 SAMPLING EVENT GW@7'
QUA CAL. @ 10:22
DUP = E

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2131.1-.6
Sample Rec'd: 08/15/96
Analysis Start: 08/15/96
Analysis Comp: 08/16/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

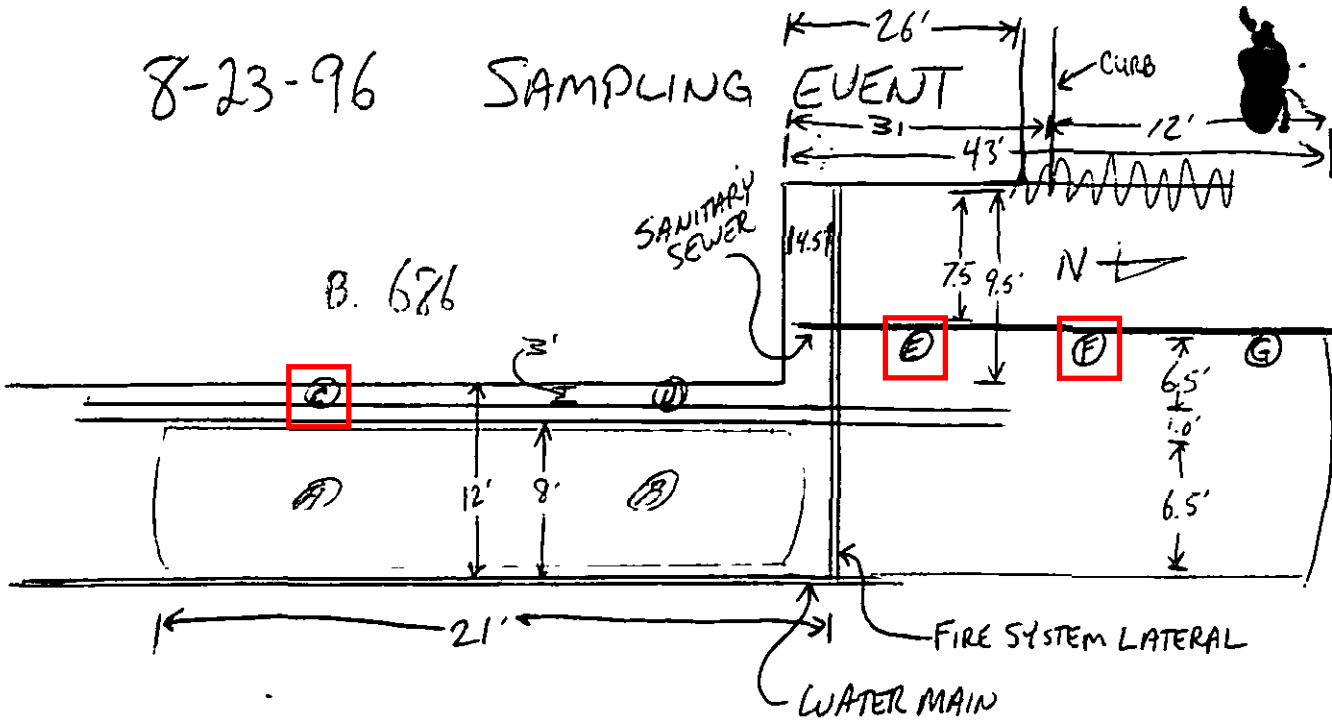
NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-A (Exc. Floor @ 9')	100	72.2	200	84.8	ND
686-B (Exc. Floor @ 9')	10	70.5	200	71.2	250
686-C (Sidewall @ 6.5')	ND	79.2	200	80.8	210
686-D (Sidewall @ 6.5')	ND	78.1	200	88.0	ND
686-E (Sidewall @ 6.5')	ND	74.0	200	83.8	ND
686-DUP (Field Dupl.)	--	72.5	200	79.0	ND
Method Blank	NA	100	200	81.7	ND

QC: 2131.5MS=83%, 2131.5MSD=85%, RPD=2.4%, 2131.3DUP=90% @ 190
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director



Indicates that TPH > 1000 mg/kg

8-23-96 OVA CAL @ 1000 (#A51903)

(GW @ 6')

			OVA
686-A (EF @ 10')	8-23-96	@ 1045	ND
686-B	"	" @ 1037	ND
686-C (SW @ 5.5')	"	1336	100
686-D	"	" 1419	10
686-E	"	" 1428	30
686-F	"	" 1502	40
686-G	"	" 1516	10
686-FIELD (FIELD BLANK)		" 1527	—
686-DUP (FIELD DUPLICATE)		" —	—

NOTE 686-A = FIELD DUPLICATE (TPHC)

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2140.1-.9
Sample Rec'd: 08/23/96
Analysis Start: 08/26/96
Analysis Comp: 08/28/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

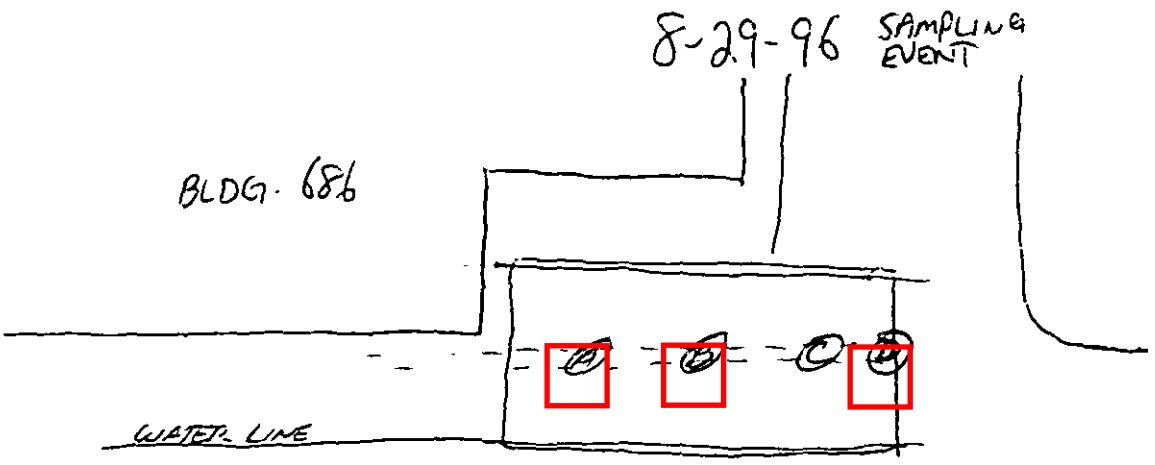
NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-A (Exc. Floor @ 10')	ND	80.1	200	78.4	ND
686-B (Exc. Floor @ 10')	ND	80.5	200	76.1	ND
686-C (Sidewall @ 5.5')	100	82.0	200	254*	7390
686-D (Sidewall @ 5.5')	10	82.3	200	124	834
686-E (Sidewall @ 5.5')	30	82.8	200	114	4100
686-F (Sidewall @ 5.5')	40	83.2	200	136	3550
686-G(Sidewall @ 5.5')	10	82.2	200	89.2	210
686-DUP (Field Dupl.)	--	79.8	200	58.8	220
Method Blank	NA	100	200	103	ND

QC: 2131.5MS=83%, 2131.5MSD=85%, RPD=2.4%, 2131.3DUP=90% @ 190
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director



N

Indicates that TPH > 1000 mg/kg

8-29-96

Dup=D

OVA CAL. 8-29-96 @1415 (#A51903)

		TIME	OVA
686-A (ETC. FLOOR @ 10')	8-29-96 @	1510	5
686-B	"	1504	ND
686-C	"	1453	ND
686-D (SW @ 5.5')	"	1444	10
686-DUP (FIELD DUP)	"	—	—
686-FIELD (FIELD BLANK)	"	1522	—

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2144.1-.5
Sample Rec'd: 08/30/96
Analysis Start: 08/30/96
Analysis Comp: 09/04/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-A (Exc. Floor @ 10')	5	81.6	200	127	1020
686-B (Exc. Floor @ 10')	ND	80.2	200	135	1190
686-C (Exc. Floor @ 10')	ND	78.6	200	132	ND
686-D (Sidewall @ 5.5')	10	86.4	200	86.9	5030
686-DUP (Field Dupl.)	--	90.0	200	102	2460
Method Blank	NA	100	200	128	ND

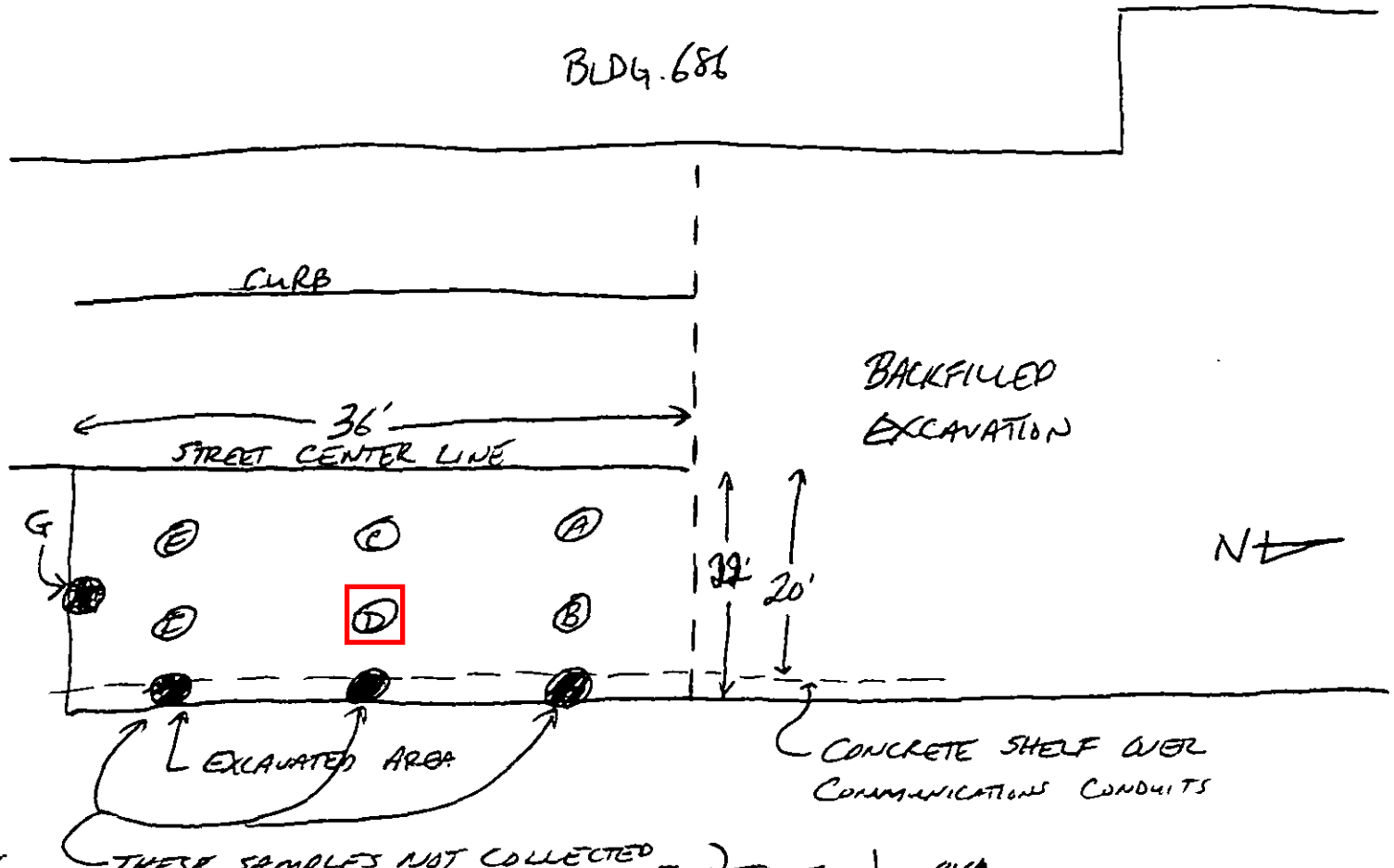
QC: 2144.3MS=146%, 2144.3MSD=150%, RPD=2.5%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

Indicates that TPH > 1000 mg/kg

9-11-96 SAMPLING EVENT
GW @ ~6' BELOW GRADE



(THESE SAMPLES NOT COLLECTED AT THAT TIME DUE TO UNSAFE EXCAVATION)

			TIME	OVA
ND	686-A (EXC. FLOOR @ 9')		1314	7
530	B	"	1333	5
ND	C	"	1336	9
1060	D	"	1343	ND
ND	E	"	1353	ND
ND	F	"	1359	ND
ND	G (S.W. @ 5.5')		1405	15
	H	"	NOT COLLECTED	
	I	"		
	J	"		
ND	DUP			

DUP = C

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2147.1-.8
Sample Rec'd: 09/11/96
Analysis Start: 09/12/96
Analysis Comp: 09/12/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

