U.S. Army Garrison
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

Charles Wood – Building 2041

NJDEP UST Registration No.: 192486-22
UST No.: 192486-22

September 2010

UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT

CHARLES WOOD – BUILDING 2041
NJDEP UST REGISTRATION NO.: 192486-22

SEPTEMBER 2010

PROJECT NO.: 10-24949

PREPARED FOR:

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

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EXECUTIVE SUMMARY

UST Closure

On April 6, 2000, a single wall, fiberglass wrapped plastic underground storage tank (UST) was 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. Installed in 1985, the tank was located adjacent to Building 2041 in Charles Wood area. UST No.: 192486-22 was a 550-gallon, FRP, No. 2 fuel oil tank. The tank with all associated piping was present at the time of removal. The tank closure was performed by TECOM-Vinnell Services, Inc. (TVS).

Site Assessment

The site assessment was performed by TVS personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (*N.J.A.C.* 7:26E) and the NJDEP *Field Sampling Procedures Manual*. Soils surrounding the tank were screened visually and with air monitoring instruments for evidence of contamination. Following removal, the UST was inspected for holes, of which none were found. No petroleum odors or stained soils were observed in the soils surrounding the tanks.

Closure soil samples were collected after the removal of the UST. Closure samples 2041-A and 2041-B were collected from a total of two (2) locations along the UST bottom of the excavation for the UST No.: 192486-22. Closure sample 2041-C was collected from a location along the UST piping. A duplicate of sample 2041-A was collected. All samples were analyzed for total petroleum hydrocarbons (TPH). Groundwater was not encountered in the bottom of the excavation.

Findings

The closure soil samples collected from the UST excavation associated UST No.: 192486-22 contained TPH concentrations below the NJDEP health based criterion of 10,000 milligrams per kilogram (mg/kg) for total organic contaminants (*N.J.A.C.* 7:26E and revisions dated February 3, 1994). All soil samples, including the duplicate, contained a TPH concentration of Not Detected.

Conclusions and Recommendations

Based on the closure soil sampling results, soils with TPH concentrations exceeding the NJDEP health based criterion of 10,000 mg/kg for total organic contaminants (*N.J.A.C.* 7:26E and revisions dated February 3, 1994) are not present in the former location of the UST.

No Further Action is proposed in regard to the closure and site assessment of UST No.: 192486-22 at Building 2041.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No.: 192486-22 was closed at Building 2041 of the Charles Wood area at U.S. Army Garrison, Fort Monmouth, New Jersey. Refer to site location maps Figure 1 & 2. This report presents the results of the implementation of the Directorate of the Public Work's UST Management Plan, March 1996. Installed in 1985, the UST was a 550-gallon, FRP, containing No. 2 fuel oil for residential use. It was removed on April 6, 2000.

Decommissioning activities for UST No.: 192486-22 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 UST was conducted by a NJDEP licensed TVS employee.

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

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 UST decommissioning activities. Section 2 describes the site investigation activities. Conclusions and recommendations are presented in Section 3 of this report.

1.2 SITE DESCRIPTION

Building 2041, (63 & 65 Megill Circle) is located in the Charles Wood area of Fort Monmouth, as shown on Figure 1 & 2. UST No.: 192486-22 and associated piping were located adjacent to the building, as shown on Figure 3.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of Bldg. 2041. 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 Charles Wood 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 Hornerstown Formation, ranging in thickness from 20-30 feet. The predominant formation underlying the Charles Wood Area is also the Hornerstown, with small areas of Vincentown Formation intruding in the southwest corner. 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 at the installation; water is typically encountered at depths ranging from 2 to 9 feet below ground surface (bgs) 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 (Jablonski). The lower member (Sandy Hook) is a dark gray to black, medium-to-fine grained sand with abundant clay, mica, and glauconite.

