United States Army
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

Building 2700
Myers Center

NJDEP UST Registration No. 81515-61
Spill Case No. 94-4-7-1617-44

February 2002

UNDERGROUND STORAGE TANK
CLOSURE AND SITE INVESTIGATION REPORT

BUILDING 2700, SITE 2700.2,6

MYERS CENTER
NJDEP UST REGISTRATION NO. 81515-61
SPILL CASE NO. 94-4-7-1617-44

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
BRISTOL, PA

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EXECUTIVE SUMMARY

UST Closure

On April 5, 1994, an underground storage tank (UST) was closed at U.S. Army Fort Monmouth, Fort Monmouth, New Jersey, by removal in accordance with the Technical Regulations for the New Jersey Department of Environmental Protection (NJDEP). The UST, NJDEP Registration No. 081515-61, was located immediately behind Building 2700, in the Myers Center area of U.S. Army, Fort Monmouth. UST No. 081515-61 was a 1,000-gallon diesel fuel UST. The UST fill port was located directly above the tank.

Site Assessment - Soil

Soils surrounding the tank were screened visually and with air monitoring equipment for evidence of contamination. Following removal, the UST was inspected for corrosion holes. No holes were noted in the UST or product piping. Evidence of potentially contaminated soils were observed surrounding the former tank.

Seven soil samples were collected June 12, 2001 in order to assess the condition of soil in the location of the former UST. All samples were analyzed for total petroleum hydrocarbons (TPHC) by the U.S. Army, Fort Monmouth Environmental Laboratory (NJDEP Certification No. 13461).

Site Assessment – Groundwater

A groundwater monitoring well was installed at the site based on the observation of possible contamination. The well, MW2700.2,6, has been sampled quarterly since May 1995. All groundwater samples are analyzed for volatile organic compounds calibrated for xylene plus 15 tentatively identified compounds (VOC's), and semivolatile organic compounds plus 15 tentatively identified compounds (SVOC's).

Findings – Soil

All post-excavation soil samples collected from the perimeter of the UST excavation contained TPH concentrations below the NJDEP residential direct contact total organic contaminants soil cleanup criteria of 10,000 milligrams per kilogram (mg/Kg) (N.J.A.C. 7:26D and revisions dated February 3, 1994). Samples 2700E-1 though 2700E-7 contained levels of TPH ranging in concentration from below the method detection limit to 974.91 mg/Kg.

Findings – Groundwater

Only one volatile compound has ever been detected at a concentration that exceeds the NJDEP criteria. Groundwater collected January 12, 2001 contained 6.89 ug/L trichloroethene. However, trichloroethene was not detected in the nine previous rounds of samples collected or in groundwater collected in the two subsequent rounds, April 12 or July 27, 2001. Aluminum and iron have been consistently detected above the NJDEP criteria. However, these metals are common background constituents in Monmouth County and the Main Post Area soils.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

An underground storage tank, designated 2700.2,6, was closed at Building 2700, U.S. Army Fort Monmouth, Fort Monmouth, New Jersey, April 5, 1994. The UST, NJDEP Registration No. 081515-61, was located immediately behind Building 2700, off Pearl Harbor Avenue off the Main Post area of U.S. Army, Fort Monmouth. Refer to site location map on Figure 1. This report presents the results of the DPW's implementation of a UST Decommissioning/Closure Plan. The UST was a steel 1,000-gallon tanks containing diesel fuel.

Decommissioning activities for UST No. 081515-61 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. All permits were posted onsite for inspection. Environmental Control Technologies, Incorporated (ECTI), the contractor that conducted the decommissioning activities, is registered and certified by the NJDEP for performing UST closure activities (Certification No. US00617).

Based on an inspection of the UST, visual evaluation and field screening of subsurface soils, and analytical results of collected soil samples, the DPW has concluded that an historical discharge was associated with the UST. A spill was reported to the NJDEP "Hotline" for UST No. 081515-61 and was assigned Spill Case No. 94-4-7-1617-44.

