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CONTRACT NO. N62472-94-D-0398	DELIVERY ORDER # 0013	ACTIVITY LOCATION Newport, Rhode Island
PROJECT TITLE Tank Farm 4 at NETC		
FROM: Foster Wheeler Environmental Corp/ Program QCM: Mark Miller		DATE January 28, 1999
TO COTR: C. Davis (2 copies)		DATE January 28, 1999

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ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
39b	SD-18, Records, Final Tank 48 Closure Assessment Report	M Miller			

**FINAL
TANK 48 CLOSURE ASSESSMENT REPORT
TANK FARM 4**

**NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND**

**REMEDIAL ACTION CONTRACT (RAC)
CONTRACT NO. N62472-94-D-0398
DELIVERY ORDER NO. 0013**

**Submitted to:
Northern Division
Environmental Branch, Code 18
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113-2090**

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JANUARY 1999

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1.0 SITE BACKGROUND

1.1 INTRODUCTION

Foster Wheeler Environmental Corporation, prepared this Tank 48 Closure Assessment Report summarizing the investigation and closure activities conducted at Tank 48, located at Tank Farm 4 at the Naval Education and Training Center (NETC) in Newport, Rhode Island. Foster Wheeler Environmental Corporation is under contract to the Navy to carry out closure activities at Tank 48. This Assessment has been written by Foster Wheeler Environmental Corporation to satisfy the Rhode Island Department of Environmental Management (RIDEM) Regulation DEM-DWM-UST05-93 Section 15.10, as detailed by the July 1992 RIDEM guidance document entitled: Department of Environmental Management UST Closure Assessment Guidelines. This report was prepared at the request of the United States Navy, Northern Division (NORTHDIV) of the Naval Facilities Engineering Command (NAVFAC) under Delivery Order No. 0013 of the Remedial Action Contract N62472-94-D-0398.

The primary objective of this Assessment is to provide sufficient evidence to conclude whether or not a leak or a release has occurred from Tank 48 and to provide documentation necessary to complete a permanent underground storage tank (UST) closure, consistent with RIDEM regulations. The Assessment objectives were met by providing the field screening data of the soil samples collected during excavation activities and an inspection of Tank 48 after the cleaning was completed and using this data to determine if oil stored in Tank 48 has impacted the environment.

B&R Environmental (as Halliburton NUS Corporation) conducted a preliminary assessment of Tank Farm 4 between October 1994 and March 1995, to evaluate the impacts of past activities on soil and groundwater in the immediate vicinity of selected on-site facilities, including twelve large USTs. That information serves as the supporting documentation necessary to complete permanent closures of the 12 USTs evaluated in the assessment, and provides general information about Tank Farm 4 for this report.

This section presents background information concerning Tank 48, including site location, site description, site history, and construction details of structures pertinent to this investigation. A summary of the site geology is also presented in this section. Finally, the technical approach and the investigation and analytical methods are discussed.

1.2 LOCATION

Tank 48 is located in Tank Farm 4 of NETC Newport, which is located in the Towns of Newport, Middletown, and Portsmouth, Rhode Island, approximately 25 miles southeast of Providence (Figure 1-1). Tank Farm 4 is situated at the northern portion of NETC-Newport, in Portsmouth (Figure 1-2). Tank 48 is located in the northern portion of Tank Farm 4 (Figure 1-3).

Tank Farm 4 is bordered by the Defense Highway to the north/northwest; Norman's Brook to the southwest; residential property to the southeast; and undeveloped woodlands to the north/northeast.

1.3 SITE DESCRIPTION

Tank Farm 4 is accessed from Defense Highway; it occupies approximately 90 acres and contains 12 UST's numbered 37 through 48. These tanks were used to store virgin heavy fuel oil (no. 6 bunker oil). Several tanks were reportedly also used to store no. 2 heating oil during the mid-1970s. Access to Tank Farm 4 is unrestricted. An unsecured gate is drawn across the entrance. A paved road leads into the tank farm, passing between the tanks in a loop.

On-site structures include the remnants of a building and a decommissioned electrical substation. Ground elevations across Tank Farm 4 range between 46 feet and 111 feet above mean low water level (mlw). Topography gradually slopes to the west/southwest, toward Narragansett Bay. The central portion of the

tank farm is vegetated with tall grass, dense brush, and trees. Dense brush and woodlands cover the perimeter areas of the tank farm. Brush at each tank has been cleared from work areas.

1.4 SITE HISTORY

In 1941, the U. S. Navy began construction of five tank farms at NETC to store fuel oils and other petroleum products to supply warships. Tank Farm 4 was used to store fuel oil from World War II until it was abandoned in the mid-1970s. For a brief period, from 1974 to 1978, three to four unidentified tanks were reportedly leased to Northeast Petroleum to store No. 2 heating oil. At the end of the lease period Northeast did not require the storage capacity and terminated the lease agreement. Northeast reportedly cleaned the tanks. Tank Farm 4 was not used for petroleum storage thereafter.

As a result of amendments to underground petroleum storage facilities regulations enacted by the State of Rhode Island in 1992, tanks used to store fuel oil also became subject to closure requirements. The Navy has filed an application with RIDEM to permanently close the tanks at Tank Farm 4 (see Appendix A).

1.5 PREVIOUS INVESTIGATIONS

B&R Environmental (as Halliburton NUS Corporation) conducted a preliminary assessment of Tank Farm 4 between October 1994 and March 1995, to evaluate the impacts of past site activities on soil and groundwater in the immediate vicinity of selected on site facilities, including twelve large UST's. This assessment report was the first investigation focusing on potential impacts to soil and groundwater from releases from the on-site UST's.

Previous investigation conducted at Tank Farm 4 from 1982 to 1992 focused on the reported disposal of tank bottom sludge's at the tank farms. Prior investigations are mentioned here for historical information purposes only.

An initial Assessment Study (IAS) was conducted by Envirodyne Engineers, Inc. in 1982 and 1983. Loureiro Engineering Associates conducted a Confirmation Study (CS) between 1983 and 1986. Results of the CS led to the conduct of a Phase 1 Remedial Investigation (RI) as part of the Department of Defense Installation Restoration (IR) Program. The RI included multi-media environmental sampling and analysis.

1.6 SUMMARY OF TANK 48 CONSTRUCTION

Tank 48 has a capacity of 60,000 barrels (standard petroleum), or approximately 2.5 million gallons. This tank was constructed in place, of reinforced concrete. Concrete in tank walls and roof has a nominal thickness of 12-inches, while the tank floor has a nominal thickness of 14-inches. Floor and wall joints were caulked at the time of construction. The outside diameter of the tank is 119 feet; the side measures 36 feet from the bottom of the footing to the top of the roof.

The Tank 48 construction sequence began by stripping the soil overburden, and then blasting and excavating between 10 and 30 feet of bedrock to create a steep walled bedrock "socket" in which the tank was built. The tank bottom was then placed 10 to 30 feet below the original bedrock surface as described in the following paragraph. Following tank completion, the annular space between the tank wall and the bedrock was backfilled with crushed bedrock and other locally derived material. Coarse to fine grained material were used, resulting in a general graded backfill with coarse bedrock at the bottom, and finer bedrock at the top. After backfill operations were completed, the tank top was covered with similar fill material.

The tank floor lies on a flat bedrock surface that has been leveled by filling depressions with cement. A 12-inch diameter reinforced concrete perforated drainpipe is embedded in gravel surrounding the base of the tank. Groundwater that infiltrates the pipe can be pumped out of the system, thus managing the water table elevation and limiting buoyant forces on the tank. The drain system is termed a ring-drain.

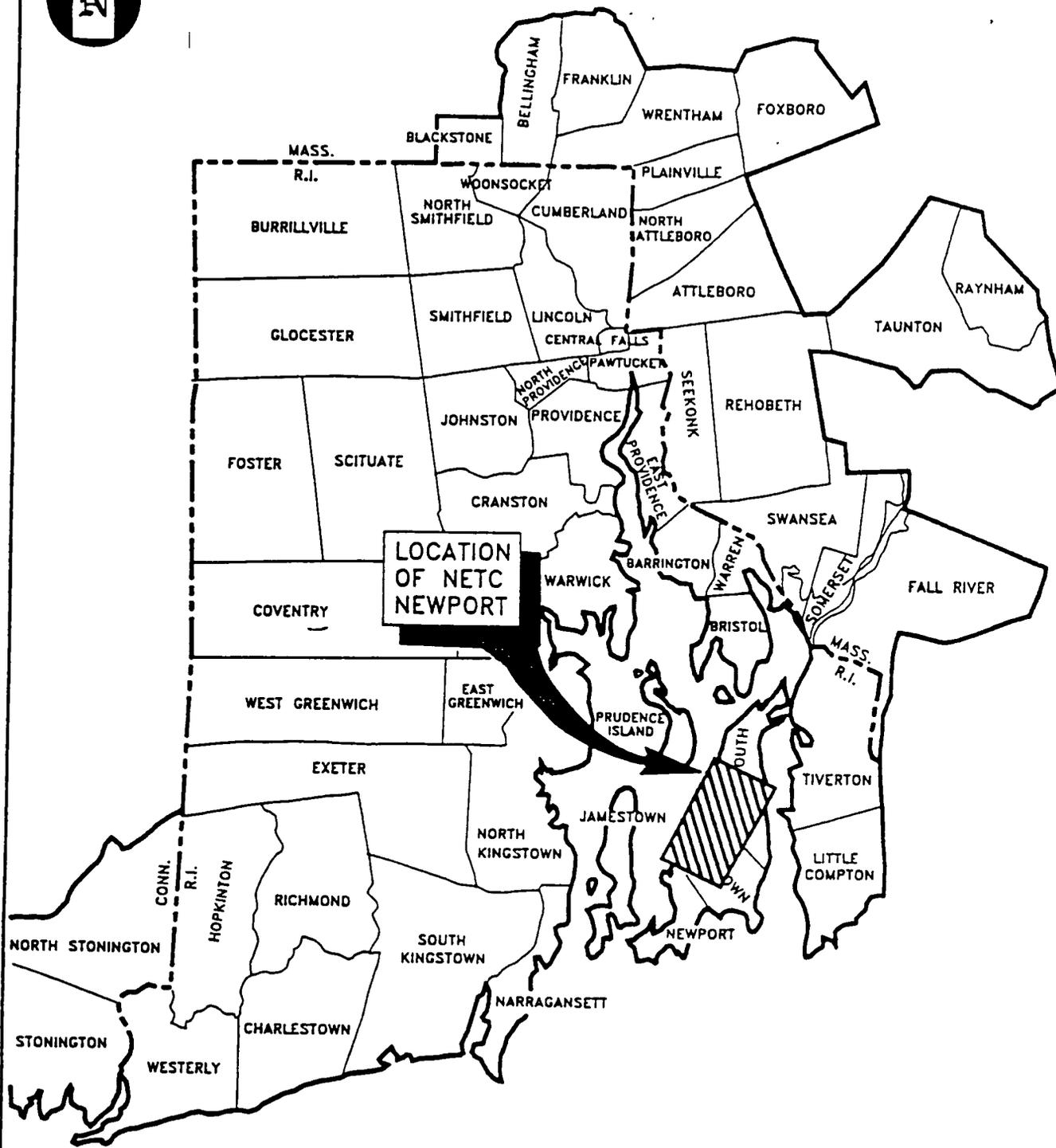
1.7 UNDERGROUND UTILITIES

Underground utilities consist of water, electricity, and telephone service. The exact location of the utilities could not be confirmed by base Dig safe services. Also, the existence of the telephone network shown on base maps could not be confirmed.

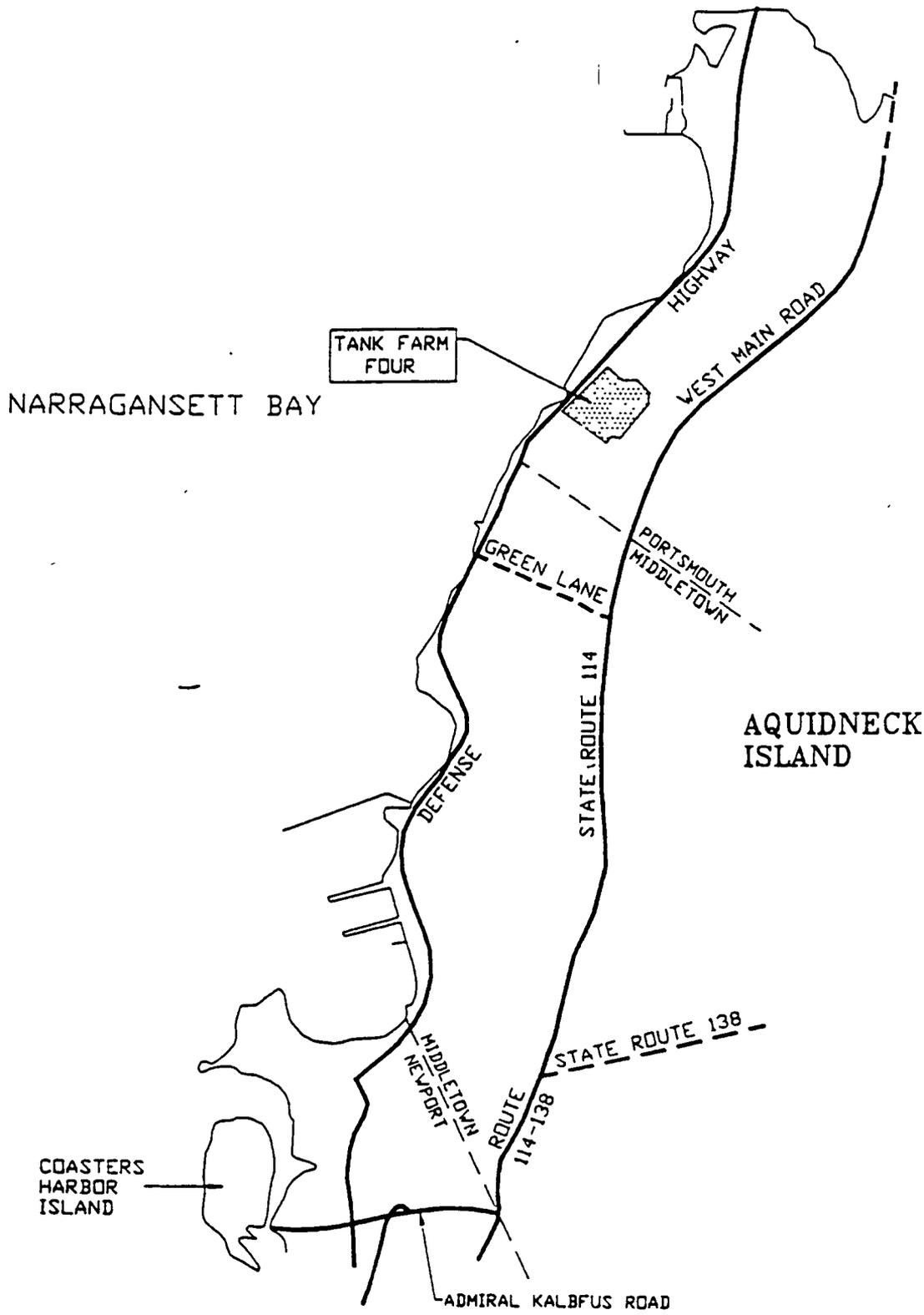
The utility lines to Tank 48 are insulated direct burial cable and are buried 5 to 7 feet below ground surface. Consequently, these utilities would be located above the ground water table and therefore would not act as a preferential migration pathway.

1.8 GEOLOGY

The NETC site, including Tank Farm 4, is located in the southeastern portion of Narragansett Basin. The basin is underlain by Pennsylvanian age non-marine sedimentary and metamorphic rocks, including the Rhode Island Formation. Bedrock at the site is reported to be a weathered shale; phyllites were also observed at borehole refusals. Overburden material consist of unconsolidated glacial sediments ranging from gravel to silt, as well as glacial till. Soil thickness at the tank farm is variable, and is estimated to be no more than 45 feet thick. Soil descriptions from preliminary Closure Assessment investigations indicate the presence of extensive fill materials in the vicinity of the tank because of the widespread disturbance of native soils during tank construction.



NETC LOCATION		FIGURE 1-1	
NETC - NEWPORT, RI			
TANK 48 CLOSURE ASSESSMENT REPORT			
DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	J. FORRELLI	DATE:	21 NOV 95
SCALE:		PROJECT NO.:	4643 CTD #196
		Brown & Root Environmental	
		<i>A Division of Halliburton NUS Corporation</i>	
		55 Jonesin Road Wilmington, MA 01887 (508)658-7899	

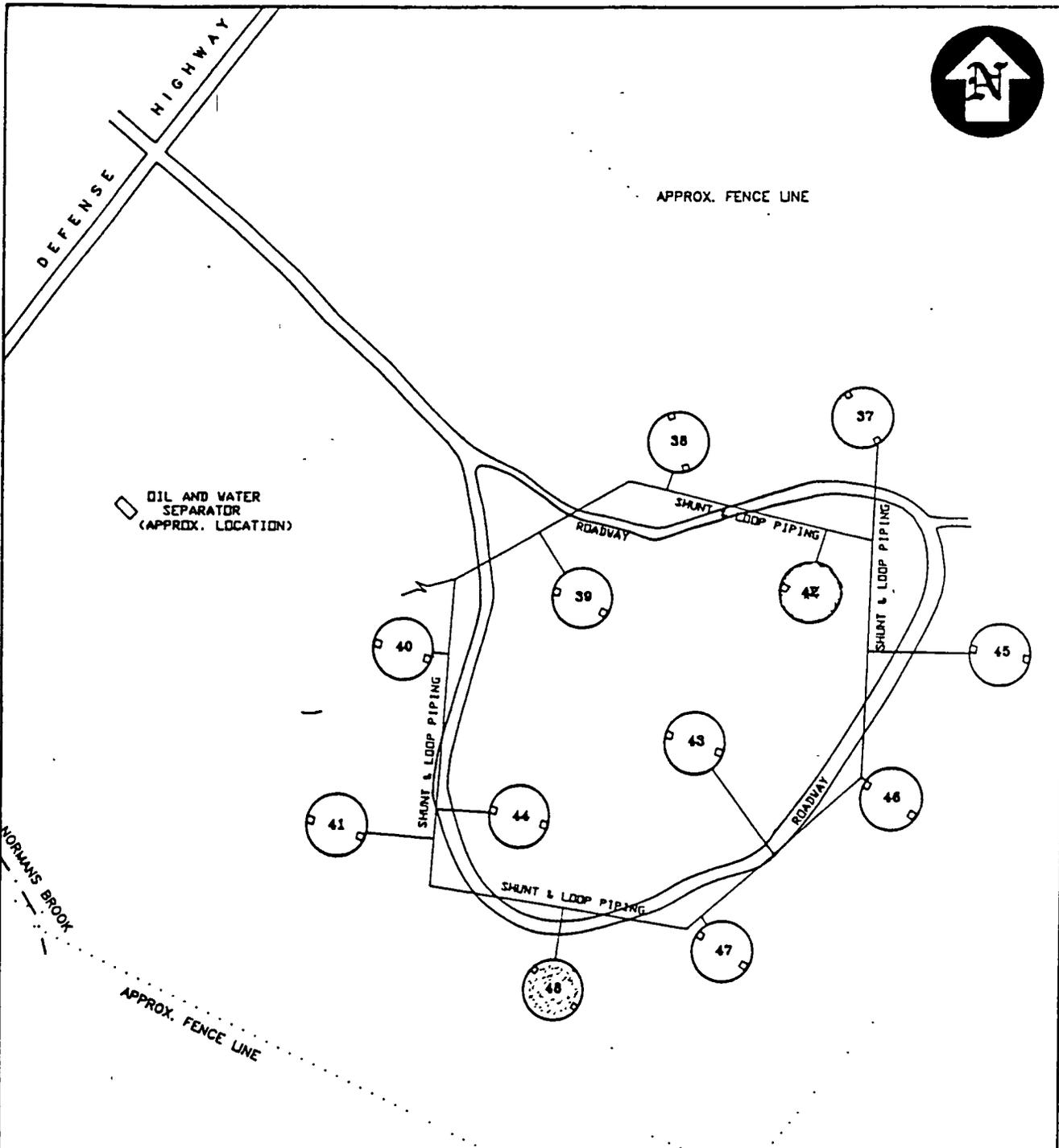


TANK FARM 4 LOCATION	
NETC - NEWPORT, RI	
TANK 48 CLOSURE ASSESSMENT REPORT	
DRAWN BY:	R.G. DEWSNAP
CHECKED BY:	J. FORRELLI
SCALE:	APPROX. 4800 FT.
REV.:	0
DATE:	21 NOV 95
PROJECT NO.:	4643 CTO #196:

FIGURE 1-2



Brown & Root Environmental
 A Division of Halliburton NUS Corporation
 55 Jonapin Road, Wilmington, MA 01887 (508)658-7899



NOTES:

- 1. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
- 2. PLAN NOI FOR DESIGN.

TANK FARM 4		FIGURE 1-3	
NETC - NEWPORT, RI			
TANK 48 CLOSURE ASSESSMENT REPORT		Brown & Root Environmental	
<small>DRAWN BY:</small> R. DEWSNAP	<small>REV.:</small> 0	<small>A Division of Halliburton NUS Corporation</small>	
<small>CHECKED BY:</small> J. FORRELLJ	<small>DATE:</small> 07 DEC 95	<small>55 Jonspin Road Wilmington, MA 01887 (508)558-7899</small>	
<small>SCALE:</small> 1"=300 FT. (APPROX.)	<small>PROJECT NO:</small> 4643 CTO #196		

2.0 CLOSURE ACTIONS

2.1 MOBILIZATION

Foster Wheeler Environmental Corporation was retained by the Navy to conduct tank closure activities at Tank Farm 4. Following the submittal of all pre-construction documents, Foster Wheeler Environmental Corporation commenced mobilization activities at Tank Farm 4 on May 20, 1996. Consistent with the tank closure work plan and specification, a support zone was set up, the site was cleared and grubbed, and temporary fencing was erected to encompass each tank work area.

Tank specific closure activities began on June 3, 1996, by excavating and exposing of the tank tops. Two entry ports (7 feet by 9 feet and 9 feet by 13 feet) were subsequently cut and removed from each tank top to provide access to the tank interior for personnel and equipment. Tank access lid excavation and access port cutting activities were completed by July 10, 1996. Subsequent to tank lid excavation activities, the soil cover for the pump room chamber associated with each tank was excavated and the chamber's lid was exposed.

Tank gauging was conducted by Foster Wheeler Environmental Corporation in June of 1996. For tank gauging activities, the total overall depth of liquids in each tank was measured. The liquid phase was assumed to be oil/water/sludge, and an attempt was made to determine the thickness, or depth, of each phase of material. Volume estimates for Tank 48 are presented below.

<u>PHASE</u>	<u>VOLUME(gallons)</u>
Oil/Sludge	32,145
Water	1,230,000
Total	1,262,000

A sample of the oil and sludge layer was analyzed for off-site disposal characterization purposes. The analytical results for the oil and sludge layer are included In Appendix B.

2.2 SOIL EXCAVATION

During excavation activities conducted to expose the tank tops and pump chamber, all soils were visually observed and screened using a flame-ionization detector (FID) The Foster Wheeler Environmental Corporation soil management plan for Tank Farm 4 activities states that all soils having a FID reading of less than 10 ppm are considered non-impacted and will be reused on site. None of the excavated soils registered FID readings greater than 10 ppm and will be reused in accordance with the soil management plan.

2.3 TANK CONTENTS REMOVAL AND STORAGE

Tank contents removal activities began on July 24, 1996 and were completed by August 13, 1996. The water phase was pumped from the tank directly into Tank 43 for treatment and discharge to the POTW. When all water was removed the oil/sludge layer was pumped to 21,000 gallon above ground frac tanks. The oil/sludge was pumped onto transporters and disposed of off site at an approved facility. Refer to Appendix C for disposal Bill of Ladings. All wastewater generated during the tank cleaning was also pumped to the wastewater treatment facility, including groundwater generated by ring drain pumping operations.

2.4 TANK CLEANING

Tank 48 interior surface cleaning operations commenced on August 14, 1996. The cleaning method employed consisted of washing surface with high pressure hot water utilizing a diluted water based industrial degreaser/cleaner solution. Pertinent features of the cleaning solution selected for use include operating temperatures up to 240 degrees Fahrenheit and operating nozzle pressures up to 3,000 psi. Degreaser vendor information may be found in Appendix D.

2.5 PIPING, EQUIPMENT, AND DEBRIS REMOVAL

During Tank 48 surface cleaning operations, all piping and equipment was dismantled and decontaminated with high pressure hot water. All decontaminated, salvageable materials were sent to an approved scrap yard. All other debris, including spent personnel protective equipment from tank cleaning operations is currently being disposed of off site at an approved disposal facility. Manifests for shipments to the facility are included in Appendix E.

2.6 TANK CLOSURE

On February 6, 1997, prior to tank inspection (see section 3.2) and after the pipes were cleaned and dismantled, blind flanges were installed at the pipes entrances into the tank. Three pipe entrances were identified and blind flanged. These entrances are identified as follows:

One 16-inch line extending from the bottom of the pump room into the bottom of the tank

One 6-inch line extending from the bottom of the pump room into the bottom of the tank

One 10-inch line extending from the top of the pump room into the top of the tank

All blind flanges were installed on the tank's exterior side, within the pump room, and the tank was ballasted with water until demolition.

2.7 TANK DEMOLITION

Chip samples were taken from the floor, column and walls of this tank on 7-14-97 and analyzed for TCLP Metals, VOC's, SVOC's and TPH. The results are included as Appendix J. 15 test pits were excavated around the perimeter of the Tank 48. The test pits were excavated to ensure that the fill located on and around the tank were not contaminated. The 15 Test Pits were equally spaced around the tank with Test Pit No.1 located on the North side of the tank. The Test Pits were excavated to the tank top and extended the same distance out from the tank. On 7-11-97 a composite sample was analyzed for VOC's, SVOC's, RCRA 8 Metals and TPH. The results are included in Appendix K. The tank had 15 feet of sand placed into the bottom and on 11-6-97 at 1423 the tank top was imploded. The remaining hole was backfilled with clean borrow material. A copy of the blast report is included as Appendix L.

3.0 TANK CONDITION

3.1 STRUCTURAL INSPECTION

On January 27, 1997, Mark Gouveia of Foster Wheeler Environmental Corporation inspected the tank's interior to assess the structural integrity of the tank. During the inspection excessive floor cracks were identified and documented in Appendix F. Excessive floor cracks were repaired with Sika 123 grout. Walls and columns appeared in good condition and therefore no repairs were required.

3.2 CLOSURE INSPECTION

Tank 48 was formally inspected on February 7, 1997. Participating in the inspection were:

RIDEM

Daniel Russell - Division of Waste Management
Paul Kulpa - Division of Waste Management
Pat Hogan - Division of Waste Management
Warren Angell - Division of Waste Management

NETC

Ray Roberge - Code 40E, Environmental

Foster Wheeler Environmental

Jon Cary - Site Manager
Roger Beaugard - Site Quality Control

During the inspection, all participants entered the tank's interior and viewed the cleaning surfaces. At the post inspection meeting, all participants agreed that the interior surface cleaning results were satisfactory.

3.3 PIPING INSPECTION

On February 6, 1997, an inspection was conducted for all pipe runs extending into the tank's interior from the pump room. Three pipe runs, each approximately ten feet long, were identified and inspected. The piping was inspected for cleanliness and the condition of each pipe run was noted.

Participating in the inspection were:

Mark Gouveia, Foster Wheeler Environmental- Site Engineer
Roger Beaugard, Foster Wheeler Environmental- Site QA/QC

Inspection observations are as follows:

One 10-inch pipe, located at the top of the pump room was identified and inspected. The pipe interior was clean and in good condition. No scaling, cracks, or holes were observed.

One 16-inch pipe, located at the bottom of the pump room was identified and inspected. The pipe interior was clean and in good condition. No scaling, or holes were observed.

One 6-inch pipe, located at the bottom of the pump room was identified and inspected. The pipe interior was clean and in good condition. No scaling, or holes were observed.

3.4 PUMP ROOM INSPECTION

On November 18, 1996 an inspection of the pump room was conducted for cleanness and over all condition of the walls and floors of the pump room.

Participating in the inspection are as follows:

Mark Gouveia, Foster Wheeler Environmental- Site Engineer

Roger Beauregard, Foster Wheeler Environmental- Site QA/QC

Jon Cary, Foster Wheeler Environmental- Site Manager

During the inspection all participants entered the pump room and viewed the clean surfaces. At the completion of the inspection all participants agreed that the pump room was clean and in good condition.

4.0 DESCRIPTION OF SOIL CONDITIONS SURROUNDING TANK 48

Drilling activities conducted as part of the Preliminary Closure Assessment were completed at Tank 48 on November 11, 1994 (HNUS 1995). At soil boring B-48, continuous split-barrel sampling was conducted from 25 feet below the ground surface (bgs) to refusal, at approximately 40 feet. The boring was completed as groundwater monitoring well MW-119.

The upper 25 feet of the boring was not examined. Soil sampling was initiated at 26 feet based on information suggesting that the water table was approximately this deep. It was presumed that petroleum releases above the water table would migrate vertically downward and be detected in soil and groundwater.