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

"Arsenic and lead are naturally occurring in soil and can vary widely. All soils contain naturally-occurring arsenic and lead in some amount (Kabata-Pendias and Pendias, 1984). In general, the concentrations of arsenic in any particular soil are dependent upon the parent material and the soil forming processes. Because the soil forming processes are relatively consistent in New Jersey, differences in arsenic concentrations depend primarily on the soil parent material and past and present land use (Motto, Personal comm., 1997).

Because the underlying geologic materials vary widely throughout New Jersey, naturally occurring concentrations of metals in New Jersey soils also vary widely. Even though soils within a specific soil series can be similar in texture and color, the mineral and organic matter composition of soil tend to be heterogeneous. As a result, concentrations of metals in adjacent soil samples can vary substantially over distances of a few feet.

Based on a Department survey of background concentrations of metals in soil in rural and suburban areas of the state, non-agricultural soils contained 0.02 – 22.7 ppm of arsenic with an average 3.25 ppm and less than 1.2- 150 ppm of lead with an average of 19.2 ppm (Fields, et al., 1993). A statistical test was conducted to determine the correlation between sand, silt and clay content of the samples and metal concentrations. Samples containing higher clay content tended to have higher concentrations of most metals, including arsenic and lead (Fields, et al., 1993).

While naturally-occurring lead concentrations have not been detected above the Department's residential soil cleanup criteria in New Jersey, elevated arsenic concentrations have been found. Higher concentrations of naturally-occurring arsenic have been specifically associated with soils containing glauconite. The US Geological Survey found arsenic concentrations generally lower than 10 ppm in sandy soils from undeveloped areas, but concentrations were as large as 40 ppm in samples containing higher clay content (Barringer, et al., 1998). Soil sampling conducted as part of site remediation activities have shown glauconite soils to commonly contain arsenic concentrations of 20-40 ppm and range as high as 260 ppm (Schick, Personal comm., 1998). The Department is currently involved in a research project with the New Jersey Geological Survey investigating metal levels in glauconite soils." *Findings and Recommendations for Remediation of Historic Pesticide Contamination, Historic Pesticide Contamination Task Force, Final Report March 1999*

Fort Monmouth has been an operational military facility for in excess of ninety (90) years; and in many areas of Charles Wood, human activities have completely transformed the topography. Currently, Fort Monmouth is conducting a correlation study to determine the relative impact of the ubiquitous glauconitic silty sands and clays and the concentrations of dissolved arsenic observed in a number of monitoring wells on the post. Upon the completion of the study, the results will be provided to NJDEP for review and comment. It is the intent of the US Army to demonstrate that the preponderance of the dissolved arsenic is a function of soil type and chemistry and is not anthropogenic in nature.

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 and at a shallow depth below the Charles Wood Area. The Hornerstown and Red Bank formations overlay the larger Wenonah-Mount Laurel aquifer.

Based on records of wells drilled in the Charles Wood area, water is typically encountered at depths ranging from 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may yield 2 to 25 gallons per minute (gpm). Some local well owners have reported acidic water that requires treatment to remove iron. Acid sulfate soils are naturally occurring soils, sediments or organic substrates (e.g. peat) that are formed under waterlogged conditions. Soil and sediment materials rich in iron sulfide tend to be very dark and soft. Iron sulfides can react rapidly when they are disturbed (i.e. exposed to oxygen). Pyrite will tend to occur as more discrete crystals in soil and organic matter matrices and will react more slowly when disturbed. The oxidation of iron sulfide in the potential acid sulfate soil materials (sulfidic material) may result in the formation of actual acid sulfate soil material or sulfuric material.

These soils contain iron sulfide minerals (predominantly as the mineral pyrite) or their oxidation products. Soil horizons that contain sulfides are called 'sulfidic materials' (Isbell 1996; Soil Survey Staff 2003) and can be environmentally damaging if exposed to air by disturbance. Exposure results in the oxidation of pyrite.