This UST Closure and Site Investigation Report has been prepared by Versar, Inc. The applicable NJDEP-BUST regulations at the date of closure were the *Requirements for Underground Storage Tank Systems* (N.J.A.C. 7: 14B-1 et seq. Effective December 21, 1987 with all revisions though November 17, 1997).

1.2 SITE DESCRIPTION

Building 2700 is located off of the Main Post area of Fort Monmouth, as shown on Figure 1. UST No. 081515-61 was located on the rear (east) of Building 2700 and appurtenant piping ran approximately 30 feet west to Building 2700. The fill port area was located directly above the tank. A site map is provided on Figure 2.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the area surrounding Building 2700. 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 area of activity.

Regional Geology

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

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

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

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member (Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish brown clayey, medium-to-coarse-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray to black, medium-to-fine grained sand with abundant clay, mica, and glauconite.

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

Hydrogeology

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

of the associated piping, a manway was opened to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal from the ground.

The UST was cleaned prior to removal from the excavation, in accordance with the NJDEP-BUST regulations. After the UST was removed from the excavation, they were staged on polyethylene sheeting, examined for holes, and cut up on site for disposal. Soils surrounding the UST above the ground water line were screened visually and with a PID for evidence of contamination. Potentially contaminated soils were observed within the excavation.

1.5 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tank was cut-up on site and transported for disposal in compliance with all applicable regulations and laws.

The removal contractor labeled the UST prior to transport with the following information:

- Site of origin
- Contact person
- NJDEP UST Facility ID number
- Name of transporter/contact person
- Destination site/contact person

1.6 MANAGEMENT OF EXCAVATED SOILS

Potentially contaminated soils were stockpiled on and covered with polyethylene sheets. Soils that did not exhibit signs of contamination were used as backfill following removal of the UST.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed U.S. Army DPW personnel. All TPH analyses were performed and reported by U.S. Army Fort Monmouth Environmental Laboratory, Inc., an NJDEP-certified testing laboratory. All sampling was performed under the direct supervision of an NJDEP Certified Sub-Surface Evaluator according to the methods described in the NJDEP Field Sampling Procedures Manual (1992). Sampling frequency and parameters analyzed complied with the NJDEP Technical Regulations (N.J.A.C. 7:26E), which was the applicable regulation at the time of the closures.

2.2 FIELD SCREENING/MONITORING

Field screening was performed by an NJDEP Certified Sub-Surface Evaluator using a PID and visual observations to identify potentially contaminated material. Soils were removed from the UST excavation area until no evidence of contamination remained.

2.3 SOIL SAMPLING

ON June 12, 2001, seven soil samples, 2700E-1 through 2700E-7, were collected from the soil around the perimeter of the former excavation and piping. The soil samples were collected at 8 feet below ground surface (BGS) except at one location, 2700E-1, which was collected at 2 feet BGS along the former piping. All samples were analyzed for total petroleum hydrocarbons (TPH) by the U.S. Army, Fort Monmouth Environmental Laboratory (NJDEP Certification No. 13461).

The site assessment was performed in accordance with the NJDEP Technical Requirements and the NJDEP Field Sampling Procedures Manual. A summary of sampling activities including parameters analyzed is provided in Table 1. Following soil sampling activities, the TPH samples were chilled and delivered to U.S. Army Fort Monmouth Environmental Laboratory located in Fort Monmouth, New Jersey, for analysis.

2.4 GROUNDWATER SAMPLING

A monitoring well was installed at the location of the former UST 2700.2,6 in response to the impacted soil in the excavation. Starting in November 27, 1996, groundwater at Building 2700.2,6 has been sampled each quarter and analyzed for volatile organic compounds calibrated for xylene plus 15 tentatively identified compounds (VOC's), and semivolatile organic compounds plus 15 tentatively identified compounds (SVOC's). Sampling and analysis were performed in accordance with the NJDEP *Field Sampling Procedures Manual* and the *Technical Requirements For Site Remediation.*

3.3 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all post-excavation soil samples collected from the UST closure excavation at 2700.2,6 were below the NJDEP soil cleanup criteria for total organic contaminants. Soil with TPH concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg, do not exist in the former location of the UST or associated piping.