A generalized description of the subsurface follows. The interval from 25 to 27 feet bgs is comprised of sandy silt with few coarse gravels. From 27 to 31 feet bgs silty gravelly silt was observed. Fine and coarse soils in this interval were heavily impacted by petroleum. The contamination was prevalent throughout the remainder of the boring. A silty gravel layer with a trace of fine sand was observed from 31 to 37 feet bgs. Coarse, angular to subangular gravel comprised most of the sample interval. Few subrounded gravels were noted. The interval from 37 to 39.5 feet bgs is predominately comprised of coarse, angular to subangular gravel. Refusal was encountered at approximately 40 feet bgs. Bedrock reportedly consists of grey, highly weathered to competent, slightly metamorphosed shale with quartz lenses. Tank Farm 4-B-48 was not advanced into bedrock. Boring logs and soil descriptions are presented in Appendix G.

5.0 SOIL SAMPLE ANALYTICAL DATA SUMMARY

Consistent with the usage of Tank 48 as storage for virgin No. 6 fuel oil, the Preliminary Closure Assessment investigation at this UST focused on evaluating soils and groundwater for the presence of petroleum components. Soil samples were visually inspected for the presence of petroleum, screened for the presence of petroleum with PIDs and FIDs (as well as an Ensys Petro Risc petroleum field screening immunoassay kit), and subjected to laboratory analysis. Visibly stained soils were not field screened for TPH (using the immunoassay method) because the TPH concentration would exceed the 100 ppm standard, the highest concentration of TPH that could be detected by the screening analysis.

The following section describes the analytical data findings of the investigation activities conducted at this location. Subsurface soils were collected and sent to laboratories to be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbon (TPH) extractables, and eight RCRA metals.

From boring B-48 two subsurface soil samples were selected for laboratory analysis. Samples B482729 and B483941 were collected from depths of 27 to 29 feet bgs, and 39 to 41 feet bgs, respectively. They consisted of sandy gravelly silt, and gravel with minor amounts of silt and sand. Both of the subsurface soil samples were heavily contaminated with petroleum. The groundwater sample was collected from the midpoint of the well screen, approximately 36.5 bgs. Immiscible oil droplets were observed in the groundwater sample.

Positive laboratory analytical results are reported in Table 5-1 and presented on Figure 5-1. The averaged value of duplicate samples is reported in the summary table. In instances when samples have been reanalyzed the maximum detected concentration of each compound or metal is reported. Laboratory analytical results are presented in Appendix H. Results for groundwater are discussed in greater detail in section 6.0.

5.1 VOLATILE ORGANIC COMPOUNDS (VOCs)

Benzene was detected at a concentration of 260 micrograms per kilogram ($\mu\text{g}/\text{kg}$) in subsurface soil sample B482729. Benzene is a common organic chemical identified in fuel oil (Dragun 1988). No other volatile organic compounds were detected in this subsurface soil sample. No analytes exceeded detection limits in subsurface soil sample B483941

TABLE 5-1
POSITIVE CONTAMINANT DETECTION IN SOIL AND GROUNDWATER
TANK 48 CLOSURE ASSESSMENT REPORT
NETC NEWPORT, RHODE ISLAND

TABLE 5-1
POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER
TANK 48 SUMMARY
PRELIMINARY CLOSURE ASSESSMENT REPORT
TANK FARMS 4 & 5
NETC - NEWPORT, RHODE ISLAND

MEDIA	BORING NO. OR WELL NO.	DEPTH OR SCREEN INTERVAL	CONTAMINANT	CONCENTRATION	REGULATORY STANDARD(S)	EXCEEDS STANDARD(S) (YES/NO)
Soil	B48	27-29	Benzene	260 µg/kg	None	N/A
Soil	B48	27-29	2-Methylnaphthalene	1200 µg/kg	None	N/A
Soil	B48	27-29	Acenaphthene	290 µg/kg	None	N/A
Soil	B48	27-29	Dibenzofuran	210 µg/kg	None	N/A
Soil	B48	27-29	Fluorene	570 µg/kg	None	N/A
Soil	B48	27-29	N-Nitrosodiphenylamine	1100 µg/kg	None	N/A
Soil	B48	27-29	Phenanthrene	1400 µg/kg	None	N/A
Soil	B48	27-29	Anthracene	340 µg/kg	None	N/A
Soil	B48	27-29	Fluoranthene	120 µg/kg	None	N/A
Soil	B48	27-29	Pyrene	1200 µg/kg	None	N/A
Soil	B48	27-29	Benzo(a)anthracene	99 µg/kg	None	N/A
Soil	B48	27-29	Chrysene	150 µg/kg	None	N/A
Soil	B48	27-29	Bis(2-ethyhexyl)phthalate	84 µg/kg	None	N/A
Soil	B48	27-29	Benzo(a)pyrene	76 µg/kg	None	N/A

TABLE 5.1 (CONTINUED)
 POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER
 TANK 48 SUMMARY
 PRELIMINARY CLOSURE ASSESSMENT REPORT
 TANK FARMS 4 & 5
 NETC - NEWPORT, RHODE ISLAND
 PAGE 2

MEDIA	BORING NO. OR WELL NO.	DEPTH OR SCREEN INTERVAL	CONTAMINANT	CONCENTRATION	REGULATORY STANDARD(S)	EXCEEDS STANDARD(S) (YES/NO)
Soil	B48	27-29	Benzo(g,h,i)perylene	61 µg/kg	None	N/A
Soil	B48	27-29	Arsenic	10.4 mg/kg	None	N/A
Soil	B48	27-29	Barium	11.5 mg/kg	None	N/A
Soil	B48	27-29	Cadmium	1.8 mg/kg	None	N/A
Soil	B48	27-29	Chromium	12.6 mg/kg	None	N/A
Soil	B48	27-29	Lead	9.0 mg/kg	150 ppm (3) 400 ppm (4)	No
Soil	B48	27-29	TPH-Bunker Oil	5300 mg/kg	300 ppm (6) TPH	Yes
Soil	B48	39-41	2-Methylnaphthalene	72 µg/kg	None	N/A
Soil	B48	39-41	Acenaphthylene	43 µg/kg	None	N/A
Soil	B48	39-41	Acenaphthene	110 µg/kg	None	N/A
Soil	B48	39-41	Dibenzofuran	100 µg/kg	None	N/A
Soil	B48	39-41	Fluorene	240 µg/kg	None	N/A
Soil	B48	39-41	Phenanthrene	590 µg/kg	None	N/A
Soil	B48	39-41	Anthracene	290 µg/kg	None	N/A
Soil	B48	39-41	Fluoranthene	93 µg/kg	None	N/A
Soil	B48	39-41	Pyrene	1300 µg/kg	None	N/A
Soil	B48	39-41	Benzo(a)Anthracene	92 µg/kg	None	N/A

W/5295063F

TABLE 5-1 (CONTINUED)
POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER
TANK 48 SUMMARY
PRELIMINARY CLOSURE ASSESSMENT REPORT
TANK FARMS 4 & 5
NETC - NEWPORT, RHODE ISLAND
PAGE 3

MEDIA	BORING NO. OR WELL NO.	DEPTH OR SCREEN INTERVAL	CONTAMINANT	CONCENTRATION	REGULATORY STANDARD(S)	EXCEEDS STANDARD(S) (YES/NO)
Soil	B48	39-41	Chrysene	160 µg/kg	None	N/A
Soil	B48	39-41	Bis(2-ethylhexyl)phthalate	640 µg/kg	None	N/A
Soil	B48	39-41	Benzo(a)pyrene	79 µg/kg	None	N/A
Soil	B48	39-41	Indeno(1,2,3-cd)pyrene	45 µg/kg	None	N/A
Soil	B48	39-41	Benzo(g,h,i)perylene	64 µg/kg	None	N/A
Soil	B48	39-41	Arsenic	10.6 mg/kg	None	N/A
Soil	B48	39-41	Barium	11.5 mg/kg	None	N/A
Soil	B48	39-41	Cadmium	1.7 mg/kg	None	N/A
Soil	B48	39-41	Chromium	15.1 mg/kg	None	N/A
Soil	B48	39-41	Lead	6.1 mg/kg	150 ppm (3) 400 ppm (4)	No
Soil	B48	39-41	TPH-Bunker Oil	3000 mg/kg	300 ppm (6) TPH	Yes
Groundwater	MW119	33.5-38.5	Naphthalene	1 µg/L	None	N/A
Groundwater	MW119	33.5-38.5	2-Methylnaphthalene	7 µg/L	None	N/A
Groundwater	MW119	33.5-38.5	Dibenzofuran	1 µg/L	None	N/A
Groundwater	MW119	33.5-38.5	Fluorene	2 µg/L	None	N/A
Groundwater	MW119	33.5-38.5	Phenanthrene	3 µg/L	None	N/A
Groundwater	MW119	33.5-38.5	Pyrene	2 µg/L	None	N/A

**TABLE 5-1 (CONTINUED)
 POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER
 TANK 48 SUMMARY
 PRELIMINARY CLOSURE ASSESSMENT REPORT
 TANK FARMS 4 & 5
 NETC - NEWPORT, RHODE ISLAND
 PAGE 4**

MEDIA	BORING NO. OR WELL NO.	DEPTH OR SCREEN INTERVAL	CONTAMINANT	CONCENTRATION	REGULATORY STANDARD(S)	EXCEEDS STANDARD(S) (YES/NO)
Groundwater	MW119	33.5-38.5	Mercury	0.42 µg/L	2 µg/L (1), (2), (5)	No

Legend:

ppm-parts per million
 µg/L-micrograms per liter
 mg/kg-milligrams per kilogram
 µg/kg-micrograms per kilogram
 N/A-Not Applicable

Notes:

- 1) U.S. EPA Drinking Water Regulations and Health Advisories, EPA 822-R-94-001, May 1994.
- 2) State of Rhode Island Department of Environmental Management, Rules No. 12-100-006, Rule and Regulations for Groundwater Quality, Section 10, July 1993.
- 3) Rhode Island Department of Health - Environmental Lead Program, [R23-24.6-PB], Rules and Regulations for Lead Poisoning Prevention, February 1992 (with amendments).
- 4) OSWER Directive 9355.4-12- Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities.
- 5) 40 CFR Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart F, Sections 264.92 - 264.94, July 1991.
- 6) State of Rhode Island criteria established for clean-up of TPH in non-sensitive environmental areas.

W5295063F

TABLE 5-1 (CONTINUED)
POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER
TANK 48 SUMMARY
PRELIMINARY CLOSURE ASSESSMENT REPORT
TANK FARMS 4 & 5
NETC - NEWPORT, RHODE ISLAND
PAGE 5

MW119 was installed in boring location B48.

Sample values were averaged with applicable duplicates.

In cases where samples were reanalyzed, the maximum detected concentration was reported.

- For comparative purposes only, mg/kg unit designations and ppm unit designations were considered to be equivalent.
- For comparative purposes only, Regulatory Standard unit designations have been converted to the unit of the detected contaminant. Regulatory Standards are typically expressed in milligrams per liter (mg/l).

**FIGURE 5-1
TANK 48 DATA SHEET
TANK 48 CLOSURE ASSESSMENT REPORT
NETC NEWPORT, RHODE ISLAND**

ANALYTICAL RESULTS

TF4-MW119
GR. ELEV.=62.9 MLW

DEPTH (IN FEET) BELOW GROUND SURFACE

SOIL TPH IMMUNDASSAY
FIELD SCREENING
(PPM)

SOIL TPH LAB
METHOD SV/8015
(MG/KG)

GROUNDWATER VOCs
LAB METHOD SV/82-40
(UG/L)

GROUNDWATER SVOCs
LAB METHOD SV/82-70
(UG/L)

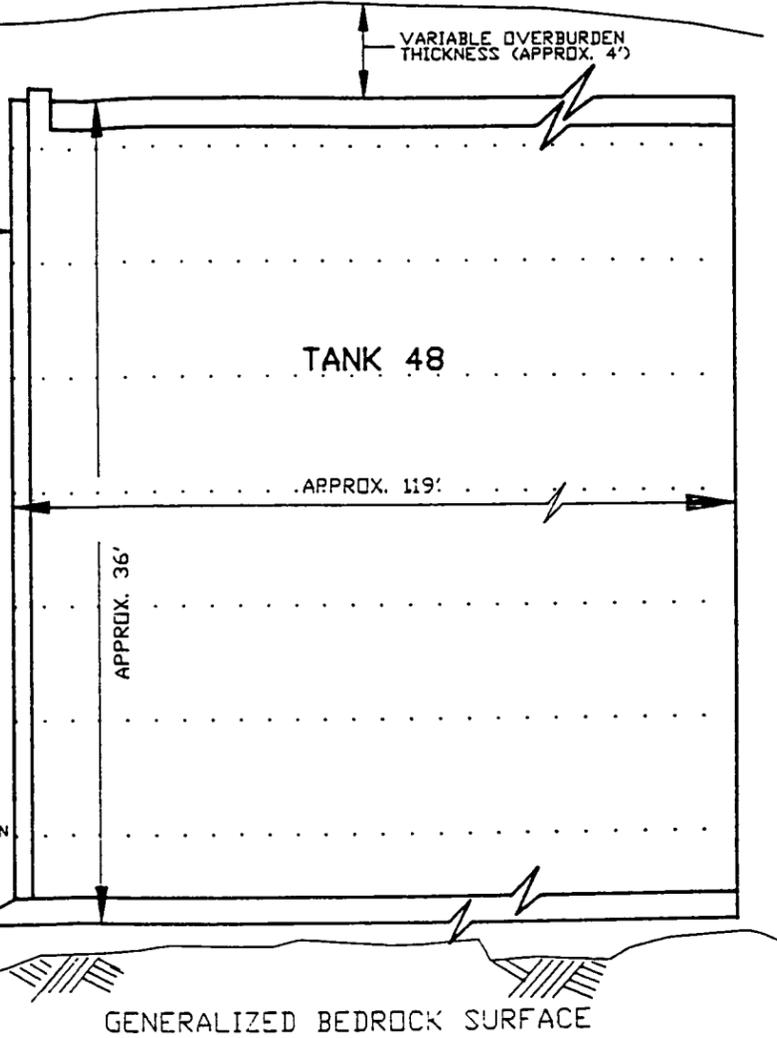
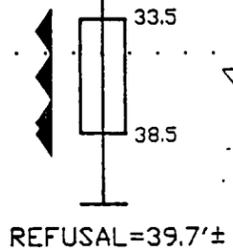
GROUNDWATER RCRA8 METALS
LAB METHOD CLP INORGANICS
SDV ILMD3.0 (UG/L)

SOIL SAMPLES FOR TPH-FIELD SCREENING ANALYSIS WERE NOT COLLECTED -
SOIL WAS VISUALLY CONTAMINATED WITH PETROLEUM.

5,300 (Bunker Oil)	ND	NAPHTHA- LENE (1)	MERCURY (0.42)
3,000 (Bunker Oil)		2-METHYL- NAPHTHA- LENE (7)	
		DIBENZO- FURAN (1)	
		FLUORENE (2)	
		PHENAN- THRENE (3)	
		PYRENE (2)	

ODOR
PI

PID 3.7 PPM
PID 10 PPM
PID 10 PPM
PID 15 PPM
PID 15 PPM



LEGEND

- WATER TABLE (FEET BELOW GROUND SURFACE)
- MONITORING WELL
SCREEN DEPTH (FEET BELOW GROUND SURFACE)
- UG/L MICROGRAMS PER LITER
- PPM PARTS PER MILLION
- MG/KG MILLIGRAMS PER KILOGRAM
- MG/L MILLIGRAMS PER LITER
- TPH TOTAL PETROLEUM HYDROCARBON
- VOCs VOLATILE ORGANIC COMPOUNDS
- SVOCs SEMI-VOLATILE ORGANIC COMPOUNDS
- TF4 TANK FARM 4
- MW101 GROUNDWATER MONITORING WELL NO.
- MLW MEAN LOW WATER
- PID PHOTOIONIZATION DETECTOR-SCREENING OF SAMPLE PRIOR TO REMOVING FROM SPLIT BARREL SAMPLER
- ND NOT DETECTED
- PI PETROLEUM IMPACTED MEDIA

DATA SHEET - TANK 48		
NETC-NEWPORT, RI		
PRELIMINARY CLOSURE ASSESSMENT REPORT		
DRAWN BY: P.G. DEWSNAP	REV.: 1	
CHECKED BY: J.B. HOLDEN	DATE: 5 JUN 95	
SCALE: 1" = 8' (APPROX.)	FILE NO.: C:\DWG\NETC\FIG_3-12	

FIGURE 5-1

Halliburton NUS CORPORATION

55 Jonspin Road Wilmington, MA 01887

(508)658-7899

5.2 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)

Sixteen semi-volatile organic compounds ranging in concentration from 43 micrograms per kilogram ($\mu\text{g}/\text{kg}$) to 1400 $\mu\text{g}/\text{kg}$ were detected in subsurface soil samples B482729 and B483941.

2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)pyrene, benzo(g,h,i)perylene, and bis(2-ethylhexyl)phthalate were detected in both samples, at concentrations ranging from 61 $\mu\text{g}/\text{kg}$ to 1400 $\mu\text{g}/\text{kg}$. N-nitrosodiphenylamine was detected in subsurface soil sample B482729 at a concentration of 1100 $\mu\text{g}/\text{kg}$. Acenaphthylene and indeno(1,2,3-cd)perylene were detected in subsurface soil sample B483941 at a concentration of 43 $\mu\text{g}/\text{kg}$ and 45 $\mu\text{g}/\text{kg}$, respectively.

All, with the exception of dibenzofuran, bis(2-ethylhexyl)phthalate, and N-nitrosodiphenylamine, are common organic chemicals identified in fuel oil (Dragun 1988). They are also commonly referred to as polynuclear aromatic hydrocarbons (PAHs), and are homocyclic compounds. PAHs are typically derived from coal tar (Shreve and Brink 1977; Morrison and Boyd 1983), and as a residual of incomplete burning of fossil fuels. These compounds are also constituents of heavy oils (Dragun 1988).

Dibenzofuran is also a derivative of coal tar, but is a heterocyclic compound (Morrison and Boyd 1983; Sax and Lewis 1987). N-nitrosodiphenylamine has been used in the rubber industry as a vulcanizing retarder (Clayton and Clayton 1981). The source of this compound in B482729 has not been evaluated. Bis(2-ethylhexyl)phthalate represents a compound typically used as a plasticizer in the manufacturing of PVC and other plastics (Howard 1989; Sittig 1981), including plastics used in analytical laboratories.

5.3 RCRA METALS

Arsenic, barium, cadmium, chromium, and lead were detected in both of the subsurface soil samples collected from boring B48. Concentrations ranging from 1.7 to 15.1 milligrams per kilogram (mg/kg). The source of these metals has not been evaluated. However, metals are not typically associated with storage of virgin fuel oil.

5.4 TOTAL PETROLEUM HYDROCARBONS (TPH)

High TPH concentrations ranging from 3000 to 5300 mg/kg were detected by laboratory analysis in subsurface soil samples B483941 and B482729, respectively.. Both detections were identified as bunker oil.

Subsurface soil samples for TPH immunoassay field screening analysis were not collected due to the obvious presence of petroleum contamination in both of the samples.

6.0 SITE GROUNDWATER DESCRIPTION

Water levels in Tank Farm 4 monitoring wells were measured to a hundredth-of-a-foot accuracy using an electronic measuring device. The relative elevation of each monitoring well was determined by a land surveyor registered in the State of Rhode Island, and the depth of the water table was established using measurements made from November 2 to 29, 1994. From these data, groundwater flow direction was characterized and a water table map (Figure 6-1) was created for Tank Farm 4. Groundwater generally flows west-southwest toward Narragansett Bay and is slightly affected by Norman's Brook.

MW-119 is approximately 5 feet from the perimeter of Tank 48 and was installed on the hydraulically downgradient side of tank. It is assumed that petroleum resulting from a release would accumulate in the ring drain. A well installed in the ring drain would therefore serve as a monitoring point for a release of petroleum product from this tank. The MW -119 well screen was set 34 to 39 feet bgs to correspond with the estimated depth of the ring drain, based on available information, the ring drain typically extends from the bedrock surface to a point approximately 1 to 2 feet above the tank bottom. Refusal was interpreted as the bedrock surface. Therefore the ring drain was estimated to be approximately 39 feet bgs. The well boring log is presented in Appendix G.

The depth to groundwater table was 13.87 feet bgs on May 10, 1996. Seasonal and precipitation effects on groundwater levels have not been evaluated at the site. Therefore, this single measurement may not be representative of the actual groundwater table.

Groundwater samples were collected from MW-119 and were analyzed for VOC's, SVOC's, and the eight RCRA metals. The results of these are summarized below and presented in Table 5-1 and Appendix H.

6.1 VOLATILE ORGANIC COMPOUNDS (VOC's)

No analytes exceeded detection limits in the groundwater sample collected from MW-119.

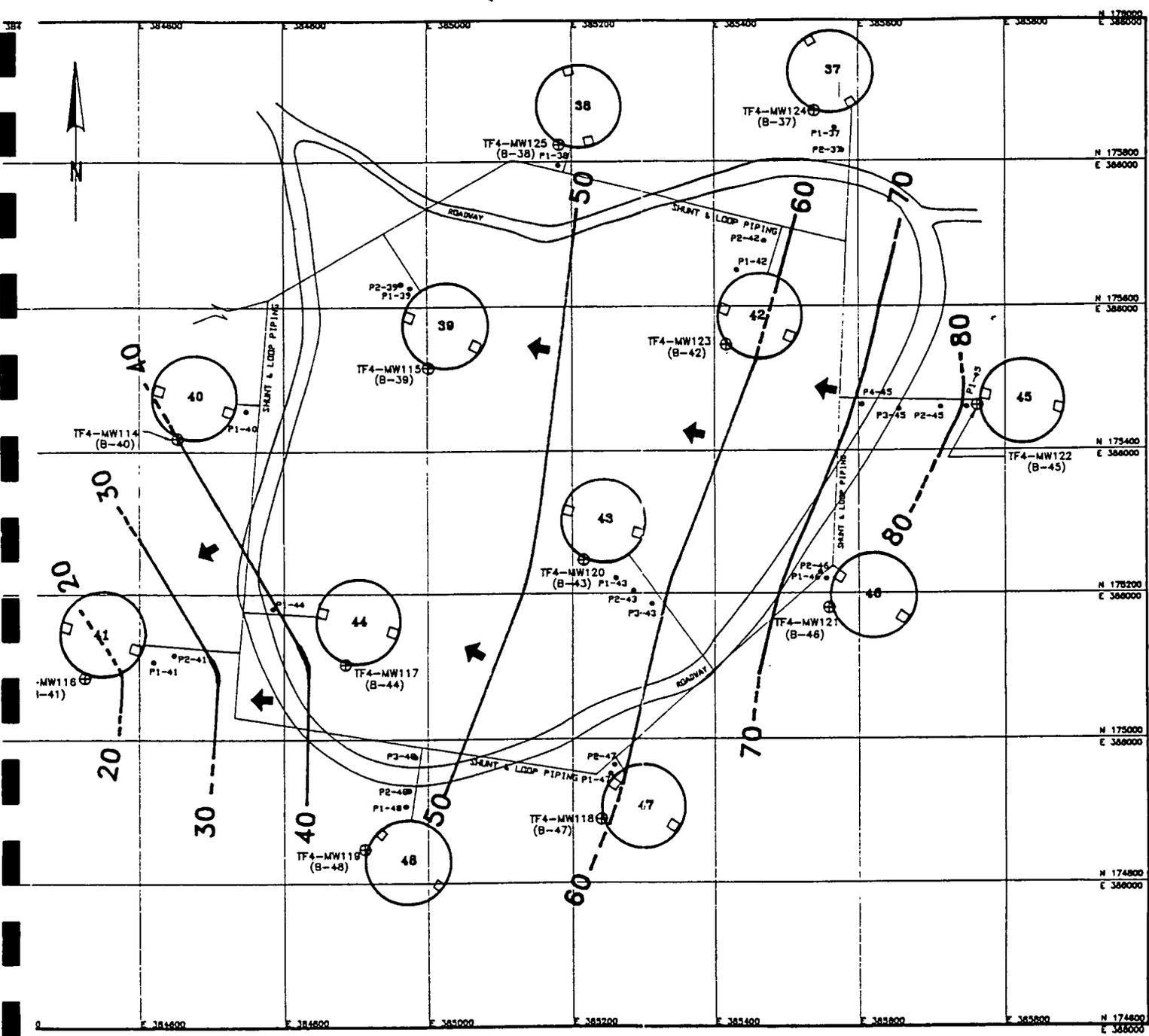
6.2 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC's)

Six semi-volatile organic compounds, ranging in concentration from 1 microgram per liter ($\mu\text{g/L}$) to 7 $\mu\text{g/L}$ were detected in the MW-119 groundwater sample. These compounds included: naphthalene, 2-methylnaphthalene, dibenzofuran, fluorene, phenanthrene, and pyrene.

6.3 RCRA 8 METALS

Mercury was detected at a concentration of 0.42 $\mu\text{g/L}$ in the groundwater sample collected from MW-119. No other metals exceeded detection limits in the sample. The source of this contaminant has not been evaluated.

FIGURE 6-1
TANK FARM 4 GROUNDWATER CONTOURS
TANK 48 CLOSURE ASSESSMENT REPORT
NETC NEWPORT, RHODE ISLAND



TANK FARM 4

MONITORING WELLS AT TANK FARM #4	
NETC-NEWPORT, RI	
PRELIMINARY CLOSURE ASSESSMENT REPORT	
DRAWN BY: R G. DEWSNAP	REV.: 0
CHECKED BY K. JALKUT	DATE: 5 JUN 95
SCALE: 1" = 200'	FILE NO. C:\DWG\NETC\TNK_FM4.DWG

FIGURE 6-1


Halliburton NUS CORPORATION
 55 Janspin Road Wilmington, MA 01887
 (508)658-7899

7.0 ANALYTICAL SAMPLE COLLECTION AND HANDLING

Soil and groundwater samples were collected and analyzed to Naval Facilities Engineering Services Center requirements. All environmental samples collected as part of this tank closure were stored and shipped in accordance with the chain-of-custody procedures outlined in the Quality Assurance/Quality Control Plan.

Sample chain-of-custody forms are presented in Appendix I. Sample analyses were conducted by Ceimic Laboratories of Narragansett, Rhode Island and Nytest Environmental of Port Washington, New York. Analytical results are presented in Appendix H.

8.0 SITE WELLHEAD PROTECTION STATUS

Tank 48 is not within a designated wellhead protection area.

9.0 SITE GROUNDWATER CLASSIFICATION AND USE

The groundwater beneath Tank 48 is classified by RIDEM as "GA". GA classified groundwater is primarily located in recreational or agricultural areas and, in areas of sources of potable water. Groundwater classified as GA is categorized as or presumed to be suitable as drinking water without treatment.

Tank Farm 4 and all land hydraulically downgradient of the tank farm is owned by the federal government. A review of Newport Water Department records by HNUS in March 1995 indicates that no private or public potable water wells are located on or in the vicinity of the site.

10.0 POTENTIAL RECEPTORS

The potential receptor of a release from Tank 48 is Narragansett Bay. Tank Farm 4 groundwater generally flows west-southwest toward Narragansett Bay and shallow groundwater in the southern portion of the site may flow toward Norman's Brook. Petroleum dissolved in and migrating with groundwater may discharge to both of these surface waters. No private wells or basements that could be affected by a release from Tank Farm 4 are known to exist (see section 9.0).

11.0 FINDINGS AND CONCLUSIONS

11.1 FINDINGS

Tank 48 has been emptied of its contents, cleaned, demolished, and backfilled. This tank has passed both the Navy structural integrity inspection and RIDEM post-closure inspection for completeness of oil removal. Following the inspections the tank was demolished and backfilled to final closure.

A petroleum sheen was observed on soils collected 34 to 40 feet bgs, and on the interpreted bedrock surface, at refusal.

Laboratory analytical results of the site soils and groundwater collected immediately adjacent to Tank 48 were evaluated with respect to one or more of the following regulatory standards:

Rhode Island Department of Health Lead Poisoning Prevention Standard

U.S. EPA Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities

Rhode Island Department of Environmental Management (RIDEM) Groundwater Quality Standard and Preventative Action Limits

U.S. EPA Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs)

RCRA Groundwater Protection Standard

Rhode Island Department of Environmental Management (RIDEM) Action Levels for TPH in Soil

Regulatory standards have not been proposed or established for benzene concentrations in soil. Similarly, none have been established for any of the semi-volatile organic compound detections in the subsurface soil samples B482729 and B483941. There are no known standards for concentrations of arsenic, barium, cadmium, and chromium in soil.

The Rhode Island Department of Health "lead-free" standard (1992) for soil was used in the evaluation of the detected lead result in subsurface soil samples B482729 and B483941. This standard, 150 milligram per kilogram (mg/kg), is designed for the protection of children in a residential setting. Because anticipated future land use of Tank Farm 4 is not for residential purposes, this standard is used for comparative purposes only.

The U.S. EPA guidance (1994a) for CERCLA Sites and RCRA Corrective Action Facilities was also used to evaluate the detected lead result. This directive recommends a 400 ppm screening level for lead in soil designated for residential land use. For the primary reason stipulated above, this guidance is also used for comparative purposes only.

The B482729 and B483941 soil lead concentrations (9.0 mg/kg and 6.1 mg/kg) do not exceed either of these standards.