1.3 HEALTH AND SAFETY

Work site health and safety hazards were minimized during all decommissioning activities. All areas which posed a vapor hazard were monitored by a qualified individual utilizing a calibrated photo-ionizer detector: Thermo Instruments Organic Vapor Monitor (OVM) – Model #580-B. The individual 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 permissible exposure limits (PEL's).

1.4 REMOVAL OF UNDERGROUND STORAGE 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 great regard to safety and health and the safeguarding of the environment.

- All excavated soils were visually examined and screened with an OVM for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.

- Surface materials (i.e., asphalt, concrete, etc.) were excavated and staged separately from all soil and recycled in accordance with all applicable regulations and laws.

- An NJDEP certified Subsurface Evaluator was present during all closure and remediation activities.

1.4.2 Underground Storage Tank Excavation

During decommissioning activities, surficial soil was carefully removed to expose the UST. The tank was completely empty and contained no liquids prior to removal from the ground.

After the UST was removed from the excavation, it was staged on an impervious surface, labeled and examined for holes. The Subsurface Evaluator observed no holes in the tank during the inspection. Soils surrounding the UST were screened visually and with an OVM for evidence of contamination. Soil staining or petroleum hydrocarbons were not observed.

1.5 UNDERGROUND STORAGE TANK DECOMMISSIONING AND DISPOSAL

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

The tank was then transported by TVS for disposal in compliance with all applicable regulations and laws. The UST disposal certification, along with backfilling authorization, is included in Appendix B.

The Subsurface Evaluator labeled the UST with the following information:

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

If available, photographic documentation of the UST is included in Appendix C.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

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

The following Parties participated in Closure and Site Investigation Activities.

- Ft. Monmouth Directorate of Public Works-Environmental Division
  Contact Person: Joseph Fallon
  Phone Number: (732) 532-6223

- Subsurface Evaluator: Frank Accorsi
  Employer: TECOM-Vinnell Services, Inc. (TVS)
  Phone Number: (732) 532-5241
  NJDEP License No.: 0010042
  (TVS)NJDEP License No.: US252302

- Analytical Laboratory: Fort Monmouth Environmental Testing Laboratory
  Contact Person: Dan Wright
  Phone Number: (732) 532-4359
  NJDEP Laboratory Certification No.: 13461

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, of which none were found.

2.3 SOIL SAMPLING

On April 6, 2000, closure soil samples were collected after the removal of the UST. Closure samples 2041-A and 2041-B were collected from a total of two (2) locations along the UST bottom of the excavation for the UST No.: 192486-22. Closure sample 2041-C was collected from a location along the UST piping. A duplicate of sample 2041-A was also collected.

Refer to soil sampling location map in Figure 3. All samples were analyzed for total petroleum hydrocarbons (TPH). Groundwater was not encountered in the excavation.

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

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

Closure soil samples were collected from a total of three locations (which included the duplicate) on April 6, 2000 to evaluate soil conditions following removal of the UST and piping. All samples were analyzed for TPH. The closure soil sample results were compared to the NJDEP health based criterion of 10,000 mg/kg for total organic contaminants (*N.J.A.C.* 7:26D and revisions dated February 3, 1994). A summary of the analytical results and comparison to the NJDEP soil cleanup criteria is provided on Table 2. The analytical data package, including associated quality control data, is provided in Appendix D.

Closure soil samples collected on April 6, 2000 from the UST site excavation contained concentrations of TPH below the NJDEP soil cleanup criteria.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all of closure soil samples collected from the UST closure excavation at UST No.: 192486-22 were Not Detected for total petroleum hydrocarbons.

Based on the closure soil sampling results, soils with TPH concentrations exceeding the NJDEP soil cleanup criterion for total organic contaminants of 10,000 mg/kg are not present in the location of former UST No.: 192486-22.

No Further Action is proposed in regard to the closure and site investigation of UST No.: 192486-22 at Building 2041.

