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SITE INVESTIGATION REPORT FOR THE CLOSURE OF FOUR UNDERGROUND
STORAGE TANKS NWS EARLE NJ
9/1/1994
ROY F. WESTON, INC.

**SITE INVESTIGATION REPORT FOR THE CLOSURE
OF FOUR UNDERGROUND STORAGE TANKS
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY**

September 1994

Prepared for:

DEPARTMENT OF THE NAVY
Officer in Charge
NAVFAC Contracts
Naval Weapons Station Earle
Building C-1, C-11, C-22, and C-25
Colts Neck, New Jersey 07722-5000

W.O. # 10240-001-001



Steven A. Rock
Principal Project Manager



Richard M. Leuser, P.E.
Project Director
New Jersey P.E. Registration No. 23275
NJDEP UST Certification No. E0000457

Prepared by:
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One Weston Way
West Chester, Pennsylvania 19380

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EXECUTIVE SUMMARY

In May and June, 1994, the United States Navy closed Underground Storage Tanks (USTs) C-1, C-11, C-22, and C-25 at the Naval Weapons Station Earle, in Colts Neck, New Jersey. The tanks were removed per the New Jersey Department of Environmental Protection (NJDEP) Closure Approval Nos. (TMS Nos.) C94-0268, C94-0271, and C94-0272.

Tank C-1 was a single walled fiberglass, 3,000 gallon capacity UST. Tank C-11 was a single walled steel, 5,000 gallon capacity tank. Tank C-22 was a single walled steel, 2,000 gallon capacity tank. Tank C-25 was a single walled steel, "Diamond Plate" coated steel, 1,000 gallon capacity tank. Tank C-25 had been mistakenly registered as a 2,000 gallon capacity tank. Each of the tanks formerly contained No. 2 fuel oil.

Closure of the tanks were performed by removing overburden material, emptying the tanks and piping, remotely cleaning the tanks, cutting the piping at the building, removing the piping and tanks from the excavations, collecting post-excavation samples, and backfilling the excavations with clean sand and/or stone.

Visual examination of the tanks and appurtenant piping indicated that Tank C-11 had a hole in its end seam, that the fill line associated with Tank C-22 had leaked, and that dime-sized holes were observed in the product piping associated with Tank C-25. As a result of these observations, a release was reported to the NJDEP Hotline. Spill Case No. 94-7-5-0950-19 was assigned.

Groundwater was encountered in the Tank C-11 excavation at a depth of approximately 8.5 feet below grade. Free product was observed on the groundwater.

Four post-excavation soil samples were collected from the Tanks C-1, C-22, and C-25 excavations, while three were collected from the Tank C-11 excavation. All the soil samples were analyzed for total petroleum hydrocarbons (TPHC). An additional volume of each sample was collected for volatile organic analysis with a forward library search (VO + 10). VO + 10 analysis was performed on samples which indicated TPHC concentrations greater than 1,000 mg/kg.

The TPHC analytical results for Tank C-1 ranged from 55 mg/kg to 120 mg/kg, therefore, VO + 10 analysis was not required. All concentrations were below the 10,000 mg/kg limit established by NJDEP draft Soil Cleanup Criteria for total organic concentrations.

Analytical results for the Tank C-11 post excavation sample indicated the presence of TPHC at concentrations ranging from not detectable at 58 mg/kg to 3,900 mg/kg. One sample was analyzed for VO + 10. With the exception of one volatile compound (xylenes

at 19 mg/kg), all concentrations were below the Impact to Groundwater Soil Cleanup Criteria.

TPHC was not detectable (at 47 mg/kg to 49 mg/kg) in all of the Tank C-22 post-excavation soil samples. Analytical results for the Tank C-25 samples indicated the presence of TPHC at concentrations ranging from not detectable at 54 mg/kg to 270 mg/kg. VO + 10 analysis was not required on the samples collected from either of these tank excavations. All the concentrations of TPHC were below the 10,000 mg/kg limit.

Analytical results for samples collected from the excavated soils indicated all soils generated during closure of the four USTs were non-hazardous. The soils were shipped off site for recycling at a licensed treatment facility.

Based on the results of the post-excavation sample analyses, which indicate only one compound in only one sample exceeded cleanup criteria by less than a factor of two, no further actions is recommended for tanks C-1, C-11, C-22 and C-25.