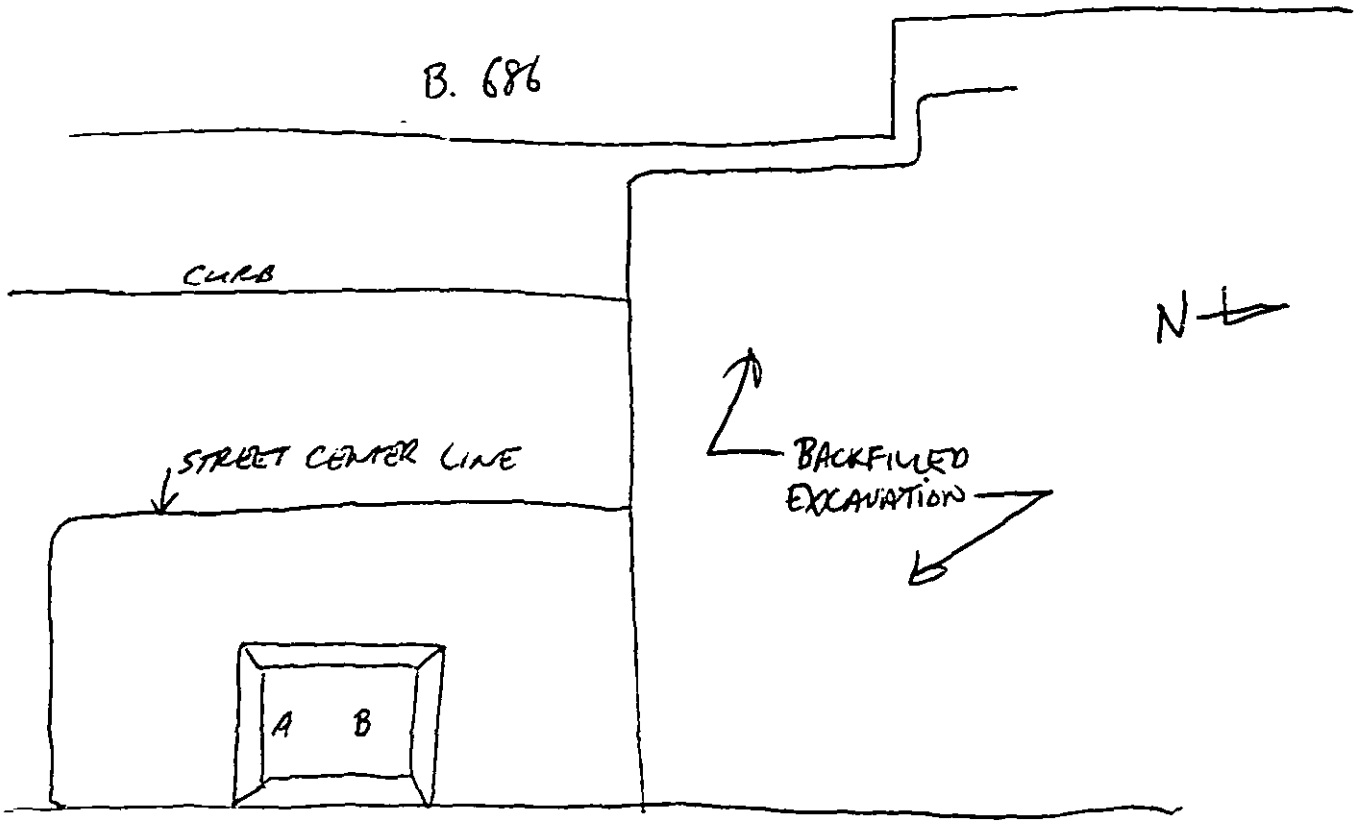
Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	Result (mg/Kg)
686-A (Exc. Floor @ 9')	7	83.7	200	95/94	ND
686-B (Exc. Floor @ 9')	5	79.4	200	128/95	530
686-C (Exc. Floor @ 9')	9	83.1	200	120/117	ND
686-D (Exc. Floor @ 9')	ND	82.6	200	153/166*	1660
686-E (Exc. Floor @ 9')	ND	83.4	200	125/116	ND
686-F (Exc. Floor @ 9')	ND	80.9	200	100/92	ND
686-G (Sidewall @ 5.5')	15	84.5	200	95/92	ND
686-DUP (Field Dupl.)	-	82.0	200	96/94	ND
Method Blank	NA	100	200	91/90	ND

QC: 2147.6MS=101%, 2147.6MSD=124%, RPD=20%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

9-14-96 SAMPLING EVENT



OVA CAL. @ 8:15 on 9-14-96 (951803)

			OVA
686-A (EF@11')	9-14-96	@ 9:03	3
686-B (EF@11')	9-14-96	@ 8:44	ND
686-Dup	9-14-96	"	—

A = Dup

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2151.1-.3
Sample Rec'd: 09/16/96
Analysis Start: 09/16/96
Analysis Comp: 09/17/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

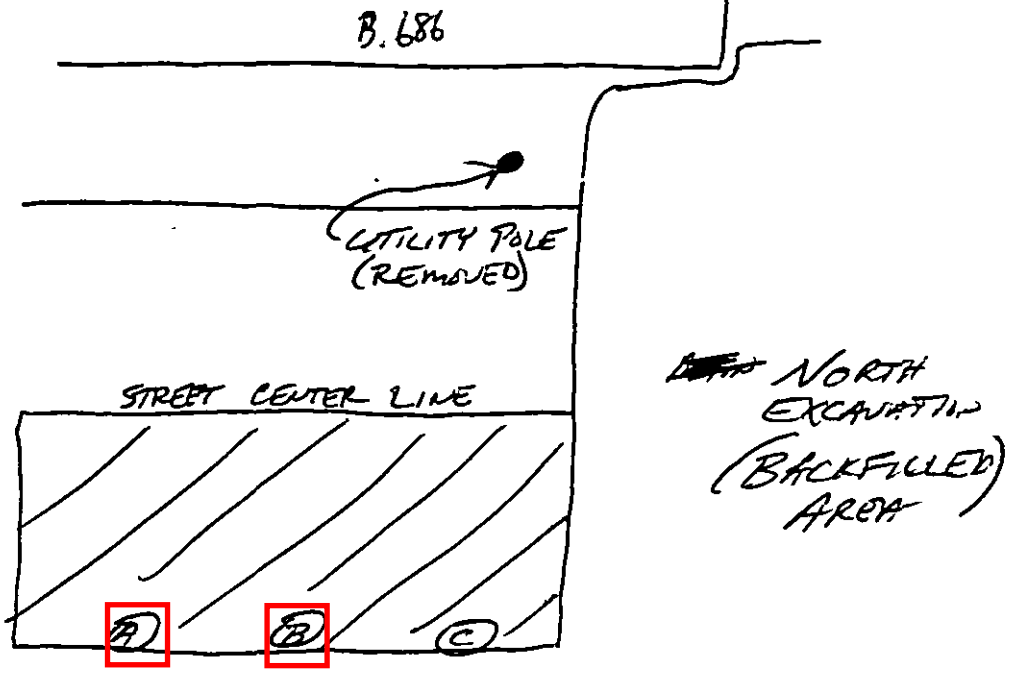
Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	TPHC Result (mg/Kg)
686-A (Exc. Floor @ 11')	3	84.2	200	112/105	ND
686-B (Exc. Floor @ 11')	ND	78.6	200	100/94	ND
686-DUP (Field Dupl.)	-	84.3	200	99/93	ND
Method Blank	NA	100	200	97/92	ND

QC: 2151.2MS=106%, 2151.2MSD=104%, RPD=1.5%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

9-16-96
SAMPLING EVENT



Indicates that TPH > 1000 mg/kg

OVA CAL @ 3:40 on 9-16-96 (A51983)

	DATE	TIME	OVA
686-A (SW@5.5')	9-16-96	1614	20
686-B		1606	30
686-C		1555	10
686-DUP		—	—

DUP = C

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2154.1-.4
Sample Rec'd: 09/17/96
Analysis Start: 09/20/96
Analysis Comp: 09/20/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	TPHC Result (mg/Kg)
686-A (Sidewall @ 5.5')	20	84.4	200	219/99*	4280
686-B (Sidewall @ 5.5')	30	86.8	200	309/91*	7760
686-C (Sidewall @ 5.5')	10	85.5	200	112/96	380
686-D (Field Dupl.)	-	86.8	200	138/95*	1130
Method Blank	NA	100	200	100/93	ND

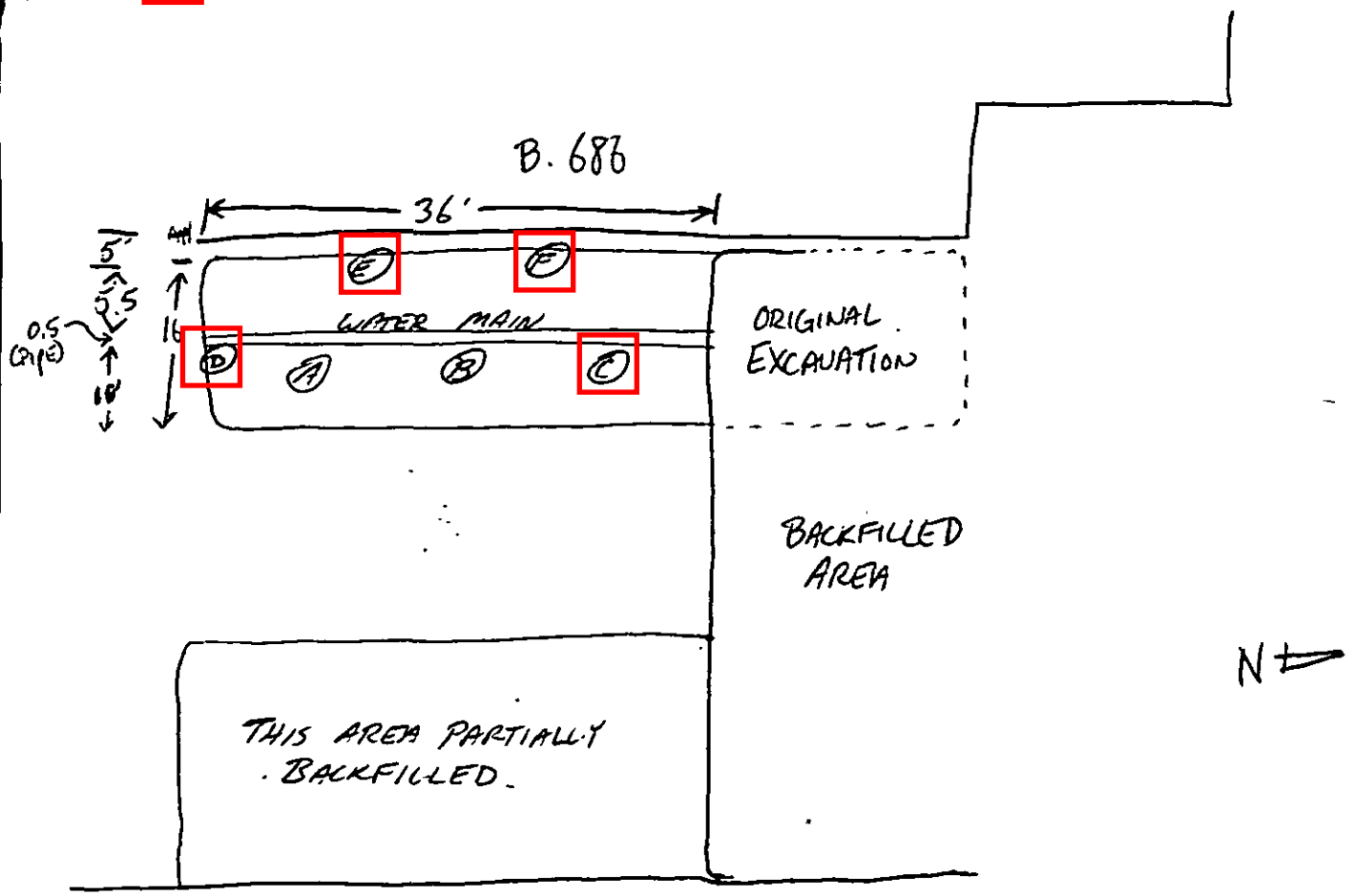
QC: 2154.3MS=115%, 2154.3MSD=114%, RPD=0.7%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

Indicates that TPH > 1000 mg/kg

9-19-96 SAMPLING EVENT



		TIME	OVA
A	EF @ 9'	1640	2
B	↓	1627	2
C	↓	~~1688~~	7
D	SW @ 5.5'	1659	10
E	↓	1710	15
F	↓	1721	20

D = DUP

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2155.1-.7
Sample Rec'd: 09/20/96
Analysis Start: 09/20/96
Analysis Comp: 09/23/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	TPHC Result (mg/Kg)
686-A (Exc. Floor @ 9')	2	84.2	200	110/103	ND
686-B (Exc. Floor @ 9')	2	89.4	200	121/95	560
686-C (Exc. Floor @ 9')	7	82.9	200	138/103	1140
686-D (Sidewall @ 5.5')	10	83.3	200	169/91*	2450
686-E (Sidewall @ 5.5')	15	80.2	200	248/90*	5440
686-F (Sidewall @ 5.5')	20	85.1	200	284/97*	6680
686-Dup (Field Duplicate)	-	83.8	200	132/104	760
Method Blank	NA	100	200	100/93	ND