FIGURES

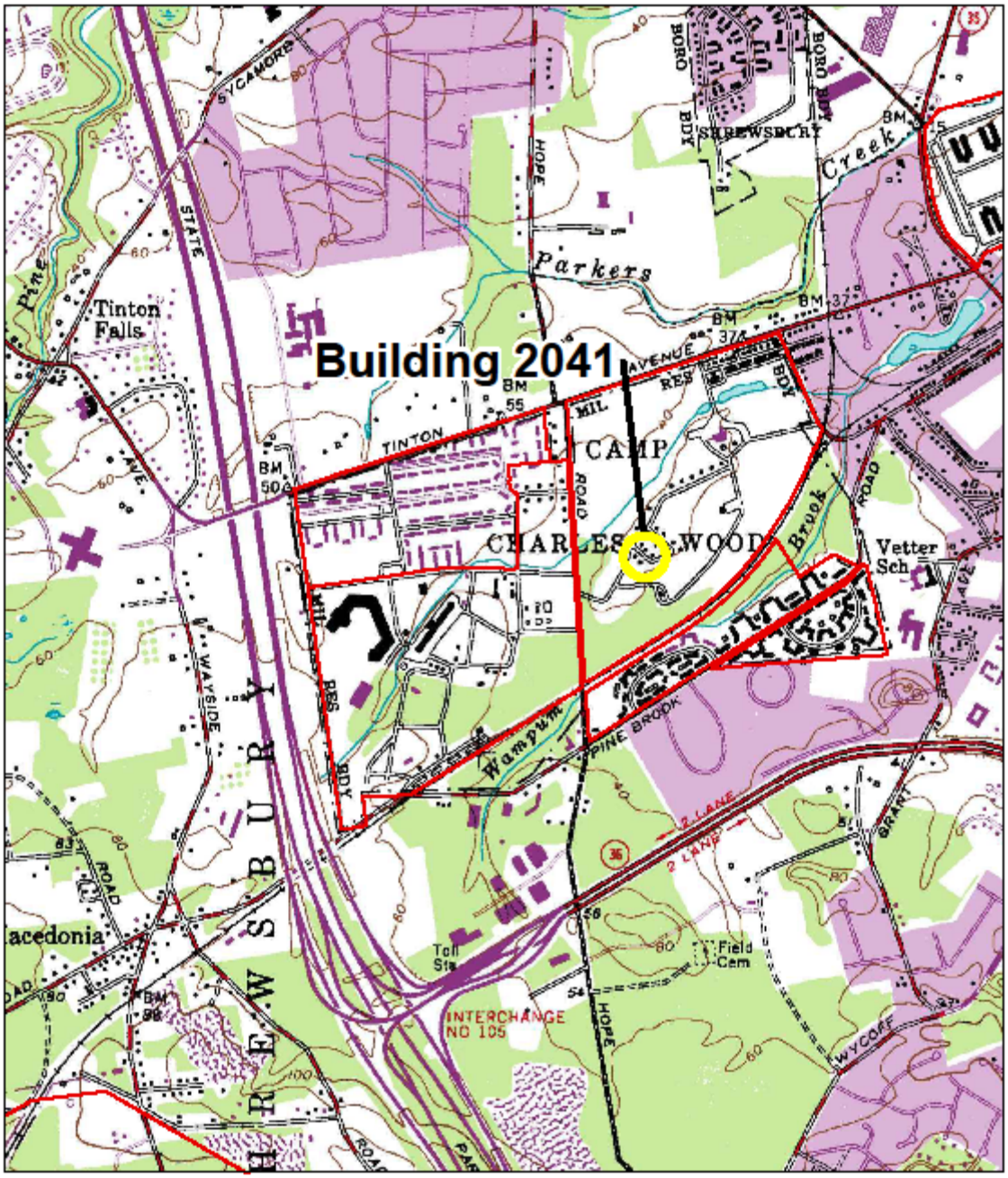

Figure 1
Location Map
Building 2041, Charles Wood
Fort Monmouth, NJ
Date: 1/2011
UST Registration # 192486-22
UST Discharge # NA

