COPY

United States Army
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

Building 864A
Main Post-West Area

NJDEP UST Registration No. 0081533-136

September 1998

UNDERGROUND STORAGE TANK
CLOSURE AND SITE INVESTIGATION REPORT

BUILDING 864A

MAIN POST-WEST AREA
NJDEP UST REGISTRATION NO. 0081533-136

SEPTEMBER 1998

PREPARED FOR:

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

PREPARED BY:

SMC ENVIRONMENTAL SERVICES GROUP
501 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

PROJECT NO. 2491-308

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EXECUTIVE SUMMARY

UST Closure

On June 5, 1998, a fiberglass underground storage tank (UST) was closed by removal in accordance with the New Jersey Department of Environmental Protection (NJDEP) underground storage tank procedures at the Main Post-West area of the U.S. Army Fort Monmouth, Fort Monmouth, New Jersey. The UST, NJDEP Registration No. 0081533-136 (Fort Monmouth ID No. 864A), was located east of Building 864A. UST No. 0081533-136 was a 1,000-gallon No. 2 fuel oil UST.

Site Assessment

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual*. The sampling and laboratory analysis conducted during the site assessment were performed in accordance with Section 7:26E-2.1 of the *Technical Requirements for Site Remediation*. 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 or punctures. No holes or punctures were noted in the UST. Perched water was encountered at five (5) feet below ground surface. No evidence of potentially contaminated soil or groundwater was observed surrounding the tank or piping. Samples contained non-detectable levels of TPHC.

Site Restoration

Following receipt of all post-excavation soil sampling results, the excavation was backfilled to grade with crushed stone, sand, and native backfill and restored to its original condition.

Conclusions and Recommendations

Based on the post-excavation soil sampling results, soils with TPHC 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.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-136 at Building 864A.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No. 0081533-136, was closed at Building 864A at the Main Post-West area of U.S. Army Fort Monmouth, Fort Monmouth, New Jersey on June 5, 1998. Refer to site location map on Figure 1. This report presents the results of the Department of Public Works= (DPW) implementation of the UST Decommissioning/Closure Plan approved by the NJDEP. The UST was a fiberglass 1,000-gallon tank containing No. 2 fuel oil.

Decommissioning activities for UST No. 0081533-136 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 including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. The decommissioning activities were conducted by DPW personnel who are registered and certified by the NJDEP for performing UST closure activities. Closure of UST No. 0081533-136 proceeded under the approval of the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST). The Standard Reporting Form and signed Site Assessment Summary form for UST No. 0081533-136 are included in Appendices A and B, respectively.

Based on inspecting the UST, field screening of subsurface soils and groundwater, and reviewing analytical results of collected soil samples, the DPW has concluded that no significant historical discharges are associated with the UST or associated piping.

This UST Closure and Site Investigation Report has been prepared by SMC Environmental Services Group, to assist the United States Army Directorate of Public Works (DPW) in complying with the NJDEP-BUST regulations. The applicable NJDEP-BUST regulations at the date of closure were the *Interim Closure Requirements for Underground Storage Tank Systems* (N.J.A.C. 7:14B-1 et seq. October 1990 and revisions dated November 1, 1991).

This report was prepared using information collected at the time of closure. Section 1 of this UST Closure and Site Investigation Report provides a summary of the UST decommissioning activities. Section 2 of this report describes the site investigation activities. Conclusions and recommendations, including the results of the soil sampling investigation, are presented in the final section of this report.

1.2 SITE DESCRIPTION

Building 864A is located in the Main Post-West area of the Fort Monmouth Army Base. UST No. 0081533-136 was located east of Building 864A and appurtenant copper piping ran approximately five (5) feet west from the excavation to Building 864A. An abandoned steel remote fill pipe ran approximately 103 feet northwest to the UST excavation. 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 864A. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Main Post area.

Regional Geology

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

In general, New Jersey Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, 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. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansey Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and 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 Kirkwood Formation.

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

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

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

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

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

Building 864A located approximately 1000 feet southeast of Husky Brook, the nearest water body. Based on the Main Post topography, the groundwater flow in the area of Building 864A is anticipated to be to the northwest.

1.3 HEALTH AND SAFETY

Before, during, and after all decommissioning activities, hazards at the work site which may have posed a threat to the Health and Safety of all personnel who were involved with, or were affected by, the decommissioning of the UST system were minimized. All areas, which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing an organic vapor analyzer (OVA). The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.4 REMOVAL OF UNDERGROUND STORAGE TANK

1.4.1 General Procedures

- X All underground obstructions (utilities, etc.) were identified by the contractor performing the closure prior to excavation activities.
- X All activities were carried out with the greatest regard to safety and health and the safeguarding of the environment.
- X All excavated soils were visually examined and screened with an OVA for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.
- X 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.
- X A Sub-Surface Evaluator from the DPW was present during all site assessment activities.

1.4.2 Underground Storage Tank Excavation and Cleaning

Prior to UST decommissioning activities, surficial soil was removed to expose the UST and associated piping. All free product present in the piping was drained into the UST, and the UST was purged to remove vapors prior to cutting and removal of the piping. After removal of the associated piping, a manway was made in the UST to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal from the ground. Approximately 200 gallons of liquid from the UST and its associated piping were transported by Casie Protank to Casie Ecology Oil Salvage, Inc. facility, a NJDEP-approved petroleum recycling and disposal company located in Vineland, New Jersey. Refer to Appendix C for the waste manifest.

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, it was staged on polyethylene sheeting and examined for holes. No holes or punctures were observed during the inspection by the Sub-Surface Evaluator. Soils surrounding the UST were screened visually and with an OVA for evidence of contamination. No evidence of contamination was observed. Soil screening was also performed along the piping run associated with the UST closure. No contamination was noted anywhere along the piping length. Perched water was encountered at 5.0 feet bgs and no sheen was observed. See Figure 3 for a cross-sectional view of the excavated area.

1.5 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tank was transported to Mazza and Sons, Inc., Metal Recyclers. See Appendix D for a copy of the UST disposal certificate and Appendix F for photographs of the UST. The transportation of the UST was in compliance with all applicable regulations and laws.

The UST was labeled prior to transport with the following information:

- X Site of origin
- X Contact person
- X NJDEP UST Facility ID number
- X Former contents

1.6 MANAGEMENT OF EXCAVATED SOILS

Based on OVA air monitoring and TPHC analysis results from the post-excavation soil samples, no soils exhibited signs of contamination. Therefore, the excavated soils were used as backfill following removal of the UST.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed and carried out by U.S. Army DPW personnel. All analyses were performed and reported by U.S. Army Fort Monmouth Environmental Laboratory, a NJDEP-certified testing laboratory. All sampling was performed under the direct supervision of a 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-BUST document *Interim Closure Requirements for Underground Storage Tank Systems* (October 1990 and revisions dated November 1, 1991) 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:

X Subsurface Evaluator: Charles Appleby
Employer: U.S. Army, Fort Monmouth
Phone Number: (732) 532-6224
NJDEP Certification No.: 2056

X Analytical Laboratory: U.S. Army Fort Monmouth Environmental Laboratory
Contact Person: Daniel K. Wright
Phone Number: (908) 532-4359
NJDEP Company Certification No.: 13461

X Hazardous Waste Hauler: Casie Protank Environmental Services
Contact Person: Bob Corsiglia
Phone Number: (609) 696-4401
NJDEP Company Certification No.: 16931

2.2 FIELD SCREENING/MONITORING

Field screening was performed by a NJDEP Certified Sub-Surface Evaluator using an OVA and visual observations to identify potentially contaminated material. Soil excavated from around the tank and appurtenant piping, as well as the UST excavation sidewalls and bottom, did not exhibit any evidence of potential contamination. Perched water was encountered at 5.0 feet bgs and no sheen was observed.

2.3 SOIL SAMPLING

On June 5, 1998, following the removal of the UST, post-excavation soil samples A, B, C, D, E, F, and DUPE were collected from a total of six (6) locations of the UST excavation. Sample A was collected along the excavation floor at a depth of 7.0 feet bgs. Sidewall samples B, C, D, E and DUP E were collected at a depth of 4.5 feet bgs. Sample F was collected along the former piping length of the excavation, which was approximately five (5) feet in length. The piping sample was collected at a depth of 1.5 feet bgs.

On June 15, 1998, seven (7) samples were collected along the former remote fill piping length of the excavation. The sampling was biased towards the couplings and fill area. All samples collected on June 5 and 15,1998, were analyzed for total petroleum hydrocarbons (TPHC) and total solids.

U.S. Army personnel in accordance with the NJDEP Technical Requirements and the NJDEP Field Sampling Procedures Manual performed the site assessment. A summary of sampling activities including parameters analyzed is provided in Table 1. The post-excavation soil samples were collected using NJDEP *Field Sampling Procedures Manual* (1992) standard sampling procedures. Following soil sampling activities, the samples were chilled and delivered to U.S. Army Fort Monmouth Environmental Laboratory located in Fort Monmouth, New Jersey, for analysis.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

To evaluate soil conditions following removal of the UST, post-excavation soil samples were collected on June 2 and 15, 1998, from a total of thirteen (13) locations. All samples were analyzed for TPHC and total solids. The post-excavation sampling results were compared to the NJDEP residential direct contact total organic contaminants soil cleanup criteria of 10,000 mg/kg (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 in Table 2 and the soil sampling locations are shown on Figure 4. The analytical data package is provided in Appendix E.

All post-excavation soil samples collected on June 2 and 15, 1998, from the UST excavation and from below piping associated with the UST contained concentrations of TPHC below the NJDEP soil cleanup criteria. Samples contained non-detectable levels of TPHC.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all post-excavation soil samples collected from the UST closure excavation at Building 864A were below the NJDEP soil cleanup criteria for total organic contaminants.

Based on the post-excavation sampling results, soils with TPHC 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.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-136 at Building 864A.

TABLES

TABLE 1

SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
BUILDING 864A, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID	Date of Collection	Date Analysis Started	Matrix	Sample Type	Analytical Parameters*	Analysis Method
A	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
B	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
C	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
D	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
E	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
F	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
DUP E	6/5/98	6/8/98	Soil	Post-Excavation	TPHC	OQA-QAM-025

Note:
* TPHC Total Petroleum Hydrocarbons

TABLE 1

SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
BUILDING 864A, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID	Date of Collection	Date Analysis Started	Matrix	Sample Type	Analytical Parameters*	Analysis Method
A	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
B	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
C	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
D	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
E	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
F	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025
DUP	6/15/98	6/16/98	Soil	Post-Excavation	TPHC	OQA-QAM-025

Note:
* TPHC Total Petroleum Hydrocarbons

TABLE 2

POST-EXCAVATION SOIL SAMPLING RESULTS
BUILDING 864A, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID/ Depth	Sample Laboratory ID	Sample Date	Analysis Date	Analytical Method Used	Method Detection Limit (mg/kg)	Compound of Concern	Result (mg/kg) *	NJDEP Soil Cleanup Criteria ** (mg/kg)	Exceeds Cleanup Criteria
A/7.0=	3626.01	6/5/98	6/8/98	Total Solid	--	--	79.52	--	--
				TPHC	190	yes	ND	10,000	No
B/4.5=	3626.02	6/5/98	6/8/98	Total Solid	--	--	81.31	--	--
				TPHC	191	yes	ND	10,000	No
C/4.5=	3626.03	6/5/98	6/8/98	Total Solid	--	--	81.84	--	--
				TPHC	191	yes	ND	10,000	No
D/4.5=	3626.04	6/5/98	6/8/98	Total Solid	--	--	82.39	--	--
				TPHC	186	yes	ND	10,000	No
E/4.5=	3626.05	6/5/98	6/8/98	Total Solid	--	--	83.52	--	--
				TPHC	187	yes	ND	10,000	No
F/1.5=	3626.06	6/5/98	6/8/98	Total Solid	--	--	80.45	--	--
				TPHC	195	yes	ND	10,000	No
DUP E/4.5=	3626.07	6/5/98	6/8/98	Total Solid	--	--	83.44	--	--
				TPHC	180	yes	ND	10,000	No

Note:
* Total Solid results are expressed as a percentage.
** NJDEP Residential Direct Contact soil cleanup criteria for total organics
-- Not detected above stated sample quantitation limit
TPHC Total Petroleum Hydrocarbons

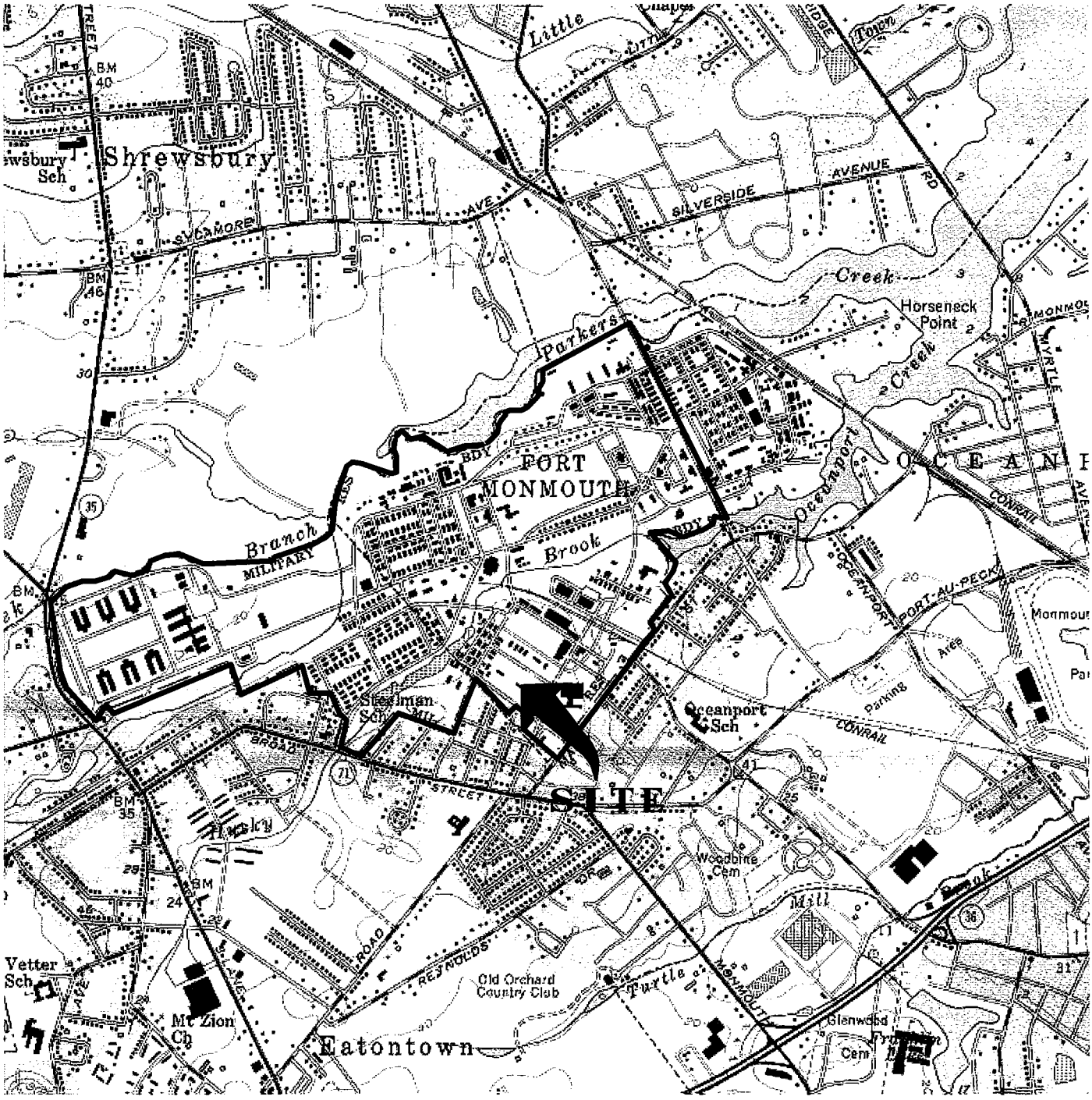
TABLE 2

POST-EXCAVATION SOIL SAMPLING RESULTS
BUILDING 864A, MAIN POST-WEST AREA
FORT MONMOUTH, NEW JERSEY

Sample ID/ Depth	Sample Laboratory ID	Sample Date	Analysis Date	Analytical Method Used	Method Detection Limit (mg/kg)	Compound of Concern	Result (mg/kg) *	NJDEP Soil Cleanup Criteria ** (mg/kg)	Exceeds Cleanup Criteria
A/3.5=	3655.01	6/15/98	6/16/98	Total Solid	--	--	93.41	--	--
				TPHC	167	yes	ND	10,000	No
B/3.5=	3655.01	6/15/98	6/16/98	Total Solid	--	--	85.97	--	--
				TPHC	182	yes	ND	10,000	No
C/3.0=	3655.01	6/15/98	6/16/98	Total Solid	--	--	85.55	--	--
				TPHC	182	yes	ND	10,000	No
D/3.0=	3655.01	6/15/98	6/16/98	Total Solid	--	--	90.39	--	--
				TPHC	172	yes	ND	10,000	No
E/2.5=	3655.01	6/15/98	6/16/98	Total Solid	--	--	86.56	--	--
				TPHC	180	yes	ND	10,000	No
F/2.0=	3655.01	6/15/98	6/16/98	Total Solid	--	--	86.02	--	--
				TPHC	181	yes	ND	10,000	No
G/2.0 =	3655.01	6/15/98	6/16/98	Total Solid	--	--	86.26	--	--
				TPHC	180	yes	ND	10,000	No
DUP A/3.5=	3655.01	6/15/98	6/16/98	Total Solid	--	--	92.79	--	--
				TPHC	168	yes	ND	10,000	No

Note:
* Total Solid results are expressed as a percentage.
** NJDEP Residential Direct Contact soil cleanup criteria for total organics
-- Not detected above stated sample quantitation limit
TPHC Total Petroleum Hydrocarbons

FIGURES



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

FIGURE 1

SITE LOCATION MAP
Building 864A
Main Post-West
Fort Monmouth Army Base
Monmouth County, NJ

SMC Environmental
Services Group
Engineers, Managers, Scientists & Planners
Valley Forge, PA.