SECTION 1

INTRODUCTION

1.1 PROJECT DESCRIPTION

The United States Navy has closed four underground storage tanks (USTs) at Naval Weapons Station Earle (NWS Earle), located in Colts Neck, New Jersey. The tanks were located adjacent to Buildings C-1, C-11, C-22 and C-25 at the facility. The tank removals and closures are being conducted as part of a station-wide program to convert existing fuel oil heating processes to natural gas. This effort is expected to last several years.

The tanks were registered with the New Jersey Department of Environmental Protection (NJDEP) under Facility Registration No. UST 0151003. The NJDEP - Bureau of Underground Storage Tanks (BUST) issued closure approvals (TMS) C94-0268, C94-0269, C94-0271, and C94-0272 on 22 March 1994. Copies of the closure approvals are located in Appendix A.

Roy F. Weston, Inc. (WESTON) closed the tanks under contract to the Navy in May and June 1994. The following Site Investigation Report has been prepared in accordance with the NJDEP's regulations Technical Requirements for Site Remediation (N.J.A.C. 7:26E) and Underground Storage Tanks (N.J.A.C. 7:14B). This report includes a description of the site, technical overviews of the tank closures, results of analytical testing, and conclusions based on the findings of this investigation.

1.2 SITE DESCRIPTION AND HISTORY

The NWS Earle consists of two geographical areas. The main section (referred to as the Inland Area), of NWS Earle is located in Colts Neck, New Jersey and encompasses an area of approximately 9 square miles (Figure 1-1). The other section of NWS Earle is located adjacent to Leonardo, New Jersey and is referred to as the Waterfront Area (Figure 1-2). Both sections of NWS Earle are connected by a government road approximately 13 miles in length. The tanks addressed in this summary (C-1, C-11, C-22 and C-25) are located at the Inland Area facility. The Hockhockson Swamp is located approximately 1/2 mile northeast of the Inland Area.

1.3 REGIONAL GEOLOGY

The NWS Earle sites are located in Monmouth County, New Jersey. Monmouth County lies within the New Jersey Coastal Plain province. The NWS Earle sites are located in the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, the sediments of the New Jersey, or "Atlantic" Coastal Plain consist of a seaward-dipping wedge of unconsolidated deposits of sand with some clay, silt and gravel. These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. The mineralogy ranges from nearly all quartz to nearly all glauconite. The general hydrogeologic framework reflects that the transgressive deposits act as confining units while most of the aquifers have formed in the regressive deposits.

The tanks were located in a sand fill. The excavations ranged in depth from 7.5 feet below ground surface (BGS) to 11 feet BGS. Groundwater was not encountered in the Tank C-1, C-22, or C-25 excavations, while depth to groundwater was measured to be approximately 8.5 feet BGS in the Tank C-11 excavation. The groundwater flow direction was not determined at the UST sites.

SECTION 2

TANK CLOSURE ACTIVITIES

2.1 TANK SYSTEMS DESCRIPTION

Tank C-1 was a 3,000 gallon UST located on the north side of Building C-1. Tank C-11 was a 5,000 gallon UST located on the south side of Building C-11. Tank C-22 was a 2,000 gallon UST located on the south side of Building C-22. Tank C-25 had been registered as a 2,000 gallon tank, and was located on the north side of Building C-25. Upon removal of the tank overburden, Tank C-25 was discovered to have a capacity of 1,000 gallons. Figures 2-1, 2-2, 2-3, and 2-4 depict, respectively, the tank C-1, C-11, C-22, and C-25 sites. Figures 2-5, 2-6, 2-7, and 2-8 present the cross sectional profiles for Tanks C-1, C-11, C-22, and C-25, respectively.

All four tanks contained No. 2 fuel oil, and were registered with the NJDEP under UST Facility Registration No. 0151003. A summary of the tank information is presented in Table 2-1.

2.2 TANK CLOSURE ACTIVITIES

The closure of Tanks C-1, C-11, C-22, and C-25 were performed under contract to the Department of the Navy. All work was performed by WESTON (Closure Certification No. E0000457). Prior to beginning work, the occupants of the Buildings C-1, C-11, C-22, and C-25 were notified of the planned removal activities. Underground and overhead utilities were surveyed and marked prior to excavation at each tank site.

Tank closure activities were fully photodocumented. Copies of photographs documenting the closure of Tanks C-1, C-11, C-22, and C-25 are presented in Appendix B.