LONG BRANCH, N.J.
40073-C6-TF-024
1954
PHOTOREVISED 1991
DMA 6164 I SE-SERIES V822

FOUO
All drawings must be field verified.
Environmental Division, Directorate of Public Works, Fort Monmouth, New Jersey

Figure 2
Location Map
Building 2041, Charles Wood Area
Fort Monmouth, NJ
Date: 1/2011
UST Registration # 192486-22
UST Discharge # NA

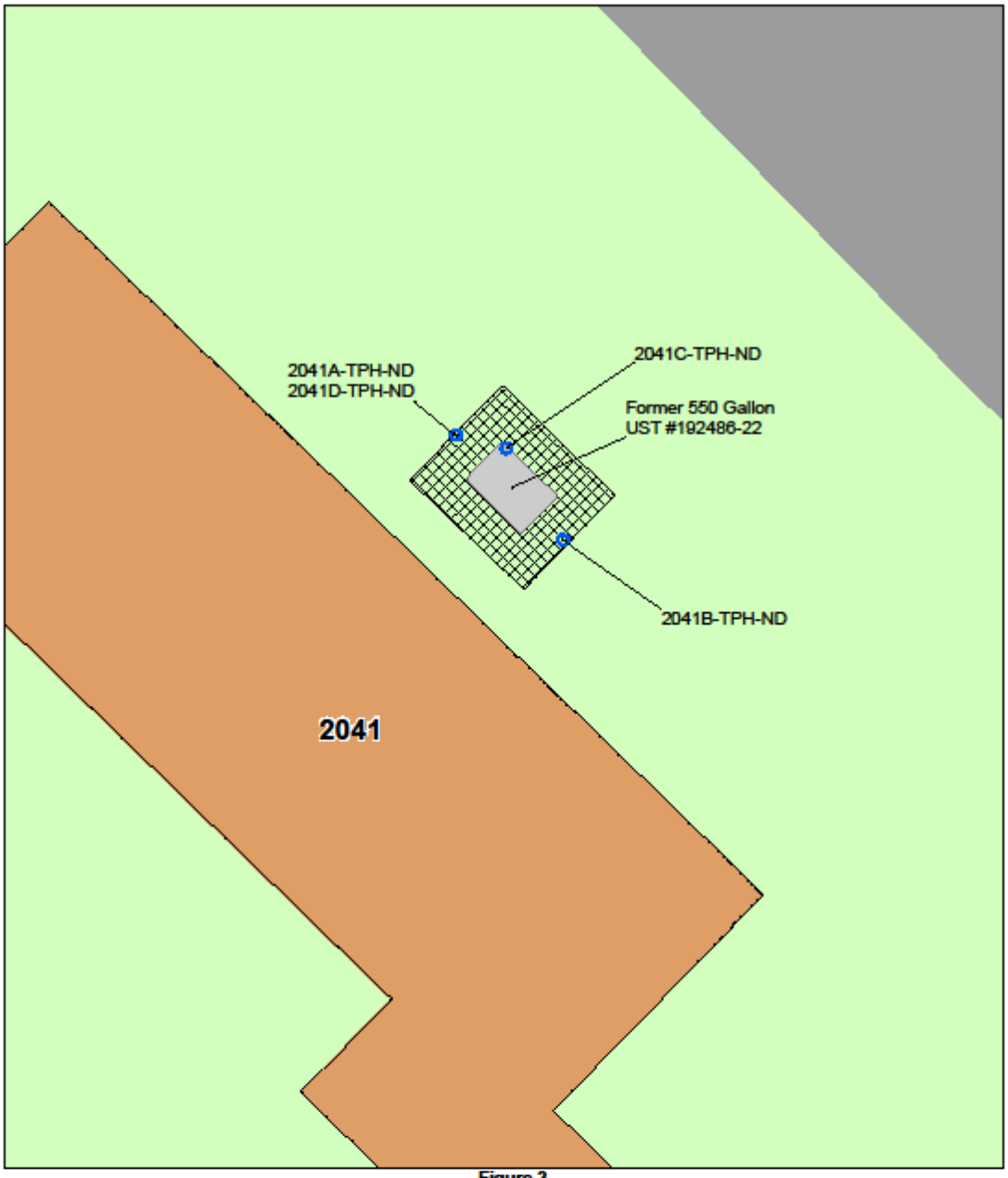

Figure 3
Soil Sampling Location Map
Building 2041, Charles Wood Area
Fort Monmouth, NJ
Date: 1/2011
UST Registration # 192486-22
UST Discharge # NA

TABLES

TABLE 1

SUMMARY OF LABORATORY ANALYSIS

FT. MONMOUTH, BUILDING 2041, UST No.: 192486-22
06 April 2000

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE DATE	SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD
2041-A	5319.01	06-Apr-00	SOIL	TPH	OQA-QAM-25
2041-B	5319.02	06-Apr-00	SOIL	TPH	OQA-QAM-25
2041-C	5319.03	06-Apr-00	SOIL	TPH	OQA-QAM-25
2041-D Duplicate	5319.04	06-Apr-00	SOIL	TPH	OQA-QAM-25

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

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS

FT. MONMOUTH, BUILDING 2041, UST No.: 192486-22
06 April 2000

TOTAL PETROLEUM HYDROCARBONS

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE LOCATION	SAMPLE DEPTH	MATRIX	TPH RESULT S
			(in feet)		mg/kg
2041-A	5319.01	WEST END	6.5-7.0	Soil	ND
2041-B	5319.02	EAST END	6.5-7.0	Soil	ND
2041-C	5319.03	PIPING	1.5-2.0	Soil	ND
2041-D Duplicate	5319.04	DUPLICATE-WEST END	6.5-7.0	Soil	ND

ABBREVIATIONS:
mg/kg = Milligrams Per Kilogram = parts per million
ND = Compound Not Detected