SCALE: 1"= 2000'

DATE: JUNE 1998

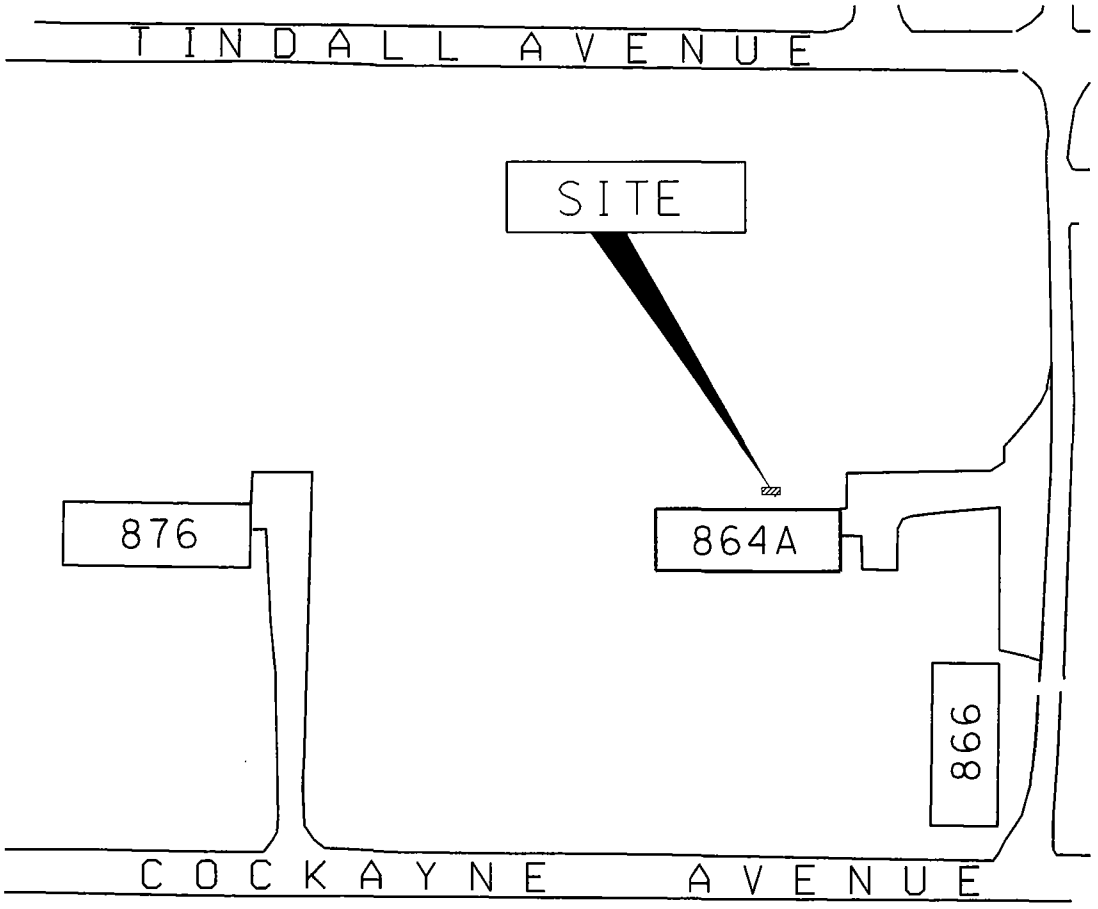


FIGURE 2
SITE MAP
BUILDING 864A
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: 1"=100'

DATE: JUNE 1998

864A 2429 FIG2

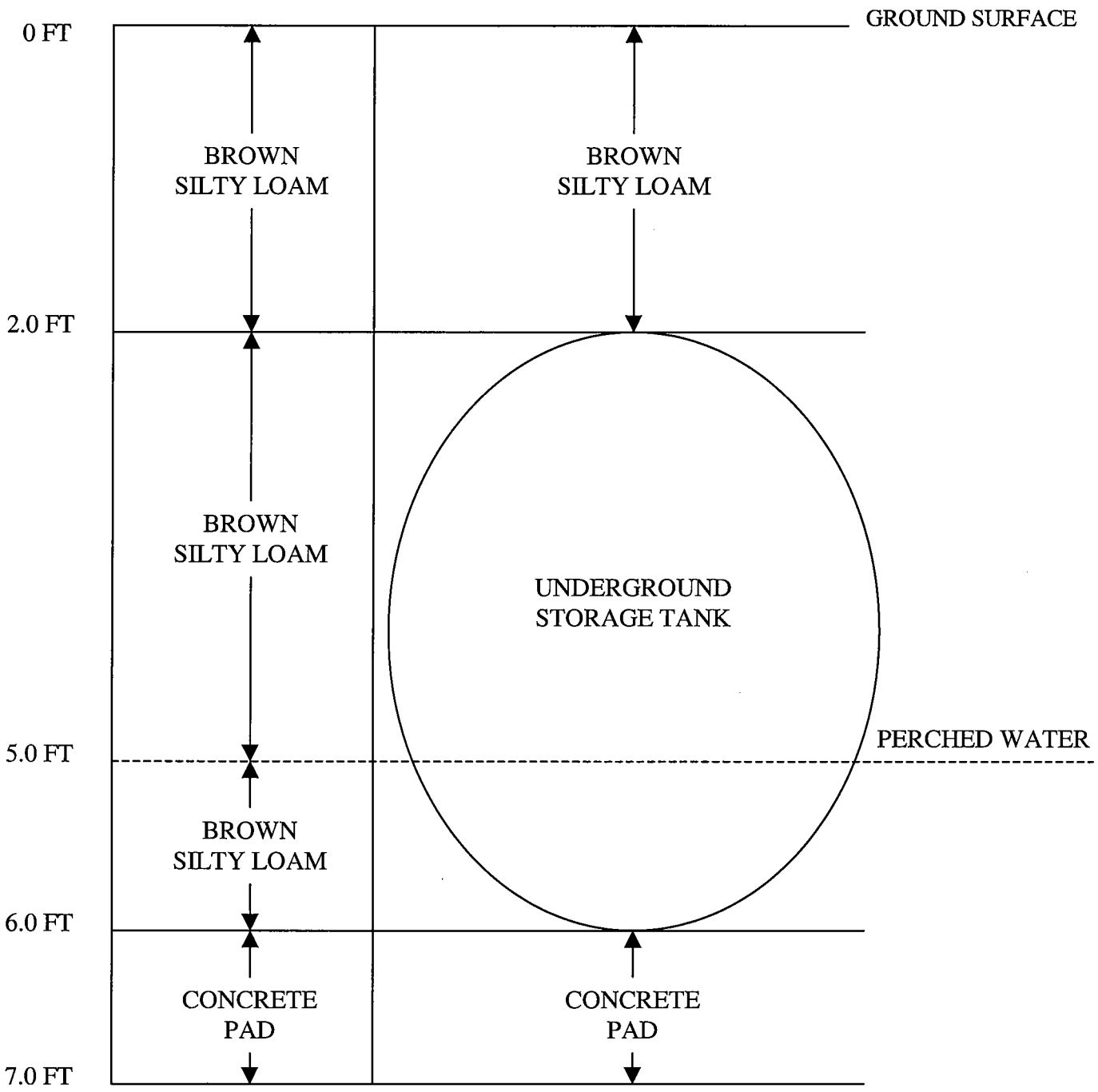
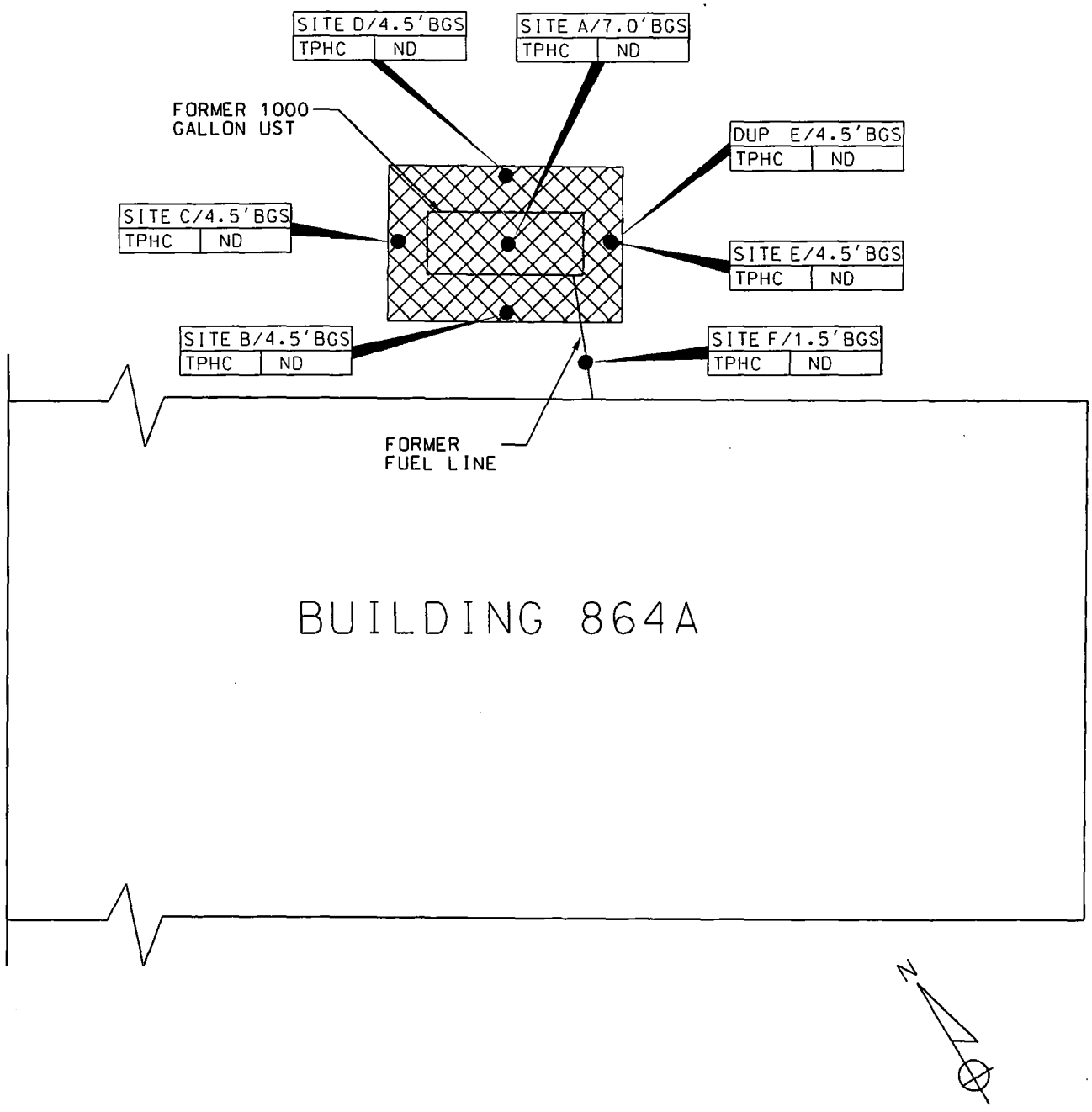


FIGURE 3
CROSS SECTIONAL VIEW
BUILDING 864A
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: NTS | DATE: JUNE 1998



LEGEND

- SOIL SAMPLE LOCATION (JUNE 5, 1998)
- LIMIT OF EXCAVATION (JUNE 5, 1998)

NOTES:

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

FIGURE 4
SOIL SAMPLING LOCATION MAP
BUILDING 864A
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: 1"=10' | DATE: JUNE 1998

864A 2429 FIG4

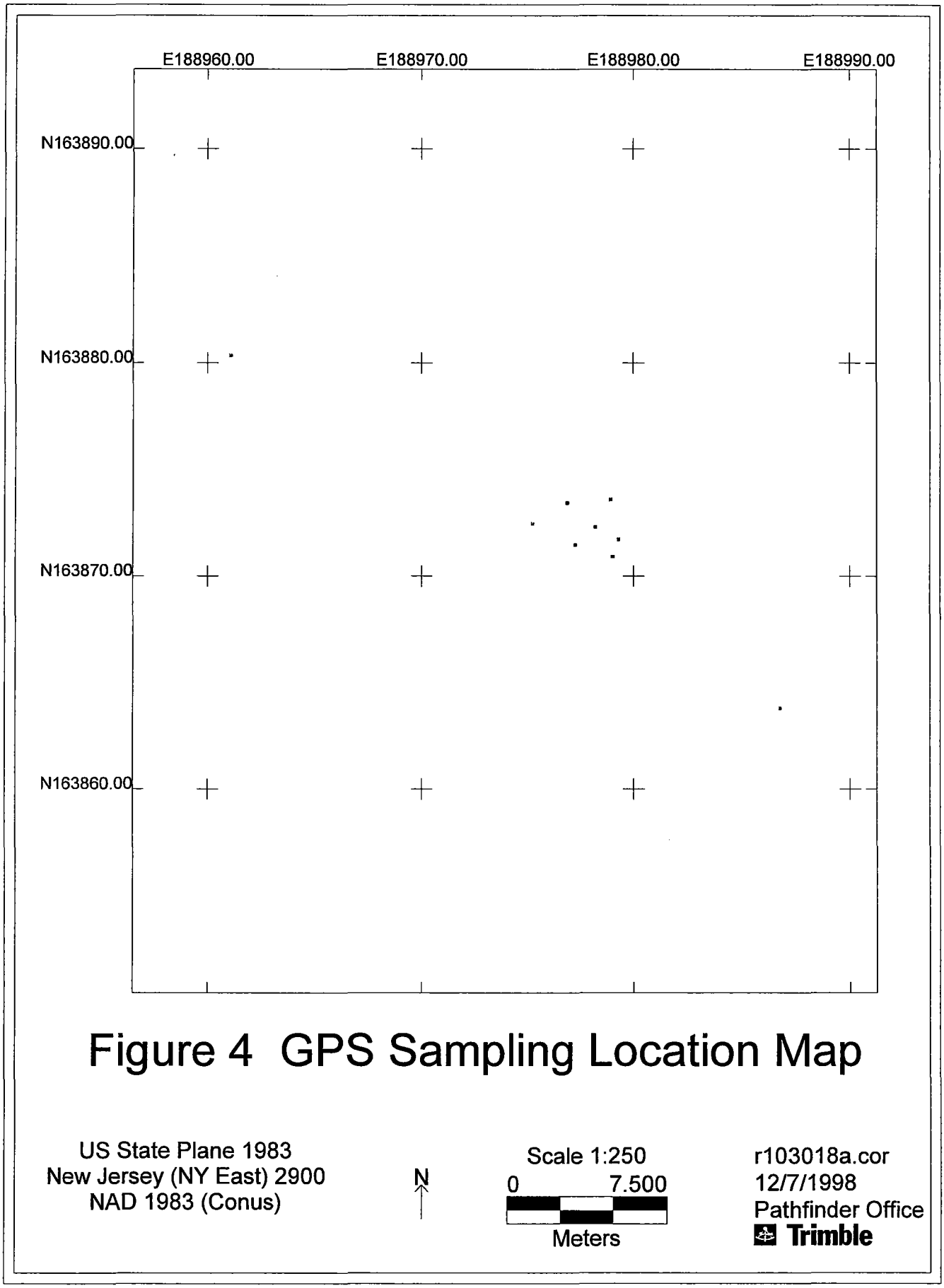


Figure 4 GPS Sampling Location Map

US State Plane 1983
New Jersey (NY East) 2900
NAD 1983 (Conus)

N

Scale 1:250
0 7.500
Meters

r103018a.cor
12/7/1998
Pathfinder Office
Trimble

Figure 4 GPS Sample Location Point Data

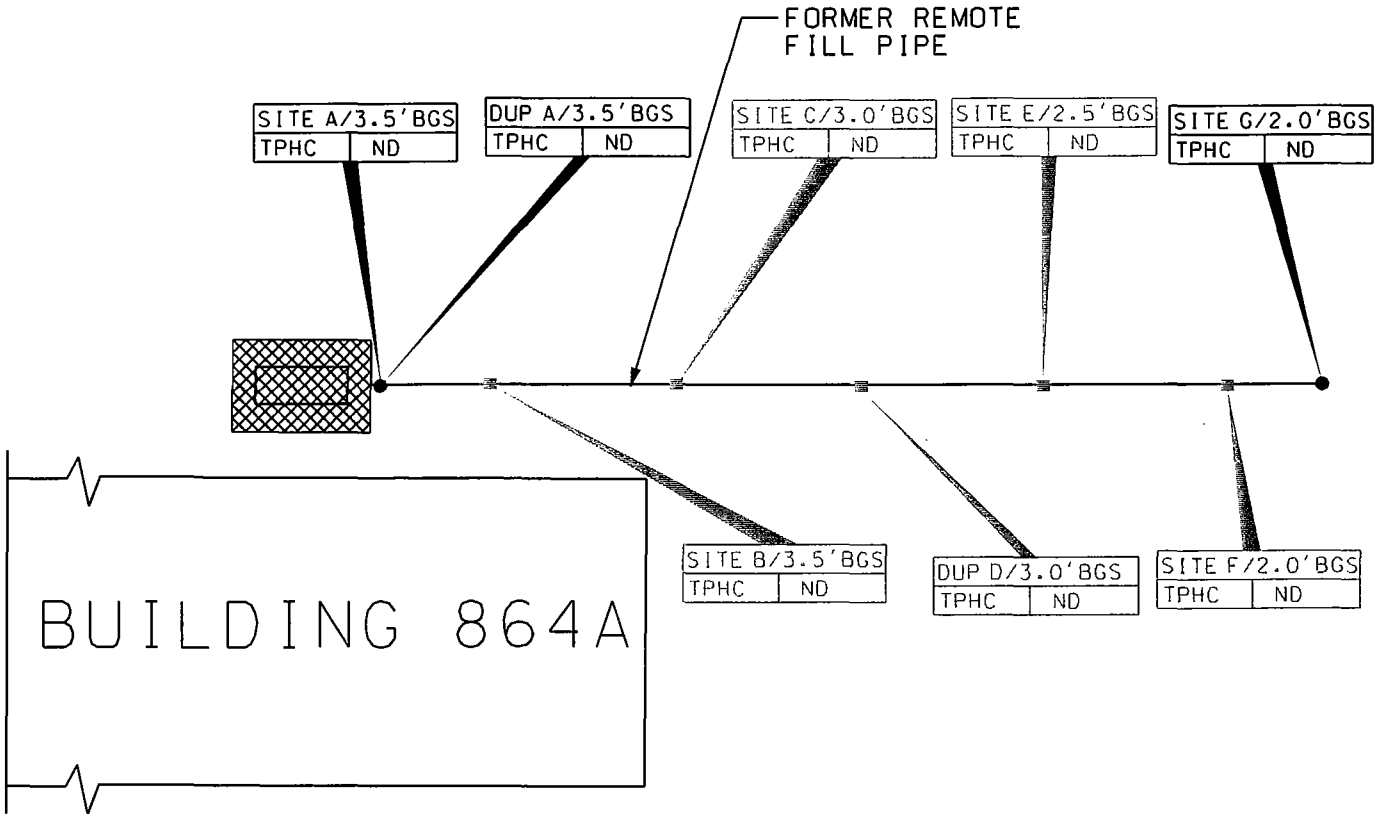
US State Plane 1983 NJ (NY East) 2900 Nad 1983 (Conus)

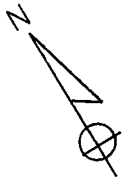
Reference Points

Location	Y Coord. (Northing)	X Coord. (Easting)
864 BLDG E CORNER	163863.812	188986.726
864 BLDG N CORNER	163880.377	188961.068
AC UNIT	163872.498	188975.21

Sample Locations

Location	Y Coord. (Northing)	X Coord. (Easting)
864 A	163872.352	188978.16
864 B	163871.498	188977.226
864 C	163873.48	188976.831
864 D	163873.625	188978.885
864 E	163871.764	188979.259
864 F	163870.945	188978.996





LEGEND

- LIMIT OF EXCAVATION (JUNE 5, 1998)
- SOIL SAMPLE LOCATION (JUNE 15, 1998)
- SOIL SAMPLE LOCATION BIASED TOWARDS COUPLING (JUNE 15,1998)

NOTES:

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

FIGURE 4
SOIL SAMPLING LOCATION MAP
BUILDING 864A
FORT MONMOUTH ARMY BASE
MONMOUTH COUNTY, NJ

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.