The RIDEM established an action level of 300 milligrams per kilogram (mg/kg) TPH in soil for non-sensitive environments. The Tank Farm 4 property may not represent a sensitive environment because no wetlands are identified on the property; no water supply wells are located downgradient of the tank farm; and marine areas are located more than 1,000 feet from the tank farm, beyond the area likely to be impacted by a release. TPH detections of 5300 mg/kg and 3000 mg/kg in subsurface soil samples B482729 and B483941 exceed the RIDEM action level. Where detected, VOC, SVOC, and metals soil concentrations were below applicable standards.

The mercury detection in the MW-119 groundwater sample was evaluated with respect to MCLs and RIDEM groundwater standards (EPA 1994b; RIDEM 1993). The Federal and State of Rhode Island regulatory standard for mercury in groundwater is 2ug/l. In the MW-119 groundwater sample, mercury was detected at a concentration of 0.42 ug/L. This concentration does not exceed either of the standards.

The groundwater at this site is not used for potable purposes, and as such, is not subject to the provisions of SDWA.. However, lacking appropriate and relevant regulatory requirements for this medium, the SDWA MCLs for chemicals detected in groundwater are used for comparison. The RIDEM groundwater standard is applicable to groundwater classified as "GAA" or "GA". These classifications represent groundwater resources suitable for drinking water use without treatment.

Groundwater beneath Tank Farm 4 has been assigned a "GA" classification, which identifies it as a groundwater resource that is suitable for drinking water use (RIDEM1993). When available, RIDEM GA Groundwater Standards are used for comparison. In cases where RIDEM has not established standards, SDWA "MCL's for Chemicals Detected in Groundwater" are used for comparison.

The mercury concentration in the groundwater sample collected from MW-119 was also compared to the RCRA groundwater protection standard (U.S. EPA 1991). This standard, 2 µg/L, is designed to ensure that hazardous constituents detected in the groundwater from a regulated unit do not exceed specified concentration limits. The mercury concentration does not exceed the RCRA groundwater protection standard.

11.2 CONCLUSIONS

Based on an evaluation of the above data, a petroleum release did occur at Tank 48, identified as No. 6 fuel oil. The presence of petroleum saturated soil at depth, from 27 to 29 feet bgs and from 39 to 41 feet bgs adjacent to the tank and immiscible oil droplets in groundwater samples in the vicinity of the tank, indicate that leaks of fuel oil from the tank have likely occurred.

Heavier oils like No. 6 fuel oil are less soluble and will tend to migrate through the aquifer as free product, but are relatively immobile due to high viscosity and low solubility. Groundwater is probably not a significant migration pathway for heavy fuel oil compounds released from the tank.

A site investigation should be conducted in accordance with RI UST regulations.

REFERENCES

REFERENCES

Halliburton NUS Corporation, 1995b. "Preliminary Closure Assessment Report of Tank Farms 4 and 5, Naval Education and Training Center, Newport Rhode Island" March 1995.

Halliburton NUS Corporation, "Site Investigation Report Tanks 38, 42, 45, and 48 Tank Farm 4, Naval Education and Training Center, Newport Rhode Island" February 1996.

Rhode Island Department of Environmental Management, 1992. "UST Closure Assessment Guidelines"

Brown and Root Environmental "Tank 48 Closure Assessment Report Tank Farm 4, Naval Education and Training Center, Newport, Rhode Island" December 1995.

Rhode Island Department of Environmental Management, 1993. "Rules and Regulations for Groundwater Quality", Rule No. 12-100-006

Rhode Island Department of Health, 1992. "Rules and Regulations for Lead Poisoning Prevention, R23-24.6-PB"

U.S. EPA, 1994b. "Drinking Water Regulations and Health Advisories", EPA 822-R-94-001

APPENDIX A
PERMANENT CLOSURE APPLICATION FOR UNDERGROUND STORAGE FACILITIES

CERTIFICATION BY TANK OWNER

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel property gather and evaluate the infomation submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information, submitted is, to the best of my knowledge and belief, true, accurate, and completed. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME OF OWNER: (Please print) J.C. Wyman, Capt, CEC, USN
SIGNATURE: _____
TITLE Director for Public Works
ADDRESS: NETC, PWD, Bldg 1, 1 Simonpietri Dr, Newport, RI 02841
TELEPHONE: 841-3841

NOTIFICATION OF LOCAL FIRE DEPARTMENT

The authorization signature of the local fire department below indicates that the local fire officials have been notified that you are planning to close an underground storage tank at the above location. YOU MUST NOTIFY THE LOCAL FIRE DEPARTMENT OF THE EXACT CLOSURE DATE AFTER YOU HAVE CONFIRMED THIS DATE WITH DEM.

Authorized Local Fire Department Representative	Date
<u>NETC Fire Department</u> Name of Local Fire Department	<u>841-2225</u> Telephone Number

This signature dose not serve as notice to the town, dose not guarantee town approval, and dose not relieve you of your obligations to other applicable town officials. Any violation, deficiency or requirement which may have been overlooked is also subject to correction under the provision of any applicable code.

DEM
DIVISION OF BUSINESS AFFAIRS

A. NO. OF TANKS _____ X 75.00 = _____
 B. NO. OF TANKS _____ X 35.00 = _____
 TOTAL FEE = _____ (A) + _____ (B) = _____
 FULL PAYMENT RECEIVED ON _____ (DATE)

SUPPLEMENT TO THE PERMANENT CLOSURE APPLICATION FOR USTs

This supplement must accompany all Permanent Closure Applications for USTs (as revised 2/93 and earlier) received by the Rhode Island Department of Environmental Management on or after August 25, 1993.

FACILITY NAME: Tank Farm 4

FACILITY ADDRESS: NETC, PWD Bldg 1
1 Simompietri Drive
Newport, RI 02841

PROPOSED CLOSURE DATE: 10 June 96

FACILITY REGISTRATION #: 15007

* Please note that the UST registration fee has increased to \$50.00 per tank. Payment of all unregistered tanks must be submitted with this application.

1. Has a check in the total amount of \$50.00 per unregistered tank been submitted with this application? N/A
(Previously submitted with original application)
2. In the space provided below, please draw an informal sketch of the location of each UST to be permanently closed. Number each tank to coincide with the tank numbers on your UST registration form.

(See attached site plan)

(Note: for questions 3-7 please refer to Tank Farm 4 Work Plan)

3. Describe the method to be used to empty the tank(s) prior to excavation. _____
4. Describe the method to be used to remove the tank from excavation. _____
5. Describe the method(s) to be used to properly and safely vent the tank(s) and properly make openings in the tank(s).

* NOTE: Appropriate venting must be carried out both before the cutting of any tank and before off-site transport of any tank which has not been completely cleaned per Rule 15.11(c) of the UST Regs.

6. Describe the instruments used to verify that the tank(s) have been properly vented. _____
7. Describe how any residues remaining in the tank(s) will be managed. _____

I. DESCRIPTION OF TANKS TO BE CLOSED

TANK NO.	AGE	DATE LAST USED	VOLUME	CONSTRUCTION MATERIAL	STORED MATERIAL
037	48	79	2,500,000	Concrete	#6 Fuel Oil
038	48	79	2,500,000	Concrete	#6 Fuel Oil
039	48	79	2,500,000	Concrete	#6 Fuel Oil
040	48	79	2,500,000	Concrete	#6 Fuel Oil
041	48	79	2,500,000	Concrete	#6 Fuel Oil
042	48	79	2,500,000	Concrete	#6 Fuel Oil
043	48	79	2,500,000	Concrete	#6 Fuel Oil

(If there are more tanks being closed please list on attachment)

J. FEES:

Closure: NUMBER OF TANKS 7 X \$75.00 PER TANK = 525

Registration: NUMBER OF TANKS _____ X \$35.00 PER TANK = _____

K. Have these tanks ever held non-petroleum, hazardous materials

_____ YES NO

If yes, then list materials: _____

L. After the closure(s) have been completed on the aforementioned tanks, will there be any underground storage tanks remaining in existence at this facility? _____ YES NO

Will any new UST(s) be installed on the site?

_____ YES NO

CLOSURE PROCEDURE (SELECT ONE):

1. _____ Precision test and fill with iner material.

(Section 15.12).

Material used for filling tank: _____

NOTE: APPROVED PRECISION TEST METHOD MUST BE CONDUCTED BY A LICENSED TESTER AND RESULTS MUST BE SUBMITTED TO DEM PRIOR TO FILLING THE TANK IN PLACE.

2. Excavate, clean, and dispose (Section 15.11)

(Note: Tanks to be demolished and left in place following tank cleaning.)

a. Specify method of tank cleaning: Power Wash

I. DESCRIPTION OF TANKS TO BE CLOSED

TANK NO.	AGE	DATE LAST USED	VOLUME	CONSTRUCTION MATERIAL	STORED MATERIAL
044	48	79	2,500,000	Concrete	#6 Fuel Oil
045	48	79	2,500,000	Concrete	#6 Fuel Oil
046	48	79	2,500,000	Concrete	#6 Fuel Oil
047	48	79	2,500,000	Concrete	#6 Fuel Oil
048	48	79	2,500,000	Concrete	#6 Fuel Oil

(If there are more tanks being closed please list on attachment)

J. FEES:

Closure: NUMBER OF TANKS 5 X \$75.00 PER TANK = 375

Registration: NUMBER OF TANKS _____ X \$35.00 PER TANK = _____

b. Specify method of disposing of tank sludge or waste generated by cleaning process. List name of waste hauler. Tank sludges will be characterized and disposed of accordingly. Hauler yet to be determined. Cleaning wastes will be treated on site in water treatment facility.

c. Specify whether cleaning will take place:
on site x off-site _____

i. If off-site, indicate location of final tank cleaning
Firm/Address: _____

ii. Indicate firm which will transport tank(s) to site indicated in c(i) above:

Firm/Address: N/A _____

NOTE: FIRMS TRANSPORTING TANK SLUDGE AND WASTE OR TANKS WHICH REQUIRE FURTHER CLEANING MUST BE PERMITTED BY DEM (DIVISION OF AIR & HAZARDOUS MATERIALS) AS HAZARDOUS WASTE TRANSPORTERS.

D. Will tanks(s) be...

rendered unfit for use and disposed of x or reused _____?

(Note: Tanks to be demolished and left in place following tank cleaning.)

NOTE: REUSE OF A TANK IN THE GROUND REQUIRES COMPLIANCE WITH SECTION 12.03 OF STATE UST REGULATIONS.

Location for final tank(s) disposal:

Tanks to be left in place
following partial demolition

If tank is to be reused, specify:

Proposed use: _____

Name/Address of intended user: _____

APPENDIX B
DATA FOR TANK CONTENTS

Tank Volume Analysis

NETC Tank Farm No. 4												
NORDIV Rac D O. 13												
Newport, RI												
Tank No.	Estimated	Actual	Estimated	Actual	Water Removal		Product Removal		Tank Cleaning		RIDEM	
	Oil/Sludge	Oil/Sludge	Water	Water	Start	Finish	Start	Finish	Start	Finish	Approval	
45	47,150	0	756,000	756,000	7/20/96	7/21/96	7/23/96	7/25/96	7/29/96	9/18/96	1/24/97	
48	78,586	32,145	1,230,000	1,230,000	7/24/96	7/26/96	7/29/96	8/13/96	8/14/96	10/10/96	2/7/97	
41	102,155	20,000	660,000	660,000	8/8/96	8/15/96	8/19/96	8/28/96	9/4/96	9/18/96	10/21/96	
38	57,365	26,100	2,047,470	2,047,470	8/21/96	8/26/96	9/3/96	9/5/96	9/20/96	10/7/96	10/21/96	
37	51,855	166,080	1,037,000	1,037,000	9/3/96	9/9/96	9/12/96	9/19/96	10/8/96	10/20/96	11/15/96	
46	56,580	65,043	1,260,000	1,260,000	10/4/96	10/11/96	10/12/96	10/21/96	10/21/96	11/1/96	12/11/96	
47	46,760	42,000	690,000	1,794,000	10/21/96	10/31/96	11/1/96	11/4/96	11/5/96	11/15/96	12/31/96	
44	143,805	281,400	1,080,000	2,000,000	11/5/96	11/12/96	11/13/96	11/22/96	11/22/96	12/11/96	12/11/96	
40	218,675	192,300	1,815,000	1,815,000	11/18/96	11/25/96	11/26/96	12/2/96	12/12/96	12/30/96	12/31/96	
39	228,675	208,080	1,590,000	1,590,000	12/9/96	12/22/96	12/23/96	12/30/96	12/31/96	1/10/97	1/10/97	
43	146,945	512,971	1,104,000	2,000,000	1/2/97	1/8/97	1/9/97	1/22/97	1/23/97	1/31/97	1/31/97	
42	52,655	0	0	493,490	3/10/97	3/13/97	---	---	---	---	12/7/95	
	1,231,206	1,546,119	13,269,470	16,682,960								
	Variance on Tank Volumes					314,913	* This variance represents the overage of gallons of oil disposed					
	Variances on tank volumes are due to emulsifications of water and solids											

CLEAN HARBORS

TANK 48

Client: > CHES R.I.

Batch/Job #: > Round 2

Client ID: > Foster Wheeler

Internal Sample ID: > 081496422

Date Received: > 08/14/96

<u>Parameter</u>	<u>MDL</u>	<u>Result</u>	<u>Units</u>	<u>Method Number and Reference</u>
PCB's - Total	<u>2.0</u>	ND	mg/kg	600/4-81-045
Total Halogens	<u>100</u>	350	mg/kg	0808(u)/0512(k)
Flashpoint	---	>140	oF	1010(c)
Arsenic - Total	<u>2.0</u>	ND	mg/kg	3050/6010(c)
Cadmium - Total	<u>0.1</u>	ND	mg/kg	3050/6010(c)
Chromium - Total	<u>0.3</u>	ND	mg/kg	3050/6010(c)
Lead - Total	<u>1.0</u>	ND	mg/kg	3050/6010(c)

Notes: ND = Below minimum detectable level (MDL)

REPORT OF ANALYSIS

Log In No.: 28159, 27277
SDG Number: TANK1

We find as follows:

<u>Parameter(s)</u>	<u>Client ID:</u> 43OIL	43SLG	TK48SLG	TK48OIL METHOD	
	<u>Sample ID:</u> 2815901	2815902	2727701	2727702	BLANK
Reactivity S & CN, ppm/ppm	1U / 1U	1U / 1U	1U / 1U	1U / 1U	1U / 1U
Ignitability, Degrees F	>212	>212	>212	>212	>212

PCB - FORM 1
NYTEST ENVIRONMENTAL INC.

TCL PCB ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: MISC
CONC. LEVEL: MED
EXTRACTION DATE: 07/09/96
ANALYSIS DATE: 07/21/96

SAMPLE ID: TR48OIL
LAB SAMPLE ID: 2827702DB
DIL FACTOR: 3.00
% MOISTURE: NA

80
7/30/96

UG/L

COMP #	CAS Number	PCB COMPOUND	UG/L
1	12674-11-2	Aroclor-1016	3.0 U
2	11104-28-2	Aroclor-1221	3.0 U
3	11141-16-5	Aroclor-1232	3.0 U
4	53469-21-9	Aroclor-1242	3.0 U
5	12672-29-6	Aroclor-1248	3.0 U
6	11097-69-1	Aroclor-1254	3.0 U
7	11096-82-5	Aroclor-1260	3.0 U

TCLP HERB - FORM 1
NYTEST ENVIRONMENTAL INC.

TCLP HERBICIDES ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
EXTRACTION DATE: 07/20/96
ANALYSIS DATE: 07/21/96

SAMPLE ID:TK480IL
LAB SAMPLE ID:2827702
DIL FACTOR: 1.00
% MOISTURE:NA

CMPD #	CAS Number	TCLP HERBICIDE COMPOUNDS	MG/L
1	94-75-7	2,4-D	0.01 U
2	93-71-1	2,4,5-TP (Silvex)	0.001 U

1 D-TCLP
NYTEST ENVIRONMENTAL INC.

TCLP PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX : WATER
CONC. LEVEL : LOW
EXTRACTION DATE : 7/19/96
ANALYSIS DATE : 7/24/96

SAMPLE ID : TK48OIL
LAB SAMPLE ID : 2827702
DIL FACTOR : 1.00
% MOISTURE : NA
INITIAL VOL(ml) : 1000

CMPD

CAS Number TCLP PESTICIDE COMPOUND MG/L

#	58-89-9	gamma-BHC (Lindane)	0.00005	U
#	76-44-8	Heptachlor	0.00005	U
#	70-20-8	Endrin	0.00010	U
#	1024-57-3	Heptachlor Epoxide	0.00005	U
#	72-43-5	Methoxychlor	0.00050	U
#	8001-35-2	Toxaphene	0.0010	U
#	57-74-9	Chlordane	0.0010	U

000043

REPORT OF ANALYSIS

Log In No.: 28159, 27277
SDG Number: TANK1

We find as follows:

<u>Parameter(s)</u>	<u>Client ID:</u>	<u>43OIL</u>	<u>43SLG</u>	<u>TK48SLG</u>	<u>TK48OIL</u>	<u>METHOD</u>
	<u>Sample ID:</u>	<u>2815901</u>	<u>2815902</u>	<u>2727701</u>	<u>2727702</u>	<u>BLANK</u>

Reactivity S & CN, ppm/ppm	1U / 1U	1U / 1U	1U / 1U	1U / 1U	1U / 1U
Ignitability, Degrees F	>212	>212	>212	>212	>212

000054

PCB - FORM 1
NYTEST ENVIRONMENTAL INC.

TCL PCB ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: MISC
CONC. LEVEL: MED
EXTRACTION DATE: 07/09/96
ANALYSIS DATE: 07/21/96

SAMPLE ID: TK48SLG
LAB SAMPLE ID: 2827701DC
DIL FACTOR: 3.00
% MOISTURE: NA

88
7/30/96

CPD #	CAS Number	PCB COMPOUND	UG/L
1	12674-11-2	Aroclor-1016	3.0 U
2	11104-28-2	Aroclor-1221	3.0 U
3	11141-16-5	Aroclor-1232	3.0 U
4	53469-21-9	Aroclor-1242	3.0 U
5	12672-29-6	Aroclor-1248	3.0 U
6	11097-69-1	Aroclor-1254	3.0 U
7	11096-82-5	Aroclor-1260	3.0 U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TK48SLG

Lab Name: NYTEST ENV INC.

Contract: 9622627

Lab Code: NYTEST

Case No.: 28277

SAS No.: |

SDG No.: TANK1

Matrix: (soil/water) WATER

Lab Sample ID: 2827701

Sample wt/vol: 1.0 (g/mL) ML

Lab File ID: M1090.D

Level: (low/med) LOW

Date Received: 06/27/96

% Moisture: not dec. _____

Date Analyzed: 07/19/96

Column: (pack/cap) CAP

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (mg/L or mg/Kg) MG/L	Q
75-01-4-----	Vinyl Chloride	0.05	U
75-35-4-----	1,1-Dichloroethene	0.05	U
67-66-3-----	Chloroform	0.05	U
107-06-2-----	1,2-Dichloroethane	0.05	U
78-93-3-----	2-Butanone	0.05	U
56-23-5-----	Carbon Tetrachloride	0.05	U
79-01-6-----	Trichloroethene	0.05	U
71-43-2-----	Benzene	0.01	J
127-18-4-----	Tetrachloroethene	0.05	U
108-90-7-----	Chlorobenzene	0.05	U

TCLP HERB - FORM 1
HYTEST ENVIRONMENTAL INC.

TCLP HERBICIDES ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
EXTRACTION DATE: 07/20/96
ANALYSIS DATE: 07/21/96

SAMPLE ID:TK48SLG
LAB SAMPLE ID:2827701
DIL FACTOR: 1.00
% MOISTURE:NA

COMP #	CAS Number	TCLP HERBICIDE COMPOUNDS	MG/L
1	94-75-7	2,4-D	0.01 U
2	93-71-1	2,4,5-TP (Silvex)	0.001 U

1 D-TCLP
NYTEST ENVIRONMENTAL INC.

TCLP PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX : WATER
CONC. LEVEL : LOW
EXTRACTION DATE : 7/19/96
ANALYSIS DATE : 7/24/96
SAMPLE ID : TK48SLG
LAB SAMPLE ID : 2827701
DIL FACTOR : 1.00
% MOISTURE : NA
INITIAL VOL(ml) : 1000

CMPD

CAS Number TCLP PESTICIDE COMPOUND MG/L

1	58-89-9	gamma-BHC (Lindane)	0.00005	U
2	76-44-8	Heptachlor	0.00005	U
3	70-20-8	Endrin	0.00010	U
4	1024-57-3	Heptachlor Epoxide	0.00005	U
5	72-43-5	Methoxychlor	0.00050	U
6	8001-35-2	Toxaphene	0.0010	U
7	57-74-9	Chlordane	0.0010	U

000042

APPENDIX C
DISPOSAL MANIFESTS/BILL-OF-LADINGS

CleanHarbors

STRAIGHT BILL OF LADING

Check One:
 Non-Hazardous Material
 Hazardous Material

NETC 14

DATE <u>08/15/96</u>		VEHICLE NUMBER: <u>88</u>	
FROM: Shipper <u>NETC CODE 40E</u>		TO: Consignee <u>CLEAN Harbors ENV. SERVICES INC.</u>	
Street <u>ONE SIMONPIETRI DRIVE</u>		Street <u>37 RUMERY RD</u>	
City <u>NEWPORT</u> State <u>RI</u>		City <u>SOUTH PORTLAND</u> State <u>ME</u>	
Zip Code <u>02841</u>	US EPA ID Number <u>RI111171002142143</u>	Zip Code <u>04106 / ME17 980672182</u>	
Name of Carrier: <u>J. P. Moran</u>			
US DOT Description: (Include Proper Shipping Name, Hazard Class, and ID Number) <u>NON REGULATED LIQUID (OIL + WATER)</u>			
Total Quantity <u>11172100</u>	Unit Wt/Vol <u>7200</u> Gal.	EMERGENCY NUMBER: 1-800-OIL-TANK	
WASTE OIL ANALYSIS: (ACTUAL)		LAB # _____	
ARSENIC <u>ND</u> PPM.	LEAD <u>ND</u> PPM.	BTU's/LB. _____	
CADMIUM <u>ND</u> PPM.	PCB'S <u>ND</u> PPM.	BTU's/GAL. _____	
CHROMIUM <u>ND</u> PPM.	TOTAL HALOGENS <u>350</u> PPM.	FLASH POINT <u>7200</u> °F	
N.D. = NOT DETECTED		SULFUR _____	
WASTE OIL SPECIFICATION: (LIMITS)			
ARSENIC 5.0 PPM. MAX.	LEAD 100 PPM. MAX.		
CADMIUM 2.0 PPM. MAX.	PCB'S N.D. PPM. MAX.		
CHROMIUM 10.0 PPM. MAX.	TOTAL HALOGENS 1,000 PPM. MAX.	FLASH POINT <u>>100</u> °F	
Shipper's Signature <u>[Signature]</u> <u>F2216 NAVY</u>	Consignee Signature	Transporter's Signature <u>[Signature]</u>	
COMMENTS: <u>OIL FROM TANK 48</u>			

CleanHarbors

STRAIGHT BILL OF LADING

Check One:
 Non-Hazardous Material
 Hazardous Material

NETC 15

DATE <u>08/15/96</u>		VEHICLE NUMBER: # <u>25</u>	
FROM: Shipper <u>NETC CODE 40E</u>		TO: Consignee <u>CLEAN HARBORS ENV. SERVICES INC.</u>	
Street <u>ONE SIMONPIETRE DRIVE</u>		Street <u>37 RUMERY RD</u>	
City <u>NEWPORT</u> State <u>RI</u>		City <u>SOUTH PORTLAND</u> State <u>ME</u>	
Zip Code <u>02841</u>	US EPA ID Number <u>RI111700214243</u>	Zip Code <u>04106 / MED 980672182</u>	
Name of Carrier: <u>J.P. Moran</u>			
US DOT Description: (Include Proper Shipping Name, Hazard Class, and ID Number) <u>NON-REGULATED LIQUID (OIL + WATER)</u>			
Total Quantity <u>18000</u>	Unit Wt/Vol <u>Gal.</u>	EMERGENCY NUMBER: 1-800-OIL-TANK	
WASTE OIL ANALYSIS: (ACTUAL)		LAB # _____	
ARSENIC <u>ND</u> PPM.	LEAD <u>ND</u> PPM.	BTU's/LB. _____	
CADMIUM <u>ND</u> PPM.	PCB'S <u>ND</u> PPM.	BTU's/GAL. _____	
CHROMIUM <u>ND</u> PPM.	TOTAL HALOGENS <u>350</u> PPM.	FLASH POINT <u>7200</u> °F	
N.D. = NOT DETECTED		SULFUR _____	
WASTE OIL SPECIFICATION: (LIMITS)			
ARSENIC 5.0 PPM. MAX.	LEAD 100 PPM. MAX.		
CADMIUM 2.0 PPM. MAX.	PCB'S N.D. PPM. MAX.		
CHROMIUM 10.0 PPM. MAX.	TOTAL HALOGENS 1,000 PPM. MAX.	FLASH POINT <u>>100</u> °F	
Shipper's Signature <u>[Signature]</u> FOR THE ARMY	Consignee Signature	Transporter's Signature <u>[Signature]</u> 25	
COMMENTS: <u>OIL FROM TANK 48</u>			

Clean Harbors

STRAIGHT BILL OF LADING

Check One:
 Non-Hazardous Material
 Hazardous Material

NETC 16

DATE <u>08/15/96</u>		VEHICLE NUMBER: <u>315</u>	
FROM: Shipper <u>NETC CODE 40E</u>		TO: Consignee <u>CLEAN HARBORS ENV. SERVICES INC</u>	
Street <u>ONE SIMONPIETRE DRIVE</u>		Street <u>37 RUMERY RD.</u>	
City <u>WPORT</u> State <u>RI</u>		City <u>SOUTH PORTLAND</u> State <u>ME</u>	
Zip Code <u>02841</u>	US EPA ID Number <u>RI 111710012142143</u>	Zip Code <u>04106 / MED 980672182</u>	
Name of Carrier: <u>CLEAN HARBORS ENV. SERVICES, INC. MC152120</u>			
US DOT Description: (Include Proper Shipping Name, Hazard Class, and ID Number) <u>NON-REGULATED LIQUID (OIL AND WATER)</u>			
Total Quantity <u>11 1945</u>	Unit Wt/Vol <u>(Gal)</u>	EMERGENCY NUMBER: 1-800-OIL-TANK	
WASTE OIL ANALYSIS: (ACTUAL)		LAB # _____	
ARSENIC <u>ND</u> PPM.	LEAD <u>ND</u> PPM.	BTU's/LB. _____	
CADMIUM <u>ND</u> PPM.	PCB'S <u>ND</u> PPM.	BTU's/GAL. _____	
CHROMIUM <u>ND</u> PPM.	TOTAL HALOGENS <u>350</u> PPM.	FLASH POINT <u>2200</u> °F	
N.D. = NOT DETECTED		SULFUR _____	
WASTE OIL SPECIFICATION: (LIMITS)			
ARSENIC 5.0 PPM. MAX.	LEAD 100 PPM. MAX.		
CADMIUM 2.0 PPM. MAX.	PCB'S N.D. PPM. MAX.		
CHROMIUM 10.0 PPM. MAX.	TOTAL HALOGENS 1,000 PPM. MAX.	FLASH POINT <u>>100</u> °F	
Shipper's Signature <u>[Signature]</u> FOR TO NAVY	Consignee Signature	Transporter's Signature <u>[Signature]</u>	
COMMENTS: <u>OIL FROM TANK 48</u>			

Clean Harbors

STRAIGHT BILL OF LADING

Check One:
 Non-Hazardous Material
 Hazardous Material

DATE <u>08/15/96</u>		VEHICLE NUMBER: <u>281 =</u>	
FROM: Shipper <u>NETC CODE 40E</u>		TO: Consignee <u>Clean Harbors ENV. SERVICES INC.</u>	
Street <u>ONE SIMONPIETRI DRIVE</u>		Street <u>37 RUMERY RD</u>	
City <u>WINDSORPORT VT</u> State _____		City <u>SOUTH PORTLAND</u> State <u>ME</u>	
Zip Code <u>02841</u>	US EPA ID Number <u>RI1111701024243</u>	Zip Code <u>04106</u>	Med <u>980672182</u>
Name of Carrier: <u>CLEAN HARBORS ENV. SERVICES INC. - 41038339250</u>			
US DOT Description: (Include Proper Shipping Name, Hazard Class, and ID Number) <u>NON-REGULATED LIQUID (OIL AND WATER)</u>			
Total Quantity <u>441/1110</u>	Unit Wt/Vol <u>GAL/US</u>	EMERGENCY NUMBER: 1-800-OIL-TANK	
WASTE OIL ANALYSIS: (ACTUAL)		LAB # _____	
ARSENIC <u>ND</u> PPM.	LEAD <u>ND</u> PPM.	BTU's/LB. _____	
CADMIUM <u>ND</u> PPM.	PCB'S <u>ND</u> PPM.	BTU's/GAL. _____	
CHROMIUM <u>ND</u> PPM.	TOTAL HALOGENS <u>350</u> PPM.	FLASH POINT <u>7200</u> °F	
N.D. = NOT DETECTED		SULFUR _____	
WASTE OIL SPECIFICATION: (LIMITS)			
ARSENIC 5.0 PPM. MAX.	LEAD 100 PPM. MAX.		
CADMIUM 2.0 PPM. MAX.	PCB'S N.D. PPM. MAX.		
CHROMIUM 10.0 PPM. MAX.	TOTAL HALOGENS 1,000 PPM. MAX.	FLASH POINT <u>>100</u> °F	
Shipper's Signature <u>[Signature]</u> FORT RAY	Consignee Signature	Transporter's Signature	
COMMENTS: <u>OIL FROM TANK 48</u>			