Gray shading indicates exceedance of NJDEP health based criterion of 10,000 ppm total organic contaminants

APPENDIX A

CERTIFICATIONS

(NOT AVAILABLE)

APPENDIX B

UST DISPOSAL CERTIFICATE

APPENDIX C

PHOTO DOCUMENTATION

(NOT AVAILABLE)

APPENDIX D

SOIL ANALYTICAL DATA PACKAGE

FORT MONMOUTH ENVIRONMENTAL TESTING LABORATORY

DIRECTORATE OF PUBLIC WORKS
PHONE: (732) 532-6224 FAX: (732) 532-6263
WET-CHEM - METALS - ORGANICS - FIELD SAMPLING
CERTIFICATIONS: NJDEP #13461, NYSDOH #11699

ANALYTICAL DATA REPORT
Fort Monmouth Environmental Laboratory
ENVIRONMENTAL DIVISION
Fort Monmouth, New Jersey
PROJECT: IJO# 100004

Bldg. 2041

Field Sample Location	Laboratory Sample ID#	Matrix	Date and Time of Collection	Date Received
2041-A West End 6.5-7.0'	5319.01	Aqueous	06-Apr-00 11:00	04/06/00
2041-B East End 6.5-7.0'	5319.02	Aqueous	06-Apr-00 11:30	04/06/00
2041-C Piping 1.5-2.0'	5319.03	Aqueous	06-Apr-00 11:10	04/06/00
2041-D Duplicate 6.5-7.0'	5319.04	Aqueous	06-Apr-00 11:00	04/06/00
Trip Blank	5319.05	Aqueous	06-Apr-00	04/06/00

ANALYSIS:
FORT MONMOUTH ENVIRONMENTAL LAB
TPHC, %SOLIDS

ENCLOSURE:
CHAIN OF CUSTODY
RESULTS

4-20-00

Daniel Wright/Date
Laboratory Director

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Method Summary

NJDEP Method OQA-QAM-025-10/97

Gas Chromatographic Determination of Total Petroleum Hydrocarbons in Soil

Fifteen grams (15g)(wet weight) of a soil sample is added to a 125 mL acid cleaned, solvent rinsed, capped Erlenmeyer flask. 15g anhydrous sodium sulfate is added to dry sample. Surrogate standard spiking solution is then added to the flask.