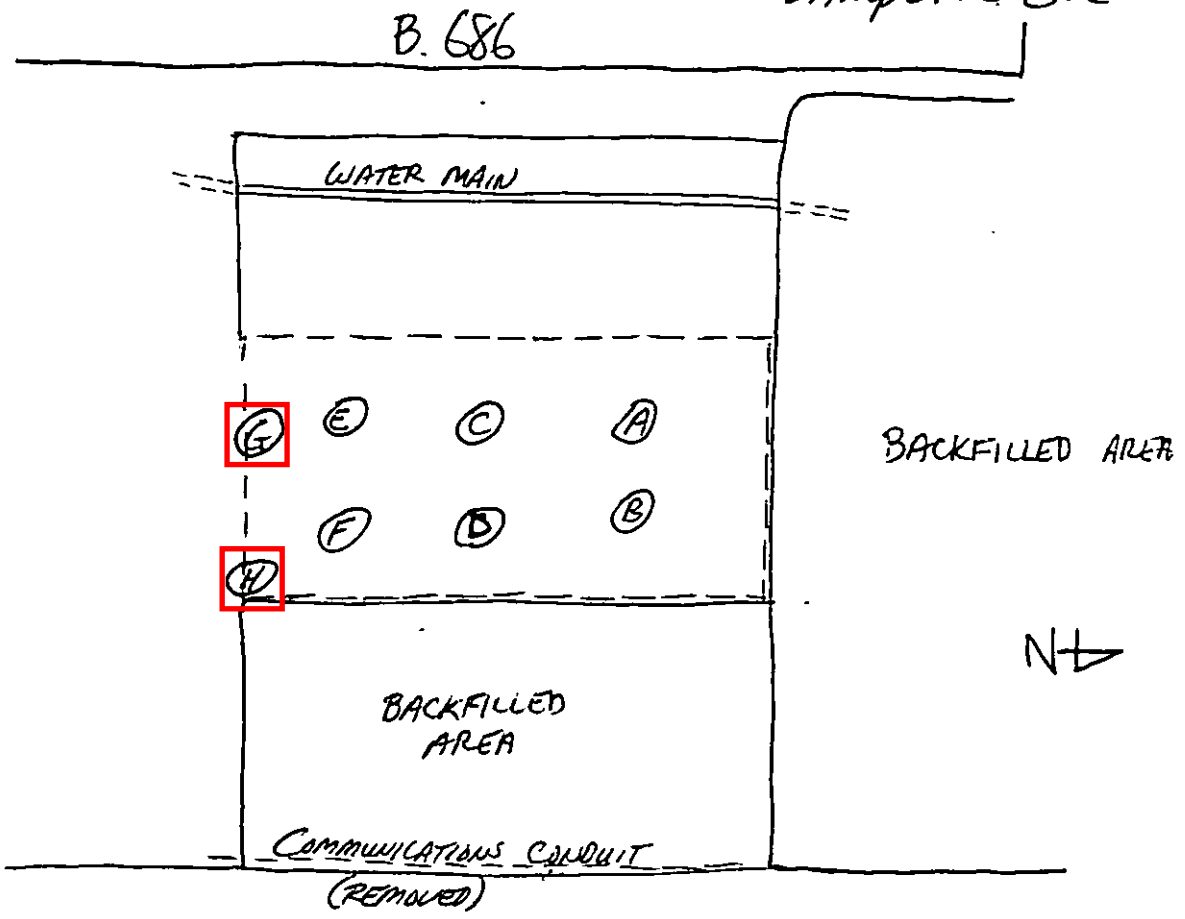
QC: 2154.3MS=115%, 2154.3MSD=114%, RPD=0.7%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

Indicates that TPH > 1000 mg/kg

9-21-96
SAMPLING EVENT



	TIME	OVA
A (EF@9')	1210	5
B	1218	4
C	1214	ND
D	1222	2
E	1234	10
F	1241	ND
G (SW@5.5')	1246	15
H	1251	10
E = Dup	—	—

OVA #A51903
CAL @ 11:50 on
9-21-96

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2156.1-.9
Sample Rec'd: 09/23/96
Analysis Start: 09/23/96
Analysis Comp: 09/24/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	TPHC Result (mg/Kg)
686-A (Exc. Floor @ 9')	5	81.6	200	110/103	ND
686-B (Exc. Floor @ 9')	4	81.6	200	103/97	ND
686-C (Exc. Floor @ 9')	ND	80.4	200	92/84	ND
686-D (Exc. Floor @ 9')	2	81.5	200	114/107	ND
686-E (Exc. Floor @ 9')	10	82.9	200	117/110	ND
686-F (Exc. Floor @ 9')	ND	81.9	200	118/111	ND
686-G (Sidewall @ 5.5')	15	83.3	200	291/84*	7290
686-H (Sidewall @ 5.5')	10	82.7	200	165/102*	2120
686-Dup (Field Duplicate)	-	83.3	200	110/102	ND
Method Blank	NA	100	200	110/103	ND

QC: 2156.4MS=113%, 2156.4MSD=110%, RPD=2.6%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

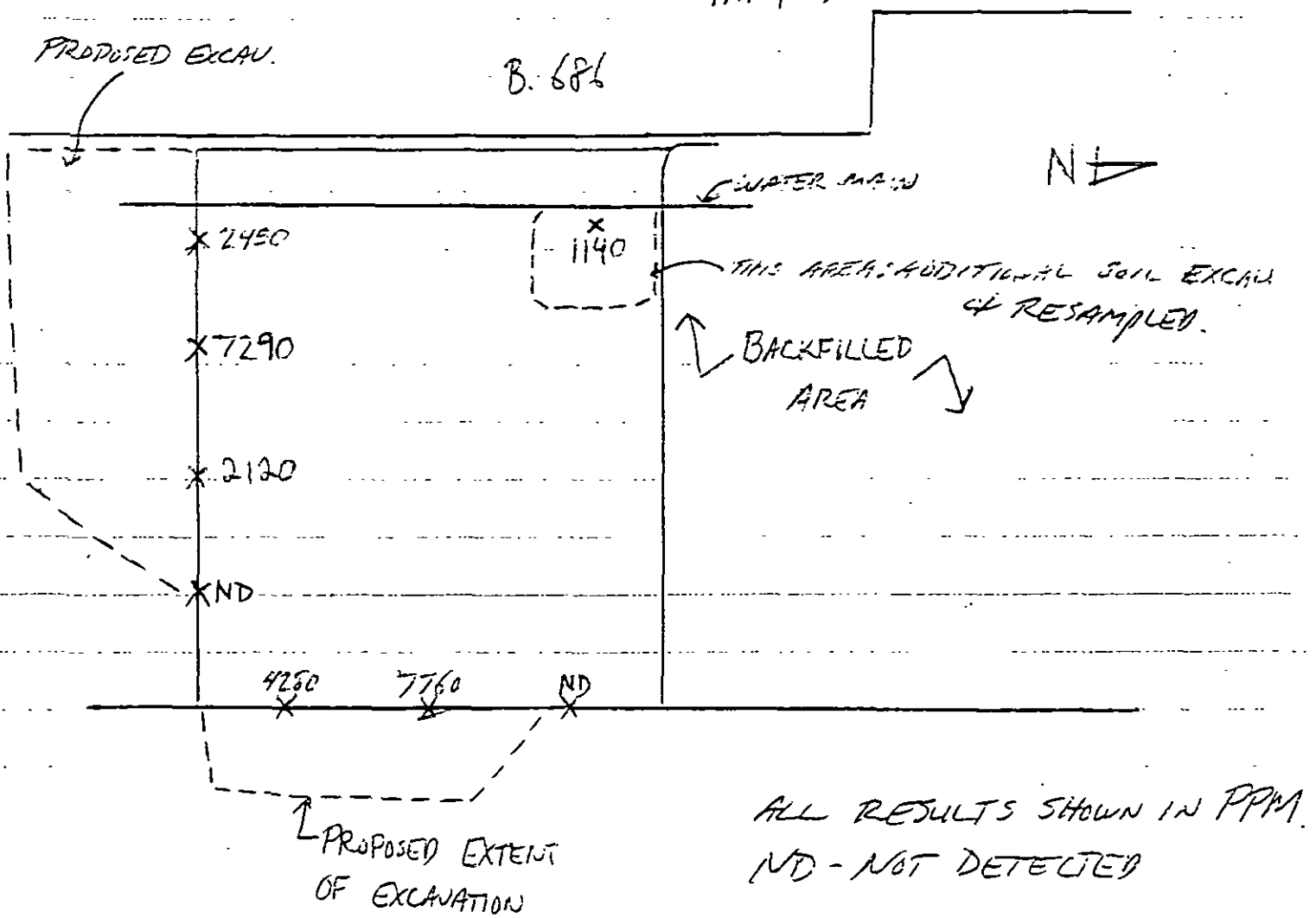
20 ©

9-26-96

GARY R.

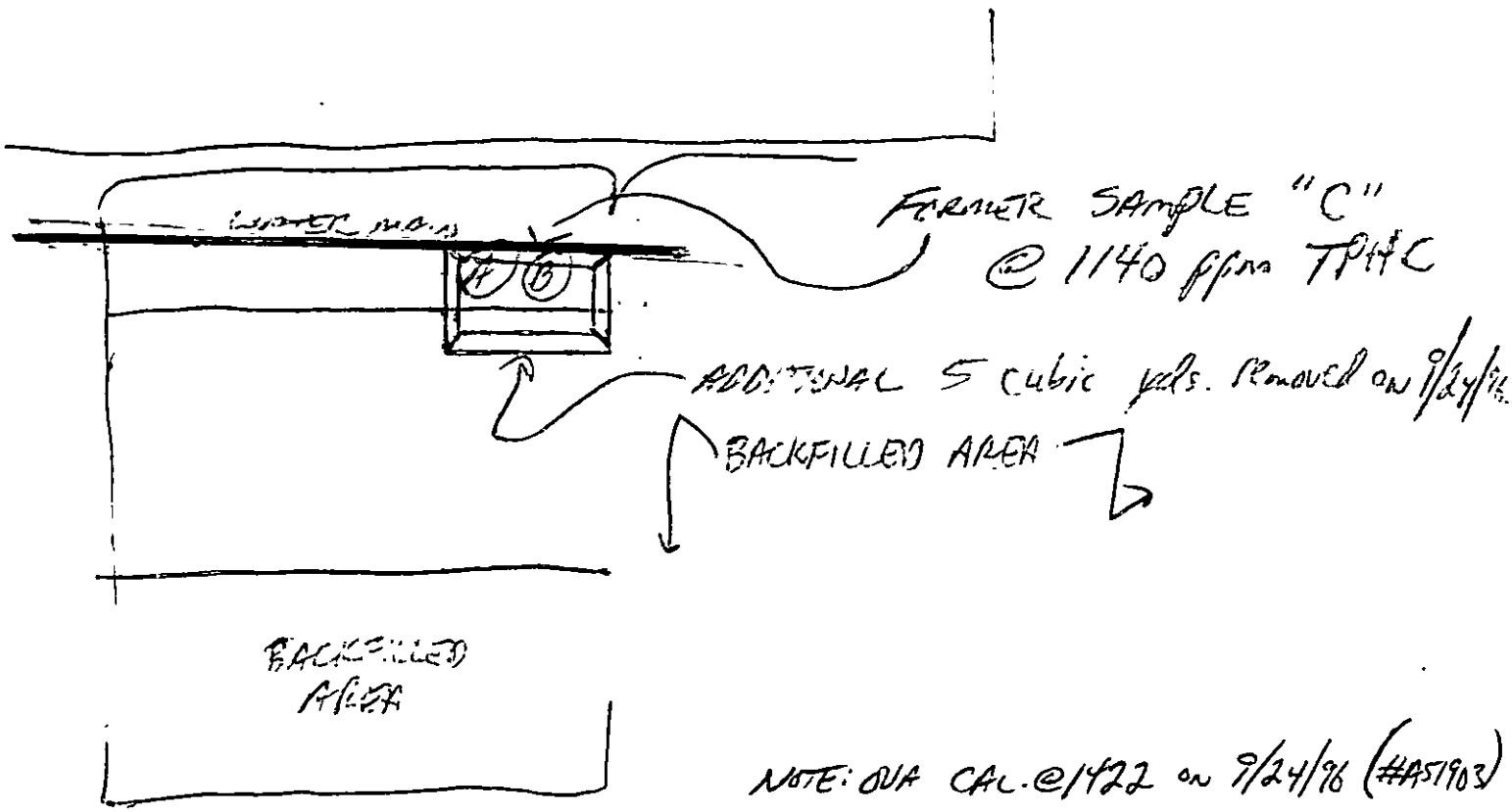
FOLLOWING IS A SKETCH OF B. 686. PER INSTRUCTIONS FROM GENE LESNUSKI, DPW, WE ARE TO CONTINUE TO EXCAVATE CONTAMINATED SOIL AT LOCATIONS WHERE SAMPLE RESULTS INDICATE TPHC ~~FQ~~ LEVELS >1,000 PPM. (EXCLUDING BUILDING AREA)

GARY D.