2.2.1 Tank C-1

Prior to excavation activities, the tank fluid level was measured in Tank C-1. Approximately 6 inches (150 gallons) of water was measured and removed from the tank by vacuum truck. On 23 May 1994, WESTON's subcontractor (EN-CLEAN) remotely cleaned the tank. Hot work and excavation permits were obtained, the overburden was removed from above the tank, the tank was inerted with nitrogen, and small holes were cut in the top of the tank. These holes were used to introduce the pump's suction tubing for the fluid removal. EN-CLEAN also used these holes during remote pressure wash cleaning operations. After cleaning, residual sludge and wash water was removed. Liquid wastes were shipped to NWS

Earle's oil/water separator for processing. The tank's holes were covered with plywood sheeting and the excavation was temporarily backfilled (for safety reasons) pending removal.

Tank C-1 was closed on 25 May 1994. The temporary backfill was removed from above the tank, and piping was cut at the building, disconnected from the tank, and removed from the excavation. Additional backfill was removed from around the tank, and the UST was lifted from the excavation using a hydraulic excavator. Tank C-1 was temporarily staged on site and the outside of the tank was cleaned. The tank was labelled with former tank content, date of removal and rendered unusable by placing holes in the tank.

During the removal of tank C-1, the operator punched two (2) holes in the top of the tank with the bucket. With the exception of these holes, the tank appeared to be intact. The copper piping associated with Tank C-1 was slightly corroded (some pitting evident), but no leaks were noticeable.

Closure of Tank C-1 was completed by backfilling the excavation with clean sand fill. The fill was compacted in approximately 24-inch lifts with the excavator bucket and a layer of top soil was placed to grade. Seed and mulch was placed on the disturbed area to establish vegetation consistent with the surrounding area.

2.2.2 Tank C-11

Prior to excavation, the tank fluid level was measured in Tank C-11. Approximately 3 inches (130 gallons) of water was measured and removed from the tank by a vacuum truck. EN-CLEAN remotely cleaned the tank. Hot work and excavation permits were obtained, the overburden was removed from above the tank, the tank was inerted with nitrogen, and small holes were cut in the top of the tank. These holes were used to introduce the pump's suction tubing for the fluid removal. EN-CLEAN also used these holes during remote pressure wash cleaning operations. After cleaning, residual sludge and wash water was removed and shipped to NWS Earle's oil/water separator for processing. The tank's holes were covered with plywood sheeting and the excavation was temporarily backfilled pending removal.

Tank C-11 was closed on 8 June 1994. The temporary backfill was removed from above the tank, and piping was cut at the building, disconnected from the tank, and removed from the excavation. Additional backfill was removed from around the tank, and the UST was lifted from the excavation using a hydraulic excavator. Tank C-11 was temporarily staged on site, and the outside of the tank was cleaned. The tank was labelled in a similar manner to Tank C-1, then transported to Jacob Goldberg & Son, Inc. (Goldberg), a scrap metal facility, for recycling.

During tank closure, groundwater was observed to enter the excavation at a depth of 8.5 feet below ground surface (BGS). Free-phase product was observed on the groundwater in the

excavation. Rust was observed on Tank C-11. Further, a small hole was observed in the bottom of the tank, and one of the bottom tank seams also had a hole. Rust, pitting, and perforations were observed in the associated piping.

Closure of Tank C-11 was completed by backfilling the excavation with crushed and clean 3/4" stone (gravel) fill. The fill was placed in the excavation using the excavator bucket to 3 to 4 inches below grade. The surface area was then asphalted to match conditions prior to excavation.

2.2.3 Tank C-22

Prior to excavation activities, the tank fluid level was measured in Tank C-22. Approximately 70 gallons No. 2 fuel oil and 120 gallons of water was removed from the tank by vacuum truck and transported to the Navy's oil/water separator for processing. On 23 May 1994, EN-CLEAN remotely clean the tank. Hot work and excavation permits were obtained, the overburden was removed from above the tank, the tank was inerted with nitrogen, and small holes were cut in the top of the tank. These holes were used to introduce the pump's suction tubing for the fluid removal. EN-CLEAN also used these holes during remote pressure wash cleaning operations. After cleaning, residual sludge and wash water was removed. Liquid wastes were shipped to NWS Earl's oil/water separator for processing. The tank's holes were covered with plywood sheeting and the excavation was temporarily backfilled pending removal.

Tank C-22 was closed on 26 May 1994. The temporary backfill was removed from above the tank, and piping was cut at the building, disconnected from the tank, and removed from the excavation. Additional backfill was removed from around the tank, and the UST was lifted from the excavation using a hydraulic excavator. Tank C-22 was temporarily staged on site and the outside of the tank was cleaned. The tank was labelled in a manner similar to Tank C-1. Tank C-22 was transported to Goldberg for recycling.