Twenty five milliliters(25mL) Methylene Chloride is added to the flask and it is secured on a orbital shaker table. The agitation rate is set to 400rpm and the sample is shaken for 30 minutes. The flask is the removed from the table and the particulate matter is allowed to settle. The extract is transferred to a Teflon capped vial. A second 25mL of Methylene Chloride is added to the flask and shaken for an additional 30 minutes. The flask is again removed and allowed to settle. The extracts are combined in the vial then transferred to a 1mL autosampler vial.

The extract is then injected directly into a GC-FID for analysis. The sample is analyzed for petroleum hydrocarbons covering a range of C8-C42 including pristane and phytane. Total Petroleum Hydrocarbon concentration is determined by integrating between 5 minutes and 22 minutes. The baseline is established by starting the integration after the end of the solvent peak and stopping after the last peak.

The final concentration of Total Petroleum Hydrocarbons is calculated using percent solid, sample weight and concentration.

TPHC Conformance/Non-conformance Summary Report

		Indicate Yes, No, N/A
1.	Method Detection Limits provided.	Yes
2.	Method Blank Contamination – If yes, list the sample and the corresponding concentrations in each blank.	NO
3.	Matrix Spike Results Summary Meet Criteria (If not met, list the sample and corresponding recovery which falls outside the acceptable range).	Yes
4.	Duplicate Results Summary Meet Criteria (If not met, list the sample and corresponding recovery which falls outside the acceptable range).	Yes
5.	IR Spectra submitted for standards, blanks and samples.	NA
6.	Chromatograms submitted for standards, blanks and samples if GC fingerprinting was conducted.	Yes
7.	Analysis holding time met. (If not met, list number of days exceeded for each sample).	Yes

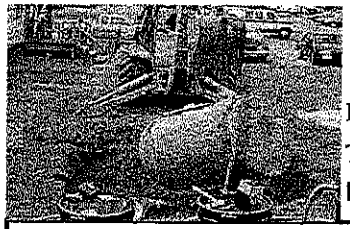
Additional comments: _____

_____

_____

_____ 4-20-00

Laboratory Manager Date



Fort Monmouth Environmental Testing Laboratory

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NJDEP Certification #13461 / NYDOH Certification #11699

Chain of Custody Record

Customer: Dinker Desai
Phone #: X21475
( )DERA (X)OMA UST Assessment

Project No: 100004
Location: 2041, 63+65 MEBILL CR.
UST# 192486-22

Samplers Name / Company : Frank Accorsi/TVS

Analysis Parameters

Lab Sample I.D.	Sample Location	Depth (ft)	Date	Time	Sample Type	# Bottles	TPHC	% SOLIDS *	VOA+10 *	VOA ID #	PID Reading	Remarks / Preservation Method
5319.01	2041-A, WEST END	6.5-7.0	4-6-00	1100	SOIL	2	X	X	X	1447	0	ICE
02	2041-B, EAST END	6.5-7.0		1130		2	X	X	X	1448	0	
03	2041-C, PIPING	1.5-2.0		1110		2	X	X	X	1449	0	
04	2041-D, DUPLICATE	6.5-7.0		1100		2	X	X	X	1450	0	
05	TRIP BLANK	—		—	AQ.	1			X	1451	—	

* = Samples Kept <4°C

OVM sn#580U-64455.343 was calibrated with zero air & w/ 245 ppm Isobutylene read 245 ppm. 1010 4-6-00 FA (time/date & initial)

Relinquished by (signature):	Date/Time:	Received by (signature):
Frank Accorsi	4-6-00 1150	
Relinquished by (signature):	Date/Time:	Received by (signature):

Comments: * VO+10 or 25% > 1000 ppm TPH, ON HIGHEST, MIN, ONE

Report Type: ( )Full, (X)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: ( )Standard 2 wks, (X)Rush 2 Days, ( )ASAP Verbal ___ Hrs.