ALL RESULTS SHOWN IN PPM
ND - NOT DETECTED

9-24-96
SAMPLING EVENT



NOTE: OVA CAL. @ 1422 on 9/24/96 (#A51903)

	TIME	OVA
686-A (EF @ 11')	1501	ND
686-B (EF @ 11')	1506	10
686-DUP	—	—

A = Dup

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2158.1-.3
Sample Rec'd: 09/24/96
Analysis Start: 09/27/96
Analysis Comp: 09/27/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

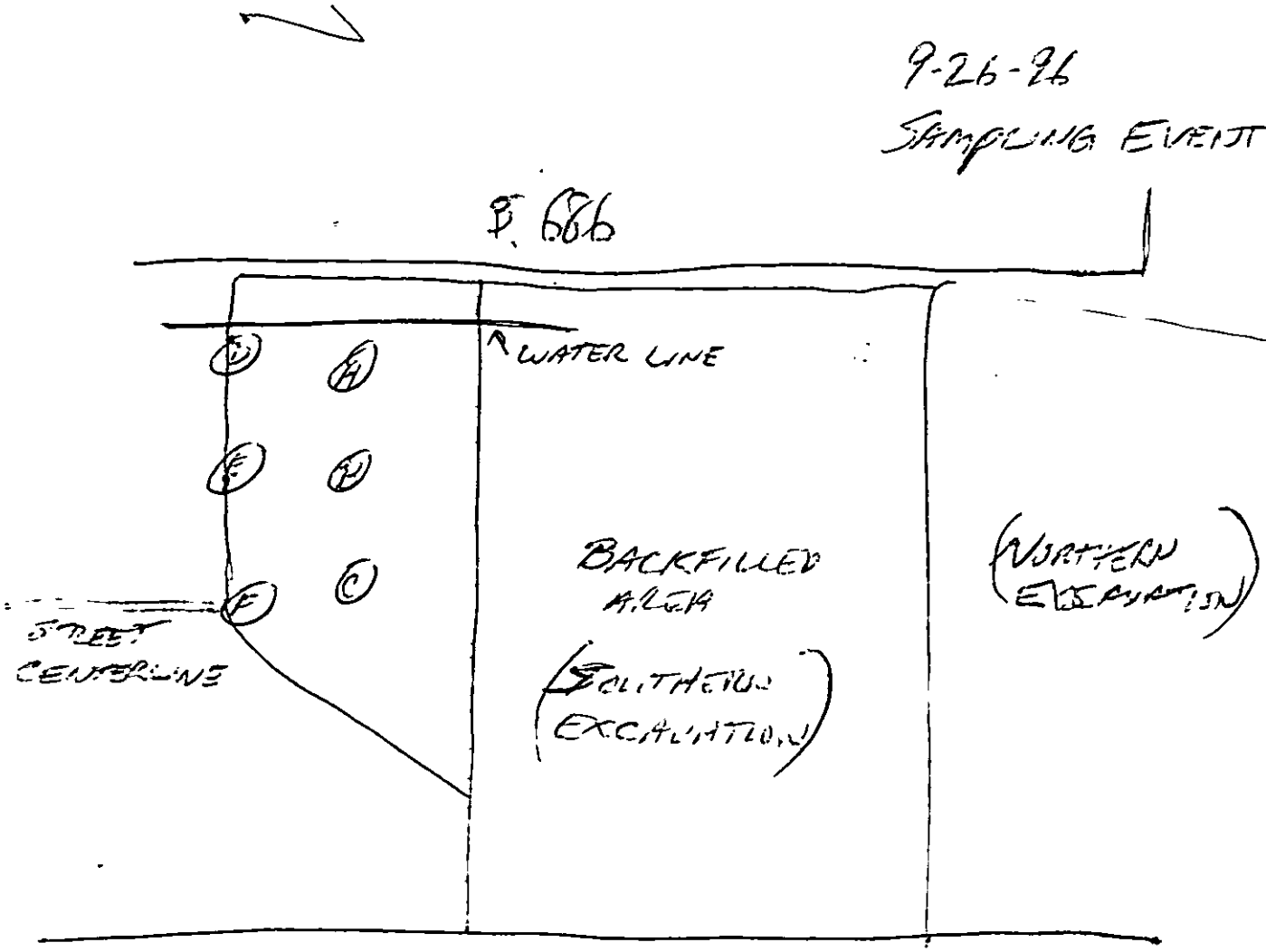
Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	TPHC Result (mg/Kg)
686-A (Exc. Floor @ 11')	ND	81.6	200	90	ND
686-B (Exc. Floor @ 11')	10	84.4	200	94	ND
686-Dup (Field Duplicate)	-	82.4	200	99	ND
Method Blank	NA	100	200	94	ND

QC: 2160.6MS=92.1%, 2160.6MSD=90.1%, RPD=2.2%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

9-26-96
SAMPLING EVENT



		TIME	OVA
686-A	EP @ 9'	1601	3
B	↓	1553	8
C	↓	1547	ND
D	SW @ 5.5'	1542	ND
E	↓	1533 [redacted]	ND
F	↓	1528	ND

OVA CAL @ 1519 ON 9-26-96 (#A57903)

DUP = E

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

Client: U.S. Army
DPW, SELFM-PW-EV
Bldg. 173
Ft. Monmouth, NJ 07703

Lab. ID #: 2160.1-.7
Sample Rec'd: 09/26/96
Analysis Start: 09/27/96
Analysis Comp: 09/27/96

Analysis: OQA-QAM-025
Matrix: Soil
Analyst: G. Armstrong
Ext. Meth: Shake

NJDEP UST Reg.#:
Closure #:
DICAR #:
Location #: Bldg. 686

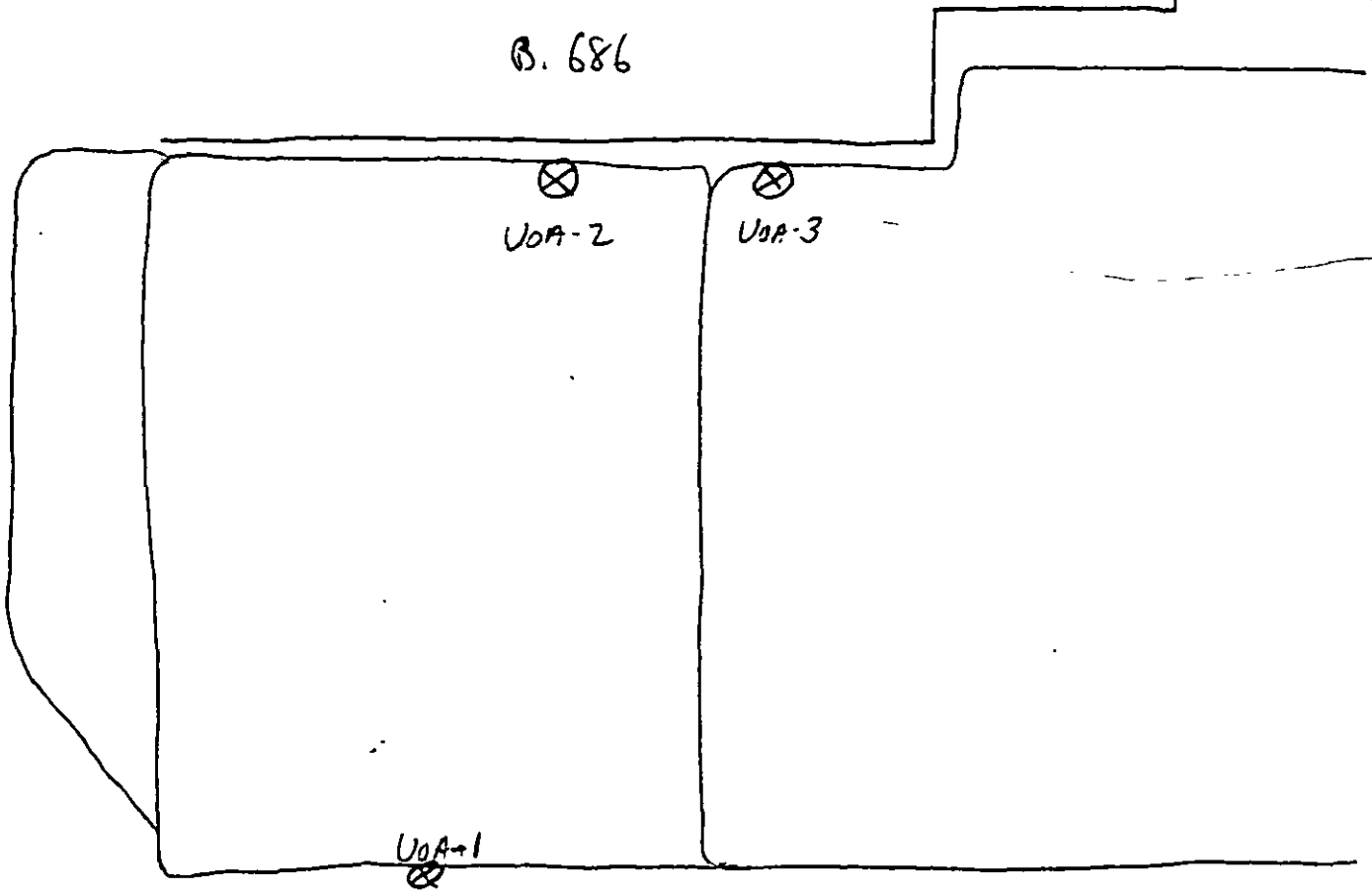
Description	OVA	%Solid	MDL (mg/Kg)	Surrogate % Recovery	TPHC Result (mg/Kg)
686-A (Exc. Floor @ 9')	3	81.6	200	87	ND
686-B (Exc. Floor @ 9')	8	83.3	200	86	ND
686-C (Exc. Floor @ 9')	ND	83.3	200	96	ND
686-D (Sidewall @ 5.5')	ND	84.1	200	87	ND
686-E (Sidewall @ 5.5')	ND	82.3	200	90	ND
686-F (Sidewall @ 5.5')	ND	84.7	200	98	ND
686-Dup (Field Duplicate)	-	81.7	200	86	ND
Method Blank	NA	100	200	94	ND

QC: 2160.6MS=92.1%, 2160.6MSD=90.1%, RPD=2.2%
QC Limits: Surrogate: 50% - 165%
MS/MSD: not established RPD: not established

Notes: ND = Not Detected, MDL = Method Detection Limit
NA = Not Applicable
* = Matrix Interference

Daniel K. Wright
Laboratory Director

9-27-96
SAMPLING EVENT



	TIME	OVA
VOA-1 (SW @ 5.5')	1406	10
VOA-2	~~1457~~	10
VOA-3	1506	16
VOA-FIELD	1523	—
VOA-DUP		—

DUP = VOA-2

FORT MONMOUTH ENVIRONMENTAL TESTING LABORATORY

542-5994

PO# R97-00201

P.O. #: PWS-07

CHAIN-OF-CUSTODY

10031819

Project #:	
Customer:	GENE LESINSKI SELFM-PW-EV
Phone:	(908) 532-0989
Sampler:	Gary DiMartinis - TVS
Date / Time:	9-27-96 / 1330
Site Name:	BUILDING #686 (VOA ANALYSIS ONLY)
Start:	
Finish:	

Analysis Parameters: TPHC, % SOLIDS, MUNSEL, VOA+15, OVA

Lab Sample ID Number	Date/Time		Customer Sample Location/ID Number	Sample Matrix	# of Bottles	TPHC	% Solids	Munsel	VOA+15	OVA	Remarks	
2163.1	9-27-96	1406	VOA-1 (SIDEWALL @ 5.5')	SOIL			X		X	10		* AB40780
.2	↓	1457	VOA-2	↓	↓		X		X	10	* = SAMPLES	40781
.3	↓	1506	VOA-3	↓	↓		X		X	10	KEPT BELOW	40782
.4	↓	—	VOA-DUP (FIELD DUPLICATE)	↓	↓		X		X	—	4°C	40783
.5	↓	1523	VOA-FIELD (FIELD BLANK)	AQ	2		X		X	—		40784

Post-It® Fax Note 7671 — To: Dan Wright — From: Chris Hettzel — Co./Dept. — Co. — Phone # — Phone # — Fax # — Fax # — Date — # of pages

Note: OVA CALIBRATED TO 75 PPM METER READING [illegible] 337

Relinquished By (signature): [signature]	Date / Time: 9-27-96 1550	Received By (signature): [signature]	Shipped By: HAND on 9-27-96 (SERIAL #A57903)
Relinquished By (signature): [signature]	Date / Time: 10-3-96 1300	Received for Lab by (signature): [signature]	Date / Time: 10/3/96 1300

Note: A drawing depicting sample location should be attached or drawn on the reverse side of this chain of custody. DEDICATED SAMPLING TOOLS USED. SEE PROJECT FILE FOR SAMPLING LOCATIONS

SAI-ENV COC Form 01 Page 1 of 1 Pages Rev. A Date: 02 Apr 93

Environmental Laboratory

Received for lab by: Kim Lane (Ventaly) 10/3/96 1605 Temp 2.2°C

HAMPTON-CLARKE/VERITECH
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID : 2163.1 SOIL
Date Rcvd/Extd: 10/03/96-N/A
Sample Matrix : Soil
Percent Solid : 88
Column : J&W DB-624 75M .53mm ID Column