SCALE: 1"=20' | DATE: JUNE 1998

864A 2429 FIG4

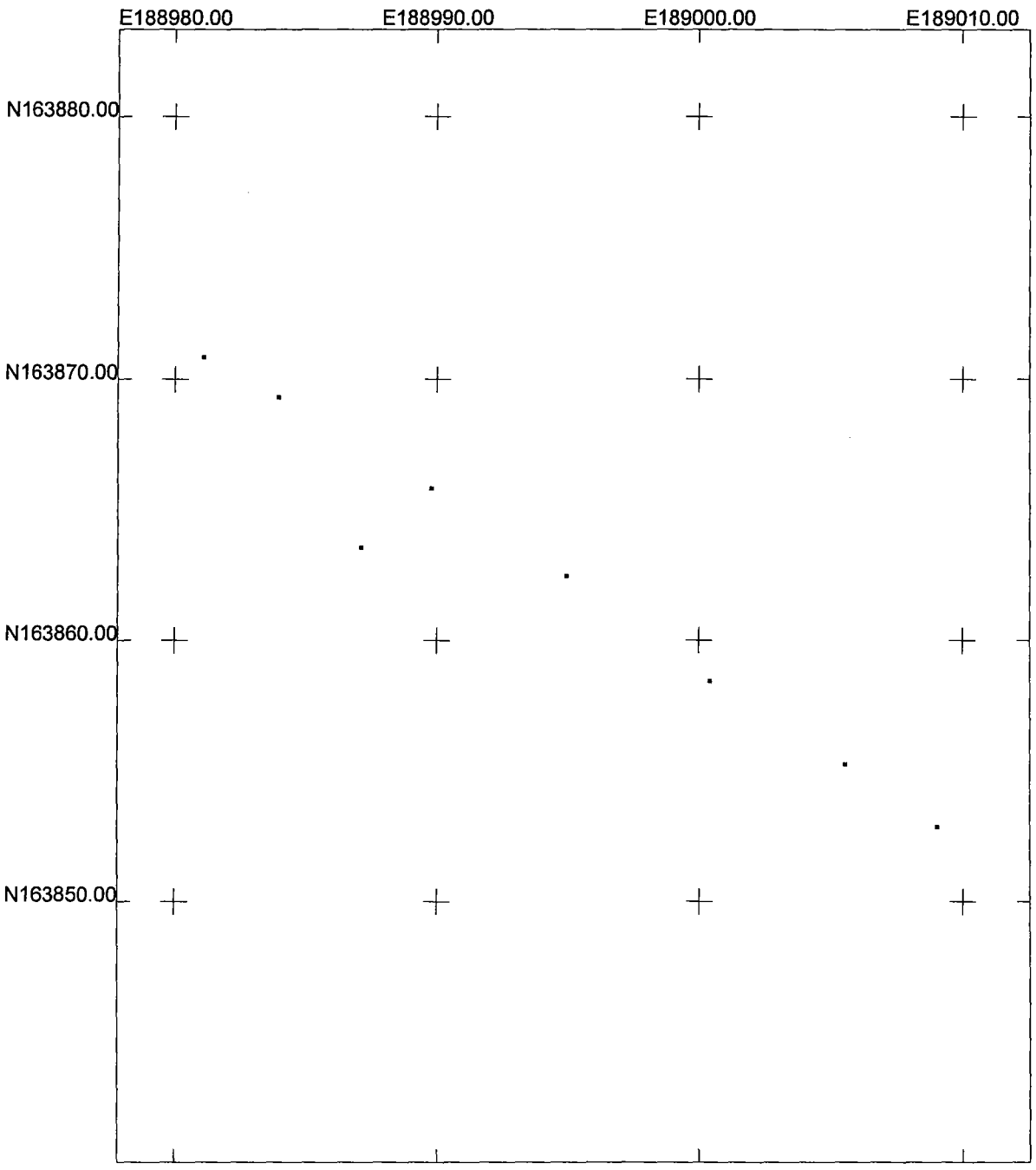


Figure 4 GPS Sampling Location Map

US State Plane 1983
New Jersey (NY East) 2900
NAD 1983 (Conus)

N

Scale 1:250
0 7.500
Meters

r103018b.cor
12/7/1998
Pathfinder Office
Trimble

Figure 4 GPS Sample Location Point Data

US State Plane 1983 NJ (NY East) 2900 Nad 1983 (Conus)

Reference Points

Location	Y Coord. (Northing)	X Coord. (Easting)
864 BLDG E CORNER	163863.58	188987.047

Sample Points

Location	Y Coord. (Northing)	X Coord. (Easting)
864 A	163870.867	188981.047
864 B	163869.335	188983.89
864 C	163865.844	188989.742
864 D	163862.472	188994.93
864 E	163858.467	189000.386
864 F	163855.285	189005.56
864 G	163852.876	189009.008

APPENDIX A

NJDEP-STANDARD REPORTING FORM

NEW JERSEY DE[illegible]RTMENT OF ENVIRONMENTAL PROTE[illegible]ON
DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
Registration and Billing Unit
CN 028, Trenton, N.J. 08625-0028
1-609-984-3156

FOR STATE USE ONLY

Check In ☐ Yes ☐ N

STATUS Active ☐ Inactive ☐ COMCODE ☐☐☐☐

UNDERGROUND STORAGE TANK FACILITY QUESTIONNAIRE

FACILITY UST # 008153 - Bldg 864

Completion of this Registration Questionnaire will satisfy the registration requirements of the Underground Storage of Hazardous Substances Act, N.J.S.A. 58:10A-21, and the Registration and Billing Regulations N.J.A.C. 7:14B-2.

[Check appropriate box(es)]

A. ☐ Is this a registration of a proposed or newly installed underground storage tank? (This form must be filed at least 30 days prior to operation)
B. ☐ Is this a registration of an existing underground storage tank not presently registered?
C. ☒ Is this a correction or amendment to an existing facility registration? UST # 008153
D. ☐ There have been no changes to the facility registration since last submittal. UST #_____ (Go to certification page for signatures)

If "C" is checked above, please check the appropriate type of change(s) below

☐ Facility Name and/or Address Change	☐ Type of Product(s) Stored	☐ Financial Responsibility Change
☐ Owner Name and/or Address Change	☐ Spills, Leaks, Releases	☐ Substantial Modification(s)
☐ Facility Operator and/or Address Change	☐ Tank(s) and/or Piping Changes	☐ Sale or Transfer (Complete Questions 4,5,6 & 13D)
☐ Owner Contact Person Change	☒ Closure (Complete Question #13)	☐ Other *(please specify)*

SECTION A - GENERAL FACILITY INFORMATION

1. Facility Name: MAIN Post West
2. Facility Location: Ft Monmouth
   NUMBER AND STREET
   CITY OR MUNICIPALITY
   COUNTY | STATE: NJ | ZIP CODE | BLOCK | LOT
3. Facility Operator
   PERSON OR TITLE | Contact Tele. No. (Area Code) (Extension)
   Operator Address (if different than #2)
   NUMBER AND STREET
   CITY OR MUNICIPALITY
   STATE | ZIP CODE
4. Tank Owner
5. Tank Owner Address
   NUMBER AND STREET
   CITY OR MUNICIPALITY
   STATE | ZIP CODE
   Contact Person (Tank Owner) | Contact Tele. No. (Area Code) (Extension)
7. EPA ID # ☐☐☐☐☐☐☐☐☐☐☐☐
8. Total number of regulated underground storage tanks at facility ☐☐☐☐ *(Complete Section B for each tank)*

9. Total regulated underground storage tank capacity at facility (gallons) [ ]

10. Facility Type: A ☐ State B ☐ Commercial/ Industrial C ☐ County/Municipal D ☐ Federal E ☐ Charitable / Public School F ☐ Residence G ☐ Other H ☐ Farm (as defined in N.J.S. 54:4-23.1 et seq.)

11. Is a copy of the facility site plan submitted with this registration pursuant to N.J.A.C. 7:14B-2? ☐ YES ☐ NO

SECTION B - SPECIFIC TANK INFORMATION

Bldg ~~564~~ Closure,

ALL underground tanks, including those taken out of operation (UNLESS THE TANK WAS REMOVED FROM THE GROUND PRIOR TO 9/3/86) must be registered. Report all tank/piping status changes unless previously submitted.

	TANK NO.	TANK NO.	TANK NO.	TANK NO.	TANK NO.
1. Tank Identification Number					
2. CAS Number (hazardous substances only)					
3. Date Tank Installed (Month/Day/Year)	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year
4. Tank Size (gallons)					
5. Tank Contents (Mark one "X" for each tank)					
A. Leaded gasoline					
B. Unleaded gasoline					
C. Alcohol enriched gasoline					
D. Light diesel fuel (No. 1-D)					
E. Medium diesel fuel (No. 2-D)					
F. Waste Oil					
G. Kerosene (No. 1)					
H. Home heating oil (No. 2)					
J. Heating oil (No. 4)					
K. Heavy heating oil (No. 6)					
L. Aviation fuel					
M. Motor oil					
N. Lubricating oil					
P. Sewage					
Q. Sewage sludge					
R. Other hazardous substances (specify)					
S. Hazardous waste (specify ID number)					
T. Mixtures (please specify)					
U. Emergency spill tank (specify substance)					
V. Other petroleum products (please specify)					
W. Other (please specify)					
6. Tank & Piping Construction (Mark one each for both tank & piping)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Piping
A. Bare Steel					
B. Cathodically protected steel					
C. Fiberglass-coated steel					
D. Fiberglass-reinforced plastic					
E. Internally lined					
F. Other (please specify)					
7. Tank & Piping Structure (Mark one each for both tank & piping)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Piping
A. Single wall					
B. Double wall					
C. Other (please specify)					
8. Type of Monitoring/Detection System (Mark all that apply for both tank & piping)	Tank Piping	Tank Piping	Tank Piping	Tank Piping	Tank Piping
A. Statistical Inventory Reconciliation					
B. Manual Tank Gauging					
C. Inventory Control					
D. Interstitial					
E. Precision Test					
F. Ground water observation wells					
G. Vapor observation wells					
H. In-tank (automatic) monitoring gauge					
J. Periodic Tank Test					

Bldg 864

Tank Identification Number	TANK NO.	TANK NO.	TANK NO.	TANK NO.	TANK NO.
8. Type of Monitoring/Detection System	Tank / Piping	Tank / Piping	Tank / Piping	Tank / Piping	Tank / Piping
K. None					
L. Other (please specify)					
9. Overfill Protection (tank only) (Mark one X for each tank)					
A. Yes	X	X	X	X	X
B. No					
10. Spill Containment Around Fill Pipe (Mark one X for each tank)					
A. Yes	X	X	X	X	X
B. No					
11. Tank Status (Mark one X for each tank)	Tank / Piping	Tank / Piping	Tank / Piping	Tank / Piping	Tank / Piping
A. In-use					
B. Empty less than 12 months					
C. Empty 12 months or more					
D. Emergency spill tank (sump)					
E. Emergency backup generator tank					
F. Abandoned in Place					
G. Removed					
H. Other (please specify)					
12. If box 11B, C, or D above has been marked, indicate the estimated date last used (month/day/year)	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year
13. Closure Information - Tank ID No. Bldg 864	TANK NO. 0136	TANK NO.	TANK NO.	TANK NO.	TANK NO.
	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year	Mo. Day Year
A. Date abandoned in place					
B. Date taken temporarily out of service					
C. Date removed	06051998				
D. Date of Sale or Transfer					
E. TMS # (if applicable)					
F. ISRA # (if applicable)	Clean-Site				

SECTION C - FINANCIAL RESPONSIBILITY

Does this facility have a Financial Responsibility Assurance Mechanism as required in 40 CFR 280? ☐ YES ☐ NO
Please list the appropriate financial information below:

Type _____ Carrier / Issuing Agency _____

Effective Date ___/___/___ Expiration Date ___/___/___ Policy Number _____ $ Amount _____

SECTION D - MONITORING SYSTEMS

Does this facility have a release detection monitoring system which is in compliance with N.J.A.C. 7:14B-6? ☐ YES ☐ NO
If "No", please be aware that the facility must meet the appropriate deadline. (See "Dates to Know" on Page 4)

SECTION E - RECORDKEEPING/COMPLIANCE

Please answer all the questions in this section on a facility basis. Any one tank not in compliance requires a "NO" answer for the entire facility.

1. Does this facility have cathodic protection systems for all steel tanks and piping? ☐ YES ☐ NO
   If "Yes", are the systems properly operated and maintained pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
2. Are the performance claims and documentation of monitoring systems maintained by the owner or operator pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
3. Are the proper monitoring, testing, sampling, repair and inventory records kept on-site pursuant to N.J.A.C. 7:14B-5 and 6? ☐ YES ☐ NO
4. Is the proper Release Response Plan kept on-site pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO
5. Does the facility have spill and over fill protection systems pursuant to N.J.A.C. 7:14B-4? ☐ YES ☐ NO
6. Have all Fill Ports been permanently marked as per API #1637 pursuant to N.J.A.C. 7:14B-5? ☐ YES ☐ NO

Bldg 564

IMPORTANT INFORMATION

FEE:	Please make checks payble to: **"Treasurer, State of New Jersey"**. Use of the enclosed return envelope will expedite processing. Registration and Billing Schedule can be found in N.J.A.C. 7:14B. All Initial Registration fees are $100 per facility.
PENALTY:	Failure by owner or operator of a regulated underground storage tank to comply with any requirement of the State UST Act or regulations may result in the penalties set forth in N.J..S.A. 58:10A-10.
EMERGENCY:	If a discharge or spill occurs, the NJDEP Hotline at (609) 292-7172 must be called IMMEDIATELY - 24 hours a day.
UPGRADE EXEMPTION:	Residential heating oil underground storage tanks are exempt from all upgrade requirements.

DATES TO KNOW (critical deadlines)

December 22, 1988	—	All new federally regulated tank systems must have cathodic protection and spill/overfill protection.
September 4, 1990	—	All new State-only regulated tank systems must have cathodic protection and spill/overfill protection.
December 22, 1990	—	All federally regulated piping must have begun leak detection.
February 19, 1993	—	All federally regulated tank systems must maintain financial responsibility assurance.
December 22, 1993	—	All federally regulated tank systems must have begun leak detection.
December 22, 1998	—	All regulated tanks shall install cathodic protection and spill/overfill protection.

CERTIFICATIONS

NOTE: IF THE PERSON SIGNING CERTIFICATION NO. 2 IS THE SAME AS THE PERSON SIGNING CERTIFICATION NO. 1, THEN CERTIFICATION NO. 2 NEED NOT BE SIGNED. (If different persons are required to sign No. 1 and No. 2, then they must do so.)

CERTIFICATION NO. 1:

Must be signed by the highest ranking individual at the facility with overall responsibility

"I certify under penalty of law that the information provided in this document is true, accurate and complete to the best of my knowledge, information and belief. I am aware that there are significant civil and criminal 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."

For MR. James Ott — (Typed / Printed Name)

George Fitzmaurice — (Signature)

Director of Public Works — (Title)

6/5/98 — (Date)

CERTIFICATION NO. 2:

Must be signed as follows:

- For a corporation, by a principal executive officer of at least the level of vice president
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively
- For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official
- For persons other than indicated above, by the person with legal responsibility for the site

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information. I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil and criminal 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."

NA — (Typed / Printed Name)

(Signature)

(Title)

(Date)

CERTIFICATION NO. 3:

If applicable, must be signed by the individual who is certified to perform services.

"I certify under penalty of law that the information provided in this document is true, accurate and complete to the best of my knowledge, information and belief. I am aware that there are significant civil and criminal 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."

Charles Appleby — (Typed / Printed Name)

Env. Pro Spec. — (Title)

6/5/98 — (Signature) (Date)

U.S. Army — (Name of Firm, if applicable)

2056 — (N.J. Certification Number)

APPENDIX B

SITE ASSESSMENT SUMMARY

(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
- UST Registration Number : 81533-136 (7 digits)
- Incident Report Number ___•___•___•_____•___ (10 or 12 digits)
  ___•___•___•_____•___
- 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: Charles Appleby Signature: UST Cert. No.: 2056

Firm: U.S. Army Fort Monmouth Firm's UST Cert. Number: NA - U.S. Army

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

State: New Jersey 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: 1/7/99

APPENDIX C

WASTE MANIFEST

CASIE / PROTANK ENVIRONMENTAL SERVICES

864

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS MANIFEST

1. Generator's US EPA ID No. NJB211002059 | Document No. 13073 JF

2. Page 1 of 1

3. Generator's Name and Mailing Address: Main Post AHn: SELFM-AO-EV / U.S. Army Com. Elec. Command c/o Joe Fallon/Bldg Fort Monmouth NJ 07703

4. Generator's Phone (732) 532-6223

A. Non-hazardous Manifest Document Number: NHZ020 17382

B. State Generator's ID: SAME

5. Transporter 1 Company Name: Casie Ecology Oil Salvage, Inc. | 6. US EPA ID Number: NJD041599569 3

C. State Trans. ID: 16931

7. Transporter 2 Company Name | 8. US EPA ID Number

D. Transporter's Phone: (609) 696-4401

E. State Trans. ID: X0597 16

9. Designated Facility Name and Site Address: Casie Ecology Oil Salvage, Inc. T/A / Casie Protank, 3209 N. Mill Rd, Vineland NJ 08360 | 10. US EPA ID Number: NJD041599569 3

F. Transporter's Phone ( )

G. State Facility's ID: 0814D1HP05

H. Facility's Phone: (609) 696-4401

GENERATOR

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	L Waste No.
a.	Combustible liquid, n.o.s.(Fuel Oil) NA1993, PGIII	001	TT	~~00001~~ 1990 JF	G	ID72
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above: L 90%oil/sed. | 0%wtr.

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information: a.24 Hr. Emergency Response #609 696-4401 K. Ambrosia ERG# 128

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

I hereby certify that the above-named material is not hazardous waste as defined by 40 CFR Part 261, 264 and 279 or any applicable state law.

Printed/Typed Name	Signature	Month Day Year
Joseph M. Fallon	Joseph M. Fallon	04 30 98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Dan Scolera	Dan Scola	04 30 98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

1-GENERATOR COPY

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

CASIE / PROTANK
ENVIRONMENTAL SERVICES

864A

Please type or print in block letters. (Form designed for use on elite (12-pitch) typewriter.) NJ3210020597

NON-HAZARDOUS MANIFEST

1. Generator's US EPA ID No. N J 2 2 1 0 0 2 0 9 7 8 | Document No. 1 4 6 2 9

2. Page 1 of 1

3. Generator's Name and Mailing Address U.S. Army Com. Elec. Command
c/o Joe Fallon/Bldg
Fort Monmouth NJ 07703

A. Non-hazardous Manifest Document Number NHZ020 19112

4. Generator's Phone: 732 532-6223 Main Post

B. State Generator's ID SAME

5. Transporter 1 Company Name: Casie Ecology Oil Salvage, Inc.

6. US EPA ID Number: N J D 0 4 5 9 9 5 6 9 3

C. State Trans. ID 1 6 2 3 K 0 5 8 2

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone (609) 696-4401

E. State Trans. ID

9. Designated Facility Name and Site Address: Casie Ecology Oil Salvage, Inc. T/A
3209 N. Mill Rd / Casie Protank
Vineland NJ 08360

10. US EPA ID Number: N J D 0 4 5 9 9 5 6 9 3

F. Transporter's Phone ( )

G. State Facility's ID 0614D1HP05

H. Facility's Phone (609) 696-4401

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
GENERATOR a. Combustible liquid, n.o.s.(Fuel Oil) NA1993, III	0 0 1	T T	X1946	G	I D 7 2
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above: L,T 40 water SC, LT 20% WATER

K. Handling Codes for Wastes Listed Above: a. b. c. d.

15. Special Handling Instructions and Additional Information: CFI#1499

a. ERG# 128
b. 24 hr emergency response #609-696-4401 K. Ambrosia

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

I hereby certify that the above-named material is not hazardous waste as defined by 40 CFR Part 261, 264 and 279 or any applicable state law.