Remarks: Dedicated Sampling Tools Used
All sample points have been GPS? (X)YES ( )NO ( )NA

000003

print legibly

USTcoc.xls3/21/00

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

Client :	U.S. Army	**Project # :**	5319
	DPW. SELFM-PW-EV	**Location :**	2041
	Bldg. 173	**UST Reg. # :**	192486-22
	Ft. Monmouth, NJ 07703		
Analysis :	OQA-QAM-025	**Date Received :**	06-Apr-00
Matrix :	Soil	**Date Extracted :**	07-Apr-00
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	Shake
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	10-Apr-00
Injection Volume :	1uL	**Analyst :**	D. Costagliola

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
5319.01	2041-A, West End	**1.00**	15.18	91.11	170	**ND**
5319.02	2041-B, East End	**1.00**	15.06	88.96	175	**ND**
5319.03	2041-C, Piping	**1.00**	15.32	88.16	174	**ND**
5319.04	2041-D, Duplicate	**1.00**	15.06	91.23	171	**ND**
METHOD BLANK	TBLK373	**1.00**	15.00	100.00	157	**ND**

ND = Not Detected

MDL = Method Detection Limit

LABORATORY DELIVERABLES CHECKLIST AND NON-CONFORMANCE SUMMARY

THIS FORM MUST BE COMPLETED BY THE LABORATORY OR ENVIRONMENTAL CONSULTANT AND ACCOMPANY ALL DATA SUBMISSIONS

The following Laboratory Deliverables checklist and Non-Conformance Summary shall be included in the data submission. All deviations from the accepted methodology and procedures, of performance values outside acceptable ranges shall be summarized in the Non-Conformance Summary. The Technical Requirements for Site Remediation, effective June 7, 1993, provides further details. The document shall be bound and paginated, contain a table of contents, and all pages shall be legible. Incomplete packages will be returned or held without review until the data package is completed.

It is recommended that the analytical results summary sheets listing all targeted and non-targeted compounds with the method detection limits, practical quantitation limits, and the laboratory and/or sample numbers be included in one section of the data package and in the main body of the report.

1. Cover page, Title Page listing Lab Certification #, facility name and address, & date of report submitted ✓
2. Table of Contents submitted ✓
3. Summary Sheets listing analytical results for all targeted and non-targeted compounds submitted ✓
4. Document paginated and legible ✓
5. Chain of Custody submitted ✓
6. Samples submitted to lab within 48 hours of sample collection ✓
7. Methodology Summary submitted ✓
8. Laboratory Chronicle and Holding Time Check submitted ✓
9. Results submitted on a dry weight basis ✓
10. Method Detection Limits submitted ✓
11. Lab certified by NJDEP for parameters of appropriate category of parameters or a member of the USEPA CLP ✓

Laboratory Manager or Environmental Consultant's Signature _____

Date 4/20/00

Laboratory Certification #13461

*Refer to NJAC 7:26E - Appendix A, Section IV - Reduced Data Deliverables - Non-USEPA/CLP Methods for further guidance.

Laboratory Authentication Statement

I certify under penalty of law, where applicable, that this laboratory meets the Laboratory Performance Standards and Quality Control requirements specified in N.J.A.C. 7:18 and 40 CFR Part 136 for Water and Wastewater Analyses and SW-846 for Solid Waste Analysis. I have personally examined the information contained in this report and to the best of my knowledge, I believe that the submitted information is true, accurate, complete and meets the above referenced standards where applicable. I am aware that there are significant penalties for purposefully submitting falsified information, including the possibility of a fine and imprisonment.

Daniel K. Wright
Laboratory Manager