Lab Sample No. : AA40780
Lab File ID : >E9360
Date Analyzed : 10/03/96
Dilution Factor: 125
Sample Wt/Vol : 5.0ml

CONCENTRATION UNITS: UG/KG(PPB)

CAS No.	COMPOUND	PQL	CONC	CAS NO.	COMPOUND	PQL	CONC
74873	Chloromethane	1400	U	124481	Dibromochloromethane	710	U
74839	Bromomethane	1400	U	79005	1,1,2-Trichloroethane	430	U
75014	Vinyl Chloride	710	U	71432	Benzene	140	U
75003	Chloroethane	1400	U	10061026	Trans-1,3-Dichloropropene	710	U
75092	Methylene Chloride	2100	U	110758	2-Chloroethylvinylether	1400	U
67641	Acetone	2800	U	75252	Bromoform	570	U
75150	Carbon Disulfide	710	U	108101	4-Methyl-2-Pentanone	3600	U
75694	Trichlorofluoromethane	710	U	591786	2-Hexanone	2800	U
75354	1,1-Dichloroethene	280	U	127184	Tetrachloroethene	140	U
75343	1,1-Dichloroethane	710	U	79345	1,1,2,2-Tetrachloroethane	280	U
156605	Trans-1,2-Dichloroethene	710	U	108883	Toluene	710	U
67663	Chloroform	710	U	108907	Chlorobenzene	570	U
107062	1,2-Dichloroethane	280	U	100414	Ethylbenzene	710	U
78933	2-Butanone	3600	U	100425	Styrene	710	U
71556	1,1,1-Trichloroethane	710	U	108383	m&p-Xylenes	710	U
56235	Carbon Tetrachloride	280	U	95476	o-Xylene	710	U
108054	Vinyl Acetate	1400	U	541731	1,3-Dichlorobenzene	710	U
75274	Bromodichloromethane	140	U	95501	1,2-Dichlorobenzene	710	U
78875	1,2-Dichloropropane	140	U	106467	1,4-Dichlorobenzene	710	U
10061015	cis-1,3-Dichloropropene	710	U	1634044	Methyl-t-butyl ether	710	U
79016	Trichloroethene	140	U	108203	Di-isopropyl-ether	710	U
				75650	t-Butyl Alcohol	14000	U

TARGET COMPOUND SUMMARY: 0

DATA REPORTING QUALIFIERS

U - Indicates the compound was analyzed for but not detected.
J - Indicates an estimated value used when a compound is detected at less than the specified detection limit.
B - Indicates the analyte was found in the blank as well as in the sample.
E - Indicates the analyte concentration exceeds the calibration range of the GC/MS instrument for that specific analyte.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

LAB SAMPLE NO.: AA40780

Lab Name: VERITECH, NJDEPE CERT.# 14622 Contract:-------

Lab Code: GC/MS Case No.: ----- SAS No.: ----- SDG No.: -----

Matrix: SOIL Client ID: 2163.1_SOIL

Sample wt/vol: 5.0 (g/ml) ml Lab File ID: >E9360

Level: (low/med) MED Date Recvd/Ext: 10/03/96-N/A

% Solid: 88 Date Analyzed: 10/03/96

Column: CAP Dilution Factor: 125

Number of TICs found: 15 CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	4923777	Cyclohexane, 1-ethyl-?-methyl	18.97	2131	J
2		Unknown	19.98	1562	J
3	1678928	Cyclohexane, propyl-	20.17	2131	J
4		Unknown	20.97	1847	J
5		Unknown	21.57	1705	J
6		Unknown	21.89	1989	J
7	17302282	Nonane, 2,6-dimethyl-	22.15	3551	J
8	1074551	Benzene, 1-methyl-4-propyl-	22.51	3551	J
9	7058017	Cyclohexane, (1-methylpropyl	22.68	1705	J
10		Unknown	22.98	1989	J
11	135013	Benzene, 1,2-diethyl-	23.37	2415	J
12		Unknown	23.53	5398	J
13	135988	Benzene, (1-methylpropyl)-	23.87	7244	J
14	1758889	Benzene, 2-ethyl-1,4-dimethyl	24.24	8381	J
15	767588	1H-Indene, 2,3-dihydro-1-met	24.45	2699	J

Tentative Compound Summary: 48295

DATA REPORTING QUALIFIERS

A - Indicates an aldol condensate
J - Indicates an estimated value
B - Indicates compound was found in the blank as well as in the sample

HAMPTON-CLARKE/VERITECH
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID : 2163.2 SOIL
Date Rcvd/Extd: 10/03/96-N/A
Sample Matrix : Soil
Percent Solid : 85
Column : J&W DB-624 75M .53mm ID Column

Lab Sample No. : AA40781
Lab File ID : >E9361
Date Analyzed : 10/03/96
Dilution Factor: 125
Sample Wt/Vol : 5.0ml

CONCENTRATION UNITS: UG/KG(PPB)

CAS No.	COMPOUND	PQL	CONC	CAS NO.	COMPOUND	PQL	CONC
74873	Chloromethene	1500	U	124481	Dibromochloromethane	740	U
74839	Bromomethane	1500	U	79005	1,1,2-Trichloroethane	440	U
75014	Vinyl Chloride	740	U	71432	Benzene	150	U
75003	Chloroethane	1500	U	10061026	Trans-1,3-Dichloropropene	740	U
75092	Methylene Chloride	2200	U	110758	2-Chloroethylvinylether	1500	U
67641	Acetone	2900	U	75252	Bromoform	590	U
75150	Carbon Disulfide	740	U	108101	4-Methyl-2-Pentanone	3700	U
75694	Trichlorofluoromethane	740	U	591786	2-Hexanone	2900	U
75354	1,1-Dichloroethene	290	U	127184	Tetrachloroethene	150	U
75343	1,1-Dichloroethane	740	U	79345	1,1,2,2-Tetrachloroethane	290	U
156605	Trans-1,2-Dichloroethene	740	U	108883	Toluene	740	U
67663	Chloroform	740	U	108907	Chlorobenzene	590	U
107062	1,2-Dichloroethane	290	U	100414	Ethylbenzene	740	U
78933	2-Butanone	3700	U	100425	Styrene	740	U
71556	1,1,1-Trichloroethane	740	U	108383	m&p-Xylenes	740	U
56235	Carbon Tetrachloride	290	U	95476	o-Xylene	740	U
108054	Vinyl Acetate	1500	U	541731	1,3-Dichlorobenzene	740	U
75274	Bromodichloromethane	150	U	95501	1,2-Dichlorobenzene	740	U
78875	1,2-Dichloropropane	150	U	106467	1,4-Dichlorobenzene	740	U
10061015	cis-1,3-Dichloropropene	740	U	1634044	Methyl-t-butyl ether	740	U
79016	Trichloroethene	150	U	108203	Di-isopropyl-ether	740	U
				75650	t-Butyl Alcohol	15000	U

TARGET COMPOUND SUMMARY: 0

DATA REPORTING QUALIFIERS

U - Indicates the compound was analyzed for but not detected.
J - Indicates an estimated value used when a compound is detected at less than the specified detection limit.
B - Indicates the analyte was found in the blank as well as in the sample.
E - Indicates the analyte concentration exceeds the calibration range of the GC/MS instrument for that specific analyte.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

LAB SAMPLE NO.: AA40781

Lab Name: VERITECH, NJDEPE CERT.# 14622 Contract:-------

Lab Code: GC/MS Case No.: ----- SAS No.: ----- SDG No.: -----

Matrix: SOIL Client ID: 2163.2_SOIL

Sample wt/vol: 5.0 (g/ml) ml Lab File ID: >E9361

Level: (low/med) MED Date Recvd/Ext: 10/03/96-N/A

% Solid: 85 Date Analyzed: 10/03/96

Column: CAP Dilution Factor: 125

Number of TICs found: 15 CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1		Unknown	18.96	1176	J
2		Unknown	19.97	1176	J
3	696297	Cyclohexane, (1-methylethyl)	20.16	1471	J
4		Unknown	21.58	1029	J
5		Unknown	21.93	1324	J
6	17302282	Nonane, 2,6-dimethyl-	22.13	4853	J
7		Unknown	22.53	3676	J
8		Unknown	22.66	1618	J
9		Unknown	22.92	1471	J
10		Unknown	23.17	1324	J
11	135013	Benzene, 1,2-diethyl-	23.35	1765	J
12	91178	Naphthalene, decahydro-	23.54	3824	J
13		Unknown	23.81	3088	J
14	1758889	Benzene, 2-ethyl-1,4-dimethyl	24.23	8235	J
15	27133933	2,3-DIHYDRO-1-METHYLINDENE	24.44	2206	J

Tentative Compound Summary: 38235

DATA REPORTING QUALIFIERS

A - Indicates an aldol condensate
J - Indicates an estimated value
B - Indicates compound was found in the blank as well as in the sample

HAMPTON-CLARKE/VERITECH
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID : 2163.3 SOIL
Date Rcvd/Extd: 10/03/96-N/A
Sample Matrix : Soil
Percent Solid : 84
Column : J&W DB-624 75M .53mm ID Column

Lab Sample No. : AA40782
Lab File ID : >E9362
Date Analyzed : 10/03/96
Dilution Factor: 125
Sample Wt/Vol : 5.0ml

CONCENTRATION UNITS: UG/KG(PPB)

CAS No.	COMPOUND	PQL	CONC	CAS NO.	COMPOUND	PQL	CONC
74873	Chloromethane	1500	U	124481	Dibromochloromethane	740	U
74839	Bromomethane	1500	U	79005	1,1,2-Trichloroethane	450	U
75014	Vinyl Chloride	740	U	71432	Benzene	150	U
75003	Chloroethane	1500	U	10061026	Trans-1,3-Dichloropropene	740	U
75092	Methylene Chloride	2200	U	110758	2-Chloroethylvinylether	1500	U
67641	Acetone	3000	U	75252	Bromoform	600	U
75150	Carbon Disulfide	740	U	108101	4-Methyl-2-Pentanone	3700	U
75694	Trichlorofluoromethane	740	U	591786	2-Hexanone	3000	U
75354	1,1-Dichloroethene	300	U	127184	Tetrachloroethene	150	U
75343	1,1-Dichloroethane	740	U	79345	1,1,2,2-Tetrachloroethane	300	U
156605	Trans-1,2-Dichloroethene	740	U	108883	Toluene	740	U
67663	Chloroform	740	U	108907	Chlorobenzene	600	U
107062	1,2-Dichloroethane	300	U	100414	Ethylbenzene	740	U
78933	2-Butanone	3700	U	100425	Styrene	740	U
71556	1,1,1-Trichloroethane	740	U	108383	m&p-Xylenes	740	U
56235	Carbon Tetrachloride	300	U	95476	o-Xylene	740	U
108054	Vinyl Acetate	1500	U	541731	1,3-Dichlorobenzene	740	U
75274	Bromodichloromethane	150	U	95501	1,2-Dichlorobenzene	740	U
78875	1,2-Dichloropropane	150	U	106467	1,4-Dichlorobenzene	740	U
10061015	cis-1,3-Dichloropropene	740	U	1634044	Methyl-t-butyl ether	740	U
79016	Trichloroethene	150	U	108203	Di-isopropyl-ether	740	U
				75650	t-Butyl Alcohol	15000	U

TARGET COMPOUND SUMMARY: 0

DATA REPORTING QUALIFIERS

U - Indicates the compound was analyzed for but not detected.
J - Indicates an estimated value used when a compound is detected at less than the specified detection limit.
B - Indicates the analyte was found in the blank as well as in the sample.
E - Indicates the analyte concentration exceeds the calibration range of the GC/MS instrument for that specific analyte.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

LAB SAMPLE NO.: AA40782

Lab Name: VERITECH, NJDEPE CERT.# 14622 Contract:-------

Lab Code: GC/MS Case No.: ----- SAS No.: ----- SDG No.: -----

Matrix: SOIL Client ID: 2163.3_SOIL

Sample wt/vol: 5.0 (g/ml) ml Lab File ID: >E9362

Level: (low/med) MED Date Recvd/Ext: 10/03/96-N/A

% Solid: 84 Date Analyzed: 10/03/96

Column: CAP Dilution Factor: 125

Number of TICs found: 15 CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	4926903	Cyclohexane, 1-ethyl-1-methyl	18.96	1637	J
2	4923777	Cyclohexane, 1-ethyl-2-methyl	19.56	1190	J
3		Unknown	19.97	1339	J
4	696297	Cyclohexane, (1-methylethyl)	20.15	1935	J
5		Unknown	20.98	1339	J
6	3868642	Pentalene, octahydro-2-methyl	21.90	1190	J
7	17302282	Nonane, 2,6-dimethyl-	22.13	2827	J
8		Unknown Substituted Benzene	22.52	2827	J
9		Unknown	22.66	1339	J
10		Unknown Substituted Benzene	23.35	1935	J
11		Unknown Substituted Benzene	23.51	5208	J
12		Unknown Substituted Benzene	23.74	1935	J
13		Unknown Substituted Benzene	24.04	1786	J
14		Unknown Substituted Benzene	24.23	4911	J
15	27133933	2,3-DIHYDRO-1-METHYLINDENE	24.44	2232	J