	Printed/Typed Name	Signature	Month	Day	Year
TRANSPORTER	17. Transporter 1 Acknowledgement of Receipt of Materials: Joseph M. Fallon	Joseph M. Fallon	06	18	98
	18. Transporter 2 Acknowledgement of Receipt of Materials: Sharon Lee	Sharon Lee	06	18	98
FACILITY	19. Discrepancy Indication Space				
	20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest except as noted in Item 19.				

1-GENERATOR COPY

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

APPENDIX D

UST DISPOSAL CERTIFICATE

3" Piping - 3 sites
876-B, 876-A
864-A

MAZZA & SONS, INC.

Metal Recyclers
3230 Shafto Rd.
Tinton Falls, NJ
(908) 922-9292

NO. _____

DATE. 11 June 98

Customer's Name Tecom - Vinnell

Address _____

	Weight	Price
Cast Iron		
Steel	15620 LB	
Lt. Iron	17020 LB	71 50
Copper #1	2600	
Copper #2		

	Weight	Price
Lt. Copper		
Brass		
Alum Clean		
Lead		
Stainless		
Battery		
TOTAL AMOUNT:		$ 71 50

RECEIVED
JUN 16
Oak 1914

Weigher _____ Customer _____

THIS CHECK IS DELIVERED FOR PAYMENT ON THE FOLLOWING ACCOUNTS.

DATE		AMOUNT	
TOTAL OF INVOICES			
LESS ___ % DISCOUNT			
LESS FREIGHT			
LESS			
TOTAL DEDUCTIONS			
AMOUNT OF CHECK			

1914

MAZZA & SONS, INC.
RECYCLING DIVISION
P.O. BOX 246
OAKHURST, NJ 07755

55-7233/2212

DATE 6/16/98

PAY TO THE ORDER OF Tecom Vinnell $ 71.50

Seventy One & 50/100 DOLLARS

Sovereign Bank

⑈001914⑈ ⑆221272332⑆000 109109928⑆

MONMOUTH COUNTY
RECLAMATION CENTER
TINTON FALLS, NJ

MAILING ADDRESS: 6000 ASBURY AVE.
NEPTUNE, NJ 07753

CUSTOMER COPY

FACILITY I.D. NO. 1336F1SP01

RECEIPT DOCUMENT NUMBER

01706023

BILL TO
MARP508937
MARPAL COMPANY
PO BOX 188
LINCROFT NJ 07738

HAULER
MARP508937
MARPAL COMPANY
PO BOX 188
LINCROFT 76852 NJ 07738
Escrow Level: 2400.00

DATE	ENTRY TIME	OPER.	EXIT TIME	OPER	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT
07/10/98	08:08	VJF	08:31	PMN	(44800 LB)	(37280 LB)	(7520 LB)
00856356	Scale 02		Scale 04		Scale 02 (22.40 T)	Scale 04 (18.64 T)	(3.76 T)

VEHICLE NUMBER	VEHICLE TYPE	PLATE NUMBER	TRANSACTION TYPE
2065AU	Rolloff Open 30	XX89HD	TUS (166) Normal

QUANTITY	WC	DESCRIPTION/ORIGIN	UNITS	UNIT PRICE	AMOUNT
3.7600	136	Bulky Waste - (MCRC) MONMOUTH COUNTY EATONTOWN BOROUGH	Tons 100.00%	88.15	331.44

I hereby certify that the information provided on this form is true to the best of my knowledge.

*** Prepayment Balance Remaining: 28628.86 ***

DRIVER NAME PRINT R. Jacques SIGNATURE

DOCUMENT TOTAL $331.44

APPENDIX E

SOIL ANALYTICAL DATA PACKAGE

US ARMY FT. MONMOUTH ENVIRONMENTAL LABORATORY
NJDEPE # 13461

REPORT OF ANALYSIS

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

Project: Total Petroleum Hydrocarbons
98-0001
Bldg. 864

Project # 3626
Date Rec. 06/05/98
Date Compl. 06/12/98
Released by:

7-6-98

Daniel K. Wright Date:
Laboratory Director

Table of Contents

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 gyrotory 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.

PHC Conformance/Non-conformance Summary Report

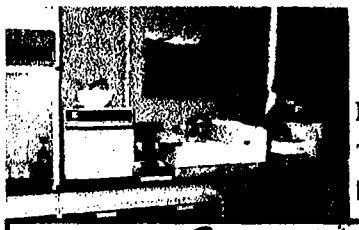
	No	Yes
1. Method Detection Limits provided.	__	✓
2. Method Blank Contamination - If yes, list the sample and the corresponding concentrations in each blank.	✓	__
3. Matrix Spike Results Summary Meet Criteria. (If not met, list the sample and corresponding recovery which falls outside the acceptable range).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

Additional Comments: _____

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



Fort Monmouth Environmental Testing Laboratory

Bldg. 173, SELFM-PW-EV, Fort Monmouth, NJ 07703
Tel (732)532-4359 Fax (732)532-3484 EMail:appleby@doim6.monmouth.army.mil
NJDEP Certification #13461

Chain of Custody Record

Customer: C Appleby - OPW
Phone #: 26324
( )DERA (X)OMA ( )Other:_____
Project No: 98-0001
Location: B.864
Samplers Name / Company : GARY DiMARTINIS - TUS

Lab Sample I.D.	Sample Location	Date	Time	Sample Type	# bottles	TPHC	% Solids	Munsell	OVA	Remarks / Preservation Method
36026-01	864-A	6-5-98	1339	Soil	1	X	X	X	NO	EXC. FLOOR @ 7.0' *
02	B		1344						ND	SIDEWALL @ 4.5'
03	C		1346						ND	
04	D		1348						ND	
05	E		1357						ND	
06	F		1351						ND	Piping Run @ 1.5'
07	DUP		—						—	FIELD DUPLICATE

NOTE: OVA (#A52114) CALIBRATED W/ 95 ppm CH4 & ZERO (0) AIR @ 1320 HRS. ON 6-5-98 by G. DiMARTINIS.

Analysis Parameters

Comments:
* = SAMPLES KEPT BELOW 4°C

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
[signature]	6-5-98 1520	[signature]			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: (_)Full, (X)Reduced, (_)Standard, (_)Screen / non-certified
Turnaround time: (X)Standard 4 wks, (_)Rush ____ Days, (_)ASAP Verbal ____ Hrs.

Remarks:
DEDICATED SAMPLING TOOLS USED.

print legibly

coc.XLS5/18/98

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

Client :	U.S. Army	**Lab. ID # :**	3626
	DPW. SELFM-PW-EV	**Date Rec'd:**	05-Jun-98
	Bldg. 173	**Analysis Start:**	08-Jun-98
	Ft. Monmouth, NJ 07703	**Analysis Complete:**	12-Jun-98
Analysis:	OQA-QAM-025	**UST Reg. #:**	
Matrix:	Soil	**Closure #:**	
Analyst:	D.DEINHARDT	**DICAR #:**	
Ext. Meth:	Shake	**Location #:**	B. 864

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3626.01	864-A	**1.00**	15.56	79.52	190	**ND**
3626.02	864-B	**1.00**	15.14	81.31	191	**ND**
3626.03	864-C	**1.00**	15.05	81.84	191	**ND**
3626.04	864-D	**1.00**	15.31	82.39	186	**ND**
3626.05	864-E	**1.00**	15.06	83.52	187	**ND**
3626.06	864-F	**1.00**	14.97	80.45	195	**ND**
3626.07	864-DUP	**1.00**	15.69	83.44	180	**ND**
METHOD BLANK	TBLK 111	**1.00**	15.00	100.00	157	**ND**

ND = Not Detected

MDL = Method Detection Limit

Daniel K. Wright
Laboratory Director

Response Factor Report GC/MS Ins

Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998

Calibration Files
100 =T05610.D 50 =T05611.D 20 =T05612.D
10 =T05613.D 5 =T05614.D

	Compound	100	50	20	10	5	Avg	%RSD
1)	tC C8	2.121	2.039	1.912	1.984	2.064	2.024 E4	3.93
2)	tC C10	2.305	2.184	2.138	2.205	2.215	2.209 E4	2.76
3)	TC C12	2.550	2.393	2.339	2.387	2.400	2.414 E4	3.30
4)	tC C14	2.654	2.496	2.459	2.503	2.528	2.528 E4	2.96
5)	tC C16	2.711	2.562	2.547	2.612	2.650	2.616 E4	2.56
6)	tC C18	3.131	3.028	2.996	3.016	2.986	3.031 E4	1.91
7)	tC C20	2.968	2.814	2.807	2.877	2.906	2.874 E4	2.34
8)	tC C22	2.923	2.778	2.769	2.841	2.861	2.834 E4	2.24
9)	tC C24	2.968	2.825	2.806	2.876	2.900	2.875 E4	2.25
10)	tC C26	2.957	2.820	2.782	2.852	2.874	2.857 E4	2.30
11)	tC C28	2.992	2.851	2.799	2.873	2.863	2.876 E4	2.47
12)	tC C30	3.101	2.957	2.881	2.950	2.903	2.958 E4	2.90
13)	tC C32	3.137	2.994	2.879	2.930	2.887	2.966 E4	3.58
14)	tC C34	3.267	3.114	2.979	3.014	2.946	3.064 E4	4.24
15)	tC C36	3.229	3.069	2.864	2.895	2.752	2.962 E4	6.33
16)	tC C38	3.100	2.923	2.657	2.575	2.270	2.705 E4	11.86
17)	tC C40	2.791	2.587	2.210	1.982	1.570	2.228 E4	21.76
18)	tC c42	2.484	2.257	1.798	1.475	1.060	1.815 E4	31.76
19)	TC Pristane	2.844	2.665	2.705	2.785	2.764	2.753 E4	2.54
20)	TC Phytane	2.979	2.828	2.827	2.892	2.933	2.892 E4	2.29
21)	sC o-terphenyl	3.572	3.380	3.368	3.461	3.500	3.456 E4	2.46
22)	tC TPHC - total	3.082	2.986	2.975	3.099	3.340	3.096 E4	4.74

(#) = Out of Range MEAN RSD % = 5.619

TPH41.M Fri Jun 12 08:15:45 1998

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\980611\T05724.D Vial: 3
Acq On : 15 Jun 98 7:27 pm Operator: Deinhardt
Sample : 50 PPM STANDARD Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E

Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	tC	C8	20.240	19.422 E3	4.0	98	-0.02
2	tC	C10	22.094	21.903 E3	0.9	103	0.00
3	TC	C12	24.139	24.395 E3	-1.1	105	0.00
4	tC	C14	25.279	25.538 E3	-1.0	106	0.00
5	tC	C16	26.162	26.207 E3	-0.2	106	0.00
6	tC	C18	30.314	30.294 E3	0.1	105	0.01
7	tC	C20	28.743	28.872 E3	-0.4	106	0.01
8	tC	C22	28.341	28.470 E3	-0.5	106	0.01
9	tC	C24	28.749	29.146 E3	-1.4	107	0.01
10	tC	C26	28.571	29.165 E3	-2.1	110	0.01
11	tC	C28	28.758	29.553 E3	-2.8	120	0.01
12	tC	C30	29.584	30.822 E3	-4.2	130	0.00
13	tC	C32	29.655	31.307 E3	-5.6	136	0.00
14	tC	C34	30.640	32.819 E3	-7.1	139	0.00
15	tC	C36	29.620	32.857 E3	-10.9	142	0.01
16	tC	C38	27.051	32.506 E3	-20.2	147	0.02
17	tC	C40	22.281	31.142 E3	-39.8#	158	0.03
18	tC	c42	18.150	30.694 E3	-69.1#	177	0.04
19	TC	Pristane	27.526	28.233 E3	-2.6	108	0.00
20	TC	Phytane	28.919	28.911 E3	0.0	106	0.00
21	sC	o-terphenyl	34.563	35.270 E3	-2.0	108	0.00
22	tC	TPHC - total	30.963	31.166 E3	-0.7	112	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 2

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\980611\T05735.D
Acq On : 16 Jun 98 5:22 am
Sample : 50 PPM STANDARD
Misc :
IntFile : TPHCINT.E

Vial: 3
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	tC	C8	20.240	20.946 E3	-3.5	106	0.00
2	tC	C10	22.094	23.420 E3	-6.0	110	0.00
3	TC	C12	24.139	25.766 E3	-6.7	111	0.00
4	tC	C14	25.279	26.757 E3	-5.8	111	0.00
5	tC	C16	26.162	27.387 E3	-4.7	111	0.00
6	tC	C18	30.314	30.858 E3	-1.8	107	0.00
7	tC	C20	28.743	30.177 E3	-5.0	111	0.01
8	tC	C22	28.341	29.704 E3	-4.8	111	0.01
9	tC	C24	28.749	30.436 E3	-5.9	112	0.01
10	tC	C26	28.571	30.471 E3	-6.7	115	0.01
11	tC	C28	28.758	30.993 E3	-7.8	126	0.01
12	tC	C30	29.584	32.371 E3	-9.4	137	0.00
13	tC	C32	29.655	32.856 E3	-10.8	143	0.00
14	tC	C34	30.640	34.537 E3	-12.7	146	0.00
15	tC	C36	29.620	34.583 E3	-16.8	150	0.01
16	tC	C38	27.051	34.228 E3	-26.5#	155	0.02
17	tC	C40	22.281	32.807 E3	-47.2#	166	0.03
18	tC	c42	18.150	32.429 E3	-78.7#	187	0.04
19	TC	Pristane	27.526	28.900 E3	-5.0	111	0.00
20	TC	Phytane	28.919	30.224 E3	-4.5	110	0.00
21	sC	o-terphenyl	34.563	36.704 E3	-6.2	113	0.00
22	tC	TPHC - total	30.963	33.253 E3	-7.4	119	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 3

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

Surrogate Recovery Report

Lab. ID # : 3626

Location #: B.864

Sample		Surrogate Added (ppm)	Amount Recovered (ppm)	Percent Recovery
3626.01		10.00	9.57	**95.70**
3626.02		10.00	9.59	**95.94**
3626.03		10.00	9.82	**98.22**
3626.04		10.00	9.68	**96.78**
3626.05		10.00	9.76	**97.61**
3626.06		10.00	9.73	**97.27**
3626.07		10.00	9.55	**95.47**
METHOD BLANK	TBLK 111	10.00	9.86	**98.64**

Surrogate Added : **o-Terphenyl**

6/15/98

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

Matrix Spike Recovery Report

Lab. ID # : 3626

Location #: B. 864

Sample	Spike Amount Added (ppm)	Sample Amount (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
3622.01MS	1000	0.00	975.75	97.57	75-125
3622.01MSD	1000	0.00	928.76	92.88	75-125

RPD	**4.93**	**20.00**

6/17/98

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

Blank Spike Recovery Report

Lab. ID # : 3626

Location #: B. 864

Sample	Date Extracted	Spike Amount Added (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
Blank Spike	5-Jun-98	1000	911.96	91.20	75-125

6/17/98

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05616.D Vial: 8
Acq On : 11 Jun 98 9:50 pm Operator: Deinhardt
Sample : 3626.01 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:49 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	330755	9.570 mg/L
Spiked Amount 10.000 Range 8 - 13	Recovery =	95.70%#	
Target Compounds			
4) tC C14	11.46	1101	0.044 mg/L
5) tC C16	12.46	1169	0.045 mg/L
7) tC C20	13.35	1126	0.039 mg/L
20) TC Phytane	13.35	1126	0.039 mg/L
22) tC TPHC - total	13.91	1158216	37.406 mg/L m

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05616.D Vial: 8
Acq On : 11 Jun 98 9:50 pm Operator: Deinhardt
Sample : 3626.01 Inst : GC/MS Ins
Misc : Multiplr: 1.00
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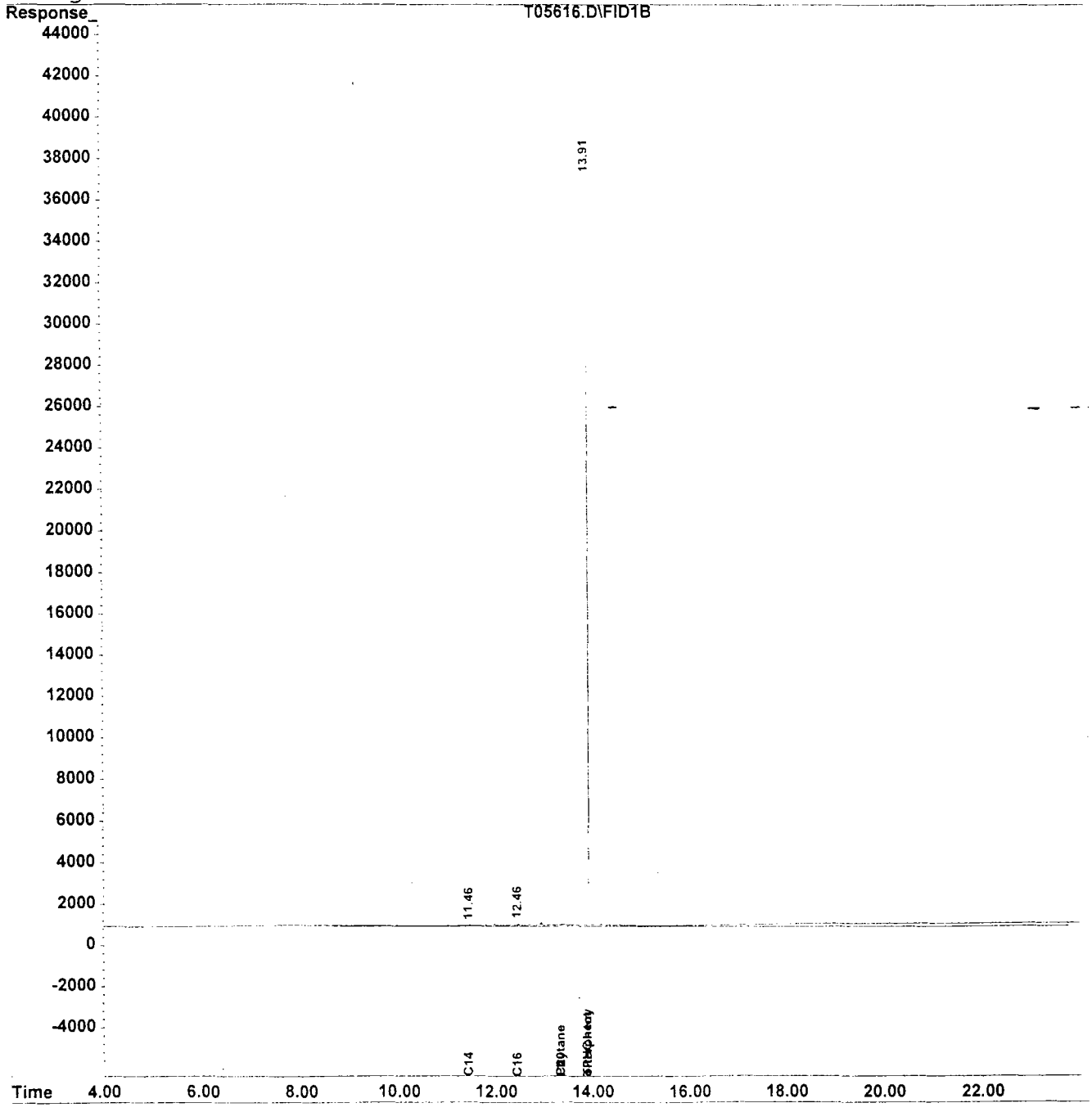
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05617.D Vial: 9
Acq On : 11 Jun 98 10:42 pm Operator: Deinhardt
Sample : 3626.02 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	331591	9.594 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	95.94%#
Target Compounds			