Clean Harbors

STRAIGHT BILL OF LADING

Check One:

Non-Hazardous Material

Hazardous Material

NETC 013

DATE <u>08 / 15 / 96</u>		VEHICLE NUMBER: <u>344</u>	
FROM: Shipper <u>NETC CODE 40 E</u>		TO: Consignee <u>Clean Harbors Env. Services Inc.</u>	
Street <u>ONE SIMONDIETZ DR</u>		Street <u>57 Rumney Rd.</u>	
City <u>NEWPORT</u> State <u>RI</u>		City <u>S. Portland</u> State <u>ME</u>	
Zip Code <u>02841</u>	US EPA ID Number <u>RI 1170624243</u>	Zip Code <u>04106</u>	<u>1MED 980672182</u>
Name of Carrier: <u>Clean Harbors Env. Services Inc. MAD 039322250</u>			
US DOT Description: (Include Proper Shipping Name, Hazard Class, and ID Number) <u>Non-Regulated Liquid (Oil and Water)</u>			
Total Quantity <u>00050010</u>	Unit Wt/Vol <u>G Gal.</u>	EMERGENCY NUMBER: 1-800-OIL-TANK	
WASTE OIL ANALYSIS: (ACTUAL)		LAB # _____	
ARSENIC <u>ND</u> PPM.	LEAD <u>ND</u> PPM.	BTU's/LB. <u>18 820</u>	
CADMIUM <u>ND</u> PPM.	PCB'S <u>ND</u> PPM.	BTU's/GAL. <u>140 910</u>	
CHROMIUM <u>.4</u> PPM.	TOTAL HALOGENS <u>265</u> PPM.	FLASH POINT <u>200</u> °F	
N.D. = NOT DETECTED		SULFUR <u>.5</u>	
WASTE OIL SPECIFICATION: (LIMITS)			
ARSENIC 5.0 PPM. MAX.	LEAD 100 PPM. MAX.		
CADMIUM 2.0 PPM. MAX.	PCB'S N.D. PPM. MAX.		
CHROMIUM 10.0 PPM. MAX.	TOTAL HALOGENS 1,000 PPM. MAX.	FLASH POINT <u>>100</u> °F	
Shipper's Signature <u>[Signature]</u> FOR TO NAVY	Consignee Signature	Transporter's Signature <u>[Signature]</u>	
COMMENTS: <u>Oil and Water from Tank 43</u>			

**APPENDIX D
DEGREASER/VENDOR INFORMATION**



"Maintenance
Chemicals
For Your
Environment"

HAZARD RATING		
4 = EXTREME		
3 = HIGH		
2 = MODERATE		
1 = SLIGHT		
0 = INSIGNIFICANT		
* = CHRONIC		
HEALTH HAZARD - SEE SECTION V		

MATERIAL SAFETY DATA SHEET

(Essentially Similar to Form OSHA-20)

SECTION I REVISED: 06-15-87

CHEMICAL NAME AND SYNONYMS N/A	TRADE NAME AND SYNONYMS ENVIRO 2000S
CHEMICAL FAMILY Detergent	FORMULA Proprietary

SECTION II - HAZARDOUS INGREDIENTS

MATERIAL	CAS #	%	TLV (unrts)
Sodium Hydroxide	1310-73-2		2 mg/m ³ 200 mg/m ³ IDLH

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	216°F	SPECIFIC GRAVITY (H ₂ O = 1)	1.04
VAPOR PRESSURE (mm Hg)	NIL	PERCENT VOLATILE BY VOLUME (%)	94
VAPOR DENSITY (AIR = 1)	NOT EST.	EVAPORATION RATE (_____ = 1)	1
SOLUBILITY IN WATER	COMPLETE	pH	12.0

APPEARANCE AND ODOR Clear red liquid / minimal odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	Boils without flashing.	FLAMMABLE LIMITS	<table border="1"> <tr> <td>LeI</td> <td>Uel</td> </tr> <tr> <td>N/A</td> <td>N/A</td> </tr> </table>	LeI	Uel	N/A	N/A
LeI	Uel						
N/A	N/A						
EXTINGUISHING MEDIA	Use carbon dioxide, alcohol foam, dry chemicals in areas where chemicals stored.						
SPECIAL FIRE FIGHTING PROCEDURES	Aqueous solutions of product are alkaline.						
UNUSUAL FIRE AND EXPLOSION HAZARDS	None.						

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE See Section II.

EFFECTS OF OVEREXPOSURE

Inhalation: Airborne concentrations of mist or spray may cause irritation of upper respiratory tract, nose and throat, hemolysis, hemoglobinuria.

Skin: Dermatitis may result from repeated or prolonged exposure due to defatting of tissue

Eye: Product is destructive to eye tissue. May cause severe irritation.

Ingestion: Product can cause irritation of mouth, throat, esophagus and stomach.

EMERGENCY AND FIRST AID PROCEDURES

Eyes: Irrigate immediately with running water for at least 15 minutes. Seek medical attention if irritation persists. Skin: Flush with soap and water immediately. Remove impervious clothing immediately when skin is wet or contaminated. Seek medical attention if irritation persists. Inhalation: If person exposed to large amounts of mist or vapor, move the exposed person to fresh air at once and perform artificial respiration. Ingestion: If ingested, seek medical attention immediately. Give large quantities of water

FOR MEDICAL EMERGENCY CALL COLLECT (713) 734-1656

SECTION VI — REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
Acids, organic halogens, reactive metals such as zinc, tin, aluminum, leather and wool.			
HAZARDOUS DECOMPOSITION PRODUCTS			
None.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Small Spill: Mop or wipe up or absorb on sawdust or clay and dispose of in accordance with RCRA Regulations. Flush any residue with water.

Large Spill: Wear goggles, coveralls, and impervious gloves and boots. Add dry absorbant shovel, or sweep up, and place in a D.O.T. approved container and seal. Flush any residue with water.

WASTE DISPOSAL METHOD

Treat and dispose of in accordance with regulations under the RCRA as administered by the USEPA or other appropriate state agency.

SECTION VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Use NIOSH approved respirator for mists and vapors.

VENTILATION	LOCAL EXHAUST To maintain below TLV guidelines.	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES	Rubber or Neoprene	EYE PROTECTION Goggles or Safety Glasses
OTHER PROTECTIVE EQUIPMENT	Impervious boots, and coveralls, to minimize skin contact.	

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in cool dry place in original sealed container.
Avoid temperatures above 140°F. Avoid freezing conditions.

OTHER PRECAUTIONS

Read all directions and cautions on label before use.
Keep out of reach of children.

FOR MEDICAL EMERGENCY CALL COLLECT (713) 734-1656

Statements, information and data given are believed to be accurate and reliable as of the data hereof, but are presented without guaranty warranty or responsibility of any kind. Expressed or implied on our part. It is not intended to be all inclusive and the manner and conditions of use and handling may involve other or additional considerations. Information regarding the proper course of treatment in the event of an accident or misuse of this product is properly the domain of the attending physician.

Material Safety Data Sheet

QUICK IDENTIFIER (In Plant Common Name)

SW 1000

FIRE

HAZARD RATING
 4 = Extreme
 3 = High
 2 = Moderate
 1 = Slight
 0 = Insignificant



See Section (5)

Manufacturer's Name (201) 437-7775
 Heritage Labs, Inc.

Address P.O. Box 4141
 Bayonne, NJ 07002

Signature of Person Responsible for Preparation
 10/10/89 *Donald J. Adone*
 Donald J. Adone

SECTION 1 - IDENTITY

Common Name (used on label) (Trade Name & Synonyms) SW 1000

Chemical Name n.a.

Formula Proprietary

SECTION 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component(s) (chemical & common name(s))	CAS #	%	ACGIH TLV	Other Limits Recommended
Sodium metasilicate	6834-93-0	<5%	n.a.	
Isopropanol	67-63-0	<5%	(TWA 400 ppm, STEL 500 ppm)	
Sodium hydroxide	1310-73-2	<1%	(C 2 mg/m ³)	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosion Data)

Burning Point	213°F	Specific Gravity (H ₂ O = 1)	1.036	Vapor Pressure (mm Hg)	n.a.
Percent Volatile by Volume (%)	0	Vapor Density (Air = 1)	n.a.	Evaporation Rate (water = 1)	<1%
Solubility in Water	completely	Reactivity in Water	none		
Appearance and Odor	clear liquid / non objectionable odor				

Flash Point	none	Flammable Limits in Air % by Volume	Lower n.a. Upper n.a.	Extinguisher Media	none required	Auto-ignition Temperature	none
Special Fire Fighting Procedures	none	Unusual Fire and Explosion Hazards	none				

SECTION 4 - REACTIVITY DATA

Unstable		Conditions to Avoid	none
Stable	X		

Incompatibility (Materials to Avoid) Only those materials incompatible with water.

Hazardous Decomposition or Byproducts n.a.

Hazardous Polymerization	May Occur	Conditions to Avoid	none
	Does Not Occur	X	

SECTION 5 - HEALTH HAZARDS

Route(s) of Entry: Inhalation? unlikely Skin? likely Ingestion? unlikely

Health Hazards (Acute and Chronic) Skin irritation may develop if repeated exposure occurs or if it is used for long periods of time.
 Avoid eye contact.

Carcinogenicity None known

Signs and Symptoms of Exposure None known

Emergency and First Aid Procedures n.a.

1. Inhalation Move to more adequate ventilation.

2. Eyes Rinse thoroughly with water, if irritation develops -- see physician

3. Skin Same as above.

4. Ingestion Drink juices, milk or water - consult a physician.

SECTION 6 - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) n.a. provide proper ventilation.

Ventilation Local Exhaust Mechanical (General) Special Other Should be adequate.

Protective Gloves water resistant gloves. Eye Protection Goggles or safety glasses.

Other Protective Clothing or Equipment

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage Store in temperatures ranging from 30°F to 110°F / 0°-43°C

Other Precautions None

Steps to be Taken in Case Material is Released or Spilled Hose down with water.

Waste Disposal Methods Biodegradable. Refer to applicable regulations. Special disposal may not be required.

The information on this data sheet represents our current data and best opinion as to the proper use in the handling of this product under normal conditions. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for particular use. Any use of this product which is not in conformance with this data sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

APPENDIX E
MANIFESTS (DEBRIS DISPOSAL)



DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS MATERIALS
 One Winter Street Boston, Massachusetts 02108

Please print or type (Form designed for use on elite (12-pitch) paper)

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

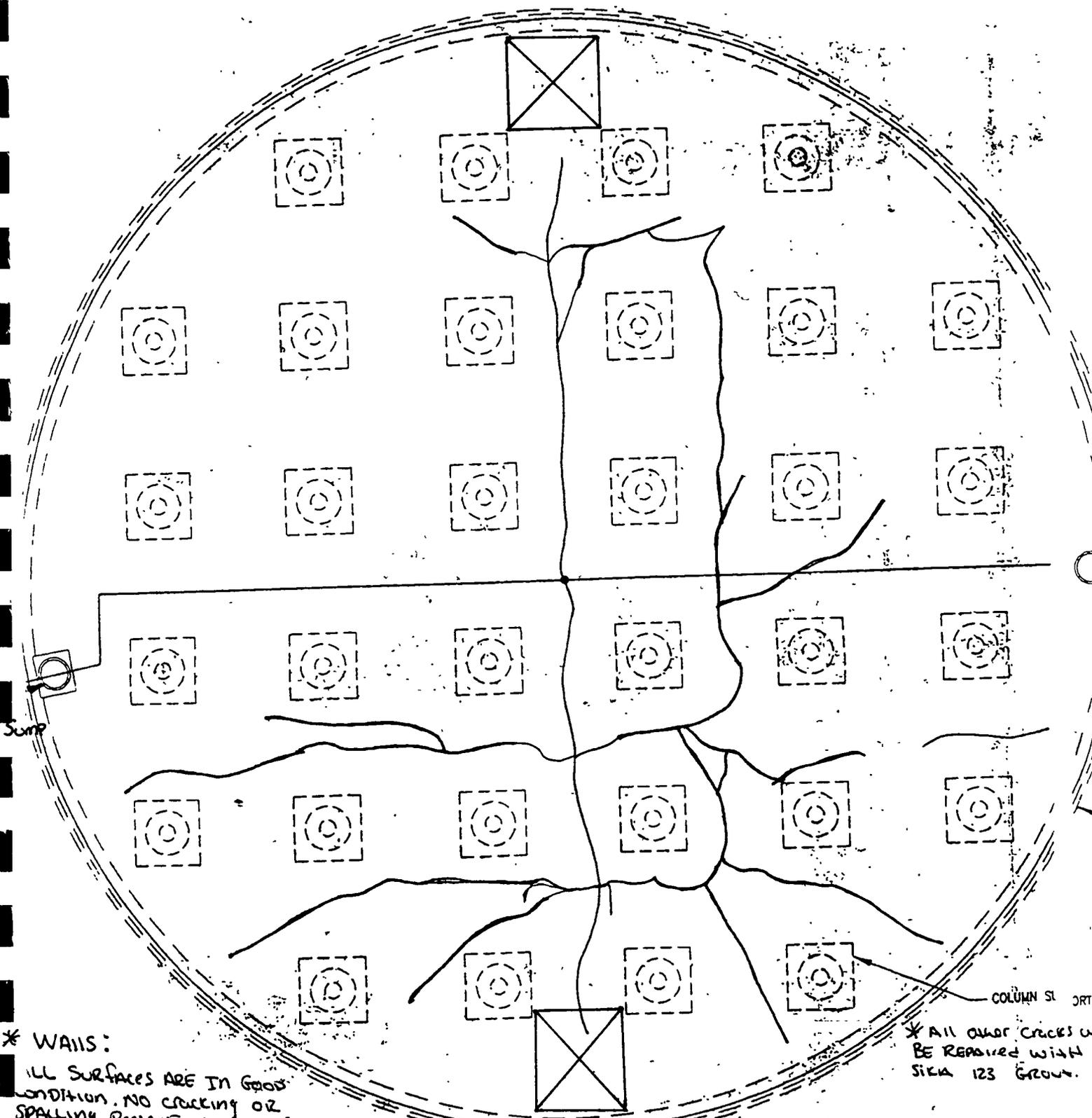
UNIFORM HAZARDOUS WASTE MANIFEST		1 Generator's US EPA ID No RI11700Z4243		Manifest Document No 50380		2 Page 1 of 1		Information in the shaded area is not required by Federal law			
		3 Generator's Name and Mailing Address NETC, CODE 40E 1 Simon Pletch Dr. Newport RI 02841 (401) 841-3736						A. State Manifest Document Number MAJ 568783		B. State Gen ID SAME	
4 Generator's Phone				5 Transporter 1 Company Name Clean Harbors Env. Services, Inc.		6 US EPA ID Number MAD039322250		C. State Trans. ID MA 13268		D. Transporter's Phone (617) 849-1800	
7 Transporter 2 Company Name				8 US EPA ID Number		9 Designated Facility Name and Site Address Clean Harbors of Braintree, Inc. 385 Quincy Avenue Braintree, MA 02184		10 US EPA ID Number MAD053452637		E. State Trans. ID	
11 US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12 Containers NO Type		13. Total Quantity		14. Unit Wt/Vol	
a. Non D.O.T. Regulated Oily Solids, None, N/A						1 Ch		25		Y	
b.											
c.											
d.											
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) a. (S)MA Regulated						K. Handling Codes for Wastes Listed Above					
b.											
c.											
d.											
11a 10 Hazardous Waste Handling Instructions and Additional Information 11b 11c 11d Emergency Contact: 1-800-645-8265 (Clean Harbors) WO:											
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 If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment OR if I am a small quantity generator I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that can afford											
Printed/Typed Name Raymond M. Roberge						Signature 			Date 09/27/19		
17 Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Charles Fitzgerald						Signature 			Date 09/27/19		
18 Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name						Signature			Date		
19 Discrepancy Indication Space											
20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19											
Printed/Typed Name						Signature			Date		

Form Approved OMB No. 2050-0039 Expires 9-30-96
 EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

Clean Harbors has appropriate permits for and will accept the waste the generator is shipping
 COPY>1: FACILITY MAILES TO DESTINATION STATE

APPEDDIX F
STRUCTURAL INSPECTION

TANK 48



* WALLS:
ALL SURFACES ARE IN GOOD
CONDITION. NO CRACKING OR
SPALLING PRESENT. ALL WALLS
ARE CLEAN AND DRY.

Columns:
ALL COLUMNS HAVE NO CRACKING AND ARE
IN GOOD CONDITION. ALL COLUMN SUPPORTS ARE IN GOOD
CONDITION.

* ALL PIPE HAS BEEN REMOVED
* ALL LADDERS ARE IN GOOD
CONDITION.

PLAN VIEW

* NO LEAKING AT THE FLOOR/WALL INTERFACE.

* ALL OTHER CRACKS W
BE REPAIRED WITH
SILKA 123 GROUT.

* THE FLOOR HAS EXCESSIVE CRACKING
NEEDS REPAIR. THE CRACKS THAT HAV
BE REPAIRED ARE SHOWN ABOVE:

* THE CRACK THAT RUNS BETWEEN TWO
ACCESS HOLES LEAKS AND NEED TO
BE REPAIRED USING 3M CHEMICAL GROUT

**APPENDIX G
BORING LOGS**

BORING LOG (BORING NO. TF4-B-48 = WELL NO. TF4-MU-119)

NUS CORPORATION

PROJECT: OTO 143 LOCATION: NETC Newport DRILLED BY: S. Lamasche BORING NO.: TF4-84
 DATE STARTED: 11/10/94 INCLINATION: Vertical LOGGED BY: K. Jankov GROUND ELEV.: None
 DATE COMPLETED: 11/11/94 BEARING: _____ CHECKED BY: _____ TOTAL DEPTH: 39' 8"

ELEV. feet	DEPTH feet	SAMPLE				REMARKS ON ADVANCE OF BORING	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
		TYPE-NO.	BLOWS PER 6"	PEN. in.	REC. in.			
285	15	S-1	18-16 6-16	24	13	1515 hrs PID on sample petroleum odor		S-1 (13 in) ^{sandy} SILT - poorly graded, mostly silt, some fine sand, few fine sand, few coarse gravel up to 1/4 in x 1 in, dry, brown, petroleum-odor (MC)
287	17	S-2	18-17 18-15	24	33	1517 hrs 3.7 ppm Free phase oil present		S-2 (25 in) sandy gravelly SILT - poorly graded, mostly silt, some coarse subangular gravel up to 2 1/2 x 2 in, others 1 1/2 x 1 in, few fine angular gravel up to 1/2 in, little sand (fine) few med sand, brown, free phase oil present, saturated (MC) 2 pieces gravel up to 3/4 x 2 1/2 inches
293	23	S-3	5-7 4-12	24	21	0753 hrs Free phase oil thru out hazard sample PID not functioning see code.		S-3 (21 in) sandy gravelly SILT - poorly graded, mostly silt, some coarse angular gravel up to 2 in x 1 1/2 in, rock fragments slate-like or phyllite, free phase oil in on sample, brown, to black, petroleum like odor, saturated (MC)
31	25	S-4	10-11 11-13	24	15	0757 hrs Free phase, petroleum-like odor PID OK		S-4 (15 in) silty silty GRAVEL - poorly graded, mostly coarse angular to subangular gravel up to 2 1/2 x 1 1/2 inches, few some fine angular gravel up to 1/2 in, lots of fragments (chips) slate-like bedrock, brown to black. Free phase petroleum visible thru out sample, saturated, some silt with fine sand trace med. sand (GM)
33	27	S-5	6-7 7-11	24	20	0811 hrs Same as above 10 ppm oil sample w/ out		S-5 (20 in) SILTY GRAVEL - similar to above w/ few sand - gravel are slate-like - thin layers - altered up to 3/4 in x 2 in, 1 piece sub rounded gravel up to 1 in x 1 in (GM)
35	29	S-6	11-14 10-17	24	18	0823 hrs 10 ppm Same as above possibly ring drum		S-6 (18 in) silty GRAVEL - similar to S-5 w/ non-slate like gravel - coarse, subangular up to 3 in x 2 in, 1 sub rounded angular gravel up to 2 in diameter (GM)
37	31	S-7	21-28 30-19	24	14	0830 hrs Same as above 15 ppm oil sample		
39	33							

all bit
TPH
S-1
11/10
11/11

LEGEND:
 TYPE-NO - Type of sample
 C - Rock core sample
 S - Split barrel sample
 BLOWS PER 6" - 40 lb. hammer falling 30" to drive a split barrel sampler; coring time per foot of rock
 PEN - Penetration length of sampler
 REC - Length of sample recovered

NOTES: HSA 6 1/4 ID 10 1/4 OD No samples 0-26 FT WT@ 27-28
 Continuous 265-41'
 140 lb hammer except where noted
 3" barrel
 DATE: 11/10/94 PROJECT NO.: 025
 PAGE: 1 OF 1 BORING NO.: TF4

BORING LOG

(14) RECORD NO. TF4-B-48 = WELL NO. TF4-MW-119

NUS CORPORATION

PROJECT: 10143 LOCATION: NETL Report DRILLED BY: S. LaMarche BORING NO.: TF4-B-48
 DATE STARTED: 11/10/94 INCLINATION: Vertical LOGGED BY: K. Sakant GROUND ELEV.: 121.9 MW
 TIME COMPLETED: 11/11/94 BEARING: _____ CHECKED BY: _____ TOTAL DEPTH: 37' 8"

ELEV. feet	DEPTH feet	SAMPLE				REMARKS ON ADVANCE OF BORING	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
		TYPE-NO.	BLOWS PER 8"	PEN. in.	REC. in.			
	39	S-8	16-5/2	8	8	30 lb hammer - breaks rock layer on 140 lb hammer		S-7 (14 in) GRAVEL - poorly graded mostly coarse subangular gravel up to 2 1/2 x 2 in, 1 piece coarse sub rounded gravel up to 2 1/2 in x 2 in rock chips, concrete pre-diminished up to 2 in diameter free phase oil, saturated few fine angular gravels up to 1/2 in (G1)
	41					US 55 H is some cement 15 ppm		S-8 - (8 in) sandy silty GRAVEL - poorly graded mostly coarse subangular to angular gravel up to 2 in x 1 1/2 in 1 piece sub rounded gravel up to 2 in, rock fragments, saturated, free phase oil, black (G1)

Rock @ 39' 8"

Augers to 39.5'
 Screen - 0.020 slot #2 sand at 39.34 - 38.5 - 33.5

See well construction log for TFS-MW-119

LEGEND:
 TYPE-NO. - Type of sample
 RC - Rock core sample
 SB - Split barrel sample
 BLOWS PER 8" - 140 lb hammer striking 30" to drive a split barrel sampler
 CORING TIME PER FOOT OF ROCK - Coring time per foot of rock
 PEN - Penetration length of sampler
 REC - Length of sample recovered
 W - Natural ground water table

NOTES:
 See p 1

DATE: 11/11/94 PROJECT NO.: 10143
 PAGE: 2 OF 2 BORING NO.: TF4-B-48

APPENDIX H
SOIL AND GROUNDWATER ANALYTICAL RESULTS

DATA QUALIFIERS

J Quantitation is estimated
U Parameter is not detected at the listed detection limit
UJ Parameter is not detected at the estimated detection limit

SAMPLE NUMBER KEY

Field samples collected from both sites, Tank Farms 4 and 5, are assigned a unique field sample tracking number. This numbering system as presented in Appendix C is explained here. Sample numbers are keyed to specific tanks in each tank farm and will consist of a five-segment alphanumeric code that identifies the sample matrix, the site and sample location, sample depth, and the quality control (QC) identifier.

The alphanumeric coding to be used in the sample numbering system is explained in the following diagram and the subsequent definitions:

AA = (Matrix)
TFN-AA-NN = (Sample location, site identifier - borehole/probe - number)
NN = (Sample depth)
A = (QC identifier)

Character type: A = Alpha
N = Numeric

Matrix: SO = Soil
GW = Groundwater

Sample location: Sample locations will be identified by specific tank farm and borehole or groundwater monitoring well number. Two alpha characters will indicate the specific tank farm; a pair of numeric characters will be assigned to correspond with individual tank numbers so that location is identifiable from all other locations of a similar type.

TF-4 = Tank Farm 4
TF-5 = Tank Farm 5
B = Borehole (subsequent monitoring well installation)
P = Probe

Sample identifier: Depth in feet below ground surface representing the top of the interval sample was collected.

QC Identifier: The QC identifier will be assigned only when applicable. The following identifiers will be utilized.

D = Field Duplicate
R = Equipment Rinsate Blank
F = Field Blank
T = Trip Blank

Example: A soil sample collected from 2 to 4 feet below ground surface from a boring located in Tank Farm 4, adjacent to tank number 39 will be numbered:

SO-TF4-B-39-02

ASE NO. CTO143

EIMIC CORPORATION

CL SOIL VOLATILE ORGANICS (ug/Kg)

STATION ID.
LABORATORY ID:

SOTF4B443638 SOTF4B472830 SOTF4B473840 SOTF4B482729 SOTF4B483941
940980-23 940980-24 940980-25 940980-27 940980-28

ANALYTE	CRQL	MDL/IDL	SOTF4B443638 940980-23	SOTF4B472830 940980-24	SOTF4B473840 940980-25	SOTF4B482729 940980-27	SOTF4B483941 940980-28
Chloromethane	10	2	11 U	11 U	12 U	1400 U	59 U
Bromomethane	10	2	11 U	11 U	12 U	1400 U	59 U
Vinyl Chloride	10	2	11 U	11 U	12 U	1400 U	59 U
Chloroethane	10	2	11 U	11 U	12 U	1500 U	59 U
Methylene Chloride	10	2	11 U	11 U	12 U	1400 U	59 U
Acetone	10	2	11 U	11 U	12 U	1400 U	59 U
Carbon Disulfide	10	2	11 U	11 U	12 U	1400 U	59 U
1,1-Dichloroethane	10	2	11 U	11 U	12 U	1400 U	59 U
1,1-Dichloroethane	10	2	11 U	11 U	12 U	1400 U	59 U
1,2-Dichloroethane (total)	10	2	11 U	11 U	12 U	1400 U	59 U
Chloroform	10	2	11 U	11 U	12 U	1400 U	59 U
1,2-Dichloroethane	10	2	11 U	11 U	12 U	1400 U	59 U
2-Butanone	10	2	11 U	11 U	12 U	1400 U	59 U
1,1,1-Trichloroethane	10	2	11 U	11 U	12 U	1400 U	59 U
Carbon Tetrachloride	10	2	11 U	11 U	12 U	1400 U	59 U
Bromodichloromethane	10	2	11 U	11 U	12 U	1400 U	59 U
1,2-Dichloropropane	10	2	11 U	11 U	12 U	1400 U	59 U
cis-1,3-Dichloropropene	10	2	11 U	11 U	12 U	1400 U	59 U
Trichloroethene	10	2	11 U	11 U	12 U	1400 U	59 U
Dibromochloromethane	10	2	11 U	11 U	12 U	1400 U	59 U
1,1,2-Trichloroethane	10	2	11 U	11 U	12 U	260 J	59 U
Benzene	10	2	11 U	11 U	12 U	1400 U	59 U
trans-1,3-Dichloropropene	10	2	11 U	11 U	12 U	1400 U	59 U
Bromoform	10	2	11 U	11 U	12 U	1400 U	59 U
4-Methyl-2-Pentanone	10	2	11 U	11 U	12 U	1400 U	59 U
2-Hexanone	10	2	11 U	11 U	12 U	1400 U	59 U
Tetrachloroethene	10	2	11 U	11 U	12 U	1400 U	59 U
1,1,2,2-Tetrachloroethane	10	2	11 U	11 U	12 U	1400 U	59 U
Toluene	10	2	11 U	11 U	12 U	1400 U	59 U
Chlorobenzene	10	2	11 U	11 U	12 U	1400 U	59 U
Ethylbenzene	10	2	11 U	11 U	12 U	1400 U	59 U
Styrene	10	2	11 U	11 U	12 U	1400 U	59 U
Xylene (total)	10	2	11 U	11 U	12 U	1400 U	59 U
DILUTION FACTOR:			1	1	1	1	1
% SOLIDS			87	87	82	87	85

CASE NO CTO143

CEIMIC CORPORATION

TCL AQUEOUS VOLATILE ORGANICS (ug/L)

STATION ID.
LABORATORY ID.