Tentative Compound Summary: 33631

DATA REPORTING QUALIFIERS

A - Indicates an aldol condensate
J - Indicates an estimated value
B - Indicates compound was found in the blank as well as in the sample

HAMPTON-CLARKE/VERITECH
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID : 2163.4 SOIL
Date Rcvd/Extd: 10/03/96 N/A
Sample Matrix : Soil
Percent Solid : 84
Column : J&W DB-624 75M .53mm ID Column

Lab Sample No. : AA40783
Lab File ID : >E9388
Date Analyzed : 10/04/96
Dilution Factor: 5
Sample Wt/Vol : 1.0g

CONCENTRATION UNITS: UG/KG(PPB)

CAS No.	COMPOUND	PQL	CONC	CAS NO.	COMPOUND	PQL	CONC
74873	Chloromethane	60	U	124481	Dibromochloromethane	30	U
74839	Bromomethane	60	U	79005	1,1,2-Trichloroethane	18	U
75014	Vinyl Chloride	30	U	71432	Benzene	6	U
75003	Chloroethane	60	U	10061026	Trans-1,3-Dichloropropene	30	U
75092	Methylene Chloride	89	U	110758	2-Chloroethylvinylether	60	U
67641	Acetone	120	U	75252	Bromoform	24	U
75150	Carbon Disulfide	30	U	108101	4-Methyl-2-Pentanone	150	U
75694	Trichlorofluoromethane	30	U	591786	2-Hexanone	120	U
75354	1,1-Dichloroethene	12	U	127184	Tetrachloroethene	6	U
75343	1,1-Dichloroethane	30	U	79345	1,1,2,2-Tetrachloroethane	12	U
156605	Trans-1,2-Dichloroethene	30	U	108883	Toluene	30	U
67663	Chloroform	30	U	108907	Chlorobenzene	24	U
107062	1,2-Dichloroethane	12	U	100414	Ethylbenzene	30	U
78933	2-Butanone	150	U	100425	Styrene	30	U
71556	1,1,1-Trichloroethane	30	U	108383	m&p-Xylenes	30	U
56235	Carbon Tetrachloride	12	U	95476	o-Xylene	30	U
108054	Vinyl Acetate	60	U	541731	1,3-Dichlorobenzene	30	U
75274	Bromodichloromethane	6	U	95501	1,2-Dichlorobenzene	30	U
78875	1,2-Dichloropropane	6	U	106467	1,4-Dichlorobenzene	30	U
10061015	cis-1,3-Dichloropropene	30	U	1634044	Methyl-t-butyl ether	30	U
79016	Trichloroethene	6	U	108203	Di-isopropyl-ether	30	U
				75650	t-Butyl Alcohol	600	U

TARGET COMPOUND SUMMARY: 0

DATA REPORTING QUALIFIERS

U - Indicates the compound was analyzed for but not detected.
J - Indicates an estimated value used when a compound is detected at less than the specified detection limit.
B - Indicates the analyte was found in the blank as well as in the sample.
E - Indicates the analyte concentration exceeds the calibration range of the GC/MS instrument for that specific analyte.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

LAB SAMPLE NO.: AA40783

Lab Name: VERITECH, NJDEPE CERT.# 14622 Contract:-------

Lab Code: GC/MS Case No.: ----- SAS No.: ----- SDG No.: -----

Matrix: SOIL Client ID: 2163.4_SOIL

Sample wt/vol: 1.0(g/ml) g Lab File ID: >E9388

Level: (low/med) LOW Date Recvd/Ext: 10/03/96-N/A

% Solid: 84 Date Analyzed: 10/04/96

Column: CAP Dilution Factor: 5

Number of TICs found: 15 CONCENTRATION UNITS: ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	15869940	Octane, 3,6-dimethyl-	19.99	357	J
2	1678928	Cyclohexane, propyl-	20.17	411	J
3	6783922	Cyclohexane, 1,1,2,3-tetrame	20.98	452	J
4	590669	Cyclohexane, 1,1-dimethyl-	21.48	393	J
5		Unknown	21.94	470	J
6	2847725	Decane, 4-methyl-	22.15	1548	J
7	17302328	Nonane, 3,7-dimethyl-	22.54	1250	J
8	7058017	Cyclohexane, (1-methylpropyl	22.68	542	J
9	62016142	Octane, 2,5,6-trimethyl-	22.91	589	J
10		Unknown	23.16	339	J
11	135013	Benzene, 1,2-diethyl-	23.37	375	J
12	91178	Naphthalene, decahydro-	23.53	714	J
13		Unknown	23.83	1250	J
14		Unknown	24.23	1964	J
15		Unknown	24.46	571	J

Tentative Compound Summary: 11226

DATA REPORTING QUALIFIERS

A - Indicates an aldol condensate
J - Indicates an estimated value
B - Indicates compound was found in the blank as well as in the sample

HAMPTON-CLARKE/VERITECH
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID : 2163.5 FIELD BLANK
Date Rcvd/Extd: 10/03/96-N/A
Sample Matrix : Water
Percent Solid : 0
Column : J&W DB-624 75M .53mm ID Column

Lab Sample No. : AA40784
Lab File ID : >E9359
Date Analyzed : 10/03/96
Dilution Factor: 1
Sample Wt/Vol : 5.0ml

CONCENTRATION UNITS: UG/L (PPB)

CAS No.	COMPOUND	PQL	CONC	CAS NO.	COMPOUND	PQL	CONC
74873	Chloromethane	10	U	124481	Dibromochloromethane	5	U
74839	Bromomethane	10	U	79005	1,1,2-Trichloroethane	3	U
75014	Vinyl Chloride	5	U	71432	Benzene	1	U
75003	Chloroethane	10	U	10061026	Trans-1,3-Dichloropropene	5	U
75092	Methylene Chloride	15	U	110758	2-Chloroethylvinylether	10	U
67641	Acetone	20	U	75252	Bromoform	4	U
75150	Carbon Disulfide	5	U	108101	4-Methyl-2-Pentanone	25	U
75694	Trichlorofluoromethane	5	U	591786	2-Hexanone	20	U
75354	1,1-Dichloroethene	2	U	127184	Tetrachloroethene	1	U
75343	1,1-Dichloroethane	5	U	79345	1,1,2,2-Tetrachloroethane	2	U
156605	Trans-1,2-Dichloroethene	5	U	108883	Toluene	5	U
67663	Chloroform	5	U	108907	Chlorobenzene	4	U
107062	1,2-Dichloroethane	2	U	100414	Ethylbenzene	5	U
78933	2-Butanone	25	U	100425	Styrene	5	U
71556	1,1,1-Trichloroethane	5	U	108383	m&p-Xylenes	5	U
56235	Carbon Tetrachloride	2	U	95476	o-Xylene	5	U
108054	Vinyl Acetate	10	U	541731	1,3-Dichlorobenzene	5	U
75274	Bromodichloromethane	1	U	95501	1,2-Dichlorobenzene	5	U
78875	1,2-Dichloropropane	1	U	106467	1,4-Dichlorobenzene	5	U
10061015	cis-1,3-Dichloropropene	5	U	1634044	Methyl-t-butyl ether	5	U
79016	Trichloroethene	1	U	108203	Di-isopropyl-ether	5	U
				75650	t-Butyl Alcohol	100	U

TARGET COMPOUND SUMMARY: 0

DATA REPORTING QUALIFIERS

U - Indicates the compound was analyzed for but not detected.
J - Indicates an estimated value used when a compound is detected at less than the specified detection limit.
B - Indicates the analyte was found in the blank as well as in the sample.
E - Indicates the analyte concentration exceeds the calibration range of the GC/MS instrument for that specific analyte.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

LAB SAMPLE NO.: AA40784

Lab Name: VERITECH, NJDEPE CERT.# 14622 Contract:-------

Lab Code: GC/MS Case No.: ----- SAS No.: ----- SDG No.: -----

Matrix: WATER Client ID: 2163.5_FIELD_BLANK

Sample wt/vol: 5.0 (g/ml) ml Lab File ID: >E9359

Level: (low/med) LOW Date Recvd/Ext: 10/03/96-N/A

% Solid: 0 Date Analyzed: 10/03/96

Column: CAP Dilution Factor: 1

Number of TICs found: 1 CONCENTRATION UNITS: ug/L

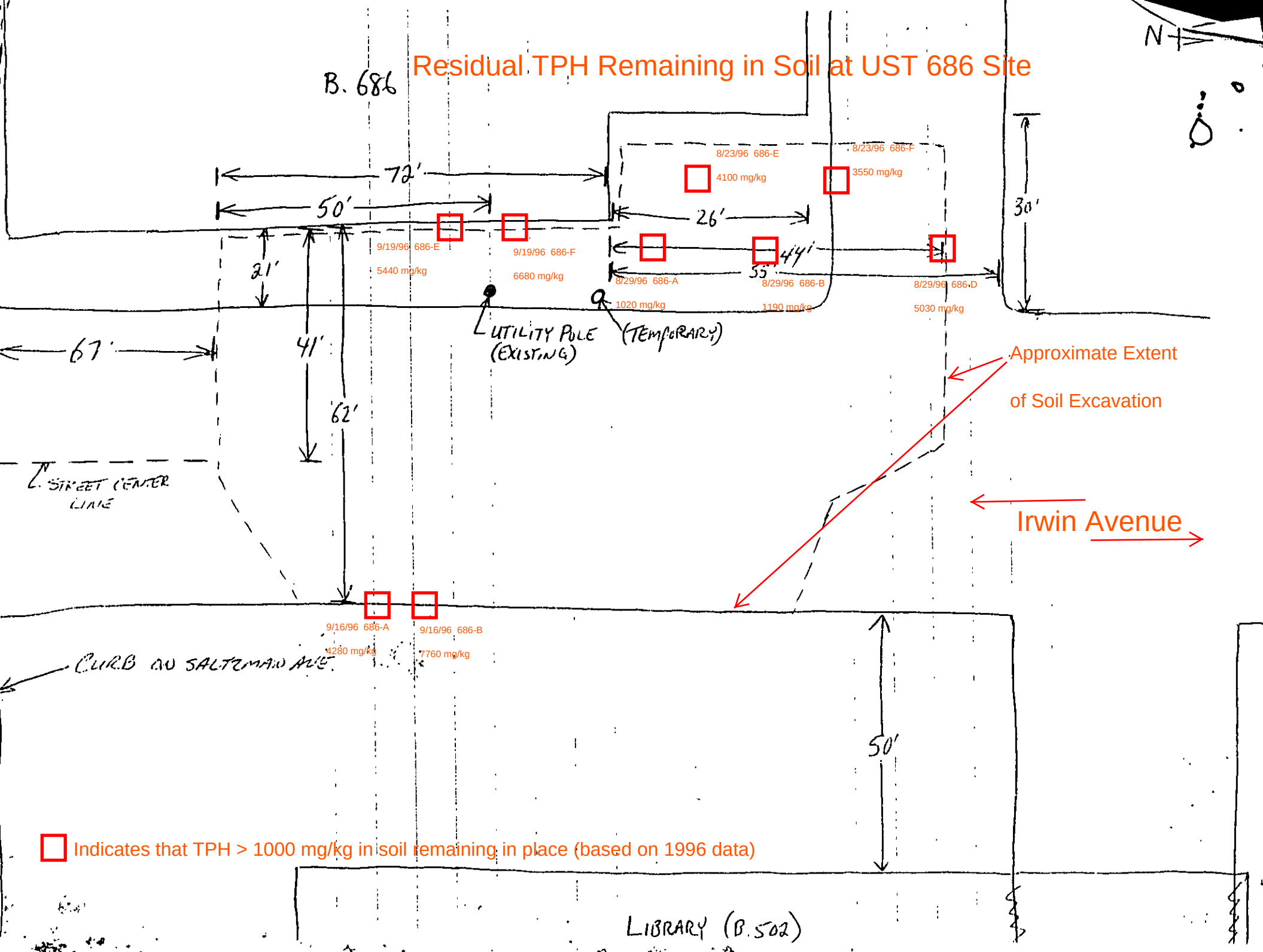
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1	Unknown	23.83	6	J

Tentative Compound Summary: 6

DATA REPORTING QUALIFIERS

A - Indicates an aldol condensate
J - Indicates an estimated value
B - Indicates compound was found in the blank as well as in the sample

Residual TPH Remaining in Soil at UST 686 Site



Indicates that TPH > 1000 mg/kg in soil remaining in place (based on 1996 data)

ATTACHMENT D
Soil Boring and Monitoring Well Logs

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4'
DATE: 4/6/16
TIME: 1100
MEAS. FROM: GLS

INSPECTOR: CW
DRILLER: Joe BARNAK
WEATHER: 40°F Clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1020 4/6/16
DATE/TIME FINISH: 1050 4/6/16
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-51-SB-01
LOCATION DESCRIPTION: Parcel 51
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/55	0	0-2" Moist, Loose, mf Brown SAND, some silt, little gravel		
				0			
1				0			
				0	8"-42" Moist, m. Dense, mf Brown SAND, some silt		
2				0			
				0	42"-55" Saturated, SAA		
3				0			
				0			▽
4				0			
				6.7			
5			60/60	24.7	0-5" SAA		
				41.6	5"-60" Wet, gray, m Dense, mf SAND, little silt		
6	6-6.5			38.7			
	6.5-7			47.6			
7				28.7			
				18.0			
8				14.4			
				17.8			
9				18.0			
				12.6			
10							