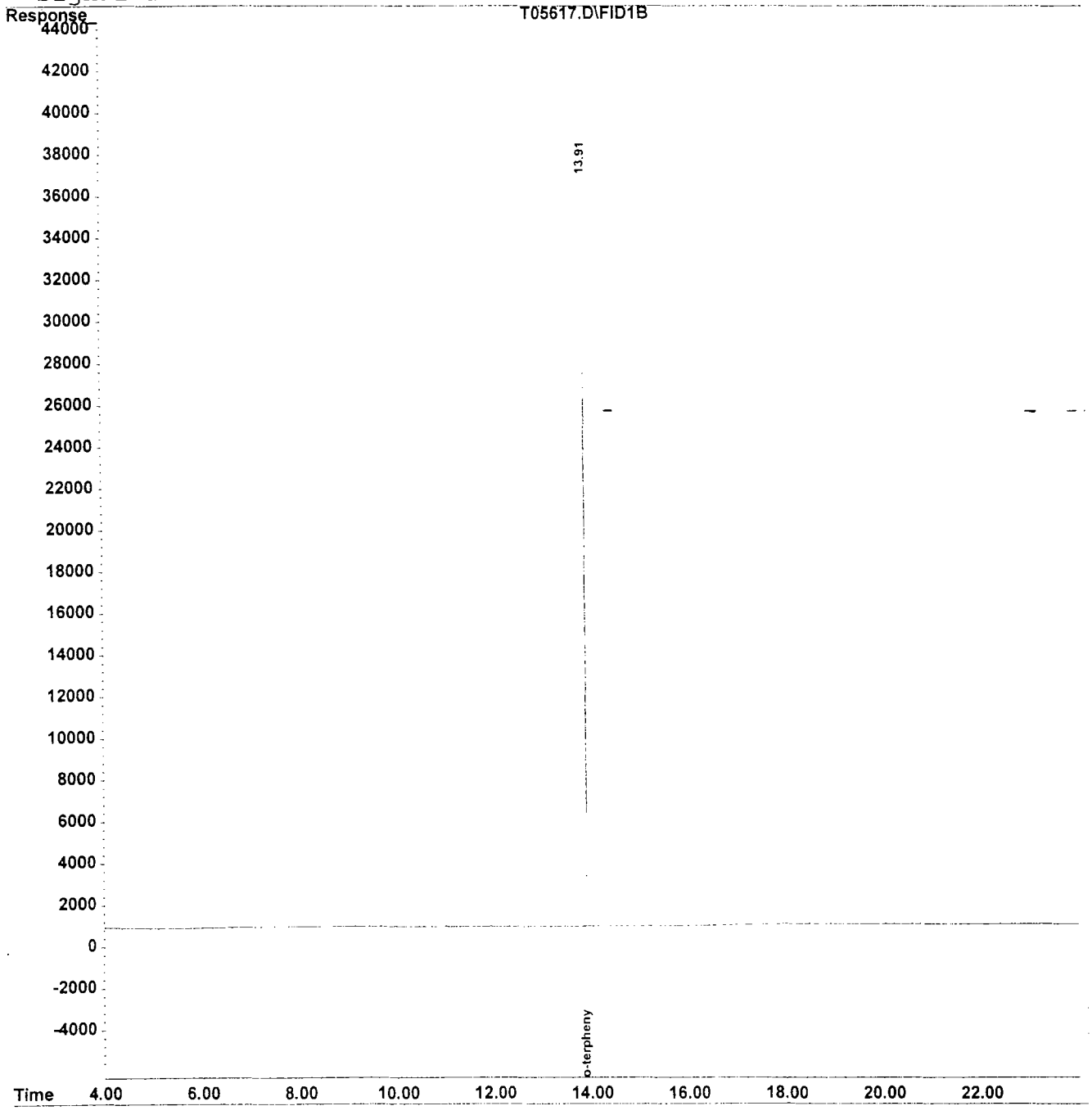
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05617.D Vial: 9
Acq On : 11 Jun 98 10:42 pm Operator: Deinhardt
Sample : 3626.02 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05618.D Vial: 10
Acq On : 11 Jun 98 11:33 pm Operator: Deinhardt
Sample : 3626.03 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	339470	9.822 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	98.22%#
Target Compounds			

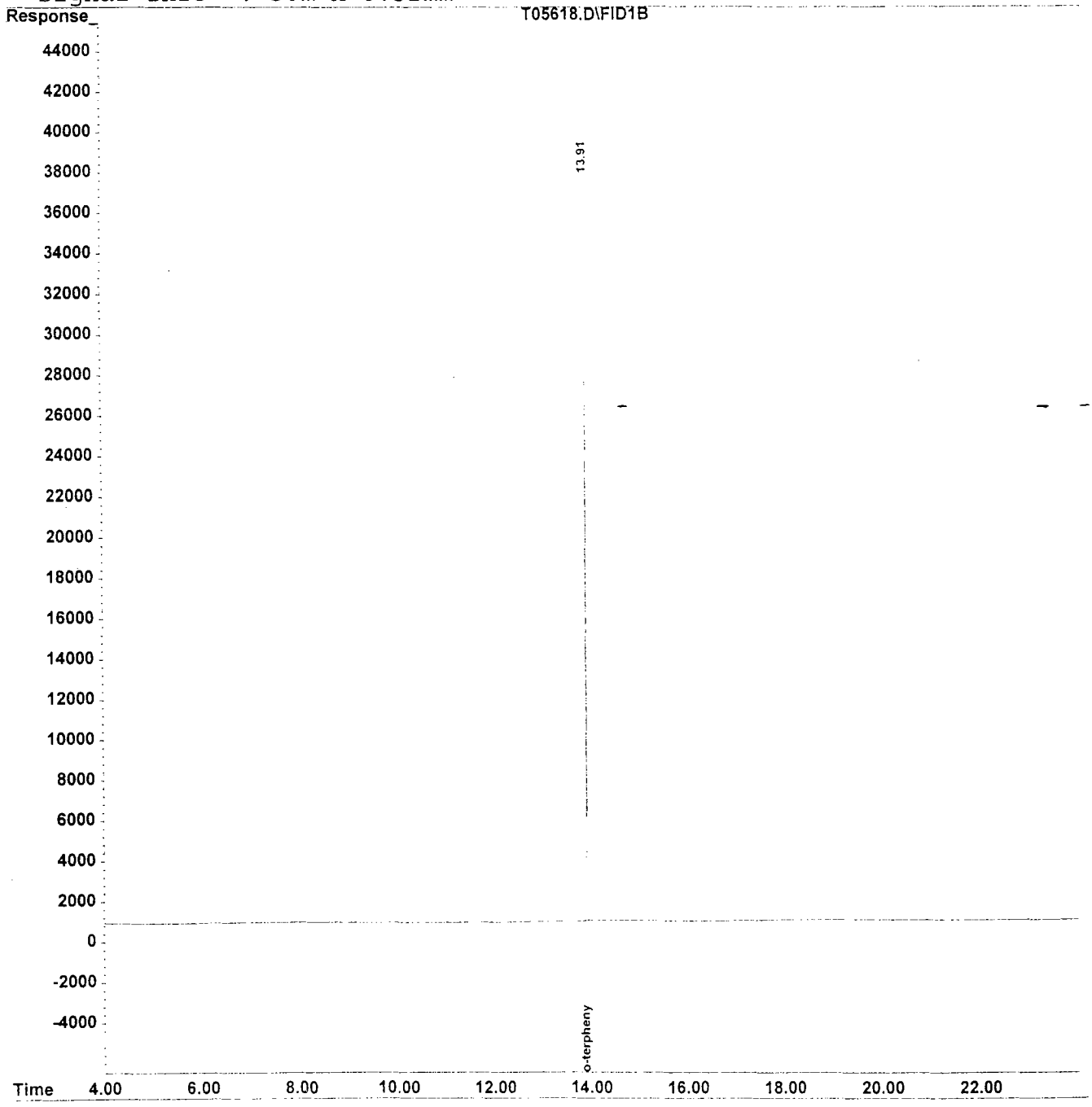
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05618.D Vial: 10
Acq On : 11 Jun 98 11:33 pm Operator: Deinhardt
Sample : 3626.03 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05619.D Vial: 11
Acq On : 12 Jun 98 12:25 am Operator: Deinhardt
Sample : 3626.04 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	334487	9.678 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	96.78%#
Target Compounds			

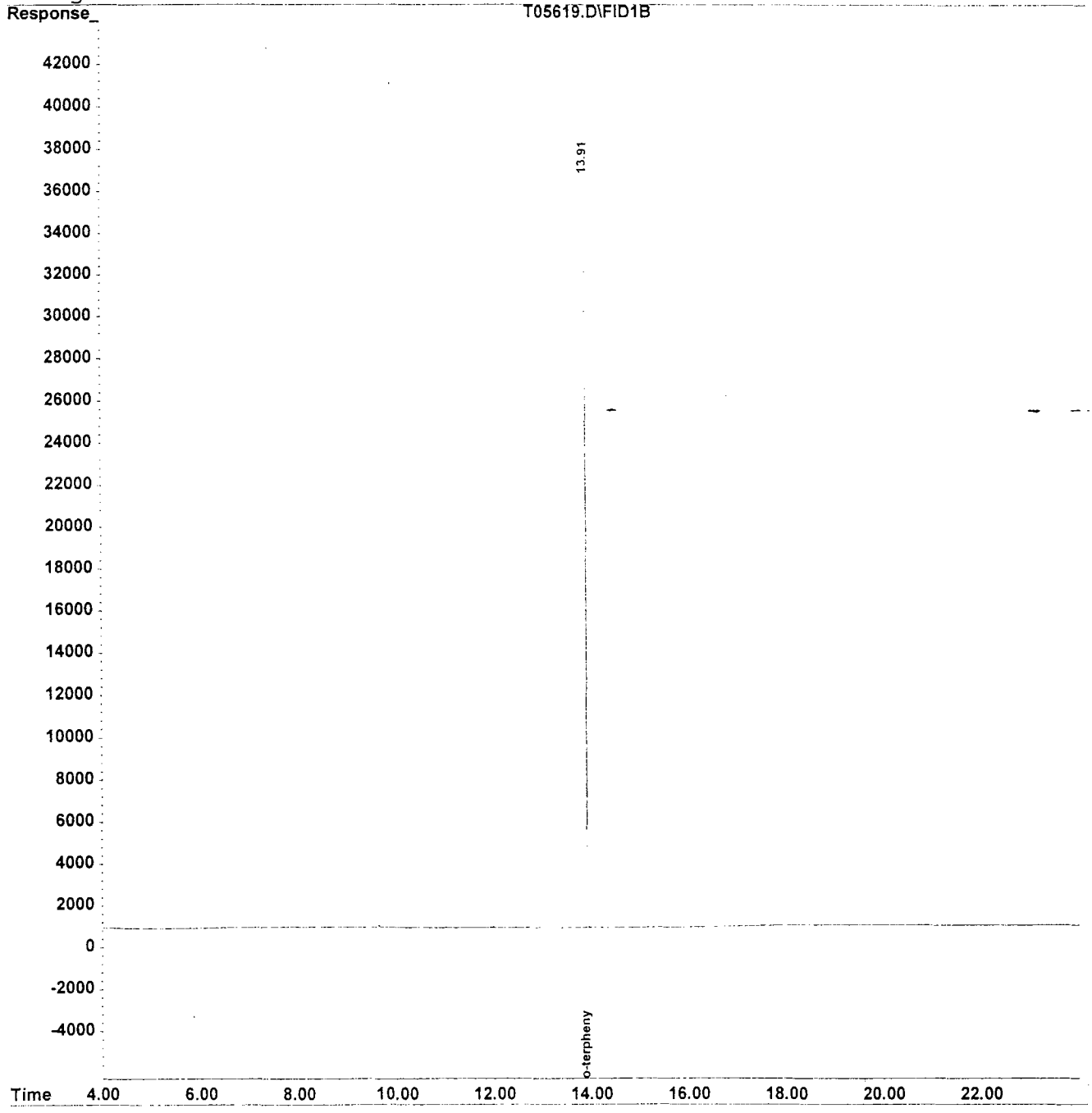
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05619.D Vial: 11
Acq On : 12 Jun 98 12:25 am Operator: Deinhardt
Sample : 3626.04 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05620.D Vial: 12
Acq On : 12 Jun 98 1:16 am Operator: Deinhardt
Sample : 3626.05 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	337354	9.761 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	97.61%#
Target Compounds			

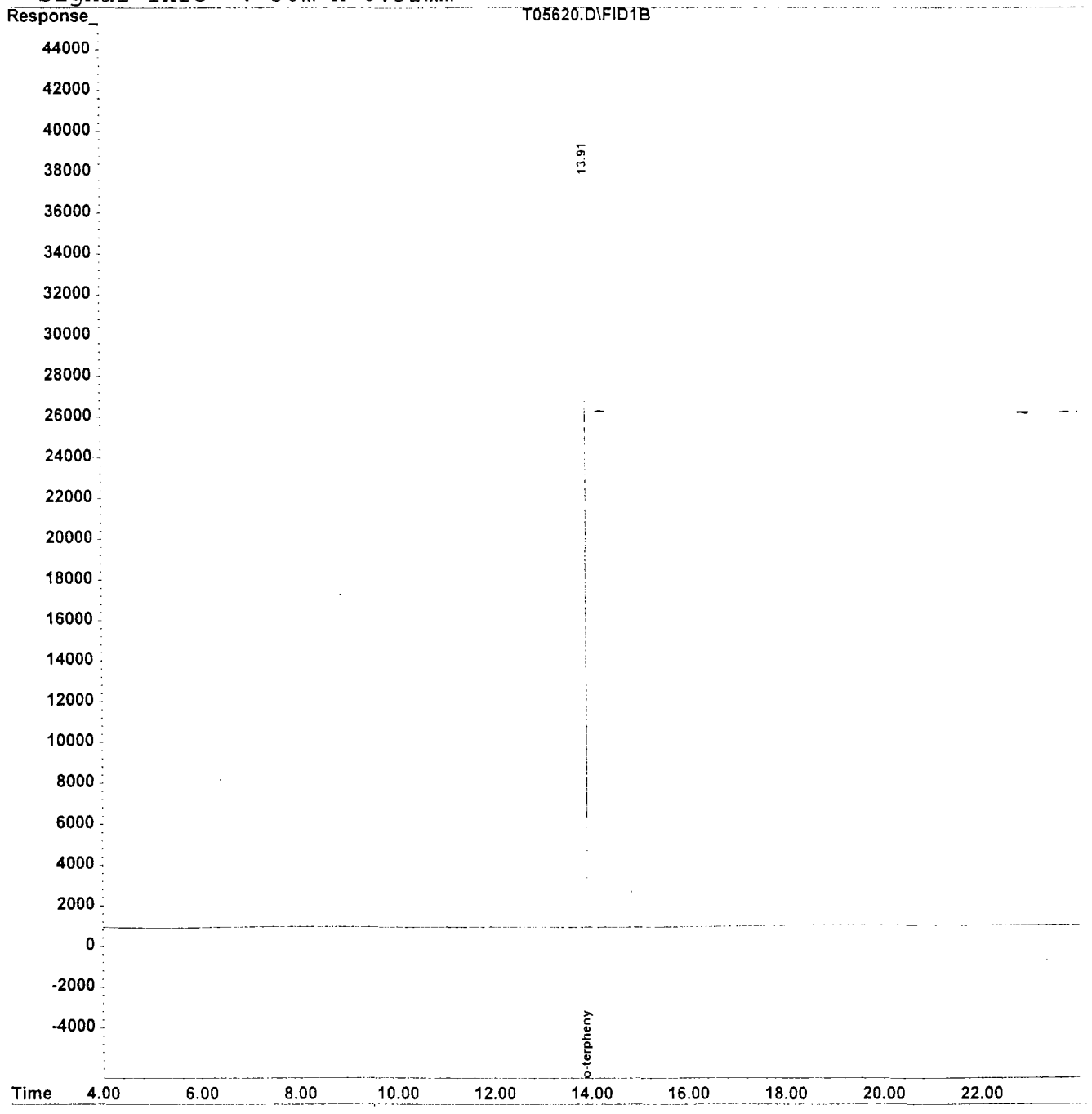
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05620.D Vial: 12
Acq On : 12 Jun 98 1:16 am Operator: Deinhardt
Sample : 3626.05 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05621.D Vial: 13
Acq On : 12 Jun 98 2:07 am Operator: Deinhardt
Sample : 3626.06 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	336197	9.727 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	97.27%#
Target Compounds			

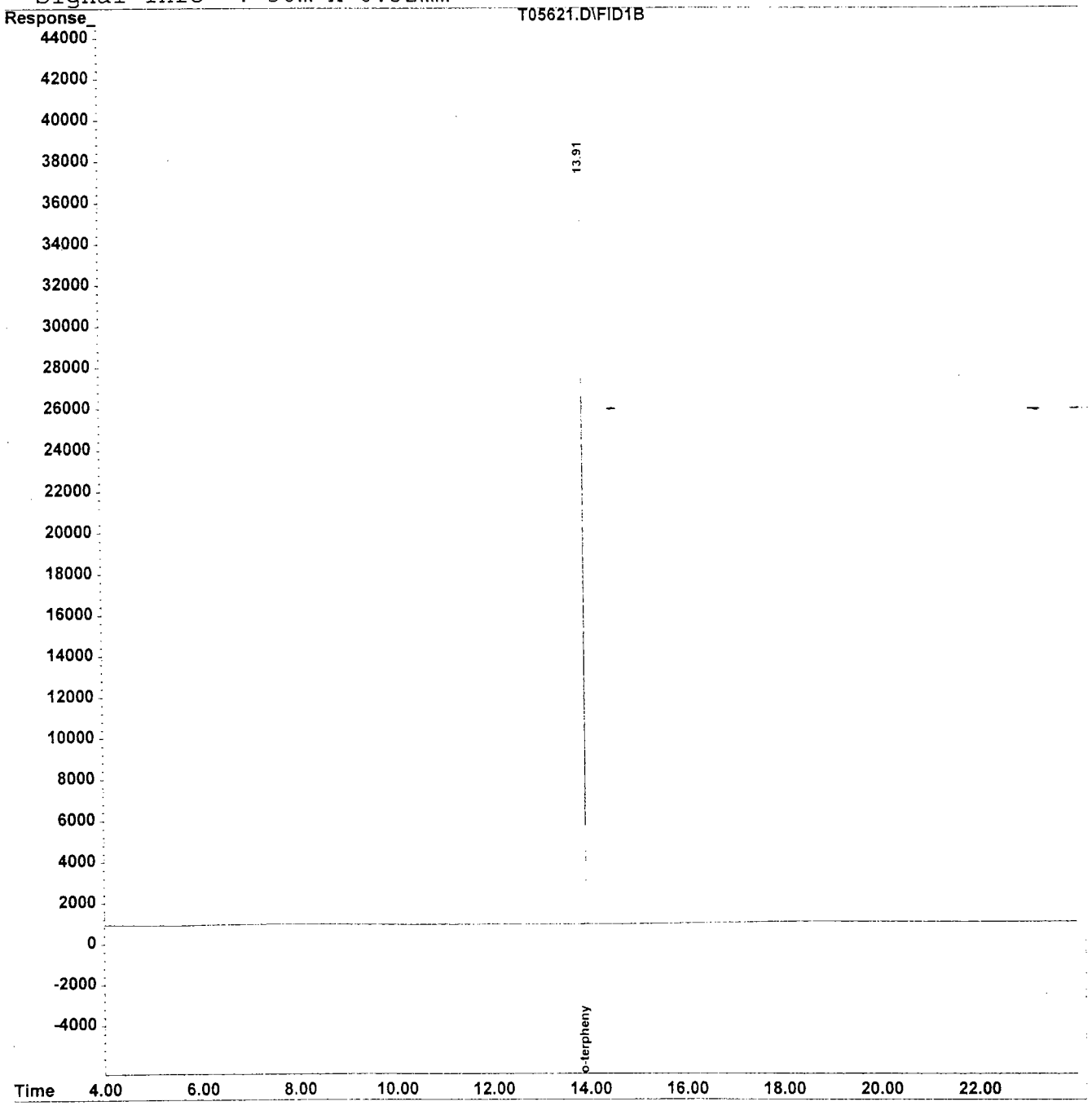
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05621.D Vial: 13
Acq On : 12 Jun 98 2:07 am Operator: Deinhardt
Sample : 3626.06 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05622.D Vial: 14
Acq On : 12 Jun 98 2:58 am Operator: Deinhardt
Sample : 3626.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	329966	9.547 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	95.47%#
Target Compounds			