GWTF4DUP1 GWTF4MW119 GWTF4MW120 GWTF4MW121 GWTF4MW122
941038-08 941038-09 941038-01 941038-02 941038-10
FIELD DUPLICATE PAIR

ANALYTE	CRQL	MDL/IDL	GWTF4DUP1 941038-08	GWTF4MW119 941038-09	GWTF4MW120 941038-01	GWTF4MW121 941038-02	GWTF4MW122 941038-10
Chlor methan	10	2	10 U	10 U	10 U	10 U	10 U
Br momethane	10	2	10 U	10 U	10 U	10 U	10 U
Vlnyl Chlorid	10	2	10 U	10 U	10 U	10 U	10 U
Chloroethane	10	2	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	10	2	10 UJ	10 UJ	10 U	14 U	37 U
Aceton	10	2	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	10	2	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10	2	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10	2	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	10	2	10 U	10 U	10 U	10 U	10 U
Chloroform	10	2	10 U	10 U	10 U	10 U	10 U
1,2-Dichlor ethane	10	2	10 U	10 U	10 U	10 U	10 U
2-Butanone	10	2	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichlor ethane	10	2	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10	2	10 U	10 U	10 U	10 U	10 U
Bromodichlor methane	10	2	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10	2	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10	2	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10	2	10 U	10 U	10 U	10 U	10 U
Dibr mochloromethane	10	2	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichl roethane	10	2	10 U	10 U	10 U	10 U	10 U
B nz ne	10	2	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10	2	10 U	10 U	10 U	10 U	10 U
Bromoform	10	2	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	10	2	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10	2	10 U	10 U	10 U	10 U	10 U
Tetrachl r ethene	10	2	10 U	10 U	10 U	10 U	10 U
1,1,1,2,2-Tetrachloroethane	10	2	10 U	10 U	10 U	10 U	10 U
T luene	10	2	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	10	2	10 U	10 U	10 U	10 U	10 U
Ethylbenz ne	10	2	10 U	10 U	10 U	10 U	10 U
Styrene	10	2	10 U	10 U	10 U	10 U	10 U
Xylen (total)	10	2	10 U	10 U	10 U	10 U	10 U
			1	1	1	1	1

DILUTION FACTOR:

ASE NO CTO143

EIMIC CORPORATION

CL SOIL SEMI-VOLATILE ORGANICS (ug/kg)

STATION ID:
LABORATORY ID:

TF4B482729RE TF4B483941RE
940980-27RE 940980-28RE

ANALYTE	CRQL	MDL/DL		
PHENOL	300	30	380 U	370 U
BIS(2-CHLOROETHYL)ETHER	300	30	380 U	370 U
2-CHLOROPHENOL	300	30	380 U	370 U
1,3-DICHLOROBENZENE	300	30	380 U	370 U
1,4-DICHLOROBENZENE	300	30	380 U	370 U
1,2-DICHLOROBENZENE	300	30	380 U	370 U
2-METHYLPHENOL	300	30	380 U	370 U
2,2'-OXYBIS(1-CHLOROPROPANE)	300	30	380 U	370 U
1-METHYLPHENOL	300	30	380 U	370 U
4-NITROSO-DI-n-PROPYLAMINE	300	30	380 U	370 U
HEXACHLOROETHANE	300	30	380 U	370 U
NITROBENZENE	300	30	380 U	370 U
SOPHORONE	300	30	380 U	370 U
2-NITROPHENOL	300	30	380 U	370 U
2,4-DIMETHYLPHENOL	300	30	380 U	370 U
BIS(2-CHLOROETHOXY)METHANE	300	30	380 U	370 U
2,4-DICHLOROPHENOL	300	30	380 U	370 U
1,2,4-TRICHLOROBENZENE	300	30	380 U	370 U
NAPHTHALENE	300	30	380 U	370 U
4-CHLOROANILINE	300	30	380 U	370 U
HEXACHLOROBUTADIENE	300	30	380 U	370 U
4-CHLORO-3-METHYLPHENOL	300	30	380 U	370 U
2-METHYLNAPHTHALENE	300	30	440	72 J
HEXACHLOROCYCLOPENTADIENE	300	30	380 U	370 U
2,4,6-TRICHLOROPHENOL	300	30	380 U	370 U
2,4,5-TRICHLOROPHENOL	800	80	920 U	900 U
2-CHLORONAPHTHALENE	300	30	380 U	370 U
2-NITROANILINE	800	80	920 U	900 U
DIMETHYLPHTHALATE	300	30	380 U	370 U
ACENAPHTHYLENE	300	30	380 U	40 J
2,6-DINITROTOLUENE	300	30	380 U	370 U
3-NITROANILINE	800	80	920 U	900 U

ASE NO CTO143

EMIC CORPORATION

CL SOIL SEMI-VOLATILE ORGANICS (ug/kg)

STATION ID:
LABORATORY ID:

TF4B482729RE TF4B483941RE
940980-27RE 940980-28RE

ANALYTE	CRQL	MDL/DL				
ACENAPHTHENE	300	30	270	J	110	J
2,4-DINITROPHENOL	800	80	920	U	900	U
1-NITROPHENOL	800	80	920	U	900	U
BENZOFURAN	300	30	210	J	100	J
2,4-DINITROTOLUENE	300	30	380	U	370	U
DIETHYL PHTHALATE	300	30	380	U	370	U
4-CHLOROPHENYL-PHENYL ETHER	300	30	500		230	J
FLUORENE	800	80	920	U	900	U
4-NITROANILINE	800	80	920	U	900	U
4,6-DINITRO-2-METHYLPHENOL	300	30	380	U	370	U
N-NITROSODIPHENYLAMINE	300	30	380	U	370	U
4-BROMOPHENYL-PHENYL ETHER	300	30	380	U	370	U
HEXACHLOROBENZENE	800	80	920	U	900	U
PENTACHLOROPHENOL	300	30	1300		590	
PHENANTHRENE	300	30	340	J	280	J
ANTHRACENE	300	30	380	U	370	U
DI-n-BUTYLPHTHALATE	300	30	78	J	93	J
FLUORANTHENE	300	30	380	U	370	U
CARBAZOLE	300	30	1200		940	
PYRENE	300	30	380	U	370	U
BUTYLBENZYLPHTHALATE	300	30	380	U	370	U
3,3'-DICHLOROBENZIDINE	300	30	99	J	92	J
BENZO(a)ANTHRACENE	300	30	150	J	150	J
CHRYSENE	300	30	84	J	450	
BIS(2-ETHYLHEXYL)PHTHALATE	300	30	380	U	370	U
DI-n-OCTYLPHTHALATE	300	30	380	U	370	U
BENZO(b)FLUORANTHENE	300	30	380	U	370	U
BENZO(k)FLUORANTHENE	300	30	69	J	79	J
BENZO(a)PYRENE	300	30	380	U	45	J
INDENO(1,2,3-cd)PYRENE	300	30	380	U	370	U
DIBENZO(a,h)ANTHRACENE	300	30	61	J	40	J
BENZO(g,h,i)PERYLENE						
DILUTION FACTOR:			1		1	
% SOLIDS			87		87	

CASE NO. CTO143

CEIMIC CORPORATION

TCL SOIL SEMI-VOLATILE ORGANICS (ug/kg)

STATION ID:
LABORATORY ID.

SOTF4B443638 SOTF4B472830 SOTF4B473840 SOTF4B482729 SOTF4B483941
940980-23 940980-24 940980-25 940980-27 940980-28

ANALYTE	CRQL	MDL/IDL							
ACENAPHTHENE	300	30	380 U	370 U	390 U	290 J	110 J		
2,4-DINITROPHENOL	800	80	930 U	900 U	950 U	920 U	900 U		
4-NITROPHENOL	800	80	930 U	900 U	950 U	920 U	900 U		
DIBENZOFURAN	300	30	380 U	370 U	390 U	210 J	370 U		
2,4-DINITROTOLUENE	300	30	380 U	370 U	390 U	380 U	370 U		
DIETHYL PHTHALATE	300	30	380 U	370 U	390 U	380 U	370 U		
4-CHLOROPHENYL-PHENYL ETHER	300	30	380 U	370 U	390 U	570	240 J		
FLUORENE	300	30	380 U	370 U	390 U	920 U	900 U		
4-NITROANILINE	800	80	930 U	900 U	950 U	920 U	900 U		
4,6-DINITRO-2-METHYLPHENOL	800	80	930 U	900 U	950 U	920 U	900 U		
N-NITROSODIPHENYLAMINE	300	30	380 U	370 U	390 U	1100	970 U		
4-BROMOPHENYL-PHENYL ETHER	300	30	380 U	370 U	390 U	380 U	370 U		
HEXACHLOROBENZENE	300	30	380 U	370 U	390 U	380 U	370 U		
PENTACHLOROPHENOL	800	80	930 U	900 U	950 U	920 U	900 U		
PHENANTHRENE	300	30	380 U	370 U	390 U	1400	560		
ANTHRACENE	300	30	380 U	370 U	390 U	270 J	290 J		
DI-n-BUTYLPHTHALATE	300	30	380 U	370 U	390 U	380 U	370 U		
FLUORANTHENE	300	30	380 U	370 U	390 U	120 J	81 J		
CARBAZOLE	300	30	380 U	370 U	390 U	380 U	370 U		
PYRENE	300	30	380 U	370 U	390 U	620	1300		
BUTYLBENZYLPHTHALATE	300	30	380 U	370 U	390 U	380 U	370 U		
3,3'-DICHLOROBENZIDINE	300	30	380 U	370 U	390 U	380 U	370 U		
BENZO(a)ANTHRACENE	300	30	380 U	370 U	390 U	96 J	370 U		
CHRYSENE	300	30	380 U	370 U	390 U	150 J	160 J		
BIS(2-ETHYLHEXYL)PHTHALATE	300	30	73 J	370 U	87 J	71 J	640		
DI-n-OCTYLPHTHALATE	300	30	380 U	370 U	390 U	380 U	370 U		
BENZO(b)FLUORANTHENE	300	30	380 U	370 U	390 U	380 U	370 U		
BENZO(k)FLUORANTHENE	300	30	380 U	370 U	390 U	380 U	370 U		
BENZO(a)PYRENE	300	30	380 U	370 U	390 U	76 J	76 J		
INDENO(1,2,3-cd)PYRENE	300	30	380 U	370 U	390 U	380 U	370 U		
DIBENZO(a,h)ANTHRACENE	300	30	380 U	370 U	390 U	380 U	370 U		
BENZO(g,h,i)PERYLENE	300	30	380 U	370 U	390 U	380 U	64 J		
DILUTION FACTOR:			1	1	1	1	1		
% SOLIDS			86	88	83	87	87		

CASE NO. CTO143

CEIMIC CORPORATION

TCL AQUEOUS SEMI-VOLATILE ORGANICS (ug/L)

STATION ID:

LABORATORY ID:

GW-TF4-DUP1 GW-TF4-MW119 GW-TF4-MW120 GW-TF4-MW121 GW-TF4-MW122
941038-08 941038-09 941038-01 941038-02 941038-10
FIELD DUPLICATE PAIR

ANALYTE	CRQL	MDL/IDL	941038-08	941038-09	941038-01	941038-02	941038-10
ACENAPHTHENE	10	1	1 J	1 J	10 U	10 U	100 U
2,4-DINITROPHENOL	25	25	25 U	25 U	25 U	25 U	250 U
4-NITROPHENOL	25	25	25 U	25 U	25 U	25 U	250 U
DIBENZOFURAN	10	1	1 J	1 J	10 U	10 U	100 U
2,4-DINITROTOLUENE	10	1	10 U	10 U	10 U	10 U	100 U
DIETHYL PHTHALATE	10	1	10 U	10 U	10 U	10 U	100 U
4-CHLOROPHENYL-PHENYL ETHER	10	1	10 U	10 U	10 U	10 U	100 U
FLUORENE	10	1	2 J	2 J	10 U	10 U	18 J
4-NITROANILINE	25	25	25 U	25 U	25 U	25 U	250 U
4,6-DINITRO-2-METHYLPHENOL	25	25	25 U	25 U	25 U	25 U	250 U
N-NITROSODIPHENYLAMINE	10	1	10 U	10 U	10 U	10 U	100 U
4-BROMOPHENYL-PHENYL ETHER	10	1	10 U	10 U	10 U	10 U	100 U
HEXACHLOROBENZENE	10	1	10 U	10 U	10 U	10 U	100 U
PENTACHLOROPHENOL	25	25	25 U	25 U	25 U	25 U	250 U
PHENANTHRENE	10	1	3 J	3 J	10 U	10 U	15 J
ANTHRACENE	10	1	1 J	10 UJ	10 U	10 U	100 U
DI-n-BUTYLPHthalate	10	1	10 U	10 U	10 U	10 U	100 U
FLUORANTHENE	10	1	10 U	10 U	10 U	10 U	100 U
CARBAZOLE	10	1	2 J	2 J	10 U	10 U	15 J
PYRENE	10	1	10 U	10 U	10 U	10 U	100 U
BUTYLBENZYLPHthalate	10	1	10 U	10 U	10 U	10 U	100 U
3,3'-DICHLOROBENZIDINE	10	1	10 U	10 U	10 U	10 U	100 U
BENZO(a)ANTHRACENE	10	1	10 U	10 U	10 U	10 U	100 U
CHRYSENE	10	1	10 U	10 UJ	10 U	10 U	100 U
BIS(2-ETHYLHEXYL)PHTHALATE	10	1	10 U	10 U	10 U	10 U	100 U
DI-n-OCTYLPHthalate	10	1	10 U	10 U	10 U	10 U	100 U
BENZO(b)FLUORANTHENE	10	1	10 U	10 U	10 U	10 U	100 U
BENZO(k)FLUORANTHENE	10	1	10 U	10 U	10 U	10 U	100 U
BENZO(a)PYRENE	10	1	10 U	10 U	10 U	10 U	100 U
INDENO(1,2,3-cd)PYRENE	10	1	10 U	10 U	10 U	10 U	100 U
DIBENZO(a,h)ANTHRACENE	10	1	10 U	10 U	10 U	10 U	100 U
BENZO(g,h,i)PERYLENE	10	1	10 U	10 U	10 U	10 U	100 U
DILUTION FACTOR.			1	1	1	1	10

CEIMIC CORPORATION

TCL AQUEOUS SEMI-VOLATILE ORGANICS (ug/L)

STATION ID:
LABORATORY ID.

GW-TF4-DUP1 GW-TF4-MW119 GW-TF4-MW120 GW-TF4-MW121 GW-TF4-MW122
941038-08 941038-09 941038-01 941038-02 941038-10
FIELD DUPLICATE PAIR

ANALYTE	CRQL	MDL/IDL	GW-TF4-DUP1	GW-TF4-MW119	GW-TF4-MW120	GW-TF4-MW121	GW-TF4-MW122
PHENOL	10	1	10 U	10 U	10 U	10 U	100 U
BIS(2-CHLOROETHYL)ETHER	10	1	10 U	10 U	10 U	10 U	100 U
2-CHLOROPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
1,3-DICHLOROBENZENE	10	1	10 U	10 U	10 U	10 U	100 U
1,4-DICHLOROBENZENE	10	1	10 U	10 U	10 U	10 U	100 U
1,2-DICHLOROBENZENE	10	1	10 U	10 U	10 U	10 U	100 U
2-METHYLPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10	1	10 U	10 U	10 U	10 U	100 U
4-METHYLPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
N-NITROSO-DI-n-PROPYLAMINE	10	1	10 U	10 U	10 U	10 U	100 U
HEXACHLOROETHANE	10	1	10 U	10 U	10 U	10 U	100 U
NITROBENZENE	10	1	10 U	10 U	10 U	10 U	100 U
ISOPHORONE	10	1	10 U	10 U	10 U	10 U	100 U
2-NITROPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
2,4-DIMETHYLPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
BIS(2-CHLOROETHOXY)METHANE	10	1	10 U	10 U	10 U	10 U	100 U
2,4-DICHLOROPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
1,2,4-TRICHLOROBENZENE	10	1	1 J	1 J	10 U	10 U	100 U
NAPHTHALENE	10	1	10 U	10 U	10 U	10 U	100 U
4-CHLOROANILINE	10	1	10 U	10 U	10 U	10 U	100 U
HEXACHLOROBUTADIENE	10	1	10 U	10 U	10 U	10 U	100 U
4-CHLORO-3-METHYLPHENOL	10	1	7 J	7 J	10 U	10 U	100 U
2-METHYLNAPHTHALENE	10	1	10 U	10 U	10 U	10 U	100 U
HEXACHLOROCYCLOPENTADIENE	10	1	10 U	10 U	10 U	10 U	100 U
2,4,6-TRICHLOROPHENOL	25	25	25 U	25 U	25 U	25 U	250 U
2,4,5-TRICHLOROPHENOL	10	1	10 U	10 U	10 U	10 U	100 U
2-CHLORONAPHTHALENE	25	25	25 U	25 U	25 U	25 U	250 U
2-NITROANILINE	10	1	10 U	10 U	10 U	10 U	100 U
DIMETHYLPHTHALATE	10	1	10 U	10 U	10 U	10 U	100 U
ACENAPHTHYLENE	10	1	10 U	10 U	10 U	10 U	100 U
2,6-DINITROTOLUENE	10	1	10 U	10 U	10 U	10 U	100 U
3-NITROANILINE	25	25	25 U	25 U	25 U	25 U	250 U

CASE NO. CTO143

HEMICON CORPORATION
TOTAL
CRA SOIL METALS (mg/Kg)

STATION ID:
LABORATORY ID.

SOTF4B433638	SOTF4B442224	SOTF4B443638	SOTF4B472830	SOTF4B473840	SOTF4B482729
940980-21	940980-22	940980-23	940980-24	940980-25	940980-27

ANALYTE	CRDL	IDL												
ARSENIC	1	0.2	9.4		13.3		12.9		19.2		16.5		10.4	
BARIUM	20	0.3	19.3		6.6		6.9		8.9		14.6		11.5	
CADMIUM	0.5	0.4	1.4		1.7		2.4		2.2		2.3		1.8	
CHROMIUM	1	0.7	9.0		11.9		10.8		11.1		15.1		12.6	
LEAD	0.3	0.1	10.4		6.9		4.8		5.8		7.8		9.0	
MERCURY	0.1	0.05	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
SELENIUM	0.5	0.2/0.4	0.38	U	0.21	U	0.33	U	0.18	U	0.32	U	0.19	U
SILVER	1	0.4	0.38	UJ	1.1	U	1.8	U	1.2	U	1.4	U	0.81	UJ
% SOLIDS			81.3		86.6		85.8		87.8		83.7		84	

CASE NO. CTO143

CEIMIC CORPORATION
TOTAL
RCRA SOIL METALS (mg/Kg)

STATION ID:
LABORATORY ID:

SOTF4B483941
940980-28

ANALYTE	CRDL	IDL		
ARSENIC	1	0.2	10.6	
BARIUM	20	0.3	11.5	
CADMIUM	0.5	0.4	1.7	
CHROMIUM	1	0.7	15.1	
LEAD	0.3	0.1	6.1	
MERCURY	0.1	0.05	0.05	U
SELENIUM	0.5	0.2/0.4	0.19	U
SILVER	1	0.4	0.65	UJ

% SOLIDS

84

CASE NO. 1038BTAC

CEIMIC CORPORATION
TOTAL
RCRA AQUEOUS METALS (ug/L)

STATION ID LABORATORY ID.			GW-TF4-DUP1	GW-TF4-MW119	GW-TF4-MW120	GW-TF4-MW121	GW-TF4-MW122	GW-TF4-MW122	GW-TF4-MW122	
			941038-08	941038-09	941038-01	941038-02	941038-10	941038-10	941038-11	
ANALYTE	CRDL	IDL	FIELD DUPLICATE PAIR							
ARSENIC	10	2	59 U	75 U	24 UJ	126	656		330	
BARIUM	200	1	164 U	208 U	113 U	514	1530		379	
CADMIUM	5	3	30 U	30 U	30 U	30 U	30 U	30 U	30	
CHROMIUM	10	5	50 U	50 U	50 U	52	496		258	
LEAD	3	1	29 U	52 U	10 U	11.8	722		160	
MERCURY	0.2	0.1	0.13 UJ	0.42 J	0.13 UJ	0.14 UJ	0.52 J	0.52 J	0.13	
SELENIUM	5	2	20 U	20 U	20 U	2.0 U	2.0 U	2.0 U	2.0	
SILVER	10	4	40 U	40 U	40 U	4.0 U	290		40	

Total Petroleum Hydrocarbons
(Extractables)

EPA Method 8015B
GC/FID Fingerprint

Client: Halliburton NUS

Client Sample ID: SO-TF4-P2-48-0608

Laboratory ID: 940996-13

Date Sample Received: 11/15/94

Date Sample Prepared: 11/22/94

Date Sample Analyzed: 11/30/94

Concentration in: mg/kg⁺

Target Analyte	Sample Concentration	Method Reporting Limits
Mineral Spirits (Paint Thinner)	ND	11
JP-4 Jet Fuel	ND	11
Kerosene	ND	11
Jet Fuel A	ND	11
JP-5 Jet Fuel	ND	11
JP-8 Jet Fuel	ND	11
Mineral Oil	ND	11
Naphtha	ND	11
Diesel Fuel	ND	11
Fuel Oil #2	ND	11
Fuel Oil #4	ND	11
Fuel Oil #5	ND	11
Fuel Oil #6	ND	11
Bunker Oil	ND	11
Motor Oil	ND	11
Hydraulic Jack Oil	ND	11
Transmission Fluid	ND	11
Lubricating Oil	ND	11
Compressor Oil	ND	11
Creosote	ND	11
Diesel Range Organics (C10 to C28)	ND	5.4
Residual Range Organics (C28 to C40)	ND	5.4

ND = Not detected

+ = dry weight basis, solids = 93%

The sample chromatogram was compared to the Target Analytes listed. The reported analyte concentrations are estimated from the most closely matching target analytes.

Reported by: _____



Approved by: _____



**Total Petroleum Hydrocarbons
(Extractables)**

EPA Method 8015B
GC/FID Fingerprint

Client: Halliburton NUS

Client Sample ID: SO-TF4-P3-48-0406

Date Sample Received: 11/15/94

Date Sample Analyzed: 11/30/94

Laboratory ID: 940996-14

Date Sample Prepared: 11/22/94

Concentration in: mg/kg[±]

Target Analyte	Sample Concentration	Method Reporting Limits
Mineral Spints (Paint Thinner)	ND	11
JP-4 Jet Fuel	ND	11
Kerosene	ND	11
Jet Fuel A	ND	11
JP-5 Jet Fuel	ND	11
JP-8 Jet Fuel	ND	11
Mineral Oil	ND	11
Naphtha	ND	11
Diesel Fuel	ND	11
Fuel Oil #2	ND	11
Fuel Oil #4	ND	11
Fuel Oil #5	ND	11
Fuel Oil #6	ND	11
Bunker Oil	ND	11
Motor Oil	ND	11
Hydraulic Jack Oil	ND	11
Transmission Fluid	ND	11
Lubricating Oil	ND	11
Compressor Oil	ND	11
Creosote	ND	11
Diesel Range Organics (C10 to C28)	ND	5.5
Residual Range Organics (C28 to C40)	ND	5.5

ND = Not detected

+ = dry weight basis, solids = 91%

The sample chromatogram was compared to the Target Analytes listed. The reported analyte concentrations are estimated from the most closely matching target analytes.

Reported by: AL

Approved by: HL

Total Petroleum Hydrocarbons
(Extractables)

EPA Method 8015B
GC/FID Fingerprint

Client: Halliburton NUS

Client Sample ID: SO-TF4-B-48-2729

Date Sample Received: 11/10/94

Date Sample Analyzed: 11/24/94

Laboratory ID: 940980-27

Date Sample Prepared: 11/17/94

Concentration in: mg/kg⁻¹

Target Analyte	Sample Concentration	Method Reporting Limits
Mineral Spirits (Paint Thinner)	ND	110
JP-4 Jet Fuel	ND	110
Kerosene	ND	110
Jet Fuel A	ND	110
JP-5 Jet Fuel	ND	110
JP-8 Jet Fuel	ND	110
Mineral Oil	ND	110
Naphtha	ND	110
Diesel Fuel	ND	110
Fuel Oil #2	ND	110
Fuel Oil #4	ND	110
Fuel Oil #5	ND	110
Fuel Oil #6	ND	110
Bunker Oil	5,300	110
Motor Oil	ND	110
Hydraulic Jack Oil	ND	110
Transmission Fluid	ND	110
Lubricating Oil	ND	110
Compressor Oil	ND	110
Creosote	ND	110
Diesel Range Organics (C10 to C28)	PM	57
Residual Range Organics (C28 to C40)	PM	57

ND = Not detected

PM = Pattern matches target analyte

+ Dry weight basis, solid = 87%

The sample chromatogram was compared to the Target Analytes listed. The reported analyte concentrations are estimated from the most closely matching target analytes.

Reported by: _____

Approved by: _____

**APPENDIX I
CHAIN-OF-CUSTODY FORMS**



175 Metro Center Boulevard • Warwick, Rhode Island 02886-1755
 (401) 732-3400 • Fax (401) 732-3499
 1232 East Broadway Road, Suite 210 • Tempe, Arizona 85282
 (602) 303-9535 Fax (602) 921-2883

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

REPORT TO							INVOICE TO												
COMPANY FOSTER Wheeler				PHONE 842-6940			COMPANY FOSTER Wheeler				PHONE 842-6940			LAB REFERENCE #					
NAME MARK Gouveia				FAX 842-6970			NAME				FAX 842-6970			TURNAROUND TIME					
ADDRESS P.O. Box 4749							ADDRESS P.O. Box 4749							1 WEEK TAT					
CITY/ST/ZIP MIDDLETOWN RT 02842							CITY/ST/ZIP MIDDLETOWN RT 02842												
CLIENT PROJECT NAME:			CLIENT PROJECT #:			CLIENT P.O.#:			REQUESTED ANALYSES										
TANK FARM # 4			DU # 13F			063195			<div style="display: flex; justify-content: space-between;"> VOC's SVOC's TPH PCRA & METALS ICLIP METALS EDB </div>										
SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS								COMMENTS			
TPTK-43	7/14/97/1100	x	x		x			2	✓	✓	✓	✓							
TPTK-40	7/14/97/1340	x	x		x			2	✓	✓	✓	✓							
TK 48 F1	7/14/97/1100	x	✓			✓		3	✓	✓	✓		✓	✓					
TK 48 C1	7/14/97/1030	x	x			✓		3	✓	✓	✓		✓	✓					
TK 48 WA	7/14/97/1120	x	✓			x		3	✓	✓	✓		✓	✓					
TK 48 W3	7/14/97/1130	x	✓			x		3	✓	✓	✓		✓	✓					
TK 48 W1	7/14/97/1330	✓	✓			x		3	✓	✓	✓		✓	✓					
TK 48 W2	7/14/97/1400	✓	✓			x		3	✓	✓	✓		✓	✓					
TK4-TB1	7/14/97/							1	✓										
	/																		
	/																		
	/																		
TSF#	REMOVED BY	DATE/TIME	ACCEPTED BY				DATE/TIME	ADDITIONAL REMARKS							COOLER TEMP:				
1st	<i>[Signature]</i>	7/14/97/1505	<i>[Signature]</i>				7-14-97/15:05												
2nd		/					/												
3rd		/					/												

WHITE: LABORATORY COPY

YELLOW: REPORT COPY

PINK: CLIENT'S COPY

APPENDIX J
CHIP SAMPLE ANALYTICAL RESULTS

Data Qualifiers:

- J This flag indicates an estimated value due to either
- the compound was detected at below the Reporting Limit, or
 - estimated concentration for Tentatively Identified Compound
- B This flag indicates the analyte was also detected in the associated Method Blank
- D This flag indicates the analyte concentration was obtained from a diluted analysis
- E This flag indicates the analyte concentration exceeded the Calibration Range
- P This flag is used for Pesticides/PCB/Herbicide analyte when there is a greater than 50% difference for detected concentration between the two GC columns used for Primary and Confirmation analyses. The lower of the two values is reported in the Analysis Report.



Client: Foster Wheeler Environmental Corp.

Client Project: DO#13F (Tank Farm #4)

Lab Project: D1139

Date Samples Received: July 14, 1997

Project Narrative

This data package included the analysis result for six concrete samples that were received from Foster Wheeler Environmental Corp. on July 14, 1997. Analyses were performed per specifications in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the Client sample ID and Laboratory sample ID.

Due to the alkaline nature of the concrete samples, low acid surrogate recoveries were determined for several samples for the Method 8270 analyses.

All of the analyses were performed according to method specifications.

The enclosed data package has been reviewed and is authorized for release as evidenced by the signature below.

A handwritten signature in black ink, appearing to read "Kin S. Chiu".

Kin S. Chiu
Laboratory Manager



July 25, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

RE: Client Project # DO#13F, Tank Farm #4
Lab Project #D1139

Dear Mr. Gouveia:

Enclosed is the Data Report of the required analyses for the samples associated with the Project. If you have any questions regarding the Report, please call me.

We appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Kin S. Chiu".