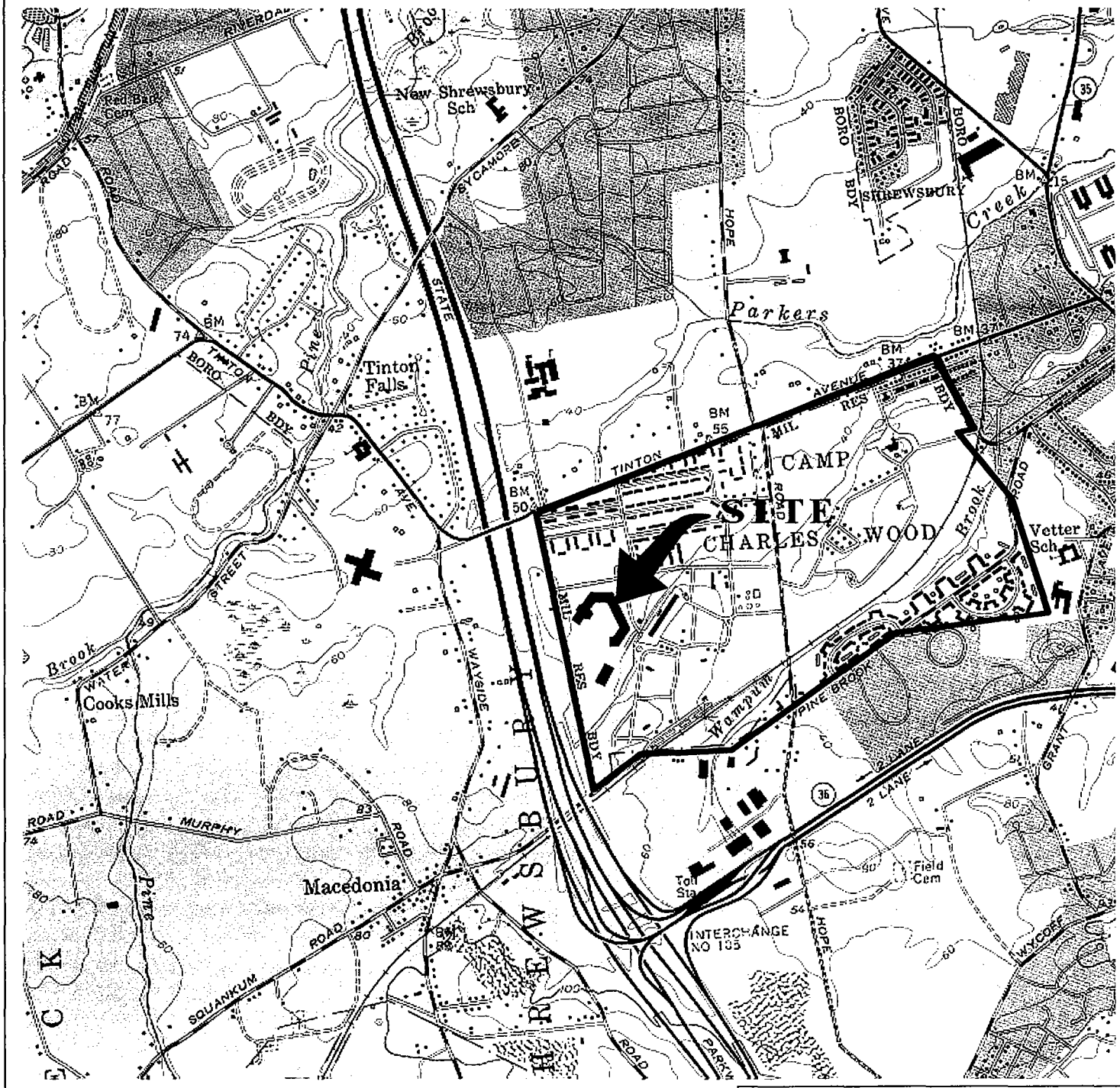
Based on the analytical results of the groundwater samples collected at Building 2700.2,6 groundwater quality at 2700.2,6 was either below the detection limit or in compliance with the New Jersey Ground Water Quality Criteria (GWQC) for the past two rounds collected April 12 and July 27, 2001 with the exception of the metals, aluminum and iron. However, metals including aluminum and iron are indigenous to the soil types present at Fort Monmouth and are consistently present in the groundwater and therefore should not be considered a concern.