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980611\T05622.D Vial: 14
Acq On : 12 Jun 98 2:58 am Operator: Deinhardt
Sample : 3626.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	329966	9.547 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	95.47%#
Target Compounds			

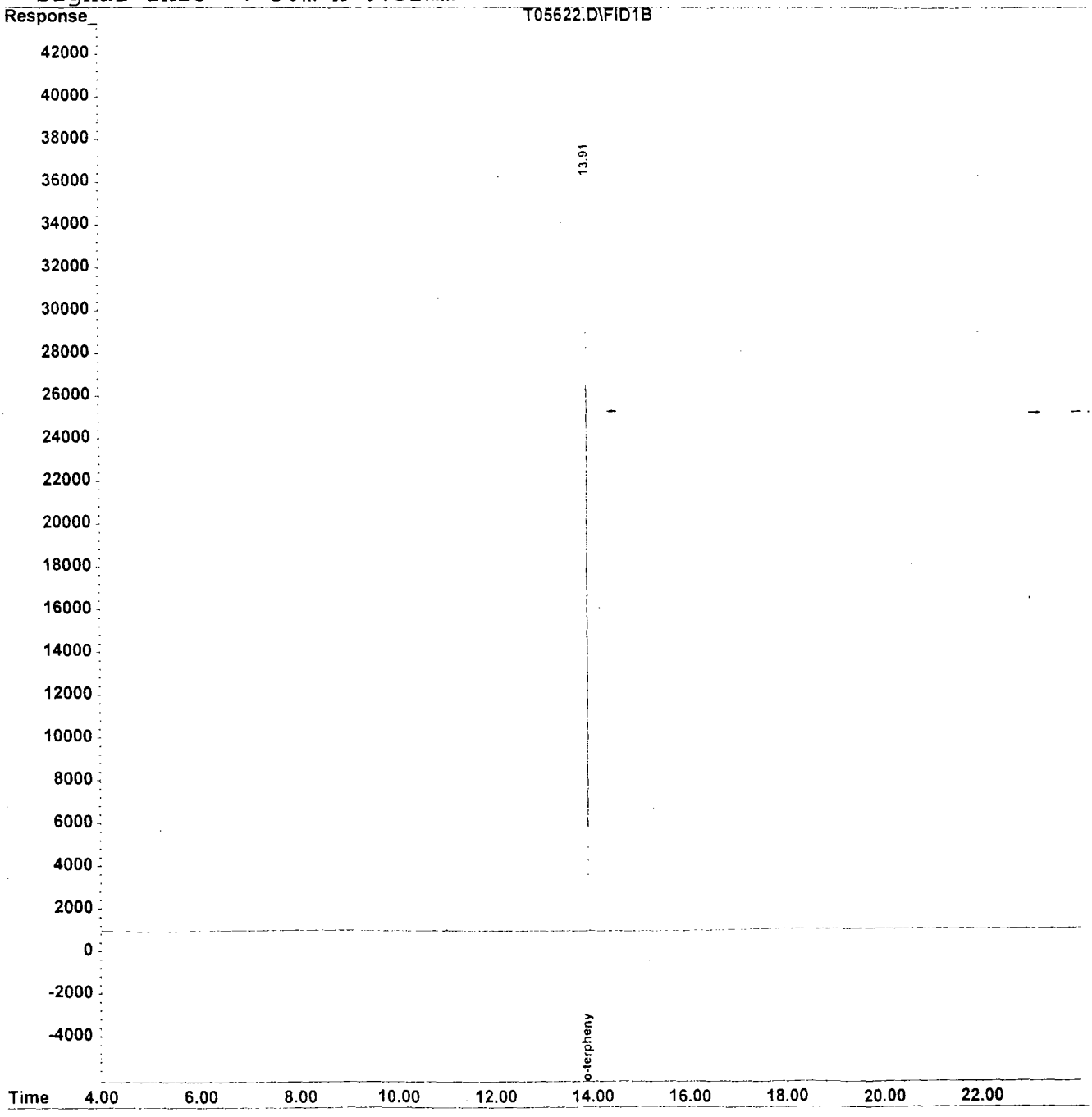
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980611\T05622.D Vial: 14
Acq On : 12 Jun 98 2:58 am Operator: Deinhardt
Sample : 3626.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 12 8:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH40.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



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 <u>and</u> 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 7/6/94

Laboratory Certification #13461

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

US ARMY FT. MONMOUTH ENVIRONMENTAL LABORATORY
NJDEPE # 13461

REPORT OF ANALYSIS

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

Project: Total Petroleum Hydrocarbons
98-0001
Bldg. 864-A

Project # 3655
Date Rec. 06/16/98
Date Compl. 06/19/98
Released by:

7-6-98

Daniel K. ~~Wright~~ Date:
Laboratory Director

Table of Contents

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 gyrotory 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.

PHC Conformance/Non-conformance Summary Report

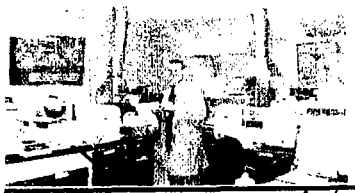
	No	Yes
1.Method Detection Limits provided.	__	✓
2. Method Blank Contamination - If yes, list the sample and the corresponding concentrations in each blank	✓	__
3. Matrix Spike Results Summary Meet Criteria. (If not met, list the sample and corresponding recovery which falls outside the acceptable range).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

Additional Comments:_____

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



Fort Monmouth Environmental Testing Laboratory

Bldg. 173, SELFM-PW-EV, Fort Monmouth, NJ 07703
Tel (732)532-4359 Fax (732)532-3484 EMail:appleby@doim6.monmouth.army.mil

NJDEP Certification #13461

Chain of Custody Record

Customer: C. Appleby-DPW
Phone #: 26224
( )DERA (X)OMA ( )Other:_____

Project No: 98-0001
Location: B. 864-A
028153736

Samplers Name / Company : GARY DiMARTINIS-TUS

Analysis Parameters: TPHC; EPA 5035 Solids; OVA

Comments: *= SAMPLES KEPT BELOW 4°C.

Lab Sample I.D.	Sample Location	Date	Time	Sample Type	# bottles	OVA	Remarks / Preservation Method
36055. 01	864-A	6-15-98	1644	Soil	1	ND	Piping Run @ 3.5' *
02	B		1645			ND	" 3.5'
03	C		1647			ND	" 3.0'
04	D		1648			ND	" 3.0'
05	E		1650			ND	" 2.5'
06	F		1651			ND	" 2.0'
07	G		1654			ND	" 2.0'
08	DUP		—			—	FIELD DUPLICATE

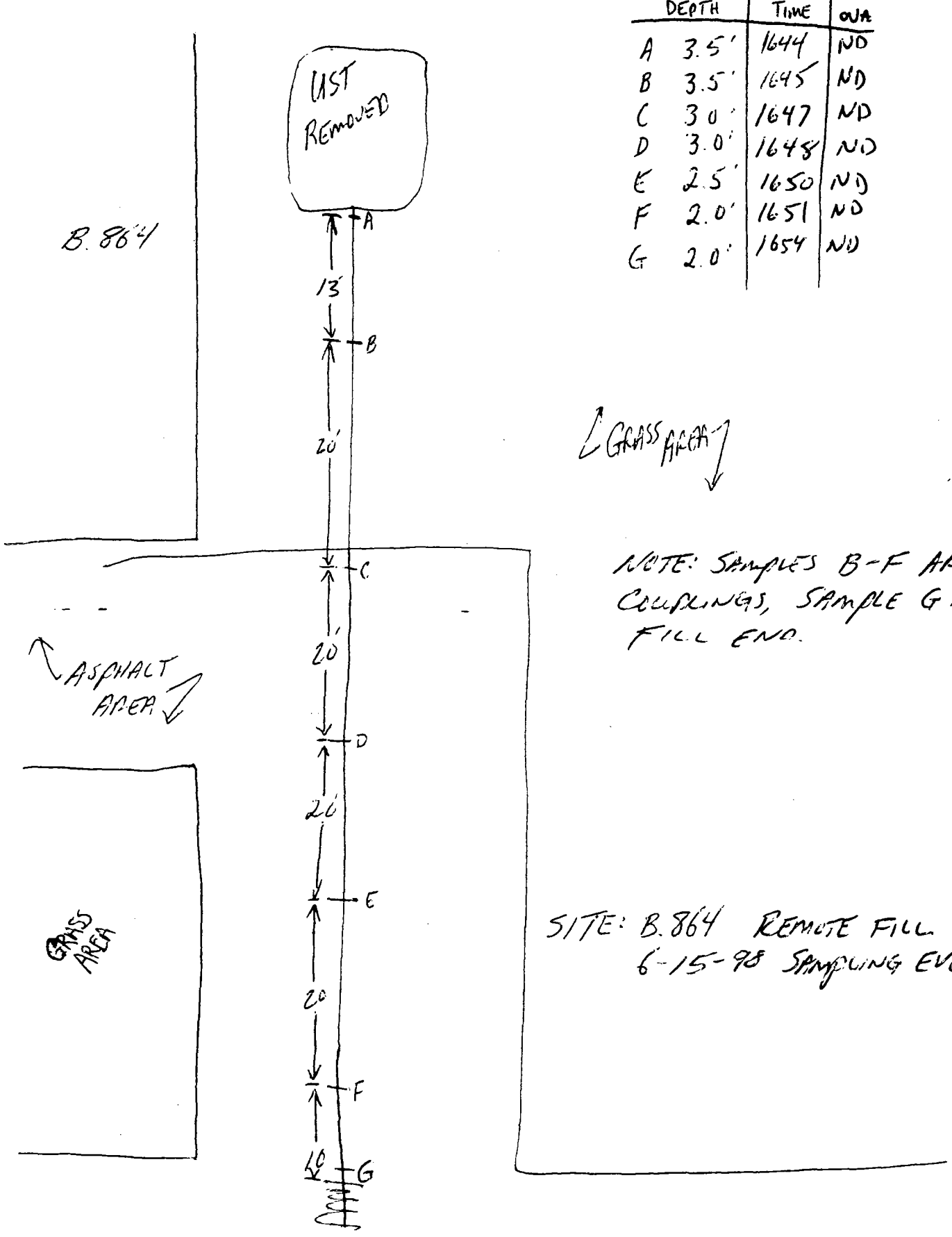
NOTE: OVA (HNU 5703) CALIBRATED W/95 ppm CH4 + ZERO (X) AIR @ 1045 HRS. ON 6-15-98 by G. DiMARTINIS.

ND - Not Detected

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
Gary DiMartinis	6-16-98 0900	J. Vergura			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: (_)Full, (X)Reduced, (_)Standard, (_)Screen / non-certified
Turnaround time: (X)Standard 4 wks, (_)Rush ____ Days, (_)ASAP Verbal ____ Hrs.

Remarks: DEDICATED SAMPLING TOOLS USED.



	DEPTH	TIME	OVA
A	3.5'	1644	ND
B	3.5'	1645	ND
C	3.0'	1647	ND
D	3.0'	1648	ND
E	2.5'	1650	ND
F	2.0'	1651	ND
G	2.0'	1654	ND

NOTE: SAMPLES B-F ARE AT COUPLINGS, SAMPLE G IS AT FILL END.

SITE: B.864 REMOTE FILL
6-15-98 SAMPLING EVENT

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

Client :	U.S. Army	**Lab. ID # :**	3655
	DPW. SELFM-PW-EV	**Date Rec'd:**	16-Jun-98
	Bldg. 173	**Analysis Start:**	16-Jun-98
	Ft. Monmouth, NJ 07703	**Analysis Complete:**	19-Jun-98
Analysis:	OQA-QAM-025	**UST Reg. #:**	
Matrix:	Soil	**Closure #:**	
Analyst:	D.DEINHARDT	**DICAR #:**	
Ext. Meth:	Shake	**Location #:**	B. 864-A

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3655.01	864-A	**1.00**	15.08	93.41	167	**ND**
3655.02	864-B	**1.00**	15.01	85.97	182	**ND**
3655.03	864-C	**1.00**	15.10	85.55	182	**ND**
3655.04	864-D	**1.00**	15.15	90.39	172	**ND**
3655.05	864-E	**1.00**	15.09	86.56	180	**ND**
3655.06	864-F	**1.00**	15.07	86.02	181	**ND**
3655.07	864-G	**1.00**	15.10	86.26	180	**ND**
3655.08	864-DUP	**1.00**	15.04	92.79	168	**ND**
METHOD BLANK	TBLK 115	**1.00**	15.00	100.00	157	**ND**

ND = Not Detected

MDL = Method Detection Limit

Daniel K. Wright
Laboratory Director

Response Factor Report GC/MS Ins

Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998

Calibration Files
100 =T05610.D 50 =T05611.D 20 =T05612.D
10 =T05613.D 5 =T05614.D

	Compound	100	50	20	10	5	Avg		%RSD
1) tC	C8	2.121	2.039	1.912	1.984	2.064	2,024	E4	3.93
2) tC	C10	2.305	2.184	2.138	2.205	2.215	2.209	E4	2.76
3) TC	C12	2.550	2.393	2.339	2.387	2.400	2.414	E4	3.30
4) tC	C14	2.654	2.496	2.459	2.503	2.528	2.528	E4	2.96
5) tC	C16	2.711	2.562	2.547	2.612	2.650	2.616	E4	2.56
6) tC	C18	3.131	3.028	2.996	3.016	2.986	3.031	E4	1.91
7) tC	C20	2.968	2.814	2.807	2.877	2.906	2.874	E4	2.34
8) tC	C22	2.923	2.778	2.769	2.841	2.861	2.834	E4	2.24
9) tC	C24	2.968	2.825	2.806	2.876	2.900	2.875	E4	2.25
10) tC	C26	2.957	2.820	2.782	2.852	2.874	2.857	E4	2.30
11) tC	C28	2.992	2.851	2.799	2.873	2.863	2.876	E4	2.47
12) tC	C30	3.101	2.957	2.881	2.950	2.903	2.958	E4	2.90
13) tC	C32	3.137	2.994	2.879	2.930	2.887	2.966	E4	3.58
14) tC	C34	3.267	3.114	2.979	3.014	2.946	3.064	E4	4.24
15) tC	C36	3.229	3.069	2.864	2.895	2.752	2.962	E4	6.33
16) tC	C38	3.100	2.923	2.657	2.575	2.270	2.705	E4	11.86
17) tC	C40	2.791	2.587	2.210	1.982	1.570	2.228	E4	21.76
18) tC	c42	2.484	2.257	1.798	1.475	1.060	1.815	E4	31.76
19) TC	Pristane	2.844	2.665	2.705	2.785	2.764	2.753	E4	2.54
20) TC	Phytane	2.979	2.828	2.827	2.892	2.933	2.892	E4	2.29
21) sC	o-terphenyl	3.572	3.380	3.368	3.461	3.500	3.456	E4	2.46
22) tC	TPHC - total	3.082	2.986	2.975	3.099	3.340	3.096	E4	4.74

(#) = Out of Range MEAN RSD % = 5.619

TPH41.M Fri Jun 12 08:15:45 1998

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\980617\T05799.D Vial: 2
Acq On : 19 Jun 98 8:06 am Operator: Deinhardt
Sample : 50 PPM STD Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E

Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	tC	C8	20.240	20.137 E3	0.5	102	-0.02
2	tC	C10	22.094	22.316 E3	-1.0	105	0.00
3	TC	C12	24.139	24.835 E3	-2.9	107	0.00
4	tC	C14	25.279	26.103 E3	-3.3	108	0.00
5	tC	C16	26.162	26.862 E3	-2.7	109	0.00
6	tC	C18	30.314	30.998 E3	-2.3	108	0.00
7	tC	C20	28.743	29.610 E3	-3.0	109	0.00
8	tC	C22	28.341	29.199 E3	-3.0	109	0.00
9	tC	C24	28.749	29.836 E3	-3.8	110	0.00
10	tC	C26	28.571	29.789 E3	-4.3	113	0.00
11	tC	C28	28.758	30.192 E3	-5.0	122	0.01
12	tC	C30	29.584	31.311 E3	-5.8	132	0.00
13	tC	C32	29.655	31.708 E3	-6.9	138	0.00
14	tC	C34	30.640	33.061 E3	-7.9	140	0.00
15	tC	C36	29.620	32.982 E3	-11.4	143	0.00
16	tC	C38	27.051	32.605 E3	-20.5	148	0.00
17	tC	C40	22.281	30.866 E3	-38.5#	156	0.01
18	tC	c42	18.150	30.113 E3	-65.9#	173	0.02
19	TC	Pristane	27.526	28.113 E3	-2.1	108	0.00
20	TC	Phytane	28.919	29.709 E3	-2.7	109	0.00
21	sC	o-terphenyl	34.563	36.890 E3	-6.7	113	0.00
22	tC	TPHC - total	30.963	31.873 E3	-2.9	114	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 2

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\980617\T05788.D Vial: 2
Acq On : 18 Jun 98 9:58 pm Operator: Deinhardt
Sample : 50 PM STD Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E

Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	tC	C8	20.240	20.404 E3	-0.8	103	-0.02
2	tC	C10	22.094	22.174 E3	-0.4	104	0.00
3	TC	C12	24.139	24.374 E3	-1.0	105	0.00
4	tC	C14	25.279	25.302 E3	-0.1	105	0.00
5	tC	C16	26.162	25.928 E3	0.9	105	0.00
6	tC	C18	30.314	30.214 E3	0.3	105	0.00
7	tC	C20	28.743	28.449 E3	1.0	105	0.00
8	tC	C22	28.341	27.993 E3	1.2	104	0.00
9	tC	C24	28.749	28.572 E3	0.6	105	0.01
10	tC	C26	28.571	28.494 E3	0.3	108	0.01
11	tC	C28	28.758	28.807 E3	-0.2	117	0.01
12	tC	C30	29.584	29.873 E3	-1.0	126	0.00
13	tC	C32	29.655	30.206 E3	-1.9	131	0.00
14	tC	C34	30.640	31.433 E3	-2.6	133	0.00
15	tC	C36	29.620	31.247 E3	-5.5	135	0.00
16	tC	C38	27.051	30.686 E3	-13.4	139	0.01
17	tC	C40	22.281	29.115 E3	-30.7#	148	0.02
18	tC	c42	18.150	28.023 E3	-54.4#	161	0.03
19	TC	Pristane	27.526	27.344 E3	0.7	105	0.00
20	TC	Phytane	28.919	28.524 E3	1.4	104	0.00
21	sC	o-terphenyl	34.563	35.006 E3	-1.3	107	0.00
22	tC	TPHC - total	30.963	30.669 E3	0.9	110	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 2