1110
1115

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

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

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE: SEE P. 1
TIME:
MEAS. FROM:

INSPECTOR:
DRILLER: SEE P. 1
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: SEE P. 1
DATE/TIME FINISH:
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: FTMM-SI-SB-01
LOCATION DESCRIPTION: Parcel 51
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			4-0/60	1.7	0-26" SAA		
				0	26"-60" Wet, M. dense, light Brown, mf SAND, little silt		
1				0			
				0			
2				0			
1120	12.5-13			0			
3				0			
				0			
4				0			
				0			
5					End of Boring @ 15'		
6							
7							
8							
9							
30							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

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

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5'
DATE: 1130
TIME: 4/6/16
MEAS. FROM: BGS

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 40°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1110 4/6/16
DATE/TIME FINISH: 1130 4/6/16
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: FTF-51-SB-02
LOCATION DESCRIPTION: Parcel 51
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			6/12	0	0-11" moist, brown, dark brown, mf SAND, little gravel, little silt.		
1					11"-15" concrete and Brick Debris		
2					15"-58" moist, m. dense, Brown-orange/Brown, mf SAND, little silt, trace clay/ Saturated @ bottom	(58")	
3							
4							
1140	4.5-5						▽
5			30/60	0	0-60" Saturated, SAA		
1145	6-6.5						
7							
8							
9							
1156	9.5-10						
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

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

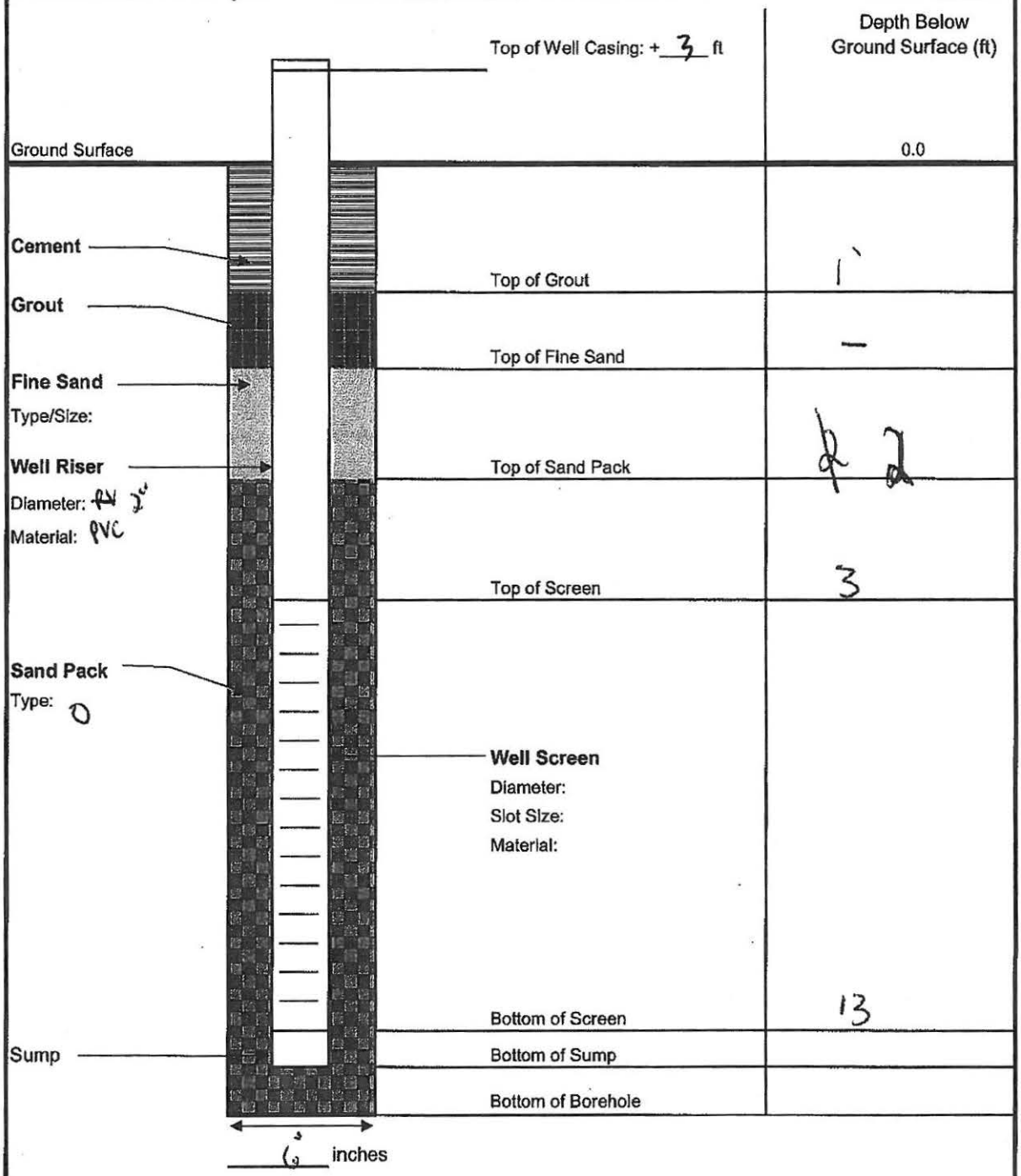
PARSONS

Well Construction Detail (Single Cased - Stickup)

Client: USACE

Well ID: PAR-51-MW-01 | NJBWA Permit No.

Date Well Installed: 4/6/16 | Location: Parcel 51



Top of Confining Unit (if present): _____

ATTACHMENT E
PAR-51-MW-01 Monitoring Well Forms

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-04Q PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201602888

WELL PERMIT

New Well

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: JAMES W DUFFY, MASTER LICENSE # 0001581

Permit Issued to: EAST COAST DRILLING, INC.

Company Address: 1256 N CHURCH ST MOORESTOWN, NJ 08057

PROPERTY OWNER

Name: US GOV

Organization: US Gov

Address: US Army Seli EH-E

City: Fort Monmouth State: New Jersey Zip Code: 07703

PROPOSED WELL LOCATION

Facility Name: Fort Monmouth - Parcel 51

Address: Oceanport Avenue

County: Monmouth Municipality: Oceanport Boro Lot: 1 Block: 110

Easting (X): 619092 Northing (Y): 539551
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: PAR-51-GW-MW-01

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 2

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: March 16, 2016
Expiration Date: March 16, 2017

Approved by the authority of:
Bob Martin
Commissioner

Terry D Pilawski

Terry Pilawski, Chief
Bureau of Water Allocation and Well Permitting

New Jersey State Department of Environmental Protection
Bureau of Water Allocation and Well Permitting
Mail Code 401-04Q PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201602888

MONITORING WELL RECORD

PROPERTY OWNER: US GOV

Company/Organization: US Gov

Address: US Army Seli EH-E Fort Monmouth, New Jersey 07703

WELL LOCATION: Fort Monmouth - Parcel 51

Address: Oceanport Avenue

County: Monmouth Municipality: Oceanport Boro Lot: 1 Block: 110

Easting (X): 619091 Northing (Y): 539546
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: April 6, 2016

DATE WELL COMPLETED: April 6, 2016

WELL USE: MONITORING

Other Use(s):

Local ID: PAR-51-GW-MW-01

WELL CONSTRUCTION

Total Depth Drilled (ft.): 13 Finished Well Depth (ft.): 13 Well Surface: Above Grade

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	13	8		
Casing	0	3	2	PVC	Sch 40
Screen	3	13	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	2	8	2	2.5	47	4
Gravel Pack	2	13	8	2	#0		

Grouting Method: Pressure method (Tremie Pipe) Drilling Method: Hollow Stem Augers

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 5 ft. below land surface
Water Level Measure Tool: M-Scope
Well Development Period: 3 hrs.
Method of Development: Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: 7822DT
Health and Safety Plan Submitted? Yes

ATTACHMENTS:

GEOLOGIC LOG

0 - .5: Brown OT - Other Top Soil

.5 - 11.5: Light Brown SM - Silty sands, sand-silt mixtures

11.5 - 13: Light Green OL - Organic silts and organic silty clays of low plasticity

ADDITIONAL INFORMATION:

Driller of Record: Joseph Barnak, MONITORING LICENSE # 534717 Company: EAST COAST DRILLING, INC.

New Jersey Department of Environmental Protection
Site Remediation Program

MONITORING WELL CERTIFICATION FORM A - AS-BUILT CERTIFICATION

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Fort Monmouth - Parcel 51

List all AKAs:

Street Address: Oceanport Avenue

Municipality: Oceanport Boro (Township, Borough or City)

County: Monmouth Zip Code: 07757

Program Interest (PI) Number(s): Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner: US Gov
2. Well Location (Street Address): Oceanport Ave
3. Well Location (Municipal Block and Lot) Block# 110 Lot # 1

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing):	E201602888
2. Site Well Number as shown on application or plans):	PAR-51-GW-MW-01
3. Well Completion Date:	4/1/2016
4. Distance from Top of Casing (cap off) to ground surface (nearest 0.01'):	+3.00
5. Total Depth of Well to the nearest ½ foot:	13
6. Depth to Top of Screen (or top of open hole) from top of casing (nearest 0.01'):	3.00
7. Screen Length (or length of open hole) in feet:	10
8. Screen or Slot Size:	.010
9. Screen or Slot Material:	Sch. 40 PVC
10. Casing Material (PVC, steel, or other – specify):	Sch. 40 PVC
11. Casing Diameter (inches):	2
12. Static Water Level from top of casing at the time of installation (nearest 0.01'):	5.00
13. Yield (gallons per minute):	1
14. Development Techinque (specify):	Pump
15. Length of Time well is developed/pumped or bailed (hours and minutes):	3 Hours 00 Minutes

New Jersey Department of Environmental Protection
Site Remediation Program

Monitoring Well Certification Form B - Location Certification

Date Stamp
(For Department use only)

SECTION A. SITE NAME AND LOCATION

Site Name: Fort Monmouth

List all AKAs: FTMM

Street Address: OACSIM - U.S. Army Fort Monmouth, PO Box 148

Municipality: Oceanport (Township, Borough or City)

County: Monmouth Zip Code: 07757

Program Interest (PI) Number(s): G000000032 Case Tracking Number(s):

SECTION B. WELL OWNER AND LOCATION

1. Name of Well Owner US Army (Fort Monmouth)
2. Well Location (Street Address) Oceanport Ave
3. Well Location (Municipal Block and Lot) Block# 110 Lot # 1

SECTION C. WELL LOCATION SPECIFICS

1. Well Permit Number (This number must be permanently affixed to the well casing): E201602888
2. Site Well Number (As shown on application or plans): PAR-51-MW-01
3. Geographic Coordinate NAD 83 to nearest 1/100 of a second:
   Latitude: North 40° 18' 49.68" Longitude: West 74° 02' 40.84"
4. New Jersey State Plane Coordinates NAD 83 datum, US survey feet units, to nearest foot:
   North 539546 East 619091
5. Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 18.32
   Elevation Top of Outer casing: 18.78 Elevation of ground: 15.60
   Check one: ☒ NAVD 88 ☐ NVGD29 ☐ On Site Datum ☐ Other
6. Source of elevation datum (benchmark, number/description and elevation/datum). If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation (referencing NAVD 88).
   GPS Observation
7. Significant observations and notes:

SECTION D. LAND SURVEYOR'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

Professional Land Surveyor's Signature: Date

Surveyor's Name: Kenny L. Kennon License Number: 37195

Firm Name: Kennon Surveying Services, Inc. Certificate of Authorization #: 27944900

Mailing Address 5 Powder Horn Drive, Suite 4

City/Town: Warren State New Jersey Zip Code: 07059

Phone Number 732-564-1818 Ext.: Fax:

ATTACHMENT F
Low Flow Purge and Sampling Records

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS | CLIENT: USACE | WELL #: PAR-51-MW01

PROJECT: Fort Monmouth ECP and UHOT Groundwater Sampling
AOC # (AREA): Parcel 51
SCREENED INTERVAL (TOC): 6.3-16.3
WELL DIAMETER (in.): 2

WELL PERMIT #:
DATE: 5/25/16
SAMPLING PERSONNEL NAME: C. Watson
SAMPLING PERSONNEL NAME:

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2	2.61	3.3	5.87

WELL HEAD VOC CONCENTRATION (ppm): 0
WELL DEPTH (TOC): 16.3
FEET OF WATER IN WELL (ft): 7.5

FEET OF SATURATED SCREEN (ft): 7.5
DEPTH TO WATER BEFORE PUMP INSTALLATION (ft below TOC): 8.80
PUMP INTAKE DEPTH (ft below TOC): 12.55