No further action is proposed in regard to the closure and site assessment of UST No. 81515-61 at Building 2700.

TABLE 3
GROUNDWATER SAMPLE RESULTS SUMMARY

	Lab	2-Butanone	Methylene Chloride	Tri-chloro-ethene	Tetra-chloro-ethene	1,2-Di-chloro-ethane	bis(2-ethyl hexyl phthalate	Aluminum	Iron	Lead	Manganese	Sodium	Depth to Water
Units:	-	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	Feet
NJDEP Criteria:		300	2	1	1	2	30	200	300	10	50	50000	-
05/22/1995	EMSL	ND	1.1	1.4	2.0	ND	ND	-	-	-	-	-	-
06/15/1995	EMSL	ND	1.4	1.2	1.9	6.3	ND	-	-	-	-	-	-
11/27/1996	FMETL	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-
04/25/1997	FMETL	ND	ND	1.8	ND	ND	ND	ND	320	ND	ND	50000	13.60
07/10/1997	FMETL	ND	ND	ND	ND	ND	ND	22.7	30	ND	73	46720	13.80
12/12/1997	FMETL	ND	ND	ND	ND	ND	ND	738	1440	11	ND	ND	13.80
03/05/1998	FMETL	ND	ND	ND	ND	ND	1.05	1890	4500	ND	6100	34000	13.42
06/10/1998	FMETL	ND	ND	1.57	ND	ND	ND	819	1899	ND	46	25720	13.49
08/27/1998	FMETL	3.56	ND	1.44	ND	ND	ND	3420	7280	4.03	54.9	33600	13.77
12/04/1998	FMETL	ND	ND	ND	ND	ND	ND	440	692	ND	50.3	31700	14.12
02/11/1999	FMETL	ND	ND	ND	ND	ND	ND	749	1500	ND	44.2	44100	13.73
06/09/1999	FMETL	ND	ND	ND	ND	ND	ND	1050	1990	ND	36.4	41300	13.84
09/27/1999	FMETL	ND	ND	ND	ND	ND	ND	4870	11000	3.94	43.8	35000	13.76
11/03/1999	FMETL	ND	ND	ND	ND	ND	3.93	2050	4640	ND	29.7	39000	13.66
02/17/2000	FMETL	ND	ND	ND	ND	ND	ND	1480	3680	ND	23.9	37600	13.63
05/08/2000	FMETL	ND	ND	ND	ND	ND	5.57	1110	2340	ND	19.2	33400	13.84
08/30/2000	FMETL	ND	ND	ND	ND	ND	ND	12400	23500	14.4	57.3	41200	14.70
10/16/2000	FMETL	ND	ND	ND	ND	ND	ND	501	1110	ND	10.4	26000	13.81
01/12/2001	FMETL	ND	ND	6.89	ND	ND	ND	373	1150	2.46	15.5	33500	13.94
04/12/2001	FMETL	ND	ND	ND	ND	ND	ND	2070	5160	6.00	27.8	27600	13.33
07/27/2001	FMETL	ND	ND	ND	ND	ND	ND	2820	3900	9.33	130	35400	13.15

FIGURES



LONG BRANCH, N. J.