Kin S. Chiu
Laboratory Manager



Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1139-01	TK48F1	400	93	90	7/24/97
D1139-02	TK48C1	5,300	96	2,100	7/24/97
D1139-03	TK48W4	1,300	94	210	7/24/97
D1139-04	TK48W3	670	95	180	7/24/97
D1139-05	TK48W1	1,500	94	420	7/24/97
D1139-06	TK48W2	980	94	370	7/24/97

QA/QC

Method Blank

I0722-B1

ND

22

7/24/97

Lab control Spike (% Recovery)

I0722-LCS1

108

7/24/97

ND = Not Detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TK48C1
Lab ID: D1139-02
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Concentration in: mg/L
Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	0.22	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	0.04	0.02
Silver	ND	0.02

ND = Not detected

QC Batch: MT0722B1



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 C1
 Lab ID: D1139-02
 Analysis: Method 8260

Analysis Date: 7/23/97
 Matrix: Soil, 98% solids
 Concentration in: ug/kg, dry weight basis
 Dilution: 10

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	51
Chloromethane	ND	51
Vinyl chloride	ND	51
Bromomethane	ND	51
Chloroethane	ND	51
Trichlorofluoromethane	ND	51
1,1-Dichloroethene	ND	51
Carbon disulfide	ND	51
Iodomethane	ND	51
Acetone	73	51
Methylene chloride	ND	51
trans-1,2-Dichloroethene	ND	51
1,1-Dichloroethane	ND	51
Vinyl acetate	ND	51
2,2-Dichloropropane	ND	51
cis-1,2-Dichloroethene	ND	51
Methyl ethyl ketone	ND	51
Bromochloromethane	ND	51
Chloroform	ND	51
1,1,1-Trichloroethane	ND	51
Carbon tetrachloride	ND	51
1,1-Dichloropropene	ND	51
Benzene	ND	51
1,2-Dichloroethane	ND	51
Trichloroethene	ND	51
1,2-Dichloropropane	ND	51
Dibromomethane	ND	51
Bromodichloromethane	ND	51
2-Chloroethyl vinyl ether	ND	51
cis-1,3-Dichloropropene	ND	51
4-Methyl-2-pentanone	ND	51
Toluene	310	51
trans-1,3-Dichloropropene	ND	51
1,1,2-Trichloroethane	ND	51
Tetrachloroethene	ND	51
1,3-Dichloropropane	ND	51



Client ID: TK 48 C1

Lab ID: D1139-02

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	51
Dibromochloromethane	ND	51
1,2-Dibromoethane (EDB)	ND	51
Chlorobenzene	ND	51
1,1,1,2-Tetrachloroethane	ND	51
Ethylbenzene	390	51
Xylenes, total	1,800	51
Styrene	ND	51
Bromoform	ND	51
Isopropylbenzene	168	51
Bromobenzene	ND	51
1,1,2,2-Tetrachloroethane	ND	51
1,2,3-Trichloropropane	ND	51
n-Propylbenzene	310	51
2-Chlorotoluene	ND	51
4-Chlorotoluene	ND	51
1,3,5-Trimethylbenzene	600	51
tert-Butylbenzene	ND	51
1,2,4-Trimethylbenzene	1,800	51
sec-Butylbenzene	100	51
1,3-Dichlorobenzene	ND	51
4-Isopropyltoluene	160	51
1,4-Dichlorobenzene	ND	51
1,2-Dichlorobenzene	ND	51
n-Butylbenzene	ND	51
1,2-Dibromo-3-chloropropane	ND	51
1,2,4-Trichlorobenzene	ND	51
Hexachlorobutadiene	ND	51
1,2,3-Trichlorobenzene	ND	51
MTBE	ND	51
Naphthalene	1,100	51

QC Batch: V1B0723A

Surrogate Recovery:

1,2-Dichloroethane-d4	116%
Toluene-d8	106%
Bromofluorobenzene	97%

ND = Not detected



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 C1
 Lab ID: D1139-02
 Analysis: Method 8270

Analysis Date: 7/24/97
 Matrix: Concrete, 96% solid
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	290
bis(2-Chloroethyl)ether	ND	290
2-Chlorophenol	ND	290
1,3-Dichlorobenzene	ND	290
1,4-Dichlorobenzene	ND	290
1,2-Dichlorobenzene	ND	290
2-Methylphenol	ND	290
2,2'-oxybis(1-Chloropropane)	ND	290
4-Methylphenol	ND	290
n-Nitroso-di-n-propylamine	ND	290
Hexachloroethane	ND	290
Nitrobenzene	ND	290
Isophorone	ND	290
2-Nitrophenol	ND	290
2,4-Dimethylphenol	ND	290
bis(2-Chloroethoxy)methane	ND	290
2,4-Dichlorophenol	ND	290
1,2,4-Trichlorobenzene	ND	290
Naphthalene	2,200	290
4-Chloroaniline	ND	290
Hexachlorobutadiene	ND	290
4-Chloro-3-methylphenol	ND	290
2-Methylnaphthalene	7,800 D	290
Hexachlorocyclopentadiene	ND	290
2,4,6-Trichlorophenol	ND	290
2,4,5-Trichlorophenol	ND	720
2-Chloronaphthalene	ND	290
2-Nitroaniline	ND	720
Dimethylphthalate	ND	290
Acenaphthylene	ND	290
2,6-Dinitrotoluene	ND	290
3-Nitroaniline	ND	720
Acenaphthene	510	290
2,4-Dinitrophenol	ND	720
4-Nitrophenol	ND	720
Dibenzofuran	300	290
2,4-Dinitrotoluene	ND	290



Client ID: TK 48 C1

Lab ID: D1139-02

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	290
Fluorene	680	290
4-Chlorophenyl-phenylether	ND	290
4-Nitroaniline	ND	720
4,6-Dinitro-2-methylphenol	ND	720
n-Nitrosodiphenylamine	ND	290
4-Bromophenyl-phenylether	ND	290
Hexachlorobenzene	ND	290
Pentachlorophenol	ND	720
Phenanthrene	2,300	290
Anthracene	420	290
Di-n-butylphthalate	30 J	290
Carbazole	49 J	290
Fluoranthene	130 J	290
Pyrene	1,400	290
Butylbenzylphthalate	ND	290
Benzo(a)anthracene	130 J	290
Chrysene	350	290
3,3'-Dichlorobenzidine	ND	290
bis(2-Ethylhexyl)phthalate	ND	290
Di-n-octylphthalate	40 J	290
Benzo(b)fluoranthene	55 J	290
Benzo(k)fluoranthene	89 J	290
Benzo(a)pyrene	ND	290
Indeno(1,2,3-cd)pyrene	35 J	290
Dibenz(a,h)anthracene	ND	290
Benzo(g,h,i)perylene	74 J	290

QC Batch: S0723-B1

Surrogate Recovery:

2-Fluorophenol	17% *
Phenol-d5	34%
2-Chlorophenol-d4	27%
2,4,6-Tribromophenol	12% *
1,2-Dichlorobenzene-d4	66%
Nitrobenzene-d5	79%
2-Fluorobiphenyl	71%
p-Terphenyl-d14	114%

ND = Not detected

*Out of control limit.



Client: Foster Wheeler Environmental Corp.

Client Project: DO#13F (Tank Farm #4)

Lab Project: D1139

Date Samples Received: July 14, 1997

Project Narrative

This data package included the analysis result for six concrete samples that were received from Foster Wheeler Environmental Corp. on July 14, 1997. Analyses were performed per specifications in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the Client sample ID and Laboratory sample ID.

Due to the alkaline nature of the concrete samples, low acid surrogate recoveries were determined for several samples for the Method 8270 analyses.

All of the analyses were performed according to method specifications.

The enclosed data package has been reviewed and is authorized for release as evidenced by the signature below.

A handwritten signature in black ink, appearing to be "Kin S. Chiu", written over a horizontal line.

Kin S. Chiu
Laboratory Manager



July 25, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

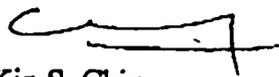
RE: Client Project # DO#13F, Tank Farm #4
Lab Project #D1139

Dear Mr. Gouveia:

Enclosed is the Data Report of the required analyses for the samples associated with the Project. If you have any questions regarding the Report, please call me.

We appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Kin S. Chiu".

Kin S. Chiu
Laboratory Manager



Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1139-01	TK48F1	400	93	90	7/24/97
D1139-02	TK48C1	5,300	96	2,100	7/24/97
D1139-03	TK48W4	1,300	94	210	7/24/97
D1139-04	TK48W3	670	95	180	7/24/97
D1139-05	TK48W1	1,500	94	420	7/24/97
D1139-06	TK48W2	980	94	370	7/24/97

QA/QC

Method Blank

I0722-B1

ND

22

7/24/97

Lab control Spike (% Recovery)

I0722-LCS1

108

7/24/97

ND = Not Detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.

Client ID: TK48F1

Lab ID: D1139-01

Analysis Method: 7470A (Mercury)

6010A (Others)

Matrix: TCLP Leachate

Concentration in: mg/L

Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	0.24	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	0.03	0.02
Silver	ND	0.02

ND = Not detected

QC Batch: MT0722B1



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 F1
 Lab ID: D1139-01
 Analysis: Method 8260

Analysis Date: 7/22/97
 Matrix: Soil, 94% solids
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	15	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5



Client ID: TK 48 F1

Lab ID: D1139-01

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	23	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	7	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	14	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	60	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	81	5

QC Batch: V1B0722A

Surrogate Recovery:

1,2-Dichloroethane-d4	111%
Toluene-d8	107%
Bromofluorobenzene	96%

ND = Not detected



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 F1
 Lab ID: D1139-01
 Analysis: Method 8270

Analysis Date: 7/24/97
 Matrix: Concrete, 93% solid
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	340
bis(2-Chloroethyl)ether	ND	340
2-Chlorophenol	ND	340
1,3-Dichlorobenzene	ND	340
1,4-Dichlorobenzene	ND	340
1,2-Dichlorobenzene	ND	340
2-Methylphenol	ND	340
2,2'-oxybis(1-Chloropropane)	ND	340
4-Methylphenol	ND	340
n-Nitroso-di-n-propylamine	ND	340
Hexachloroethane	ND	340
Nitrobenzene	ND	340
Isophorone	ND	340
2-Nitrophenol	ND	340
2,4-Dimethylphenol	ND	340
bis(2-Chloroethoxy)methane	ND	340
2,4-Dichlorophenol	ND	340
1,2,4-Trichlorobenzene	ND	340
Naphthalene	40 J	340
4-Chloroaniline	ND	340
Hexachlorobutadiene	ND	340
4-Chloro-3-methylphenol	ND	340
2-Methylnaphthalene	210 J	340
Hexachlorocyclopentadiene	ND	340
2,4,6-Trichlorophenol	ND	340
2,4,5-Trichlorophenol	ND	850
2-Chloronaphthalene	ND	340
2-Nitroaniline	ND	850
Dimethylphthalate	ND	340
Acenaphthylene	ND	340
2,6-Dinitrotoluene	ND	340
3-Nitroaniline	ND	850
Acenaphthene	ND	340
2,4-Dinitrophenol	ND	850
4-Nitrophenol	ND	850
Dibenzofuran	ND	340
2,4-Dinitrotoluene	ND	340



Client ID: TK 48 F1

Lab ID: D1139-01

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	340
Fluorene	ND	340
4-Chlorophenyl-phenylether	ND	340
4-Nitroaniline	ND	850
4,6-Dinitro-2-methylphenol	ND	850
n-Nitrosodiphenylamine	ND	340
4-Bromophenyl-phenylether	ND	340
Hexachlorobenzene	ND	340
Pentachlorophenol	ND	850
Phenanthrene	97 J	340
Anthracene	ND	340
Di-n-butylphthalate	ND	340
Carbazole	ND	340
Fluoranthene	ND	340
Pyrene	68 J	340
Butylbenzylphthalate	ND	340
Benzo(a)anthracene	ND	340
Chrysene	ND	340
3,3'-Dichlorobenzidine	ND	340
bis(2-Ethylhexyl)phthalate	78 J	340
Di-n-octylphthalate	ND	340
Benzo(b)fluoranthene	ND	340
Benzo(k)fluoranthene	ND	340
Benzo(a)pyrene	ND	340
Indeno(1,2,3-cd)pyrene	ND	340
Dibenz(a,h)anthracene	ND	340
Benzo(g,h,i)perylene	ND	340

QC Batch: S0723-B1

Surrogate Recovery:

2-Fluorophenol	35%
Phenol-d5	46%
2-Chlorophenol-d4	42%
2,4,6-Tribromophenol	42%
1,2-Dichlorobenzene-d4	59%
Nitrobenzene-d5	71%
2-Fluorobiphenyl	82%
p-Terphenyl-d14	153% *

ND = Not detected

*Out of control limit; verified as matrix effect by re-analysis of the sample at dilution.



Client: Foster Wheeler Environmental Corp.

Client Project: DO#13F (Tank Farm #4)

Lab Project: D1139

Date Samples Received: July 14, 1997

Project Narrative

This data package included the analysis result for six concrete samples that were received from Foster Wheeler Environmental Corp. on July 14, 1997. Analyses were performed per specifications in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the Client sample ID and Laboratory sample ID.

Due to the alkaline nature of the concrete samples, low acid surrogate recoveries were determined for several samples for the Method 8270 analyses.

All of the analyses were performed according to method specifications.

The enclosed data package has been reviewed and is authorized for release as evidenced by the signature below.

A handwritten signature in black ink, appearing to read "Kin S. Chiu".

Kin S. Chiu
Laboratory Manager



July 25, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

RE: Client Project # DO#13F, Tank Farm #4
Lab Project #D1139

Dear Mr. Gouveia:

Enclosed is the Data Report of the required analyses for the samples associated with the Project. If you have any questions regarding the Report, please call me.

We appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Kin S. Chiu".

Kin S. Chiu
Laboratory Manager



Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1139-01	TK48F1	400	93	90	7/24/97
D1139-02	TK48C1	5,300	96	2,100	7/24/97
D1139-03	TK48W4	1,300	94	210	7/24/97
D1139-04	TK48W3	670	95	180	7/24/97
D1139-05	TK48W1	1,500	94	420	7/24/97
D1139-06	TK48W2	980	94	370	7/24/97

QA/QC

Method Blank
I0722-B1

ND

22

7/24/97

Lab control Spike (% Recovery)
I0722-LCS1

108

7/24/97

ND = Not Detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TK48W1
Lab ID: D1139-05
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Concentration in: mg/L
Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	0.11	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	0.02	0.02
Silver	ND	0.02

QC Batch: MT0722B1

ND = Not detected



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 W1
 Lab ID: D1139-05
 Analysis: Method 8260

Analysis Date: 7/23/97
 Matrix: Soil, 94% solids
 Concentration in: ug/kg, dry weight basis
 Dilution: 2

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	12	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5



Client ID: TK 48 W1

Lab ID: D1139-05

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	31	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	7	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	21	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	78	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	7	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	96	5

QC Batch: V1B0723A

Surrogate Recovery	
1,2-Dichloroethane-d4	110%
Toluene-d8	106%
Bromofluorobenzene	101%

ND = Not detected



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 W1
 Lab ID: D1139-05
 Analysis: Method 8270

Analysis Date: 7/25/97
 Matrix: Concrete, 94% solid
 Concentration in: ug/kg, dry weight basis
 Dilution: 10

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	2,800
bis(2-Chloroethyl)ether	ND	2,800
2-Chlorophenol	ND	2,800
1,3-Dichlorobenzene	ND	2,800
1,4-Dichlorobenzene	ND	2,800
1,2-Dichlorobenzene	ND	2,800
2-Methylphenol	ND	2,800
2,2'-oxybis(1-Chloropropane)	ND	2,800
4-Methylphenol	ND	2,800
n-Nitroso-di-n-propylamine	ND	2,800
Hexachloroethane	ND	2,800
Nitrobenzene	ND	2,800
Isophorone	ND	2,800
2-Nitrophenol	ND	2,800
2,4-Dimethylphenol	ND	2,800
bis(2-Chloroethoxy)methane	ND	2,800
2,4-Dichlorophenol	ND	2,800
1,2,4-Trichlorobenzene	ND	2,800
Naphthalene	300 J	2,800
4-Chloroaniline	ND	2,800
Hexachlorobutadiene	ND	2,800
4-Chloro-3-methylphenol	ND	2,800
2-Methylnaphthalene	1,400 J	2,800
Hexachlorocyclopentadiene	ND	2,800
2,4,6-Trichlorophenol	ND	2,800
2,4,5-Trichlorophenol	ND	7,000
2-Chloronaphthalene	ND	2,800
2-Nitroaniline	ND	7,000
Dimethylphthalate	ND	2,800
Acenaphthylene	ND	2,800
2,6-Dinitrotoluene	ND	2,800
3-Nitroaniline	ND	7,000
Acenaphthene	ND	2,800
2,4-Dinitrophenol	ND	7,000
4-Nitrophenol	ND	7,000
Dibenzofuran	ND	2,800
2,4-Dinitrotoluene	ND	2,800



Client ID: TK 48 W1

Lab ID: D1139-05

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	2,800
Fluorene	ND	2,800
4-Chlorophenyl-phenylether	ND	2,800
4-Nitroaniline	ND	7,000
4,6-Dinitro-2-methylphenol	ND	7,000
n-Nitrosodiphenylamine	ND	2,800
4-Bromophenyl-phenylether	ND	2,800
Hexachlorobenzene	ND	2,800
Pentachlorophenol	ND	7,000
Phenanthrene	ND	2,800
Anthracene	ND	2,800
Di-n-butylphthalate	ND	2,800
Carbazole	ND	2,800
Fluoranthene	ND	2,800
Pyrene	410 J	2,800
Butylbenzylphthalate	ND	2,800
Benzo(a)anthracene	ND	2,800
Chrysene	ND	2,800
3,3'-Dichlorobenzidine	ND	2,800
bis(2-Ethylhexyl)phthalate	9,900	2,800
Di-n-octylphthalate	ND	2,800
Benzo(b)fluoranthene	ND	2,800
Benzo(k)fluoranthene	ND	2,800
Benzo(a)pyrene	ND	2,800
Indeno(1,2,3-cd)pyrene	ND	2,800
Dibenz(a,h)anthracene	ND	2,800
Benzo(g,h,i)perylene	ND	2,800

QC Batch: S0723-B1

Surrogate Recovery:

2-Fluorophenol	14% *
Phenol-d5	42%
2-Chlorophenol-d4	27%
2,4,6-Tribromophenol	14% *
1,2-Dichlorobenzene-d4	63%
Nitrobenzene-d5	79%
2-Fluorobiphenyl	69%
p-Terphenyl-d14	107%

ND = Not detected

*Out of control limit.



Client: Foster Wheeler Environmental Corp.

Client Project: DO#13F (Tank Farm #4)

Lab Project: D1139

Date Samples Received: July 14, 1997

Project Narrative

This data package included the analysis result for six concrete samples that were received from Foster Wheeler Environmental Corp. on July 14, 1997. Analyses were performed per specifications in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the Client sample ID and Laboratory sample ID.

Due to the alkaline nature of the concrete samples, low acid surrogate recoveries were determined for several samples for the Method 8270 analyses.

All of the analyses were performed according to method specifications.

The enclosed data package has been reviewed and is authorized for release as evidenced by the signature below.

A handwritten signature in black ink, appearing to be "Kin S. Chiu", written in a cursive style.

Kin S. Chiu
Laboratory Manager



July 25, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

RE: Client Project # DO#13F, Tank Farm #4
Lab Project #D1139

Dear Mr. Gouveia:

Enclosed is the Data Report of the required analyses for the samples associated with the Project. If you have any questions regarding the Report, please call me.

We appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Kin S. Chiu".

Kin S. Chiu
Laboratory Manager



Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1139-01	TK48F1	400	93	90	7/24/97
D1139-02	TK48C1	5,300	96	2,100	7/24/97
D1139-03	TK48W4	1,300	94	210	7/24/97
D1139-04	TK48W3	670	95	180	7/24/97
D1139-05	TK48W1	1,500	94	420	7/24/97
D1139-06	TK48W2	980	94	370	7/24/97

QA/QC

Method Blank

I0722-B1

ND

22

7/24/97

Lab control Spike (% Recovery)

I0722-LCS1

108

7/24/97

ND = Not Detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TK48W2
Lab ID: D1139-06
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Concentration in: mg/L
Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	0.24	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	0.04	0.02
Silver	ND	0.02

QC Batch: MT0722B1

ND = Not detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID:
Lab ID: TCLP Blank, MT0722B1
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Concentration in: mg/L
Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	ND	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	ND	0.02
Silver	ND	0.02

QC Batch: MT0722B1

ND = Not detected



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 W2
 Lab ID: D1139-06
 Analysis: Method 8260

Analysis Date: 7/23/97
 Matrix: Soil, 93% solids
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	21	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5



Client ID: TK 48 W2

Lab ID: D1139-06

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	21	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	7	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	20	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	78	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	7	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	79	5

QC Batch: V1B0723A

Surrogate Recovery:	
1,2-Dichloroethane-d4	108%
Toluene-d8	107%
Bromofluorobenzene	99%

ND = Not detected



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
Client ID:
Lab ID: Method Blank, V1B0723A
Analysis: Method 8260

Analysis Date: 7/23/97
Matrix: Soil
Concentration in: ug/kg, dry weight basis
Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	ND	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5



Client ID:

Lab ID: Method Blank, V1B0723A

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	ND	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	ND	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Tnmethylbenzene	ND	5
tert-Butylbenzene	ND	5
1,2,4-Tnmethylbenzene	ND	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	ND	5

QC Batch: V1B0723A

Surrogate Recovery:	
1,2-Dichloroethane-d4	106%
Toluene-d8	113%
Bromofluorobenzene	106%

ND = Not detected



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
Client ID:
Lab ID: Method Blank, V1B0722A
Analysis: Method 8260

Analysis Date: 7/22/97
Matrix: Soil
Concentration in: ug/kg, dry weight basis
Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	ND	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5



Client ID:

Lab ID: Method Blank, V1B0722A

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	ND	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	ND	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	ND	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	ND	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	ND	5

QC Batch: V1B0722A

Surrogate Recovery:

1,2-Dichloroethane-d4	110%
Toluene-d8	111%
Bromofluorobenzene	106%

ND = Not detected



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
Client ID: TK 48 W2
Lab ID: D1139-06
Analysis: Method 8270

Analysis Date: 7/25/97
Matrix: Concrete, 94% solid
Concentration in: ug/kg, dry weight basis
Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	340
bis(2-Chloroethyl)ether	ND	340
2-Chlorophenol	ND	340
1,3-Dichlorobenzene	ND	340
1,4-Dichlorobenzene	ND	340
1,2-Dichlorobenzene	ND	340
2-Methylphenol	ND	340
2,2'-oxybis(1-Chloropropane)	ND	340
4-Methylphenol	ND	340
n-Nitroso-di-n-propylamine	ND	340
Hexachloroethane	ND	340
Nitrobenzene	ND	340
Isophorone	ND	340
2-Nitrophenol	ND	340
2,4-Dimethylphenol	ND	340
bis(2-Chloroethoxy)methane	ND	340
2,4-Dichlorophenol	ND	340
1,2,4-Trichlorobenzene	ND	340
Naphthalene	89 J	340
4-Chloroaniline	ND	340
Hexachlorobutadiene	ND	340
4-Chloro-3-methylphenol	ND	340
2-Methylnaphthalene	460	340
Hexachlorocyclopentadiene	ND	340
2,4,6-Trichlorophenol	ND	340
2,4,5-Trichlorophenol	ND	850
2-Chloronaphthalene	ND	340
2-Nitroaniline	ND	850
Dimethylphthalate	ND	340
Acenaphthylene	ND	340
2,6-Dinitrotoluene	ND	340
3-Nitroaniline	ND	850
Acenaphthene	ND	340
2,4-Dinitrophenol	ND	850
4-Nitrophenol	ND	850
Dibenzofuran	ND	340
2,4-Dinitrotoluene	ND	340



Client ID: TK 48 W2

Lab ID: D1139-06

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	340
Fluorene	ND	340
4-Chlorophenyl-phenylether	ND	340
4-Nitroaniline	ND	850
4,6-Dinitro-2-methylphenol	ND	850
n-Nitrosodiphenylamine	ND	340
4-Bromophenyl-phenylether	ND	340
Hexachlorobenzene	ND	340
Pentachlorophenol	ND	850
Phenanthrene	140 J	340
Anthracene	ND	340
Di-n-butylphthalate	ND	340
Carbazole	ND	340
Fluoranthene	ND	340
Pyrene	80 J	340
Butylbenzylphthalate	ND	340
Benzo(a)anthracene	ND	340
Chrysene	ND	340
3,3'-Dichlorobenzidine	ND	340
bis(2-Ethylhexyl)phthalate	300 J	340
Di-n-octylphthalate	ND	340
Benzo(b)fluoranthene	ND	340
Benzo(k)fluoranthene	ND	340
Benzo(a)pyrene	ND	340
Indeno(1,2,3-cd)pyrene	ND	340
Dibenz(a,h)anthracene	ND	340
Benzo(g,h,i)perylene	ND	340

QC Batch: S0723-B1

Surrogate Recovery:	
2-Fluorophenol	24% *
Phenol-d5	38%
2-Chlorophenol-d4	31%
2,4,6-Tribromophenol	20%
1,2-Dichlorobenzene-d4	45%
Nitrobenzene-d5	59%
2-Fluorobiphenyl	59%
p-Terphenyl-d14	100%

ND = Not detected

*Out of control limit.



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
Client ID:
Lab ID: Method Blank, S0723-B1
Analysis: Method 8270

Analysis Date: 7/24/97
Matrix: Solid
Concentration in: ug/kg
Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	330
bis(2-Chloroethyl)ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
2-Methylphenol	ND	330
2,2'-oxybis(1-Chloropropane)	ND	330
4-Methylphenol	ND	330
n-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	ND	330
bis(2-Chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
2-Methylnaphthalene	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	830
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	830
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	830
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	830
4-Nitrophenol	ND	830
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330



Client ID:

Lab ID: Method Blank, S0723-B1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	330
Fluorene	ND	330
4-Chlorophenyl-phenylether	ND	330
4-Nitroaniline	ND	830
4,6-Dinitro-2-methylphenol	ND	830
n-Nitrosodiphenylamine	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	830
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	ND	330
Carbazole	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
3,3'-Dichlorobenzidine	ND	330
bis(2-Ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenz(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

QC Batch: S0723-B1

Surrogate Recovery:

2-Fluorophenol	64%
Phenol-d5	72%
2-Chlorophenol-d4	76%
2,4,6-Tribromophenol	80%
1,2-Dichlorobenzene-d4	76%
Nitrobenzene-d5	76%
2-Fluorobiphenyl	76%
p-Terphenyl-d14	88%

ND = Not detected



Client: Foster Wheeler Environmental Corp.

Client Project: DO#13F (Tank Farm #4)

Lab Project: D1139

Date Samples Received: July 14, 1997

Project Narrative

This data package included the analysis result for six concrete samples that were received from Foster Wheeler Environmental Corp. on July 14, 1997. Analyses were performed per specifications in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the Client sample ID and Laboratory sample ID.

Due to the alkaline nature of the concrete samples, low acid surrogate recoveries were determined for several samples for the Method 8270 analyses.

All of the analyses were performed according to method specifications.

The enclosed data package has been reviewed and is authorized for release as evidenced by the signature below.

A handwritten signature in black ink, appearing to read "Kin S. Chiu". The signature is stylized with a long horizontal stroke at the end.

Kin S. Chiu
Laboratory Manager



July 25, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

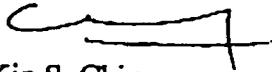
RE: Client Project # DO#13F, Tank Farm #4
Lab Project #D1139

Dear Mr. Gouveia:

Enclosed is the Data Report of the required analyses for the samples associated with the Project. If you have any questions regarding the Report, please call me.

We appreciate your business.