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

Surrogate Recovery Report

Lab. ID # : 3655

Location #: B. 864-A

Sample		Surrogate Added (ppm)	Amount Recovered (ppm)	Percent Recovery
3655.01		10.00	10.03	**100.33**
3655.02		10.00	10.19	**101.93**
3655.03		10.00	10.01	**100.06**
3655.04		10.00	10.47	**104.68**
3655.05		10.00	10.05	**100.54**
3655.06		10.00	9.74	**97.35**
3655.07		10.00	10.05	**100.50**
3655.08		10.00	9.68	**96.83**
METHOD BLANK	TBLK 115	10.00	10.72	**107.16**

Surrogate Added : **o-Terphenyl**

6/22/98

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

Matrix Spike Recovery Report

Lab. ID # : 3655

Location #: B. 864-A

Sample	Spike Amount Added (ppm)	Sample Amount (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
3654.08MS	1000	0.00	929.92	92.99	75-125
3654.08MSD	1000	0.00	952.18	95.22	75-125

RPD	**2.37**	**20.00**

6/22/98

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

Blank Spike Recovery Report

Lab. ID # : 3655

Location #: B. 864-A

Sample	Date Extracted	Spike Amount Added (ppm)	Matrix Spike Amount (ppm)	Percent Recovery	QC Limits %
Blank Spike	16-Jun-98	1000	990.58	99.06	75-125

6/22/98

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05794.D Vial: 41
Acq On : 19 Jun 98 3:40 am Operator: Deinhardt
Sample : 3655.01 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:44 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	346780	10.033 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery = 100.33%#	
Target Compounds			

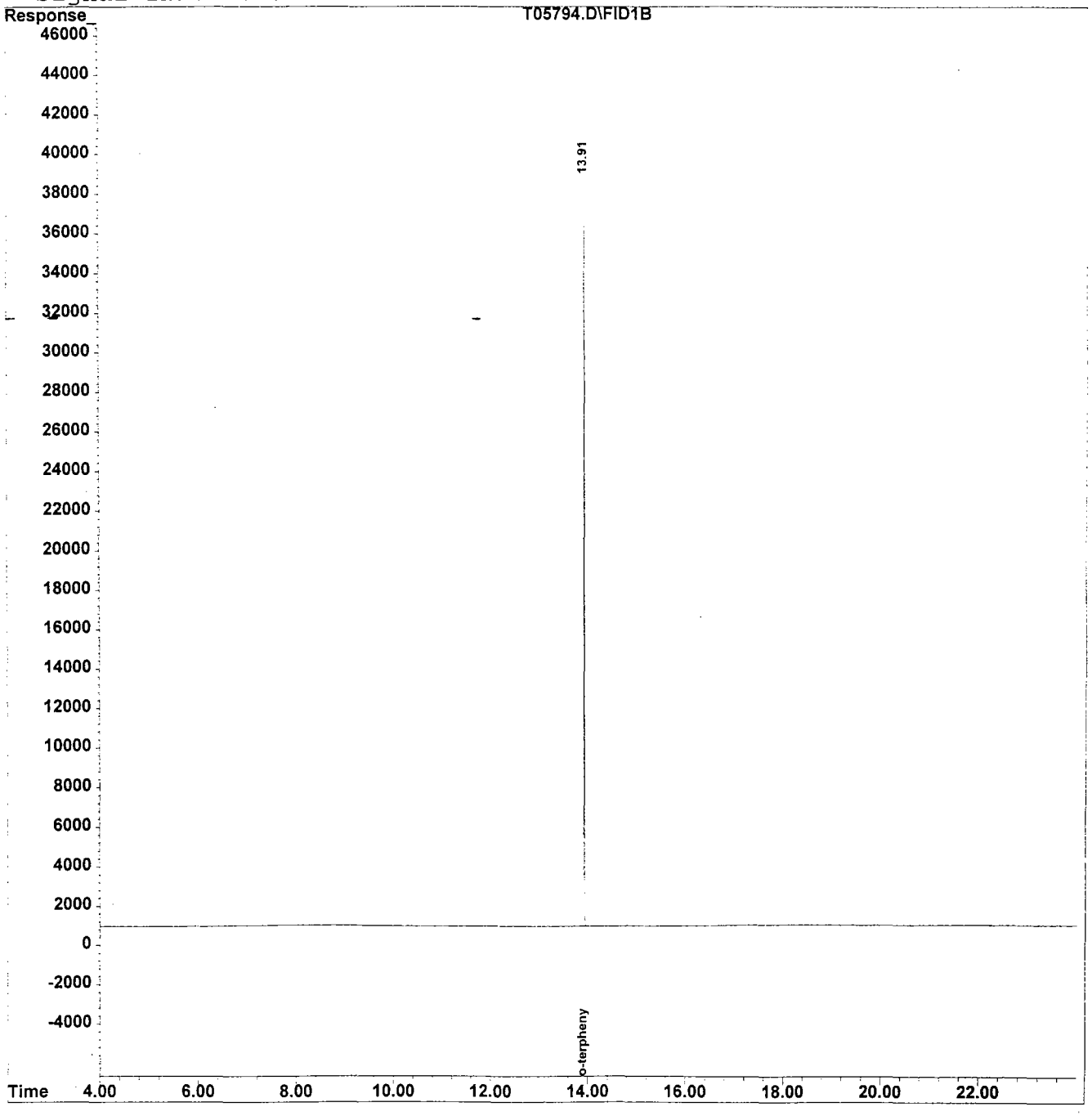
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05794.D Vial: 41
Acq On : 19 Jun 98 3:40 am Operator: Deinhardt
Sample : 3655.01 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:44 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05795.D Vial: 42
Acq On : 19 Jun 98 4:34 am Operator: Deinhardt
Sample : 3655.02 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:45 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	352302	10.193 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery = 101.93%#	
Target Compounds			

(f)=RT Delta > 1/2 Window (m)=manual int.

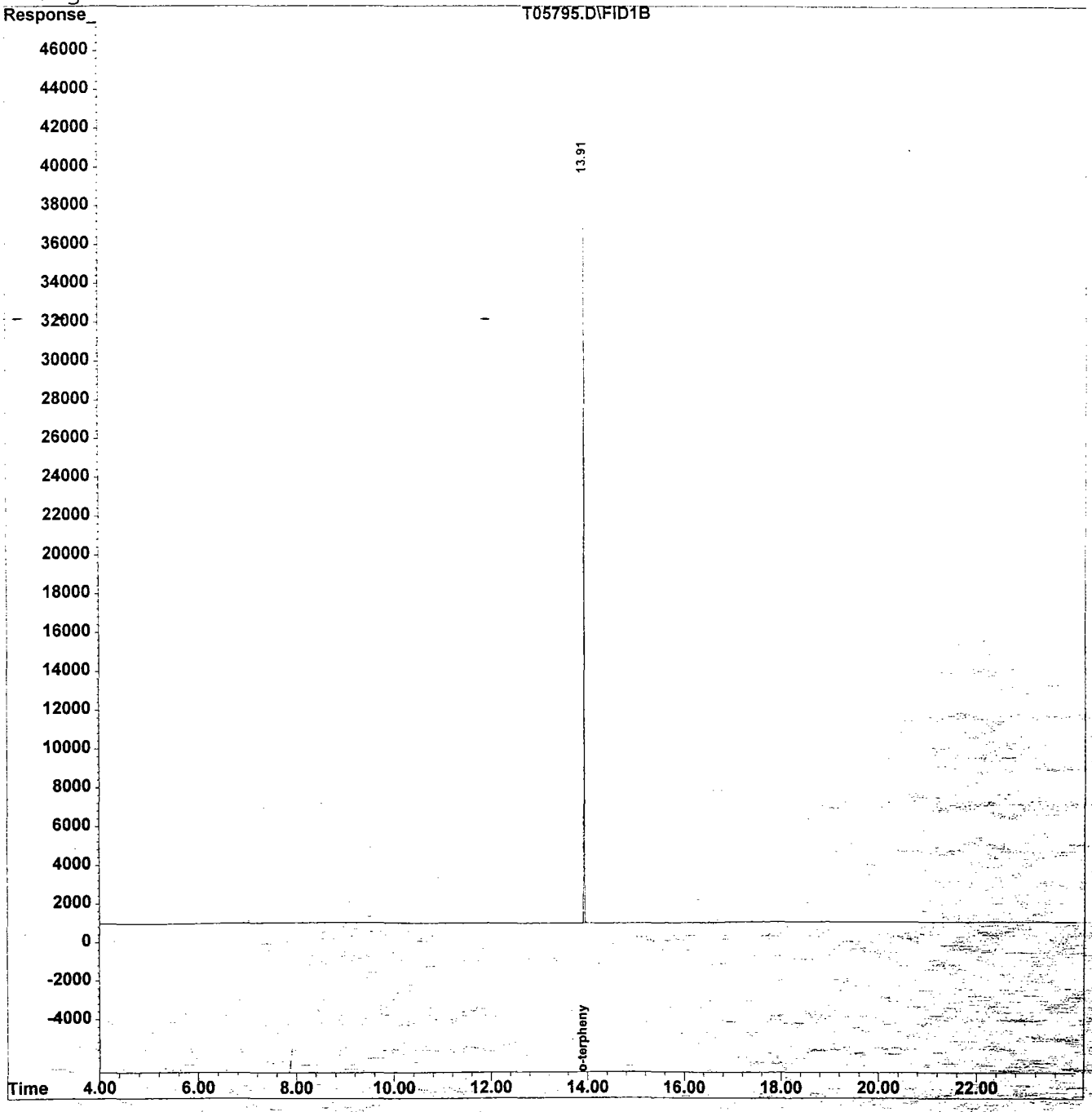
Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05795.D
Acq On : 19 Jun 98 4:34 am
Sample : 3655.02
Misc :
IntFile : TPHCINT.E
Quant Time: Jun 19 15:45 1998 Quant Results File: TPH41.RES

Vial: 42
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05796.D Vial: 43
Acq On : 19 Jun 98 5:27 am Operator: Deinhardt
Sample : 3655.03 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:45 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	345825	10.006 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery = 100.06%#	
Target Compounds			

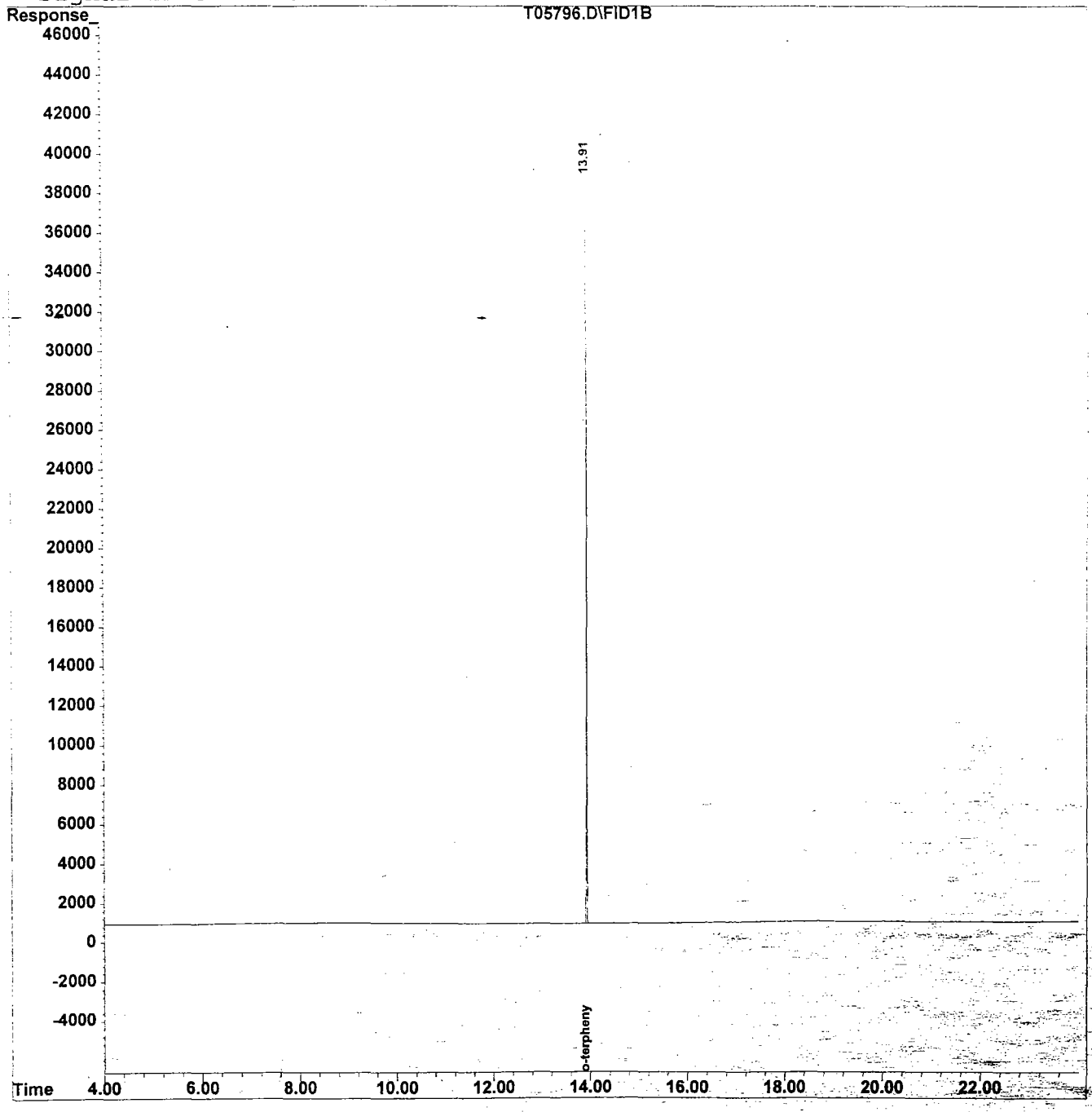
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05796.D Vial: 43
Acq On : 19 Jun 98 5:27 am Operator: Deinhardt
Sample : 3655.03 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:45 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05797.D Vial: 44
Acq On : 19 Jun 98 6:20 am Operator: Deinhardt
Sample : 3655.04 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:47 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	361798	10.468 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	104.68%#
Target Compounds			

(f)=RT Delta > 1/2 Window (m)=manual int.

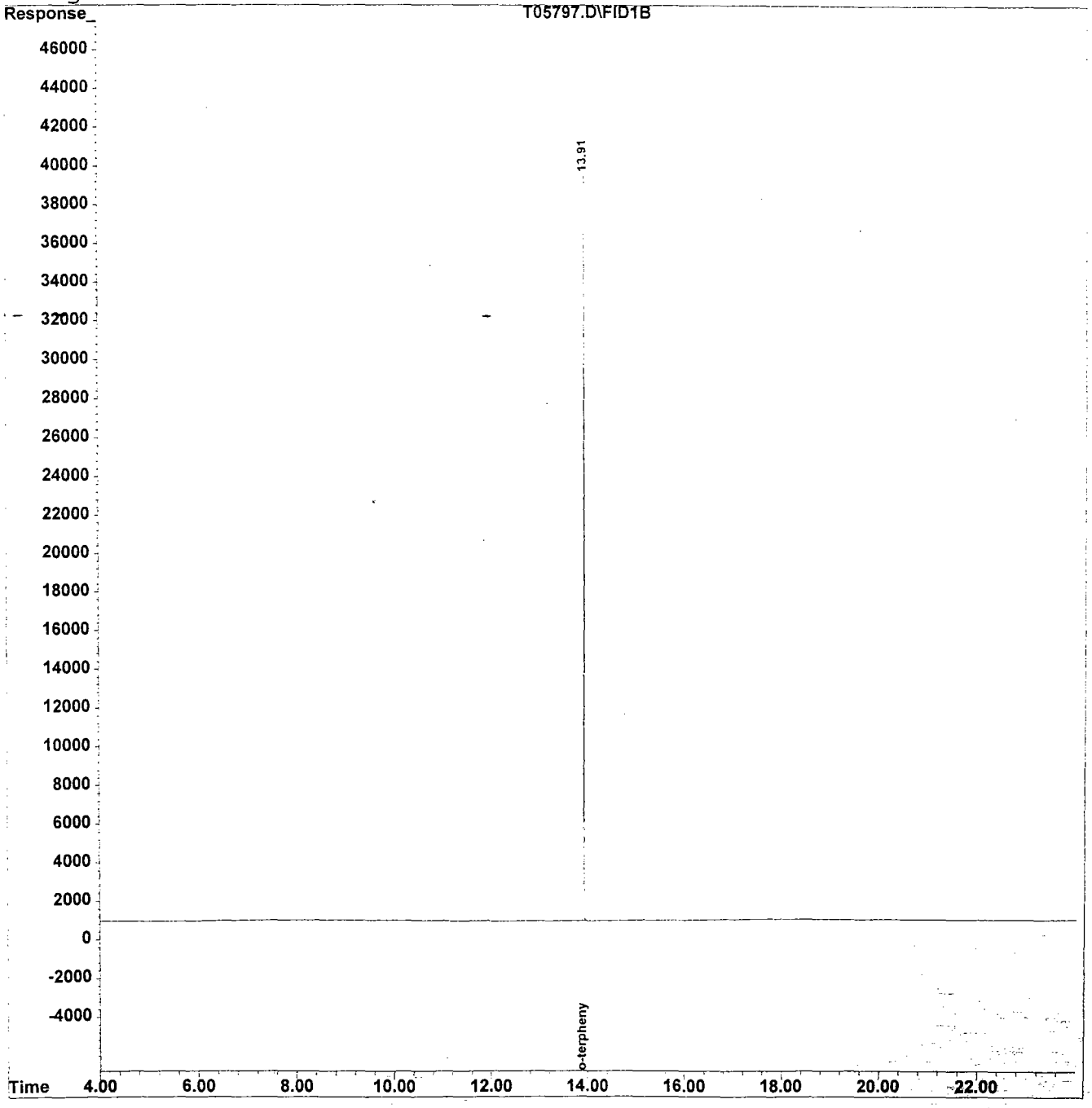
Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05797.D
Acq On : 19 Jun 98 6:20 am
Sample : 3655.04
Misc :
IntFile : TPHCINT.E
Quant Time: Jun 19 15:47 1998 Quant Results File: TPH41.RES

Vial: 44
Operator: Deinhardt
Inst : GC/MS Ins
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05798.D Vial: 45
Acq On : 19 Jun 98 7:13 am Operator: Deinhardt
Sample : 3655.05 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 22 8:00 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	347492	10.054 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery = 100.54%#	
Target Compounds			