40073-C8-TF-024

1954

PHOTOREVISED 1981

DMA 6164 I SE-SERIES V822

QUADRANGLE LOCATION

Mapped, edited and published by the Geological Survey

FIGURE 1

LOCATION MAP
Building 2700
Charles Wood
Fort Monmouth Army Base
Monmouth County, NJ

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

Scale: 1" = 2000'	Date: April 1994

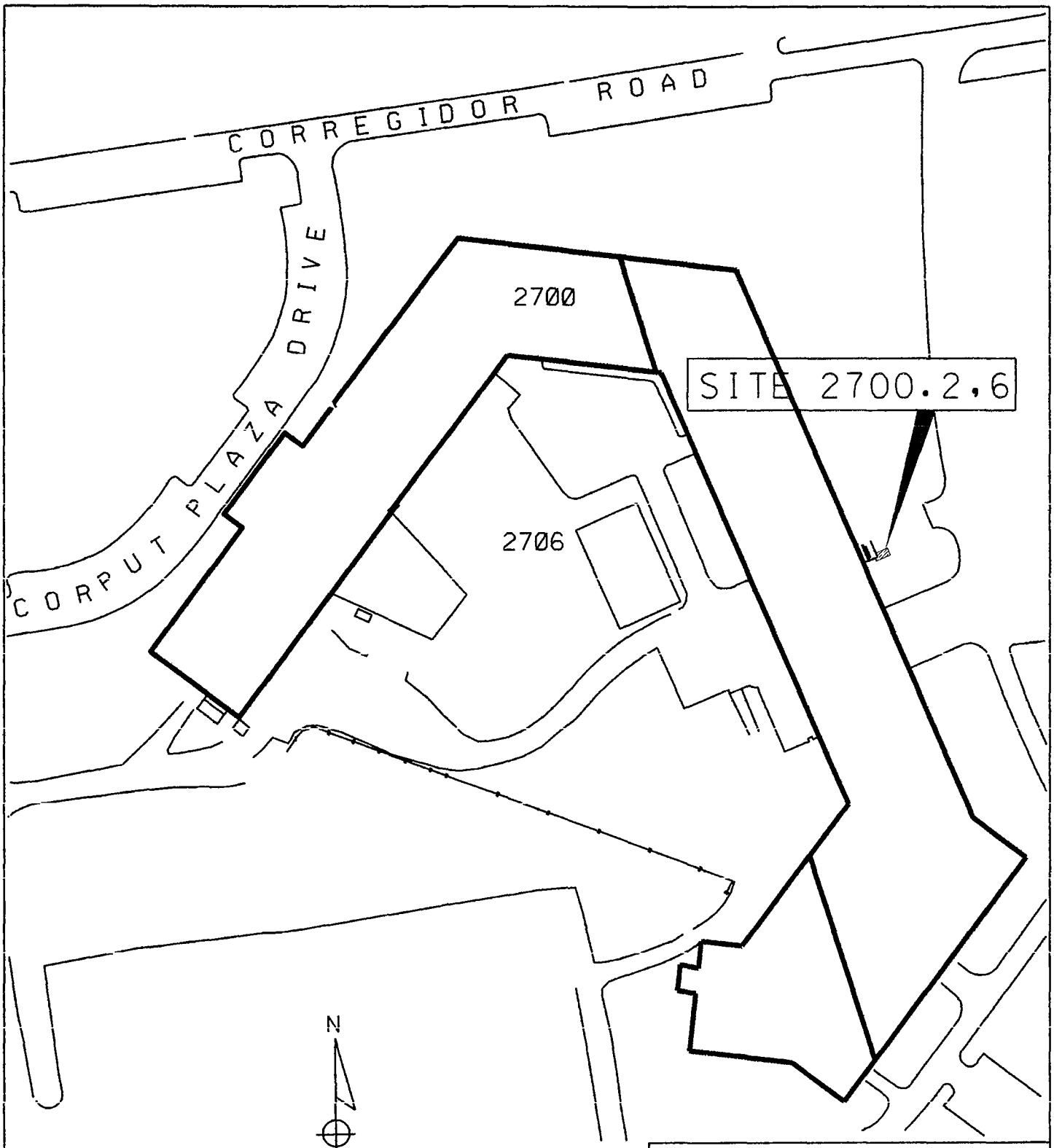