Rust and minor pitting was observed on Tank C-22. The outside of the tank exhibited a petroleum odor. Stained soil was observed around the tank's 4-inch fill line, indicating a leak.

Closure of Tank C-2 was completed by backfilling the excavation with clean sand fill. The fill was compacted in approximately 24-inch lifts with the excavator bucket to grade and topsoil seed and mulch was placed over the area to re-establish vegetation.

2.2.4 Tank C-25

Prior to excavation, the tank fluid level was measured in Tank C-25. Approximately 3.5 inches (30 gallons) of water and 33 inches (800 gallons) of No. 2 fuel oil were measured and removed from the tank by a vacuum truck. EN-CLEAN remotely cleaned the tank. Hot work and excavation permitted were obtained, the overburden was removed from above the

tank, the tank was inerted with nitrogen, and small holes were cut in the top of the tank. These holes were used to introduce the pump's suction tubing for the fluid removal. EN-CLEAN also used these holes during remote pressure wash cleaning operations. After cleaning, residual sludge and wash water was removed and shipped to NWS Earle's oil/water separator for processing.

Tank C-25 was closed on 23 May 1994. The temporary backfill was removed from above the tank, and piping was cut at the building, disconnected from the tank and removed from the excavation. Additional backfill was removed from around the tank, and the UST was lifted from the excavation using a hydraulic excavator. A concrete pad, which had been located under the tank, was also removed from the excavation. Closure of Tank -25 was completed by backfilling the excavation with clean 3/4" stone. The stone was placed with the excavator bucket to grade. Final restoration included an asphalt cover over the effected area.

Tank C-25 was temporarily staged on site, and the outside of the tank was cleaned. The tank was labelled in a similar manner to Tank C-1, then transported to Goldberg for recycling.

Visual inspection indicated Tank C-25 was intact, with no noticeable holes. Rust and minor pitting were, however, observed on the tank, and one product pip (either the suction or return line) had a dime sized hole at two location.

2.3 WASTE MATERIAL MANAGEMENT

2.3.1 Tank and Piping

The removed metal tank and piping were cleaned by pressure washing, rendered unusable, and disposed of through Jacob Goldberg and Son, Inc., a licensed scrap metal recycler. The tanks were labeled with the origin, disposal destination, and content prior to leaving the site. The receipts from the metal recycler are included in Appendix C.

2.3.2 Excavated Soil

During tank closure, excavated soils were examined for evidence of staining. The soils were also screened with either a Thermo Environmental Systems, Inc. Organic Vapor Meter (OVM) or an HNu Photoionization Detector (Hnu PID) for volatile organic vapors. Soils which did not indicate staining, odors, or elevated field instrument readings were considered to be acceptable for later use as backfill. Soils which indicated either staining, odors, elevated field instrument readings, or any combination thereof were considered potentially contaminated. Both non-contaminated and potentially contaminated soils were staged separately adjacent to the excavations on polyethylene sheeting, and were sampled to determine whether soils could be used as backfill or disposed of.

All potentially contaminated soils were classified as non-hazardous (ID 27) waste. The soil was transported to Earle Environmental Corp. in Jackson, New Jersey, a NJDEP permitted soil recycling facility. The soils were used as an aggregate in Bituminous concrete. Copies of the Certificate of Recycling, Bills of Lading and the Contaminated Soil Remediation Records are located in Appendix C.

2.3.3 Tank Fluids

Prior to cleaning of the tanks, the remaining No. 2 fuel oil was removed from the tanks by the Navy, and transported to a fuel oil recycler for recycling/fuel blending.

Immediately prior to tank removal, the remaining fuel and water was removed from the tanks with a vacuum truck by EN-CLEAN. Approximately 150 gallons of water was removed from Tank C-1, approximately 130 gallons of water was removed from Tank C-11, approximately 70 gallons of No. 2 fuel oil and 30 gallons of water were removed from Tank C-25. After tank cleaning, the wash water introduced into the tanks was removed. All oily water removed from the tanks by EN-CLEAN was transported to NSW Earle's oil/water separator for treatment prior to discharge. The water effluent leaving the separator was monitored during off-loading operations. No evidence of an oily sheen or oil residue was observed in or on the oil water separator effluent.