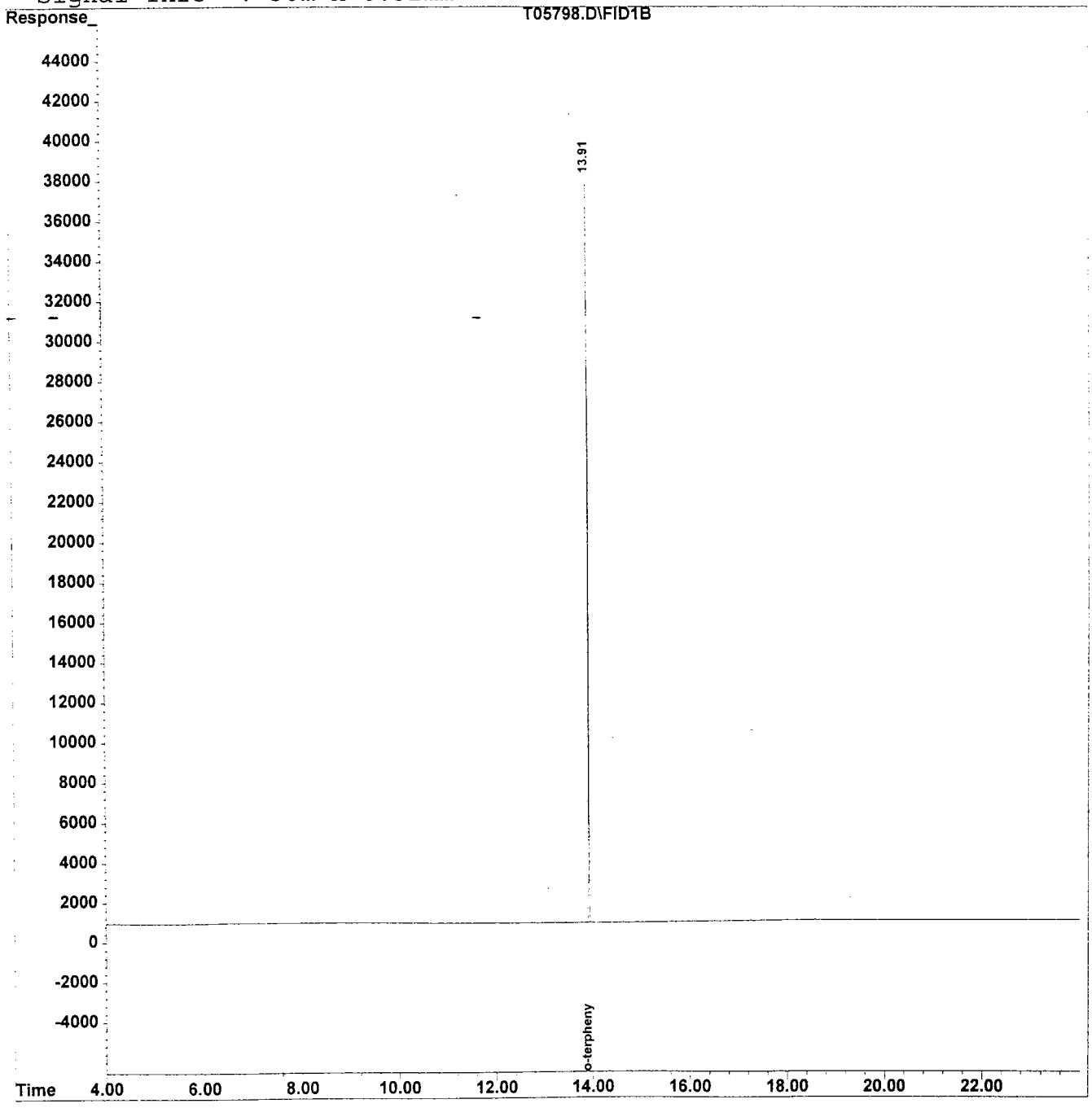
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05798.D Vial: 45
Acq On : 19 Jun 98 7:13 am Operator: Deinhardt
Sample : 3655.05 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 22 8:00 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05800.D Vial: 47
Acq On : 19 Jun 98 8:59 am Operator: Deinhardt
Sample : 3655.06 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	336483	9.735 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	97.35%#
Target Compounds			

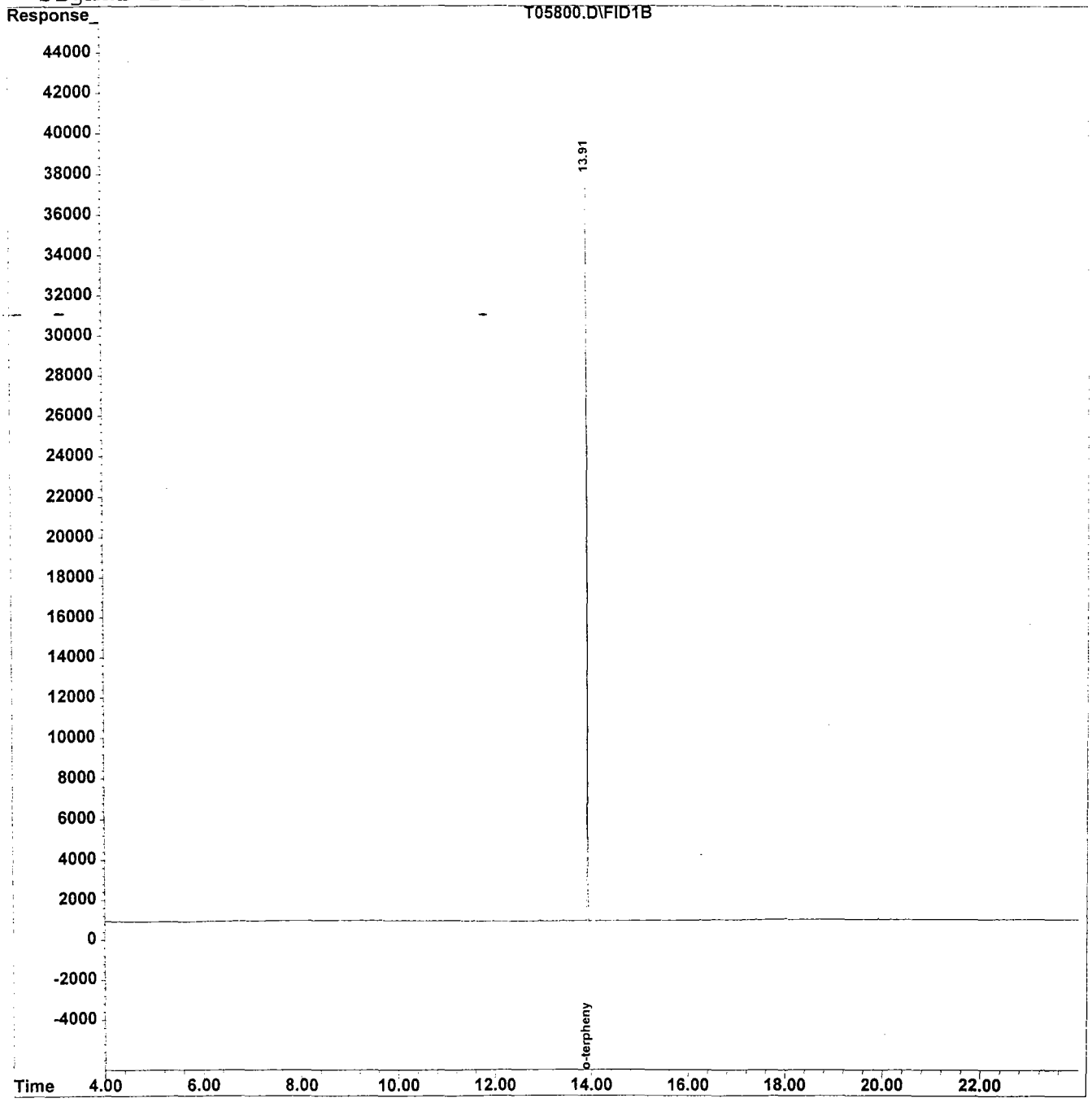
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05800.D Vial: 47
Acq On : 19 Jun 98 8:59 am Operator: Deinhardt
Sample : 3655.06 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:50 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05801.D Vial: 48
Acq On : 19 Jun 98 9:54 am Operator: Deinhardt
Sample : 3655.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	347357	10.050 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery = 100.50%#	
Target Compounds			

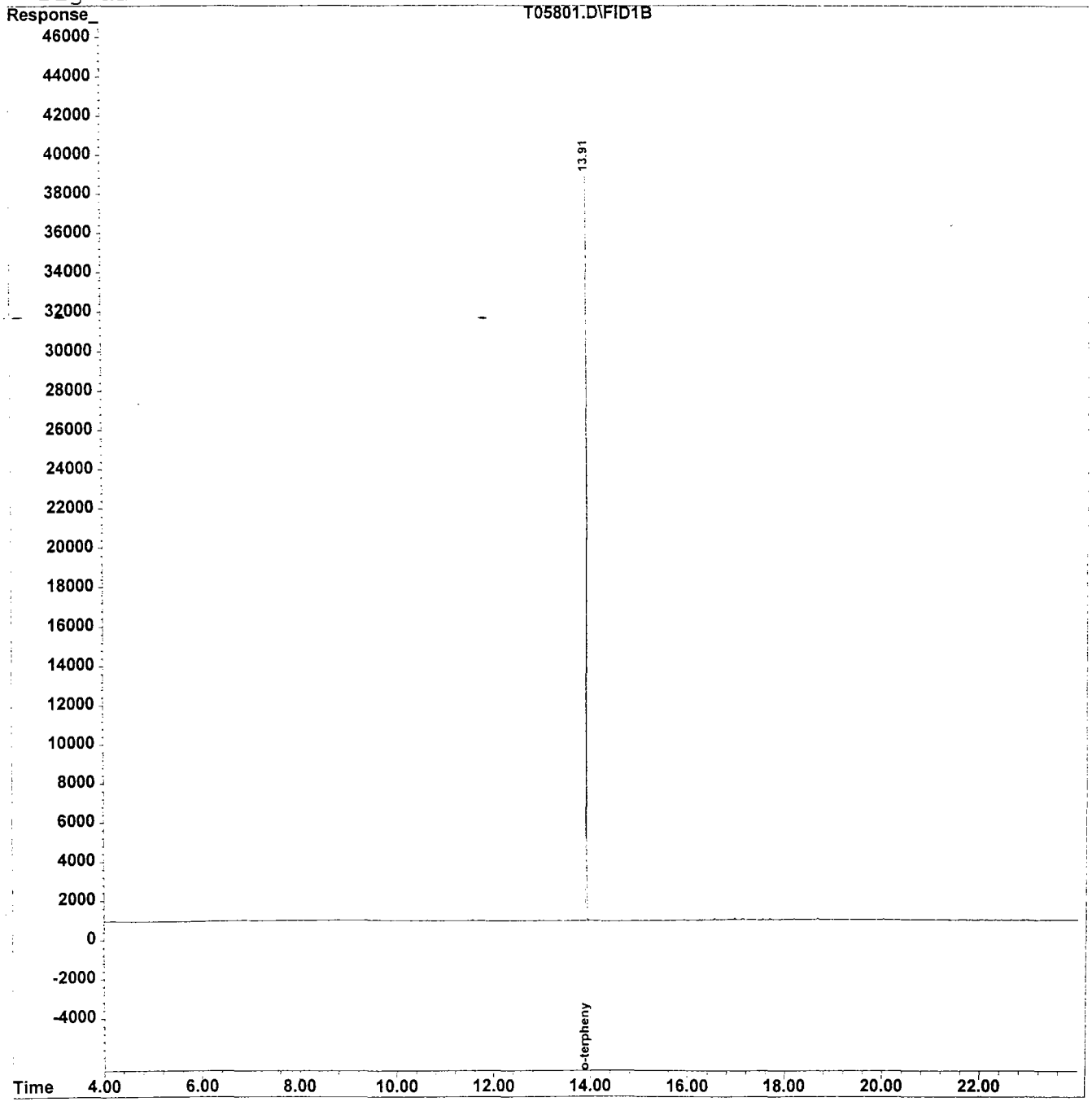
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05801.D Vial: 48
Acq On : 19 Jun 98 9:54 am Operator: Deinhardt
Sample : 3655.07 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 19 15:51 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\980617\T05802.D Vial: 49
Acq On : 19 Jun 98 10:51 am Operator: Deinhardt
Sample : 3655.08 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 22 8:02 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Initial Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
21) sC o-terphenyl	13.91	334668	9.683 mg/L
Spiked Amount 10.000	Range 8 - 13	Recovery =	96.83%#
Target Compounds			

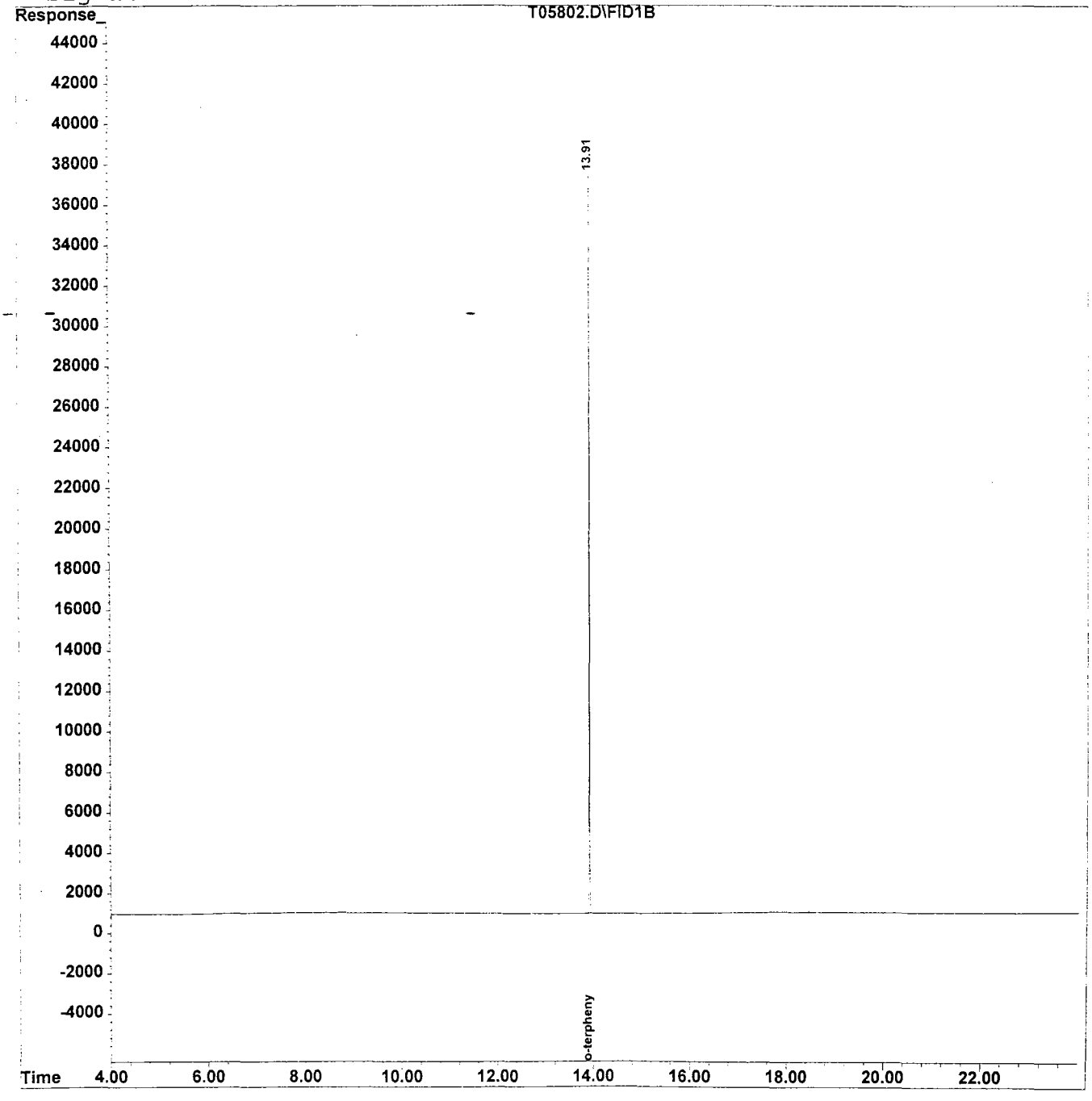
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report

Data File : C:\HPCHEM\1\DATA\980617\T05802.D Vial: 49
Acq On : 19 Jun 98 10:51 am Operator: Deinhardt
Sample : 3655.08 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : TPHCINT.E
Quant Time: Jun 22 8:02 1998 Quant Results File: TPH41.RES

Quant Method : C:\HPCHEM\1\METHODS\TPH41.M (Chemstation Integrator)
Title : TPHC Calibration 06/05/97 21 peaks
Last Update : Thu Jun 11 14:59:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPH41.M

Volume Inj. : 1 ul
Signal Phase : HP-5
Signal Info : 30m x 0.32mm



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 _____

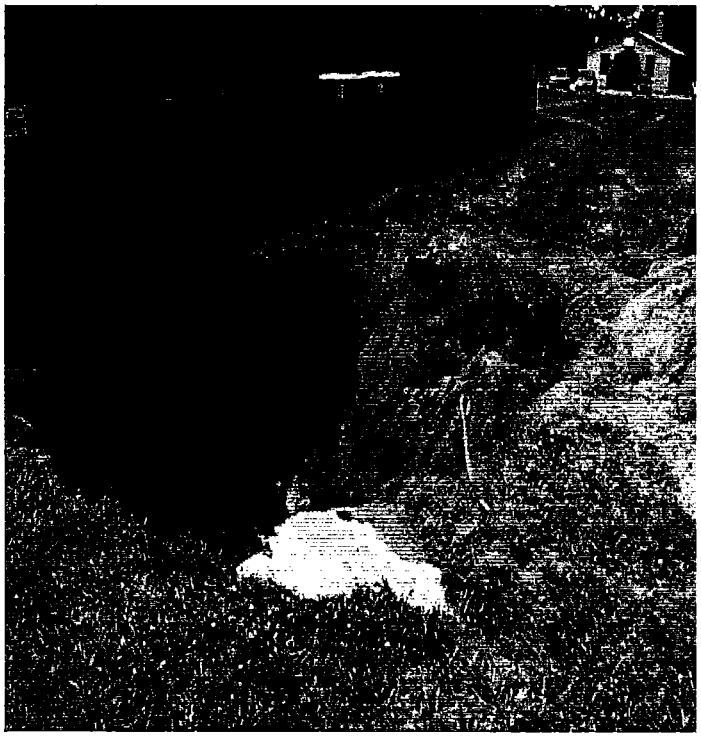
Date 7/6/04

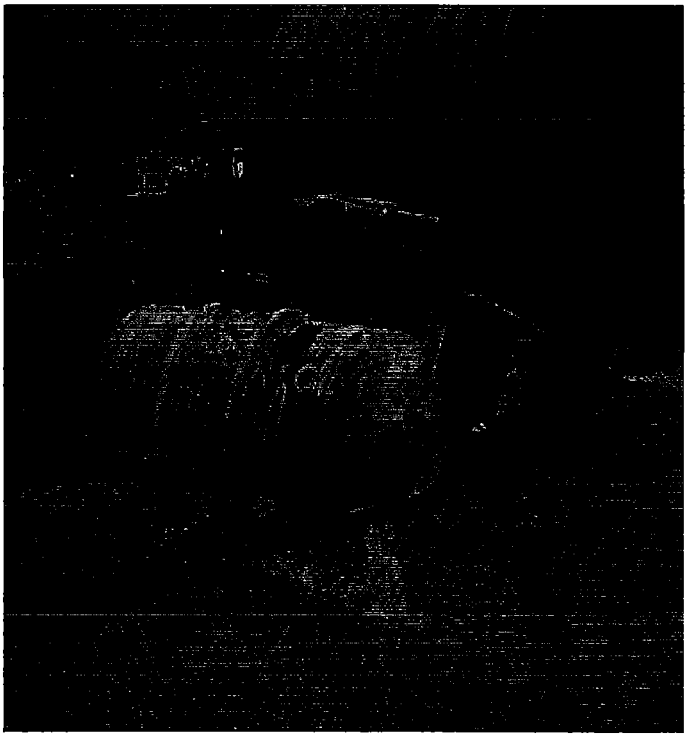
Laboratory Certification #13461

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

APPENDIX F

PHOTOGRAPHS





June 5, 1998

PHOTOGRAPHIC LOG

UST NO. 81533-136

Building 864A
Main Post-West
Fort Monmouth

SMC ENVIRONMENTAL SERVICES GROUP
Engineers, Managers, Scientists & Planners
VALLEY FORGE, PA.