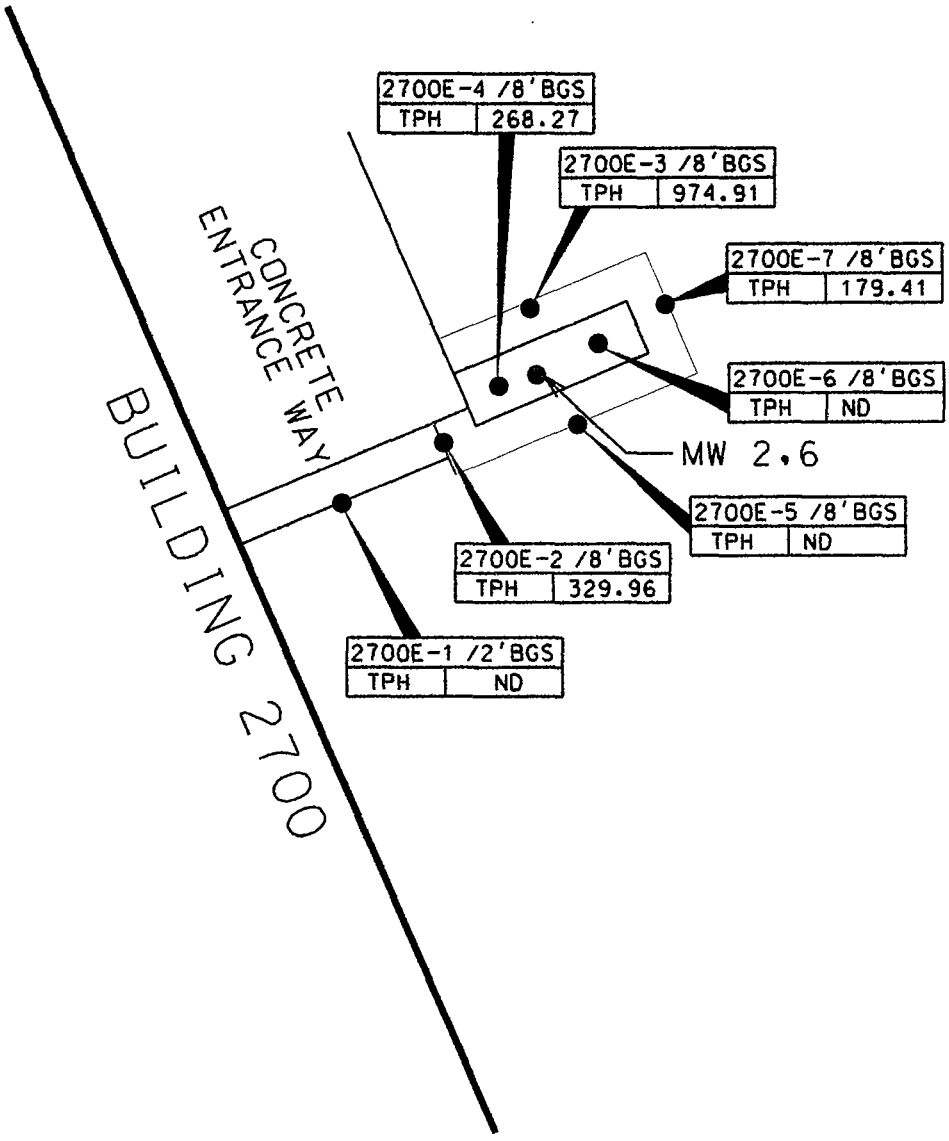
FIGURE 2
SITE MAP
BUILDING 2700
CHARLES WOOD
MONMOUTH COUNTY, NJ

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

SCALE: 1"= 125'

DATE: APRIL 1994

2700 FIG2



LEGEND

● SOIL SAMPLE LOCATION (June 12, 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 3
SOIL SAMPLING LOCATION MAP
BUILDING 2700
CHARLES WOOD
MONMOUTH COUNTY, NJ