Sincerely,


Kin S. Chiu
Laboratory Manager



Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1139-01	TK48F1	400	93	90	7/24/97
D1139-02	TK48C1	5,300	96	2,100	7/24/97
D1139-03	TK48W4	1,300	94	210	7/24/97
D1139-04	TK48W3	670	95	180	7/24/97
D1139-05	TK48W1	1,500	94	420	7/24/97
D1139-06	TK48W2	980	94	370	7/24/97

QA/QC

Method Blank
I0722-B1

ND

22

7/24/97

Lab control Spike (% Recovery)
I0722-LCS1

108

7/24/97

ND = Not Detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TK48W3
Lab ID: D1139-04
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Concentration in: mg/L
Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	0.25	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	0.04	0.02
Silver	ND	0.02

QC Batch: MT0722B1

ND = Not detected



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 W3
 Lab ID: D1139-04
 Analysis: Method 8260

Analysis Date: 7/23/97
 Matrix: Soil, 95% solids
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	18	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	6	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5



Client ID: TK 48 W3

Lab ID: D1139-04

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	16	5
Xylenes, total	93	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	12	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	24	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	63	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	240 E	5
sec-Butylbenzene	11	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	18	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	250 E	5

QC Batch: V1B0723A

Surrogate Recovery:

1,2-Dichloroethane-d4	115%
Toluene-d8	103%
Bromofluorobenzene	88%

ND = Not detected



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TK 48 W3
 Lab ID: D1139-04
 Analysis: Method 8270

Analysis Date: 7/25/97
 Matrix: Concrete, 95% solid
 Concentration in: ug/kg, dry weight basis
 Dilution: 2

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	530
bis(2-Chloroethyl)ether	ND	530
2-Chlorophenol	ND	530
1,3-Dichlorobenzene	ND	530
1,4-Dichlorobenzene	ND	530
1,2-Dichlorobenzene	ND	530
2-Methylphenol	ND	530
2,2'-oxybis(1-Chloropropane)	ND	530
4-Methylphenol	ND	530
n-Nitroso-di-n-propylamine	ND	530
Hexachloroethane	ND	530
Nitrobenzene	ND	530
Isophorone	ND	530
2-Nitrophenol	ND	530
2,4-Dimethylphenol	ND	530
bis(2-Chloroethoxy)methane	ND	530
2,4-Dichlorophenol	ND	530
1,2,4-Trichlorobenzene	ND	530
Naphthalene	360 J	530
4-Chloroaniline	ND	530
Hexachlorobutadiene	ND	530
4-Chloro-3-methylphenol	ND	530
2-Methylnaphthalene	2,000	530
Hexachlorocyclopentadiene	ND	530
2,4,6-Trichlorophenol	ND	530
2,4,5-Trichlorophenol	ND	1,300
2-Chloronaphthalene	ND	530
2-Nitroaniline	ND	1,300
Dimethylphthalate	ND	530
Acenaphthylene	ND	530
2,6-Dinitrotoluene	ND	530
3-Nitroaniline	ND	1,300
Acenaphthene	94 J	530
2,4-Dinitrophenol	ND	1,300
4-Nitrophenol	ND	1,300
Dibenzofuran	ND	530
2,4-Dinitrotoluene	ND	530



Client ID: TK 48 W3

Lab ID: D1139-04

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	530
Fluorene	140 J	530
4-Chlorophenyl-phenylether	ND	530
4-Nitroaniline	ND	1,300
4,6-Dinitro-2-methylphenol	ND	1,300
n-Nitrosodiphenylamine	ND	530
4-Bromophenyl-phenylether	ND	530
Hexachlorobenzene	ND	530
Pentachlorophenol	ND	1,300
Phenanthrene	560 J	530
Anthracene	81 J	530
Di-n-butylphthalate	ND	530
Carbazole	ND	530
Fluoranthene	ND	530
Pyrene	340 J	530
Butylbenzylphthalate	98 J	530
Benzo(a)anthracene	ND	530
Chrysene	ND	530
3,3'-Dichlorobenzidine	ND	530
bis(2-Ethylhexyl)phthalate	570	530
Di-n-octylphthalate	ND	530
Benzo(b)fluoranthene	ND	530
Benzo(k)fluoranthene	ND	530
Benzo(a)pyrene	ND	530
Indeno(1,2,3-cd)pyrene	ND	530
Dibenz(a,h)anthracene	ND	530
Benzo(g,h,i)perylene	ND	530

QC Batch: S0723-B1

Surrogate Recovery:	
2-Fluorophenol	22% *
Phenol-d5	39%
2-Chlorophenol-d4	30%
2,4,6-Tribromophenol	21%
1,2-Dichlorobenzene-d4	55%
Nitrobenzene-d5	75%
2-Fluorobiphenyl	75%
p-Terphenyl-d14	131%

ND = Not detected

*Out of control limit



Client: Foster Wheeler Environmental Corp.

Client Project: DO#13F (Tank Farm #4)

Lab Project: D1139

Date Samples Received: July 14, 1997

Project Narrative

This data package included the analysis result for six concrete samples that were received from Foster Wheeler Environmental Corp. on July 14, 1997. Analyses were performed per specifications in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the Client sample ID and Laboratory sample ID.

Due to the alkaline nature of the concrete samples, low acid surrogate recoveries were determined for several samples for the Method 8270 analyses.

All of the analyses were performed according to method specifications.

The enclosed data package has been reviewed and is authorized for release as evidenced by the signature below.

A handwritten signature in black ink, appearing to be "Kin S. Chiu", written over a horizontal line.

Kin S. Chiu
Laboratory Manager



July 25, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

RE: Client Project # DO#13F, Tank Farm #4
Lab Project #D1139

Dear Mr. Gouveia:

Enclosed is the Data Report of the required analyses for the samples associated with the Project. If you have any questions regarding the Report, please call me.

We appreciate your business.

Sincerely,

Kin S. Chiu
Laboratory Manager



Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1139-01	TK48F1	400	93	90	7/24/97
D1139-02	TK48C1	5,300	96	2,100	7/24/97
D1139-03	TK48W4	1,300	94	210	7/24/97
D1139-04	TK48W3	670	95	180	7/24/97
D1139-05	TK48W1	1,500	94	420	7/24/97
D1139-06	TK48W2	980	94	370	7/24/97

QA/QC

Method Blank

I0722-B1

ND

22

7/24/97

Lab control Spike (% Recovery)

I0722-LCS1

108

7/24/97

ND = Not Detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TK48W4
Lab ID: D1139-03
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Concentration in: mg/L
Analysis Date: 7/24/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Arsenic	ND	0.01
Barium	0.22	0.01
Cadmium	ND	0.002
Chromium	ND	0.01
Lead	ND	0.01
Mercury	ND	0.002
Selenium	0.04	0.02
Silver	ND	0.02

QC Batch: MT0722B1

ND = Not detected



Analysis Report: TCLP Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TK48W4 Spike
Lab ID: D1139-03S
Analysis Method: 7470A (Mercury)
6010A (Others)

Matrix: TCLP Leachate
Analysis Date: 7/24/97

<u>Analyte</u>	<u>% Recovery</u>
Arsenic	99
Barium	79
Cadmium	79
Chromium	95
Lead	87
Mercury	90
Selenium	98
Silver	73

QC Batch: MT0722B1



Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
Client ID: TK 48 W4
Lab ID: D1139-03
Analysis: Method 8260

Analysis Date: 7/23/97
Matrix: Soil, 95% solids
Concentration in: ug/kg, dry weight basis
Dilution: 2

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	11
Chloromethane	ND	11
Vinyl chloride	ND	11
Bromomethane	ND	11
Chloroethane	ND	11
Trichlorofluoromethane	ND	11
1,1-Dichloroethene	ND	11
Carbon disulfide	ND	11
Iodomethane	ND	11
Acetone	28	11
Methylene chloride	ND	11
trans-1,2-Dichloroethene	ND	11
1,1-Dichloroethane	ND	11
Vinyl acetate	ND	11
2,2-Dichloropropane	ND	11
cis-1,2-Dichloroethene	ND	11
Methyl ethyl ketone	ND	11
Bromochloromethane	ND	11
Chloroform	ND	11
1,1,1-Trichloroethane	ND	11
Carbon tetrachloride	ND	11
1,1-Dichloropropene	ND	11
Benzene	ND	11
1,2-Dichloroethane	ND	11
Trichloroethene	ND	11
1,2-Dichloropropane	ND	11
Dibromomethane	ND	11
Bromodichloromethane	ND	11
2-Chloroethyl vinyl ether	ND	11
cis-1,3-Dichloropropene	ND	11
4-Methyl-2-pentanone	ND	11
Toluene	13	11
trans-1,3-Dichloropropene	ND	11
1,1,2-Trichloroethane	ND	11
Tetrachloroethene	ND	11
1,3-Dichloropropane	ND	11



Client ID: TK 48 W4

Lab ID: D1139-03

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
2-Hexanone	ND	11
Dibromochloromethane	ND	11
1,2-Dibromoethane (EDB)	ND	11
Chlorobenzene	ND	11
1,1,1,2-Tetrachloroethane	ND	11
Ethylbenzene	33	11
Xylenes, total	190	11
Styrene	ND	11
Bromoform	ND	11
Isopropylbenzene	19	11
Bromobenzene	ND	11
1,1,2,2-Tetrachloroethane	ND	11
1,2,3-Trichloropropane	ND	11
n-Propylbenzene	37	11
2-Chlorotoluene	ND	11
4-Chlorotoluene	ND	11
1,3,5-Trimethylbenzene	89	11
tert-Butylbenzene	ND	11
1,2,4-Trimethylbenzene	290	11
sec-Butylbenzene	16	11
1,3-Dichlorobenzene	ND	11
4-Isopropyltoluene	26	11
1,4-Dichlorobenzene	ND	11
1,2-Dichlorobenzene	ND	11
n-Butylbenzene	ND	11
1,2-Dibromo-3-chloropropane	ND	11
1,2,4-Trichlorobenzene	ND	11
Hexachlorobutadiene	ND	11
1,2,3-Trichlorobenzene	ND	11
MTBE	ND	11
Naphthalene	260	11

QC Batch: V1B0723A

Surrogate Recovery:
1,2-Dichloroethane-d4
Toluene-d8
Bromofluorobenzene

115%
108%
106%

ND = Not detected



Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
Client ID: TK 48 W4
Lab ID: D1139-03
Analysis: Method 8270

Analysis Date: 7/25/97
Matrix: Concrete, 94% solid
Concentration in: ug/kg, dry weight basis
Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	350
bis(2-Chloroethyl)ether	ND	350
2-Chlorophenol	ND	350
1,3-Dichlorobenzene	ND	350
1,4-Dichlorobenzene	ND	350
1,2-Dichlorobenzene	ND	350
2-Methylphenol	ND	350
2,2'-oxybis(1-Chloropropane)	ND	350
4-Methylphenol	ND	350
n-Nitroso-di-n-propylamine	ND	350
Hexachloroethane	ND	350
Nitrobenzene	ND	350
Isophorone	ND	350
2-Nitrophenol	ND	350
2,4-Dimethylphenol	ND	350
bis(2-Chloroethoxy)methane	ND	350
2,4-Dichlorophenol	ND	350
1,2,4-Trichlorobenzene	ND	350
Naphthalene	400	350
4-Chloroaniline	ND	350
Hexachlorobutadiene	ND	350
4-Chloro-3-methylphenol	ND	350
2-Methylnaphthalene	2,100	350
Hexachlorocyclopentadiene	ND	350
2,4,6-Trichlorophenol	ND	350
2,4,5-Trichlorophenol	ND	870
2-Chloronaphthalene	ND	350
2-Nitroaniline	ND	870
Dimethylphthalate	ND	350
Acenaphthylene	ND	350
2,6-Dinitrotoluene	ND	350
3-Nitroaniline	ND	870
Acenaphthene	89 J	350
2,4-Dinitrophenol	ND	870
4-Nitrophenol	ND	870
Dibenzofuran	ND	350
2,4-Dinitrotoluene	ND	350



Client ID: TK 48 W4

Lab ID: D1139-03

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	350
Fluorene	120 J	350
4-Chlorophenyl-phenylether	ND	350
4-Nitroaniline	ND	870
4,6-Dinitro-2-methylphenol	ND	870
n-Nitrosodiphenylamine	ND	350
4-Bromophenyl-phenylether	ND	350
Hexachlorobenzene	ND	350
Pentachlorophenol	ND	870
Phenanthrene	490	350
Anthracene	71 J	350
Di-n-butylphthalate	ND	350
Carbazole	ND	350
Fluoranthene	ND	350
Pyrene	270 J	350
Butylbenzylphthalate	ND	350
Benzo(a)anthracene	42 J	350
Chrysene	38 J	350
3,3'-Dichlorobenzidine	ND	350
bis(2-Ethylhexyl)phthalate	210 J	350
Di-n-octylphthalate	ND	350
Benzo(b)fluoranthene	ND	350
Benzo(k)fluoranthene	ND	350
Benzo(a)pyrene	40 J	350
Indeno(1,2,3-cd)pyrene	ND	350
Dibenz(a,h)anthracene	ND	350
Benzo(g,h,i)perylene	ND	350

QC Batch: S0723-B1

Surrogate Recovery:

2-Fluorophenol	23% *
Phenol-d5	42%
2-Chlorophenol-d4	33%
2,4,6-Tribromophenol	15% *
1,2-Dichlorobenzene-d4	56%
Nitrobenzene-d5	72%
2-Fluorobiphenyl	78%
p-Terphenyl-d14	150% *

ND = Not detected

*Out of control limit.

TANK NO. 48 C1			
SUBSTANCE			FIELD ANALYTICAL DETECTIONS (mg/kg except as otherwise noted)
VOLATILE ORGANICS			
Acetone			73(PPB)
Benzene			
Bromodichloromethane			
Bromoform			
Bromomethane			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dibromochloromethane			
Dibromochloropropane (DBCP)			
Dichloroethane (1,1-)			
Dichloroethane (1,2-)			
Dichloroethylene (1,1-)			
Dichloroethene (1,1-)			
Dichloroethylene (cis-1,2,-)			
Dichloroethene (cis-1,2-)			
Dichloroethylene (trans-1,2-)			
Dichloroethene (trans-1,2-)			
Dichloropropane (1,2)			
Ethyl benzene			390(PPB)
Ethylene dibromide (EDB)			
Isopropyl benzene			168(PPB)
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methyl-tert-butyl-ether			
Methylene chloride			
Styrene			
Tetrachloroethane,1,1,1,2			
Tetrachloroethane,1,1,2,2			
Tetrachloroethylene			
Toluene			310(PPB)
Trichloroethane,1,1,1-			
Trichloroethane,1,1,2-			
Trichloroethylene			
Vinyl chloride			
Xylenes			
Xylenes (total)			1,800(PPB)
SEMIVOLATILES			
Acenaphthene			510(PPB)
Acenaphthylene			
Anthracene			420(PPB)
Benzo(a)anthracene			130(PPB)

Benzo(a)pyrene			
Benzo(b)fluoranthene			55(PPB)
Benzo(g,h,i)perylene			74(PPB)
Benzo(k)fluoranthene			89(PPB)
Biphenyl, 1,1-			
Bis(2-ethylhexyl)phthalate			
Bis(2-chloroethyl)ether			
Bis(2-chloroisopropyl)ether			
Chloroaniline, 4- (p-)			
Chlorophenol, 2-			
Chrysene			350(PPB)
Dibenzo(a,h)anthracene			
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,4- (p-DCB)			
Dichlorobenzidine, 3,3-			
Dichlorophenol, 2,4-			
Diethylhexyl phthalate			
Diethyl phthalate			
Dimethyl phenol, 2,4-			
Dimethyl phthalate			
Dinitrophenol, 2,4-			
Dinitrotoluene, 2,4-			
Fluoranthene			130(PPB)
Fluorene			680(PPB)
Hexachlorobenzene			
Hexachlorobutadiene			
Hexachloroethane			
Indeno(1,2,3-cd)pyrene			35(PPB)
Methyl naphthalene, 2-			7,800(PPB)
Naphthalene			2,200(PPB)
Pentachlorophenol			
Phenanthrene			2,300(PPB)
Phenol			
Pyrene			1,400(PPB)
Trichlorobenzene, 1,2,4-			
Trichlorophenol, 2,4,5-			
Trichlorophenol, 2,4,6-			
PESTICIDES/PCBs			
Chlorodane			
Dieldrin			
Polychlorinated biphenyls (PCBs)			
INORGANICS			
Antimony			
Arsenic			
Barium			0.22
Beryllium			
Cadmium			

Chromium			
Chromium III (Trivalent)			
Chromium VI (Hexavalent)			
Copper			
Cyanide			
Lead			
Manganese			
Mercury			
Nickel			
Selenium			0.04
Silver			
Thallium			
Vanadium			
Zinc			
TPH			

TANK NO. 48 F1			
SUBSTANCE			FIELD ANALYTICAL DETECTIONS (mg/kg except as otherwise noted)
VOLATILE ORGANICS			
Acetone			15(PPB)
Benzene			
Bromodichloromethane			
Bromoform			
Bromomethane			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dibromochloromethane			
Dibromochloropropane (DBCP)			
Dichloroethane (1,1-)			
Dichloroethane (1,2-)			
Dichloroethylene (1,1-)			
Dichloroethene (1,1-)			
Dichloroethylene (cis-1,2,-)			
Dichloroethene (cis-1,2-)			
Dichloroethylene (trans-1,2,-)			
Dichloroethene (trans-1,2-)			
Dichloropropane (1,2)			
Ethyl benzene			
Ethylene dibromide (EDB)			
Isopropyl benzene			
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methyl-tert-butyl-ether			
Methylene chloride			
Styrene			
Tetrachloroethane,1,1,1,2			
Tetrachloroethane,1,1,2,2			
Tetrachloroethylene			
Toluene			
Trichloroethane,1,1,1-			
Trichloroethane,1,1,2-			
Trichloroethylene			
Vinyl chloride			
Xylenes			
Xylenes (total)			23(PPB)
SEMIVOLATILES			
Acenaphthene			
Acenaphthylene			
Anthracene			
Benzo(a)anthracene			

Benzo(a)pyrene			
Benzo(b)fluoranthene			
Benzo(g,h,i)perylene			
Benzo(k)fluoranthene			
Biphenyl, 1,1-			
Bis(2-ethylhexyl)phthalate			78(PPB)
Bis(2-chloroethyl)ether			
Bis(2-chloroisopropyl)ether			
Chloroaniline, 4- (p-)			
Chlorophenol, 2-			
Chrysene			
Dibenzo(a,h)anthracene			
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,4- (p-DCB)			
Dichlorobenzidine, 3,3-			
Dichlorophenol, 2,4-			
Diethylhexyl phthalate			
Diethyl phthalate			
Dimethyl phenol, 2,4-			
Dimethyl phthalate			
Dinitrophenol, 2,4-			
Dinitrotoluene, 2,4-			
Fluoranthene			
Fluorene			
Hexachlorobenzene			
Hexachlorobutadiene			
Hexachloroethane			
Indeno(1,2,3-cd)pyrene			
Methyl naphthalene, 2-			210(PPB)
Naphthalene			40(PPB)
Pentachlorophenol			
Phenanthrene			97(PPB)
Phenol			
Pyrene			68(PPB)
Trichlorobenzene, 1,2,4-			
Trichlorophenol, 2,4,5-			
Trichlorophenol, 2,4,6-			
PESTICIDES/PCBs			
Chlorodane			
Dieldrin			
Polychlorinated biphenyls (PCBs)			
INORGANICS			
Antimony			
Arsenic			
Barium			0.24
Beryllium			
Cadmium			

Chromium			
Chromium III (Trivalent)			
Chromium VI (Hexavalent)			
Copper			
Cyanide			
Lead			
Manganese			
Mercury			
Nickel			
Selenium			0.03
Silver			
Thallium			
Vanadium			
Zinc			
TPH			400

TANK NO. 48 W1			
SUBSTANCE			FIELD ANALYTICAL DETECTIONS (mg/kg except as otherwise noted)
VOLATILE ORGANICS			
Acetone.			12(PPB)
Benzene			
Bromodichloromethane			
Bromoform			
Bromomethane			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dibromochloromethane			
Dibromochloropropane (DBCP)			
Dichloroethane (1,1-)			
Dichloroethane (1,2-)			
Dichchloroethylene (1,1-)			
Dichloroethene (1,1-)			
Dichloroethylene (cis-1,2,-)			
Dichloroethene (cis-1,2,-)			
Dichloroethylene (trans-1,2-)			
Dichloroethene (trans-1,2-)			
Dichloropropane (1,2)			
Ethyl benzene			
Ethylene dibromide (EDB)			
Isopropyl benzene			7(PPB)
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methyl-tert-butyl-ether			
Methylene chloride			
Styrene			
Tetrachloroethane,1,1,1,2			
Tetrachloroethane,1,1,2,2			
Tetrachloroethylene			
Toluene			
Trichloroethane,1,1,1-			
Trichloroethane,1,1,2-			
Trichloroethylene			
Vinyl chloride			
Xylenes			
Xylenes (total)			31(PPB)
SEMIVOLATILES			
Acenaphthene			
Acenaphthylene			
Anthracene			
Benzo(a)anthracene			

Benzo(a)pyrene			
Benzo(b)fluoranthene			
Benzo(g,h,i)perylene			
Benzo(k)fluoranthene			
Biphenyl, 1,1-			
Bis(2-ethylhexyl)phthalate			9,900(PPB)
Bis(2-chloroethyl)ether			
Bis(2-chloroisopropyl)ether			
Chloroaniline, 4- (p-)			
Chlorophenol, 2-			
Chrysene			
Dibenzo(a,h)anthracene			
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,4- (p-DCB)			
Dichlorobenzidine, 3,3-			
Dichlorophenol, 2,4-			
Diethylhexyl phthalate			
Diethyl phthalate			
Dimethyl phenol, 2,4-			
Dimethyl phthalate			
Dinitrophenol, 2,4-			
Dinitrotoluene, 2,4-			
Fluoranthene			
Fluorene			
Hexachlorobenzene			
Hexachlorobutadiene			
Hexachloroethane			
Ideno(1,2,3-cd)pyrene			
Methyl naphthalene, 2-			1,400(PPB)
Naphthalene			300(PPB)
Pentachlorophenol			
Phenanthrene			
Phenol			
Pyrene			410(PPB)
Trichlorobenzene, 1,2,4-			
Trichlorophenol, 2,4,5-			
Trichlorophenol, 2,4,6-			
PESTICIDES/PCBs			
Chlorodane			
Dieldrin			
Polychlorinated biphenyls (PCBs)			
INORGANICS			
Antimony			
Arsenic			
Barium			0 11
Beryllium			
Cadmium			

Chromium			
Chromium III (Trivalent)			
Chromium VI (Hexavalent)			
Copper			
Cyanide			
Lead			
Manganese			
Mercury			
Nickel			
Selenium			0.02
Silver			
Thallium			
Vanadium			
Zinc			
TPH			1,500

TANK NO. 48 W2			
SUBSTANCE			FIELD ANALYTICAL DETECTIONS (mg/kg except as otherwise noted)
VOLATILE ORGANICS			
Acetone			21(PPB)
Benzene			
Bromodichloromethane			
Bromoform			
Bromomethane			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dibromochloromethane			
Dibromochloropropane (DBCP)			
Dichloroethane (1,1-)			
Dichloroethane (1,2-)			
Dichloroethylene (1,1-)			
Dichloroethene (1,1-)			
Dichloroethylene (cis-1,2,-)			
Dichloroethene (cis-1,2-)			
Dichloroethylene (trans-1,2,-)			
Dichloroethene (trans-1,2-)			
Dichloropropane (1,2)			
Ethyl benzene			
Ethylene dibromide (EDB)			
Isopropyl benzene			7(PPB)
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methyl-tert-butyl-ether			
Methylene chloride			
Styrene			
Tetrachloroethane,1,1,1,2			
Tetrachloroethane,1,1,2,2			
Tetrachloroethylene			
Toluene			
Trichloroethane,1,1,1-			
Trichloroethane,1,1,2-			
Trichloroethylene			
Vinyl chloride			
Xylenes			
Xylenes (total)			21(PPB)
SEMIVOLATILES			
Acenaphthene			
Acenaphthylene			
Anthracene			
Benzo(a)anthracene			

Benzo(a)pyrene			
Benzo(b)fluoranthene			
Benzo(g,h,i)perylene			
Benzo(k)fluoranthene			
Biphenyl, 1,1-			
Bis(2-ethylhexyl)phthalate			300(PPB)
Bis(2-chloroethyl)ether			
Bis(2-chloroisopropyl)ether			
Chloroaniline, 4- (p-)			
Chlorophenol, 2-			
Chrysene			
Dibenzo(a,h)anthracene			
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,4- (p-DCB)			
Dichlorobenzidine, 3,3-			
Dichlorophenol, 2,4-			
Diethylhexyl phthalate			
Diethyl phthalate			
Dimethyl phenol, 2,4-			
Dimethyl phthalate			
Dinitrophenol, 2,4-			
Dinitrotoluene, 2,4-			
Fluoranthene			
Fluorene			
Hexachlorobenzene			
Hexachlorobutadiene			
Hexachloroethane			
Ideno(1,2,3-cd)pyrene			
Methyl naphthalene, 2-			460(PPB)
Naphthalene			89(PPB)
Pentachlorophenol			
Phenanthrene			140(PPB)
Phenol			
Pyrene			80(PPB)
Trichlorobenzene, 1,2,4-			
Trichlorophenol, 2,4,5-			
Trichlorophenol, 2,4,6-			
PESTICIDES/PCBs			
Chlorodane			
Dieldrin			
Polychlorinated biphenyls (PCBs)			
INORGANICS			
Antimony			
Arsenic			
Barium			0.24
Beryllium			
Cadmium			

Chromium			
Chromium III (Trivalent)			
Chromium VI (Hexavalent)			
Copper			
Cyanide			
Lead			
Manganese			
Mercury			
Nickel			
Selenium			0.04
Silver			
Thallium			
Vanadium			
Zinc			
TPH			980

TANK NO.48 W3			
SUBSTANCE			FIELD ANALYTICAL DETECTIONS
			(mg/kg except as otherwise noted)
VOLATILE ORGANICS			
Acetone			18(PPB)
Benzene			
Bromodichloromethane			
Bromoform			
Bromomethane			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dibromochloromethane			
Dibromochloropropane (DBCP)			
Dichloroethane (1,1-)			
Dichloroethane (1,2-)			
Dichloroethylene (1,1-)			
Dichloroethene (1,1-)			
Dichloroethylene (cis-1,2,-)			
Dichloroethene (cis-1,2-)			
Dichloroethylene (trans-1,2-)			
Dichloroethene (trans-1,2-)			
Dichloropropane (1,2)			
Ethyl benzene			16(PPB)
Ethylene dibromide (EDB)			
Isopropyl benzene			12(PPB)
Methyl ethyl ketone			6(PPB)
Methyl isobutyl ketone			
Methyl-tert-butyl-ether			
Methylene chloride			
Styrene			
Tetrachloroethane,1,1,1,2			
Tetrachloroethane,1,1,2,2			
Tetrachloroethylene			
Toluene			
Trichloroethane,1,1,1-			
Trichloroethane,1,1,2-			
Trichloroethylene			
Vinyl chloride			
Xylenes			
Xylenes (total)			93(PPB)
SEMIVOLATILES			
Acenaphthene			
Acenaphthylene			94(PPB)
Anthracene			81(PPB)
Benzo(a)anthracene			

Benzo(a)pyrene			
Benzo(b)fluoranthene			
Benzo(g,h,i)perylene			
Benzo(k)fluoranthene			
Biphenyl, 1,1-			
Bis(2-ethylhexyl)phthalate			570(PPB)
Bis(2-chloroethyl)ether			
Bis(2-chloroisopropyl)ether			
Chloroaniline, 4- (p-)			
Chlorophenol, 2-			
Chrysene			
Dibenzo(a,h)anthracene			
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,4- (p-DCB)			
Dichlorobenzidine, 3,3-			
Dichlorophenol, 2,4-			
Diethylhexyl phthalate			
Diethyl phthalate			
Dimethyl phenol, 2,4-			
Dimethyl phthalate			
Dinitrophenol, 2,4-			
Dinitrotoluene, 2,4-			
Fluoranthene			
Fluorene			140(PPB)
Hexachlorobenzene			
Hexachlorobutadiene			
Hexachloroethane			
Ideno(1,2,3-cd)pyrene			
Methyl naphthalene, 2-			2,000(PPB)
Naphthalene			360(PPB)
Pentachlorophenol			
Phenanthrene			560(PPB)
Phenol			
Pyrene			340(PPB)
Trichlorobenzene, 1,2,4-			
Trichlorophenol, 2,4,5-			
Trichlorophenol, 2,4,6-			
PESTICIDES/PCBs			
Chlorodane			
Dieldrin			
Polychlorinated biphenyls (PCBs)			
INORGANICS			
Antimony			
Arsenic			
Barium			0.25
Beryllium			
Cadmium			

Chromium			
Chromium III (Trivalent)			
Chromium VI (Hexavalent)			
Copper			
Cyanide			
Lead			
Manganese			
Mercury			
Nickel			
Selenium			0.04
Silver			
Thallium			
Vanadium			
Zinc			
TPH			

TANK NO. 48 W4			
SUBSTANCE			FIELD ANALYTICAL DETECTIONS (mg/kg except as otherwise noted)
<u>VOLATILE ORGANICS</u>			
Acetone			28(PPB)
Benzene			
Bromodichloromethane			
Bromoform			
Bromomethane			
Carbon tetrachloride			
Chlorobenzene			
Chloroform			
Dibromochloromethane			
Dibromochloropropane (DBCP)			
Dichloroethane (1,1-)			
Dichloroethane (1,2-)			
Dichchloroethylene (1,1-)			
Dichloroethene (1,1-)			
Dichloroethylene (cis-1,2,-)			
Dichloroethene (cis-1,2-)			
Dichloroethylene (trans-1,2-)			
Dichloroethene (trans-1,2-)			
Dichloropropane (1,2)			
Ethyl benzene			33(PPB)
Ethylene dibromide (EDB)			
Isopropyl benzene			19(PPB)
Methyl ethyl ketone			
Methyl isobutyl ketone			
Methyl-tert-butyl-ether			
Methylene chloride			
Styrene			
Tetrachloroethane,1,1,1,2			
Tetrachloroethane,1,1,2,2			
Tetrachloroethylene			
Toluene			13(PPB)
Trichloroethane,1,1,1-			
Trichloroethane,1,1,2-			
Trichloroethylene			
Vinyl chloride			
Xylenes			
Xylenes (total)			190(PPB)
<u>SEMIVOLATILES</u>			
Acenaphthene			
Acenaphthylene			89(PPB)
Anthracene			71(PPB)
Benzo(a)anthracene			42(PPB)

Benzo(a)pyrene			40(PPB)
Benzo(b)fluoranthene			
Benzo(g,h,i)perylene			
Benzo(k)fluoranthene			
Biphenyl, 1, 1-			
Bis(2-ethylhexyl)phthalate			210(PPB)
Bis(2-chloroethyl)ether			
Bis(2-chloroisopropyl)ether			
Chloroaniline, 4- (p-)			
Chlorophenol, 2-			
Chrysene			38(PPB)
Dibenzo(a,h)anthracene			
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,2- (o-DCB)			
Dichlorobenzene, 1,4- (p-DCB)			
Dichlorobenzidine, 3,3-			
Dichlorophenol, 2,4-			
Diethylhexyl phthalate			
Diethyl phthalate			
Dimethyl phenol, 2,4-			
Dimethyl phthalate			
Dinitrophenol, 2,4-			
Dinitrotoluene, 2,4-			
Fluoranthene			
Fluorene			120(PPB)
Hexachlorobenzene			
Hexachlorobutadiene			
Hexachloroethane			
Indeno(1,2,3-cd)pyrene			
Methyl naphthalene, 2-			2,100(PPB)
Naphthalene			400(PPB)
Pentachlorophenol			
Phenanthrene			490(PPB)
Phenol			
Pyrene			270(PPB)
Trichlorobenzene, 1,2,4-			
Trichlorophenol, 2,4,5-			
Trichlorophenol, 2,4,6-			
PESTCIDES/PCBs			
Chlorodane			
Dieldrin			
Polychlorinated biphenyls (PCBs)			
INORGANICS			
Antimony			
Arsenic			
Barium			0.22
Beryllium			
Cadmium			

Chromium			
Chromium III (Trivalent)			
Chromium VI (Hexavalent)			
Copper			
Cyanide			
Lead			
Manganese			
Mercury			
Nickel			
Selenium			0.04
Silver			
Thallium			
Vanadium			
Zinc			
TPH			

**TANK FARM 4
SURFACE AREA CALCULATION**

Tank Specifications:

Inside diameter	116 feet
Interior height	33.5 feet
Column diameter (34 columns/tank)	20 inches

Surface area calculations:

Wall:

$$\begin{aligned}SA_w &= 2\pi rh \\ &= 2\pi(58)(33.5) \\ &= 12,208 \text{ sq. ft.}\end{aligned}$$

Columns:

$$\begin{aligned}SA_c &= 2\pi rh(34) \\ &= 2\pi(.833)(33.5)(34) \\ &= 5,964 \text{ sq. ft.}\end{aligned}$$

Floor:

$$\begin{aligned}SA_f &= \pi \text{ Radius squared} - (34 \times \text{Area of Column Base}) \\ &= \pi \text{ Radius Squared} - [(34)(\pi \text{ Radius Squared})] \\ &= \pi (58 \times 58) - [(34)(\pi)(.833 \times .833)] \\ &= 10,494 \text{ sq. ft.}\end{aligned}$$

Total Surface Area:

$$\begin{aligned}SA_t &= SA_w + SA_c + SA_f \\ &= 12,208 + 5,964 + 10,494 \\ &= 28,666 \text{ sq. ft.}\end{aligned}$$

Percent of surface area total for the wall:

$$\begin{aligned}12,208 \text{ sq. ft.} / 28,666 \text{ sq. ft.} &= X/100 \\ &= 42.6\%\end{aligned}$$

Percent of surface area total for the columns:

$$5,964 \text{ sq. ft.}/28,666 \text{ sq. ft.} = X/100 \\ = 20.8\%$$

Percent of surface area total for the floor:

$$10,494 \text{ sq. ft.}/28,666 \text{ sq. ft.} = X/100 \\ = 36.6\%$$

Surface area weighted calculation:

$$= (.426)(\text{avg. wall TPH}) + (.208)(\text{column TPH}) + (.366)(\text{floor TPH})$$

Tank TPH by surface area weighted calculation:

$$\text{Tank No. 48} = 1,722.7 \text{ ppm TPH}$$

APPENDIX K
TEST PIT ANALYTICAL RESULTS

July 18, 1997

Foster Wheeler Environmental Corp.
Attn: Mr. Mark Gouveia
P.O. Box 4749
Middletown, RI 02842

RE: Client Project #DO# 13F, Tank Farm #4
Lab Project #D1099

Dear Mr. Gouveia:

Enclosed please find the data report of the required analyses for the samples associated with the above referenced project. If you have any questions regarding this report, please call me.