PURGING AND SAMPLING

TIME	PURGING	SAMPLING	pH (pH units) READING	pH CHANGE*	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY CHANGE*	REDOX POTENTIAL (mv) READING	REDOX POTENTIAL CHANGE*	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN CHANGE*	TURBIDITY (NTU) READING	TURBIDITY CHANGE*	TEMPERATURE (degrees C) READING	TEMPERATURE CHANGE*	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
0845	X		5.80	NA	0.342	NA	96.7	NA	4.74	NA	120	NA	19.42	NA	200	8.90
0850	X		5.94	0.14	0.245	0.097	50.7	40	1.39	3.35	96.5	23.5	17.35	2.07	200	8.99
0855	X		5.94	0	0.234	0.009	45.6	5.1	0.69	0.70	50.7	45.8	17.01	0.34	150	9.02
0900	X		5.94	0	0.233	0.001	44.7	0.9	0.64	0.05	23.6	27.1	17.06	0.05	150	9.06
0905	X		5.91	0.03	0.237	0.004	45.0	0.3	0.55	0.09	20.8	2.8	17.15	0.09	150	9.08
0910	X		5.87	0.04	0.240	0.003	48.1	3.1	0.74	0.10	19.7	1.1	17.50	0.35	150	9.10
0915	X		5.83	0.04	0.242	0.002	50.0	1.9	0.40	0.04	19.4	0.3	17.60	0.10	150	9.10
0920		X	5.82	0.01	0.242	0.000	51.6	1.6	0.40	0	20.1	0.7	17.62	0.02	150	9.11

*Indicator readings have stabilized when 3 consecutive readings are within: +/- 0.1 for pH; =+/- 3% for Specific Conductivity and Temperature; +/- 10 mv for Redox Potential; and +/- 10% for Dissolved Oxygen and Turbidity

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS	CLIENT: USACE	WELL #: Par-51-MW-01

SAMPLING INFORMATION

SAMPLING DEVICE: QED Sample Pro

SAMPLE NAME (ID): PAR-51-GW-MW01-12.55

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY	COMMENTS
VOCs	0920	250	Clear	20.01	
SVOCs	0920	250	Clear	20.01	

QA\QC SAMPLES:

DUPLICATE SAMPLE COLLECTED: (YES) or NO

DUPLICATE SAMPLE NAME (ID): Par-51-GW-MW01-12.55

MS/MSD SAMPLE COLLECTED: YES or NO

MS / MSD SAMPLE NAME (ID): Par51-GW-MW01-12.55-MS + MSD

PURGING AND SAMPLING COMMENTS:

INVESTIGATION DERIVED WASTE (IDW): GAC

Date:									
Volume Transfered to Drum:									
Drum Number:									

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS | CLIENT: USACE | WELL #: 600MW01

PROJECT: Fort Monmouth ECP and UHOT Groundwater Sampling
AOC # (AREA): Parcel 51
SCREENED INTERVAL (TOC): 2-15
WELL DIAMETER (in.): 4

WELL PERMIT #:
DATE: 6/25/16
SAMPLING PERSONNEL NAME: J. Lotzos
SAMPLING PERSONNEL NAME:

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2	2.61	3.3	5.87

WELL HEAD VOC CONCENTRATION (ppm): 0.0
WELL DEPTH (TOC): 9.00
FEET OF WATER IN WELL (ft): 3.97

FEET OF SATURATED SCREEN (ft): 3.97
DEPTH TO WATER BEFORE PUMP INSTALLATION (ft below TOC): 5.08
PUMP INTAKE DEPTH (ft below TOC): 7

PURGING AND SAMPLING

TIME	PURGING	SAMPLING	pH (pH units) READING	pH CHANGE*	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY CHANGE*	REDOX POTENTIAL (mv) READING	REDOX POTENTIAL CHANGE*	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN CHANGE*	TURBIDITY (NTU) READING	TURBIDITY CHANGE*	TEMPERATURE (degrees C) READING	TEMPERATURE CHANGE*	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
0905	X		5.50	NA	0.159	NA	150.4	NA	6.63	NA	1275	NA	17.78	NA	100	5.29
0910	X		5.38	0.12	0.069	0.090	144.7	6.0	4.86	1.76	800	475	16.46	1.32	100	5.32
0915	X		5.23	0.15	0.131	0.062	149.7	5.5	3.18	1.68	727.	73	16.68	0.22	100	5.33
0920	X		5.18	0.05	0.132	0.001	151.5	1.8	2.92	0.26	512	415	16.54	0.14	100	5.33
0925	X		5.16	0.02	0.132	0.000	151.8	0.3	2.73	0.19	146	166	16.61	0.07	100	5.33
0930	X		5.14	0.02	0.137	0.001	152.2	0.4	2.53	0.20	88.0	58	16.44	0.17	100	5.33
0935	X		5.16	0.02	0.135	0.002	150.7	1.5	2.17	0.36	32.1	55.9	16.58	0.14	100	5.33
0940	X		5.16	0.00	0.136	0.001	150.1	0.6	2.09	0.08	29.6	2.5	16.61	0.03	100	5.33
0945	X		5.18	0.02	0.137	0.001	146.2	3.9	2.04	0.05	29.1	0.5	16.68	0.07	100	5.33
0950	X		5.20	0.02	0.139	0.003	149.6	3.4	2.01	0.03	31.4	1.8	16.54	0.14	100	5.33
0955		X	5.20	0.00	0.140	0.001	150.1	0.5	1.98	0.03	30.4	0.6	16.61	0.07	100	5.33

*Indicator readings have stabilized when 3 consecutive readings are within: +/- 0.1 for pH; =+/- 3% for Specific Conductivity and Temperature; +/- 10 mv for Redox Potential; and +/- 10% for Dissolved Oxygen and Turbidity

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS	CLIENT: USACE	WELL # : GOOMW01

SAMPLING INFORMATION

SAMPLING DEVICE: QED Sample Pro

SAMPLE NAME (ID): GOOMW01-7

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY	COMMENTS
VOCs + TICs	0955	(3)x40ml w/HCl	slightly cloudy - green	30.8	
SVOCs + TICs	0955	(2)x1L amber	" "	30.8	

QA\QC SAMPLES:

DUPLICATE SAMPLE COLLECTED: YES or (NO)

DUPLICATE SAMPLE NAME (ID): _____

MS/MSD SAMPLE COLLECTED: YES or (NO)

MS / MSD SAMPLE NAME (ID): _____

PURGING AND SAMPLING COMMENTS:

- well extremely turbid. screen partially clogged w/ silt. silt clogging intake on bladder pump
- sample collected @ 0955

INVESTIGATION DERIVED WASTE (IDW): GAC

Date:									
Volume Transfered to Drum:									
Drum Number:									

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS | **CLIENT:** USACE | **WELL #:** 600MW04

PROJECT: Fort Monmouth ECP and UHOT Groundwater Sampling

AOC # (AREA): Parcel 51

SCREENED INTERVAL (TOC): 7.20 - 22.20

WELL DIAMETER (in.) 4

WELL PERMIT #:

DATE: 5/25/16

SAMPLING PERSONNEL NAME: J. Lotzos

SAMPLING PERSONNEL NAME:

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2	2.61	3.3	5.87

WELL HEAD VOC CONCENTRATION (ppm): 0.0

WELL DEPTH (TOC): 22.20

FEET OF WATER IN WELL (ft): ~~22.20~~ 14.19

FEET OF SATURATED SCREEN (ft): 14.19

DEPTH TO WATER BEFORE PUMP INSTALLATION (ft below TOC): 8.01

PUMP INTAKE DEPTH (ft below TOC): 14.7

PURGING AND SAMPLING

TIME	PURGING	SAMPLING	pH (pH units) READING	pH CHANGE*	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY CHANGE*	REDOX POTENTIAL (mv) READING	REDOX POTENTIAL CHANGE*	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN CHANGE*	TURBIDITY (NTU) READING	TURBIDITY CHANGE*	TEMPERATURE (degrees C) READING	TEMPERATURE CHANGE*	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
1025	X		6.09	NA	0.398	NA	114.3	NA	4.99	NA	24.7	NA	20.09	NA	250	8.18
1030	X		6.41	0.32	0.410	0.012	74.2	40.1	1.53	3.46	21.6	3.1	15.87	4.15	250	8.24
1035	X		6.44	0.03	0.409	0.001	67.1	7.1	1.47	0.06	12.8	8.8	16.87	1.00	200	8.21
1040	X		6.49	0.05	0.410	0.001	55.0	12.1	1.49	0.02	3.91	8.89	17.20	0.33	200	8.21
1045	X		6.49	0.00	0.409	0.001	50.7	4.3	1.50	0.01	1.65	2.26	17.19	0.01	200	8.21
1050	X		6.49	0.00	0.407	0.002	46.6	4.1	1.51	0.01	1.95	0.30	17.38	0.19	200	8.21
1055		X	6.50	0.01	0.407	0.000	44.7	1.9	1.56	0.05	1.12	0.83	17.34	0.04	200	8.21

*Indicator readings have stabilized when 3 consecutive readings are within: +/- 0.1 for pH; =+/- 3% for Specific Conductivity and Temperature; +/- 10 mv for Redox Potential; and +/- 10% for Dissolved Oxygen and Turbidity

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS	CLIENT: USACE	WELL #: 600MW04

SAMPLING INFORMATION

SAMPLING DEVICE: QED Sample Pro

SAMPLE NAME (ID): 600MW04-16.7

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY	COMMENTS
VOCs + TICs	1055	(3)x40ml w/HCl	clear	4.12	
SVOCs + TICs	1055	(2)x 1L amber	clear	1.12	

QA\QC SAMPLES:

DUPLICATE SAMPLE COLLECTED: YES or (NO)

DUPLICATE SAMPLE NAME (ID): _____

MS/MSD SAMPLE COLLECTED: YES or (NO)

MS / MSD SAMPLE NAME (ID): _____

PURGING AND SAMPLING COMMENTS:

- 1st saturated screen interval = (2)
- sample collected @ 1055

INVESTIGATION DERIVED WASTE (IDW): GAC

Date:									
Volume Transfered to Drum:									
Drum Number:									

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS	CLIENT: USACE	WELL # : 600TMW04

PROJECT: Fort Monmouth ECP and UHOT Groundwater Sampling

WELL PERMIT #:

AOC # (AREA): Parcel 51

DATE: 5/25/16

SCREENED INTERVAL (TOC): 7.20 - 22.20

SAMPLING PERSONNEL NAME: J. Lawson

WELL DIAMETER (in.) 4

SAMPLING PERSONNEL NAME:

BOREHOLE DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2	2.61	3.3	5.87

WELL HEAD VOC CONCENTRATION (ppm): 0.0

FEET OF SATURATED SCREEN (ft): 14.19

WELL DEPTH (TOC): 22.20

DEPTH TO WATER BEFORE PUMP INSTALLATION (ft below TOC): 8.01

FEET OF WATER IN WELL (ft): 14.19

PUMP INTAKE DEPTH (ft below TOC): 19.7

PURGING AND SAMPLING

TIME	PURGING	SAMPLING	pH (pH units) READING	pH CHANGE*	SPECIFIC CONDUCTIVITY (mS/cm) READING	SPECIFIC CONDUCTIVITY CHANGE*	REDOX POTENTIAL (mv) READING	REDOX POTENTIAL CHANGE*	DISSOLVED OXYGEN (mg/L) READING	DISSOLVED OXYGEN CHANGE*	TURBIDITY (NTU) READING	TURBIDITY CHANGE*	TEMPERATURE (degrees C) READING	TEMPERATURE CHANGE*	PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
1115	X		6.56	NA	0.407	NA	36.9	NA	1.94	NA	20.0	NA	17.86	NA	200	8.09
1120	X		6.46	0.10	0.409	0.002	36.0	1.1	1.26	0.68	18.1	1.9	19.80	1.94	200	8.21
1125	X		6.52	0.06	0.414	0.005	33.2	4.8	0.97	0.29	9.11	8.99	20.77	0.97	200	8.32
1130	X		6.51	0.01	0.415	0.001	32.0	1.2	0.92	0.05	8.06	1.05	21.18	0.41	200	8.32
1135	X		6.51	0.00	0.415	0.000	30.4	1.6	0.91	0.01	6.49	0.43	21.14	0.04	200	8.32
1140		X	6.50	0.01	0.417	0.002	29.3	1.1	0.89	0.02	7.70	0.79	21.06	0.08	200	8.32

*Indicator readings have stabilized when 3 consecutive readings are within: +/- 0.1 for pH; =+/- 3% for Specific Conductivity and Temperature; +/- 10 mv for Redox Potential; and +/- 10% for Dissolved Oxygen and Turbidity

LOW FLOW PURGE AND SAMPLING (LFPS) RECORD - GROUNDWATER

PARSONS	CLIENT: USACE	WELL # : 600MW04

SAMPLING INFORMATION

SAMPLING DEVICE: QED Sample Pro

SAMPLE NAME (ID): 600MW04-19.7

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY	COMMENTS
VOCs +TICs	1140	(3) x 40m w/HCl	clear	7.70	
SVOCs +TICs	1140	(2) x 1L Amber	clear	7.70	

QA\QC SAMPLES:

DUPLICATE SAMPLE COLLECTED: YES or (NO)

DUPLICATE SAMPLE NAME (ID): _____

MS/MSD SAMPLE COLLECTED: YES or (NO)

MS / MSD SAMPLE NAME (ID): _____

PURGING AND SAMPLING COMMENTS:

-2nd of (2) saturated screen intervals

INVESTIGATION DERIVED WASTE (IDW): GAC

Date:									
Volume Transfered to Drum:									
Drum Number:									