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

SCALE: 1"=10' | DATE: APRIL 1994

APPENDIX A

NJDEP UST REPORT CERTIFICATION FORM

(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

D. (Complete all that apply)

- Assigned Case Manager: Ian Curtis, Federal Case Manager
- UST Registration Number : 81515-61
- Incident Report Number : 94-04-07-1617-44
- Tank Closure Number: _____

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.: _____

Firm: U.S. Army Fort Monmouth Firm's UST Cert. Number: N/A – U.S. Army

Firm Address: Directorate of Public Works Buildings 173 City: Fort Monmouth

State:NJ Zip:07703 Telephone Number : 732-532-6224

(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: James Ott

Company Name: U.S. Army Fort Monmouth Date: 5/10/02

APPENDIX B

WASTE MANIFEST

APPENDIX NOT AVAILABLE

APPENDIX C

UST DISPOSAL CERTIFICATE

APPENDIX NOT AVAILABLE

APPENDIX D

SOIL ANALYTICAL DATA PACKAGE

APPENDIX UNDER SEPARATE COVER

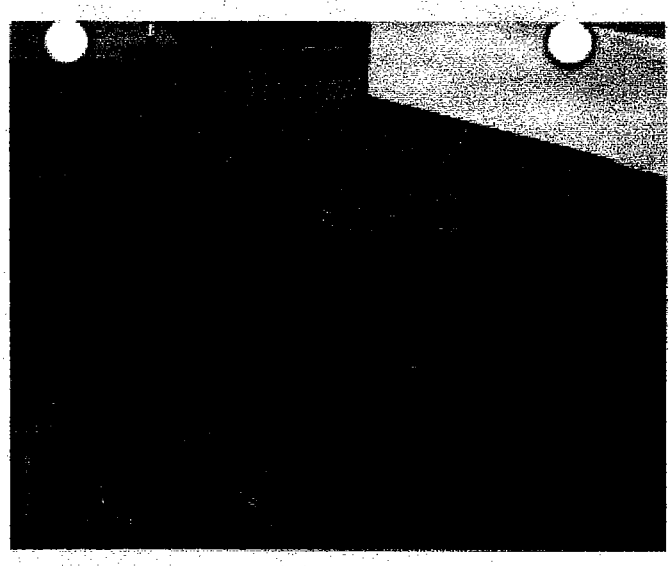
APPENDIX E

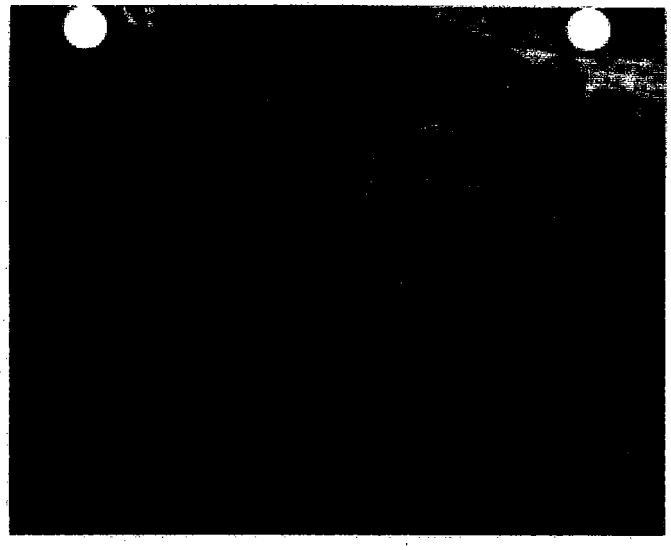
GROUNDWATER ANALYTICAL DATA PACKAGE

APPENDIX UNDER SEPARATE COVER

APPENDIX F

PHOTOGRAPHS





APRIL 05, 1994

PHOTOGRAPHIC LOG

UST NO. 81515-61

Building 2700
Charles Wood
Fort Monmouth

VERSAR
Engineers, Managers, Scientists & Planners
Bristol, PA