We appreciate your business.

Sincerely,



Edward A. Lawler
Laboratory Operations Manager

175 Metro Center Boulevard • Warwick, Rhode Island 02886-1755 • (401) 732-3400 Fax (401) 732-3499
1232 East Broadway Road, Suite 210 • Tempe, Arizona 85282 • (602) 303-9535 • Fax (602) 921-2883
email: mitkem19@mail.idt.net

Client: Foster Wheeler Environmental Corp.

Client Project: DO# 13F, Tank Farm #4

Lab Project: D1099

Date samples received: 7/11/97

Project Narrative

This data report includes the analysis results for two (2) soil samples that were received from the Tank Farm #4 site from Foster Wheeler Environmental Corp. on July 11, 1997. Analyses were performed per specification in the Chain of Custody form. For reference, a copy of the Mitkem Sample Log-In form is included for cross-referencing the client sample ID and laboratory sample ID.

All of the analyses were performed according to method specifications. No unusual observation was made for the analyses.

This data report has been reviewed and is authorized for release as evidenced by the signature below.



Edward A. Lawler
Laboratory Operations Manager

Analysis Report: Total Petroleum Hydrocarbons

Client: Foster Wheeler Environmental Corp.

Analysis: Method 418.1

Matrix: Soil

Concentration in: mg/kg, dry weight basis

<u>Lab ID</u>	<u>Client ID</u>	<u>Result</u>	<u>% Solid</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>
D1099-01	TP-TK47	ND	91	24	7/16/97
D1099-02	TP-TK48	ND	91	24	7/16/97

QA/QC

Method Blank

I0715-B1

ND

22

7/16/97

Lab Control Spike (% Recovery)

I0715-LCS1

122

7/16/97

ND = Not Detected

002

Analysis Report: Total Metals

Client: Foster Wheeler Environmental Corp.
Client ID: TP-TK48
Lab ID: D1099-02
Analysis Method: 7471A (Mercury)
6010A (Others)

Matrix: Soil, 91% Solids
Concentration in: mg/kg, dry weight basis
Analysis Date: 7/16/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limit</u>
Arsenic	7	1
Barium	15	1
Cadmium	0.7	0.1
Chromium	13	1
Lead	10	1
Mercury	ND	0.3
Selenium	ND	2
Silver	ND	1

QC Batch: 0715PBS

ND = Not detected

Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TP-TK48
 Lab ID: D1099-02
 Analysis: Method 8270

Analysis Date: 7/17/97
 Matrix: Soil, .91% solids
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	360
bis(2-Chloroethyl)ether	ND	360
2-Chlorophenol	ND	360
1,3-Dichlorobenzene	ND	360
1,4-Dichlorobenzene	ND	360
1,2-Dichlorobenzene	ND	360
2-Methylphenol	ND	360
2,2'-oxybis(1-Chloropropane)	ND	360
4-Methylphenol	ND	360
n-Nitroso-di-n-propylamine	ND	360
Hexachloroethane	ND	360
Nitrobenzene	ND	360
Isophorone	ND	360
2-Nitrophenol	ND	360
2,4-Dimethylphenol	ND	360
bis(2-Chloroethoxy)methane	ND	360
2,4-Dichlorophenol	ND	360
1,2,4-Trichlorobenzene	ND	360
Naphthalene	ND	360
4-Chloroaniline	ND	360
Hexachlorobutadiene	ND	360
4-Chloro-3-methylphenol	ND	360
2-Methylnaphthalene	ND	360
Hexachlorocyclopentadiene	ND	360
2,4,6-Trichlorophenol	ND	360
2,4,5-Trichlorophenol	ND	910
2-Chloronaphthalene	ND	360
2-Nitroaniline	ND	910
Dimethylphthalate	ND	360
Acenaphthylene	ND	360
2,6-Dinitrotoluene	ND	360
3-Nitroaniline	ND	910
Acenaphthene	ND	360
2,4-Dinitrophenol	ND	910
4-Nitrophenol	ND	910
Dibenzofuran	ND	360
2,4-Dinitrotoluene	ND	360

009

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	360
Fluorene	ND	360
4-Chlorophenyl-phenylether	ND	360
4-Nitroaniline	ND	910
4,6-Dinitro-2-methylphenol	ND	910
n-Nitrosodiphenylamine	ND	360
4-Bromophenyl-phenylether	ND	360
Hexachlorobenzene	ND	360
Pentachlorophenol	ND	910
Phenanthrene	190 J	360
Anthracene	50 J	360
Di-n-butylphthalate	ND	360
Carbazole	ND	360
Fluoranthene	260 J	360
Pyrene	150 J	360
Butylbenzylphthalate	ND	360
Benzo(a)anthracene	86 J	360
Chrysene	84 J	360
3,3'-Dichlorobenzidine	ND	360
bis(2-Ethylhexyl)phthalate	ND	360
Di-n-octylphthalate	ND	360
Benzo(b)fluoranthene	88 J	360
Benzo(k)fluoranthene	43 J	360
Benzo(a)pyrene	77 J	360
Indeno(1,2,3-cd)pyrene	38 J	360
Dibenz(a,h)anthracene	ND	360
Benzo(g,h,i)perylene	39 J	360

QC Batch:S0714-B1

Surrogate Recovery:

2-Fluorophenol	59%
Phenol-d5	70%
2-Chlorophenol-d4	70%
2,4,6-Tribromophenol	78%
1,2-Dichlorobenzene-d4	61%
Nitrobenzene-d5	67%
2-Fluorobiphenyl	78%
p-Terphenyl-d14	67%

ND = Not detected

010

Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID: TP-TK48
 Lab ID: D1099-02
 Analysis: Method 8260

Analysis Date: 7/14/97
 Matrix: Soil
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	ND	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5

016

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	ND	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	ND	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	ND	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	ND	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	ND	5

Surrogate Recovery:

1,2-Dichloroethane-d4	107%
Toluene-d8	101%
Bromofluorobenzene	100%

QC Batch: V1B0714A

017

ND = Not detected

Analysis Report: Total Metals

Client: Foster Wheeler Environmental Corp.

Client ID:

Lab ID: Prep Blank, 0715PBS

Analysis Method: 7471A (Mercury)
6010A (Others)

Concentration in: mg/kg, dry weight basis

Analysis Date: 7/16/97

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limit</u>
Arsenic	ND	1
Barium	ND	1
Cadmium	ND	0.1
Chromium	ND	1
Lead	ND	1
Mercury	ND	0.3
Selenium	ND	2
Silver	ND	1

QC Batch: 0715PBS

ND = Not detected

Analysis Report: Total Metals

Client: Foster Wheeler Environmental Corp.

Client ID:

Matrix: Soil

Lab ID: Lab Control Sample, 0715LCSS

Analysis Method: 7471A (Mercury)
6010A (Others)

Analysis Date: 7/16/97

<u>Analyte</u>	<u>% Recovery</u>
Arsenic	83
Barium	90
Cadmium	82
Chromium	95
Lead	82
Mercury	71
Selenium	72
Silver	91

QC Batch: 0715PBS

ND = Not detected

Analysis Report: Semivolatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID:
 Lab ID: Method Blank, S0714-B1
 Analysis: Method 8270

Analysis Date: 7/15/97
 Matrix: Soil
 Concentration in: ug/kg
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Phenol	ND	360
bis(2-Chloroethyl)ether	ND	360
2-Chlorophenol	ND	360
1,3-Dichlorobenzene	ND	360
1,4-Dichlorobenzene	ND	360
1,2-Dichlorobenzene	ND	360
2-Methylphenol	ND	360
2,2'-oxybis(1-Chloropropane)	ND	360
4-Methylphenol	ND	360
n-Nitroso-di-n-propylamine	ND	360
Hexachloroethane	ND	360
Nitrobenzene	ND	360
Isophorone	ND	360
2-Nitrophenol	ND	360
2,4-Dimethylphenol	ND	360
bis(2-Chloroethoxy)methane	ND	360
2,4-Dichlorophenol	ND	360
1,2,4-Trichlorobenzene	ND	360
Naphthalene	ND	360
4-Chloroaniiline	ND	360
Hexachlorobutadiene	ND	360
4-Chloro-3-methylphenol	ND	360
2-Methylnaphthalene	ND	360
Hexachlorocyclopentadiene	ND	360
2,4,6-Trichlorophenol	ND	360
2,4,5-Trichlorophenol	ND	910
2-Chloronaphthalene	ND	360
2-Nitroaniline	ND	910
Dimethylphthalate	ND	360
Acenaphthylene	ND	360
2,6-Dinitrotoluene	ND	360
3-Nitroaniline	ND	910
Acenaphthene	ND	360
2,4-Dinitrophenol	ND	910
4-Nitrophenol	ND	910
Dibenzofuran	ND	360
2,4-Dinitrotoluene	ND	360

011

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Diethylphthalate	ND	360
Fluorene	ND	360
4-Chlorophenyl-phenylether	ND	360
4-Nitroaniline	ND	910
4,6-Dinitro-2-methylphenol	ND	910
n-Nitrosodiphenylamine	ND	360
4-Bromophenyl-phenylether	ND	360
Hexachlorobenzene	ND	360
Pentachlorophenol	ND	910
Phenanthrene	ND	360
Anthracene	ND	360
Di-n-butylphthalate	ND	360
Carbazole	ND	360
Fluoranthene	ND	360
Pyrene	ND	360
Butylbenzylphthalate	ND	360
Benzo(a)anthracene	ND	360
Chrysene	ND	360
3,3'-Dichlorobenzidine	ND	360
bis(2-Ethylhexyl)phthalate	ND	360
Di-n-octylphthalate	ND	360
Benzo(b)fluoranthene	ND	360
Benzo(k)fluoranthene	ND	360
Benzo(a)pyrene	ND	360
Indeno(1,2,3-cd)pyrene	ND	360
Dibenz(a,h)anthracene	ND	360
Benzo(g,h,i)perylene	ND	360

QC Batch:S0714-B1

Surrogate Recovery:

2-Fluorophenol	60%
Phenol-d5	64%
2-Chlorophenol-d4	68%
2,4,6-Tribromophenol	84%
1,2-Dichlorobenzene-d4	65%
Nitrobenzene-d5	59%
2-Fluorobiphenyl	76%
p-Terphenyl-d14	82%

ND = Not detected

012

Analysis Report: Semivolatile Organic Compounds

Lab Control Summary

Client: Foster Wheeler Environmental Corp.

Matrix: Solid

Lab ID for Blank Spike: S0714-L1

Analysis: Method 8270

Analysis Date for Blank Spike: 7/15/97

<u>Analyte</u>	<u>% Recovery</u>
Phenol	56
2-Chlorophenol	60
1,4-Dichlorobenzene	52
n-Nitroso-di-n-propylamine	48
1,2,4-Trichlorobenzene	65
4-Chloro-3-methylphenol	72
Acenaphthene	65
4-Nitrophenol	76
2,4-Dinitrotoluene	88
Pentachlorophenol	80
Pyrene	71

QC Batch: S0714-B1

013

Analysis Report: Volatile Organic Compounds

Client: Foster Wheeler Environmental Corp.
 Client ID:
 Lab ID: Method Blank, V1B0714A
 Analysis: Method 8260

Analysis Date: 7/14/97
 Matrix: Soil
 Concentration in: ug/kg, dry weight basis
 Dilution: 1

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Carbon disulfide	ND	5
Iodomethane	ND	5
Acetone	ND	5
Methylene chloride	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Vinyl acetate	ND	5
2,2-Dichloropropane	ND	5
cis-1,2-Dichloroethene	ND	5
Methyl ethyl ketone	ND	5
Bromochloromethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
1,1-Dichloropropene	ND	5
Benzene	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Dibromomethane	ND	5
Bromodichloromethane	ND	5
2-Chloroethyl vinyl ether	ND	5
cis-1,3-Dichloropropene	ND	5
4-Methyl-2-pentanone	ND	5
Toluene	ND	5

018

<u>Analyte</u>	<u>Results</u>	<u>Reporting Limits</u>
trans-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,3-Dichloropropane	ND	5
2-Hexanone	ND	5
Dibromochloromethane	ND	5
1,2-Dibromoethane (EDB)	ND	5
Chlorobenzene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Ethylbenzene	ND	5
Xylenes, total	ND	5
Styrene	ND	5
Bromoform	ND	5
Isopropylbenzene	ND	5
Bromobenzene	ND	5
1,1,2,2-Tetrachloroethane	ND	5
1,2,3-Trichloropropane	ND	5
n-Propylbenzene	ND	5
2-Chlorotoluene	ND	5
4-Chlorotoluene	ND	5
1,3,5-Trimethylbenzene	ND	5
tert-Butylbenzene	ND	5
1,2,4-Trimethylbenzene	ND	5
sec-Butylbenzene	ND	5
1,3-Dichlorobenzene	ND	5
4-Isopropyltoluene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
n-Butylbenzene	ND	5
1,2-Dibromo-3-chloropropane	ND	5
1,2,4-Trichlorobenzene	ND	5
Hexachlorobutadiene	ND	5
1,2,3-Trichlorobenzene	ND	5
MTBE	ND	5
Naphthalene	ND	5

Surrogate Recovery:

1,2-Dichloroethane-d4	112%
Toluene-d8	103%
Bromofluorobenzene	112%

QC Batch: V1B0714A

ND = Not detected

019

MITKEM CORPORATION

Lab Project #: D1099
 Client Name: Foster Wheeler
 Client Proj #: DO# 13F
 Client PO #: 003195
 Project Name: Tank Farm #4
 Date Due: 7/18/97
 Total Price: \$ -
 Project Mgr: EL
 Salesman: PAS
 Del Req'd: NA
 Completed?: YES

Logged In By: MAM
 Reviewed By: [Signature]
 Date: 7/15/97 Time: 8:25

<u>Lab ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Analysis</u>	<u>Price</u>	<u>Sampled</u>	<u>Received</u>	<u>TPH</u>	<u>IR</u>	<u>BNA</u>	<u>Herb</u>	<u>P/P</u>	<u>Wet</u>	<u>Met</u>	<u>V-GC V</u>
-01	TP-TK47	SL	Total Metals/RCRA8 VOCs 8260 + EDB SVOCs 8270 TPH 418.1		7/11/97	7/11/97								1
								1	1					
-02	TP-TK48	SL	Total Metals/RCRA8 VOCs 8260 + EDB SVOCs 8270 TPH 418.1		7/11/97	7/11/97								1
								1	1					
							<u>TPH</u>	<u>IR</u>	<u>BNA</u>	<u>Herb</u>	<u>P/P</u>	<u>Wet</u>	<u>Met</u>	<u>V-GC V</u>
							0	2	2	0	0	0	2	0

NOTES: None

ORIGINAL REPORT GOES TO:
 Foster Wheeler Environmental Corp.
 P.O. Box 4749
 Middletown, R.I. 02842

Attn: Mark Gouveia
 Phone: 401 842-6940
 Fax: 401 842-6970

INVOICE GOES TO:
 Same

020

MITKEM CORPORATION

Sampl Condition Form

Received By: WSP Date: 7/11/97 MITKEM Project #: D1099

Client Project Description/Number: DO 135 Client: Foster Wheeler

Condition:	Lab ID	Client ID	Remarks
1) Custody Seal(s) Present/ <u>Absent</u> Intact/Broken	<u>01</u>		
	<u>02</u>		
2) Custody Seal Number(s) <u>NA</u>			
3) Chain-of-Custody Record(s) Present/ <u>Absent</u>			
4) Cooler Temperature <u>6°C</u> Coolant Condition <u>Good</u>			
5) Airbill(s) Present/ <u>Absent</u> Airbill Number(s)			
6) Sample Bottles <u>Intact</u> Broken Leaking			
7) Date Received <u>7/11/97</u>			
8) Time Received <u>16:30</u>			
9) Project Due Date			<u>022</u>

Last Page of Data Report

TANK NO. 48			
SUBSTANCE	RESIDENTIAL	GA	FIELD ANALYTICAL
	(mg/kg)	Leachability (mg/kg except as ther wis n ted)	DETECTIONS (mg/kg xc pt as oth rwis not d)
VOLATILE ORGANICS			
Acetone	7,800		
Benzene	2.5	0.2	
Bromodichloromethane	10		
Bromoform	81		
Bromomethane	0.8		
Carbon tetrachloride	1.5	0.4	
Chlorobenzene	210	3.2	
Chloroform	1.2		
Dibromochloromethane	7.6		
Dibromochloropropane (DBCP)	0.5		
Dichloroethane (1,1-)	920		
Dichloroethane (1,2-)	0.9	0.1	
Dichchloroethylene (1,1-)		0.7	
Dichloroethene (1,1-)	0.2		
Dichloroethylene (cis-1,2,-)		1.7	
Dichloroethene (cis-1,2-)	630		
Dichloroethylene (trans-1,2,-)		3.3	
Dichloroethene (trans-1,2-)	1,100		
Dichloropropane (1,2)	1.9	0.1	
Ethyl benzene	71	27	
Ethylene dibromode (EDB)	0.01	5.00E-04	
Isopropyl benzene	27		
Methyl ethyl ketone	10,000		
Methyl isobutyl ketone	1200		
Methyl-tert-butyl-ether	390	0.9	
Methylene chloride	45		
Styrene	13	2.9	
Tetrachloroethane,1,1,1,2	2.2		
Tetrachloroethane,1,1,2,2	1.3		
Tetrachloroethylene	12	0.1	
Toluene	190	32	
Trichloroethane,1,1,1,-	540	11	
Trichloroethane,1,1,2,-	3.6	0.1	
Trichloroethylene	13	0.2	
Vinyl chloride	0.02	0.3	
Xylenes		540	
Xylenes (total)	110		
SEMIVOLATILES			
Acenaphthene	43		
Acenaphthylene	23		
Anthracene	35		50(PPB)
Benzo(a)anthracene	0.9		86(PPB)

Benzo(a)pyrene	0.4	240	77(PPB)
Benzo(b)fluoranthene	0.9		88(PPB)
Benzo(g,h,i)perylene	0.8		39(PPB)
Benzo(k)fluoranthene	0.9		43(PPB)
Biphenyl, 1,1-	0.8		
Bis(2-ethylhexyl)phthalate	46		
Bis(2-chloroethyl)ether	0.6		
Bis(2-chloroisopropyl)ether	9.1		
Chloroaniline, 4- (p-)	310		
Chlorophenol, 2-	50		
Chrysene	0.4		84(PPB)
Dibenzo(a,h)anthracene	0.4		
Dichlorobenzene (all isomers)			
Dichlorobenzene, 1,2- (o-DCB)	510	41	
Dichlorobenzene, 1,2- (o-DCB)	430		
Dichlorobenzene, 1,4- (p-DCB)	27		
Dichlorobenzidine, 3,3-	1.4		
Dichlorophenol, 2,4-	30		
Diethylhexyl phthalate			
Diethyl phthalate	340	120	
Dimethyl phenol, 2,4-	1,400		
Dimethyl phthalate	1,900		
Dinitrophenol, 2,4-	160		
Dinitrotoluene, 2,4-	0.9		
Fluoranthene	20		260(PPB)
Fluorene	28		
Hexachlorobenzene	0.4		
Hexachlorobutadiene	8.2		
Hexachloroethane	46		
Ideno(1,2,3-cd)pyrene	0.9		38(PPB)
Methyl naphthalene, 2-	123		
Naphthalene	54		
Pentachlorophenol	5.3	0.8	
Phenanthrene	40	7.1	190(PPB)
Phenol	6,000		
Pyrene	13		150(PPB)
Trichlorobenzene, 1,2,4-	96		
Trichlorophenol, 2,4,5-	330	140	
Trichlorophenol, 2,4,6-	58		
PESTICIDES/PCBs			
Chlorodane	0.5		
Dieldrin	0.04	1.4	
Polychlorinated biphenyls (PCBs)	10		
INORGANICS		10	
Antimony	10		
Arsenic	1.7	0.05	7
Barium	5,500		15
Beryllium	0.40	23	
Cadmium	39	0.03	0.7

Chromium		0.03	13
Chromium III (Trivalent)	1,400	1.1	
Chromium VI (Hexavalent)	390		
Copper	3,100		
Cyanide	200		
Lead	150	2.4	10
Manganese	390	0.04	
Mercury	23		
Nickel	1,000	0.02	
Selenium	390	1	
Silver	200	0.6	
Thallium	5.5		
Vanadium	550	0.005	
Zinc	6,000		
TPH	500	500	

**APPENDIX L
BLAST REPORT**



INDUSTRIAL EXPLOSIVES • WATER BLASTING • VACUUM TRUCK SERVICES

BLAST REPORT

DATE: 11/6/97 BLAST TIME: 14:25

CUSTOMER: Foster Wheeler JOB # 9800-005
PROJECT LOCATION: Tank farm #4 - 4000 Defense Hwy Portsmouth Rd
SPECIFIC BLAST LOCATION: Tank 48
BLASTER: James McAlister BLASTERS LIC # 37-36
TYPE OF PROJECT: Tank Demolition
TYPE OF MATERIAL BLASTED: Concrete
WEATHER INFO: SKY Cloudy TEMP 55 WIND SP & DIR 10mph - NE

DRILL HOLE INFO: HOLE SIZE: 1 3/8 NO. HOLES 360 NO. ROWS 6
DEPTH RANGE: 15" TO 16"
SUB DRILL 0 FT. BURDEN 1 FT. SPACING 1.5 FT.

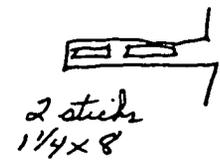
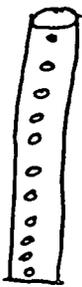
DISTANCE TO NEAREST STRUCTURE: 280+ FT.

EXPLOSIVE INFO: TOTAL OF EXPLOSIVES USED 341 LBS.
BRAND AND TYPE ICI Powdertech
MIN. LBS/HOLE .5 MAX. LBS/HOLE 1
MAX. LBS/DELAY 22 DECK SOLID ✓ STEM MIN 4"

INITIATION: BRAND/TYPE ICI Masterdet NO. CAPS USED 356
NO. DELAY USED 16 DELAY INTERVALS 25ms
TOTAL TIME FOR INITIATION 400ms

PRIMACORD: NO. OF FT. 50 SHOT LINE 0 FT.
CONTROL: QUANTITY DISTANCE DS. SEISMIC ✓ FT.
MATS USED? No - Backfill
Stay Current None

SHOT PLAN: (SHOW DIRECTION) CROSS SECTION



20
22
34

EXPLOSIVE LOAD LIST NORTHAMERICAN INDUSTRIAL SERVICES

DATE 11/6/97 LOCATION RI - Foster Wheeler JOB# 97-04-005

PowerDitch 1000 EXPLOSIVES

Det Cord

TYPE	LOT NUMBER	QTY OUT	QTY IN	QTY USED
<i>1 1/4 x 8</i>	<i>010C97J1</i>	<i>425.5</i>	<i>84 1/2 lbs</i>	<i>341</i>
<i>256R</i>	<i>31 OCT 96</i>	<i>3052</i>	<i>3002 ft.</i>	<i>50 ft</i>

16' Masterdet DETONATORS

PAVE DET

TYPE	LOT NUMBER	QTY OUT	QTY IN	QTY USED
<i>inst.</i>	<i>06R97 97</i>	<i>18</i>	<i>18</i>	<i>4</i>
<i>1</i>	<i>080C97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>2</i>	<i>030C97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>3</i>	<i>100C97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>4</i>	<i>095E97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>5</i>	<i>165E97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>6</i>	<i>095E97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>7</i>	<i>030E97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>8</i>	<i>105E97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>9</i>	<i>05A497R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>10</i>	<i>070C97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>11</i>	<i>010CT97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>12</i>	<i>155E97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>13</i>	<i>25MA97R2</i>	<i>26</i>	<i>4</i>	<i>22</i>
<i>14</i>	<i>130C97R2</i>	<i>56</i>	<i>34</i>	<i>22</i>
<i>15</i>	<i>17MY97R2</i>	<i>26</i>	<i>4</i>	<i>22</i>
<i>16</i>	<i>14MA95R2</i>	<i>26</i>	<i>4</i>	<i>22</i>
<i>17</i>	<i>APRIL 1997</i>	<i>11</i>	<i>11</i>	<i>0</i>
<i>18</i>				
<i>19</i>				
<i>20</i>				



INDUSTRIAL EXPLOSIVES • WATER BLASTING • VACUUM TRUCK SERVICES

N.A.I.S.
Shipping Papers

Date 11/6/97

Drivers Name ROE STRAZEWSKI

Drivers Signature [Signature]

Destination: NAIS
1240 SARATOGA RD
BALLSTON SPA NY

From: R-I TANK FARM
POSTSMITH R-I

Route to job site :

MOST SAFE AND DIRECT ROUTE

No. of boxes	HM	Description of articles and exceptions	Hazard Class	I.D. Number	Group Packing	Weight	Class or Rate	Labels Required (or exemption)
<u>27</u>	<input checked="" type="checkbox"/>	<u>DYNAMITE 40%</u>	<input checked="" type="checkbox"/>	<u>0143</u>	<u>I</u>	<u>84 1/2 LB</u>	<u>"A"</u>	<u>YES</u>
<u>17</u>	<input checked="" type="checkbox"/>	<u>ELECTRIC CAPS</u>	<input checked="" type="checkbox"/>	<u>0255</u>	<u>II</u>	<u>.5 LB</u>	<u>"A"</u>	<u>YES</u>
<u>1</u>	<input checked="" type="checkbox"/>	<u>DETCOD 25 GRAY</u>	<input checked="" type="checkbox"/>	<u>0289</u>	<u>III</u>	<u>9.5 LB</u>	<u>"A"</u>	<u>YES</u>

This is to certify that the above-named materials are properly classified, described, packed, marked and labeled / placarded and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Placards Required YES Placards supplied YES NO

Drivers Signature [Signature]

EMERGENCY RESPONSE TELEPHONE NUMBER 800 424-9301