2.4 SITE ASSESSMENT OBSERVATIONS AND SAMPLING

Field screening with either an OVM or an Hnu PID was performed on soils removed from the tank excavations. The readings obtained were recorded in the underground storage tank removal log notes. Soils were visually examined for evidence of staining. Groundwater, if encountered in the excavation, was examined for evidence of free product (sheen or product layer). Post-excavation soil samples were collected from each excavation prior to backfilling them with certified clean fill. The following subsections describe the site observations and sampling activities conducted for each of the UST sites.

2.4.1 Tank C-1

During removal of tank overburden, OVM readings of 10 units above background were observed in the immediate vicinity of the fill pipe. Staining and odors were not observed in the soil excavated from the sides of the UST, or from the overburden not in the immediate vicinity of the fill pipe. Headspace analysis of grab soil samples collected from the excavated soil pile indicated elevated OVM readings ranging from 4 units above background to 71 units above background.

The soil excavated from the excavation were described as orange to orange-grey to grey-black sand with 0 to 40 percent clay.

The tank excavation reached a maximum depth of 10.5 feet BGS on the north side of the excavation. Groundwater was not observed in the excavation. A subsurface pad was identified beneath Tank C-1. For safety's sake, field personnel did not enter the excavation to inspect the condition of the pad.

Post-excavation soil samples (C-1-1 through C-1-4) were collected immediately after removing Tank C-1. A total of four soil samples were collected from the bottom of the Tank C-1 excavation. Samples C-1-1 and C-1-2 were collected from beneath the tank's centerline, while samples C-1-3 and C-1-4 were collected from the tank's northern and southern perimeters, at approximately midway between the tank's ends. Figure 2-9 shows the approximate locations of the soil samples collected from the excavation.

The post-excavation soil samples were collected in the following manner: A volume of soil was lifted from the excavation via the excavator bucket. The sampler used a decontaminated stainless steel spoon to transfer the requisite quantity of soil from the bucket onto laboratory-prepared sample jars. The sampling technician took care to collect the samples from the central portion of the bucket, in an area that did not contact the bucket sidewalls. The samples were sealed, labelled, and placed in a cooler immediately upon collection.

An additional sample was collected from the excavated soil pile for waste classification sampling. Three individual grab samples were collected by stainless steel spoon and transferred into one sample jar to form composite sample C-1-5Pile.

The soil samples were analyzed for total petroleum hydrocarbons (TPHC). An additional volume of soil sample was collected from each sampling location for volatile organic analysis with a forward library search (VO + 10). VO + 10 analysis would be run on samples with TPHC concentrations greater than 1,000 mg/kg. One field blank (C-11-FB1) and one trip blank (C-1-TB1) were obtained in association with the Tank C-1 samples. The field blank was submitted for TPHC and VO + 10 analyses, and the trip blank was submitted for VO + 10 analysis only.

The post-excavation samples were submitted to Laboratory Resources, Inc. for analysis. Laboratory Resources Inc. is located at 100 Hollister Road in Teterboro, New Jersey, and is certified by the NJDEP for soil and water analyses (Certification No. 02046).

2.4.2 Tank C-11

During removal of tank overburden, Hnu PID readings greater than background were not observed. A small hole was observed in the Tank C-11. Stained soil was present beneath the tank. All visibly stained soil was removed from the excavation. Headspace analysis of the soil samples collected in association with the tank did not indicate elevated Hnu PID readings.

The tank excavation reached a maximum depth of 9 feet BGS. Groundwater entered the excavation at a depth of 8.5 feet BGS. Visible product was present on the groundwater entering the hole. A sample of this groundwater, collected for on-site headspace screening, indicated 50 units above background on the Hnu PID.

As a result of the field observations, the Navy reported a release to the NJDEP Hotline. Spill Case No. 94-7-5-0950-19 was assigned.

Three post-excavation soil samples (C-11-1 through C-11-3) were collected immediately after removing Tank C-11. Due to the presence of groundwater in the excavation, the post-excavation samples could not be taken from under the tank's centerline. The soil samples were collected from the six-inch interval above the groundwater, adjacent to the perimeter of the removed tank. Figure 2-10 depicts the approximate locations of the soil samples collected from the excavation.

The post-excavation soil samples were collected in the following manner: A volume of soil was lifted from the excavation via the excavator bucket. The sampler used a decontaminated stainless steel spoon to transfer the requisite quantity of soil from the bucket onto laboratory-prepared sample jars. The sampling technician took care to collect the samples from the central portion of the bucket, in an area that did not contact the bucket sidewalls. The samples were sealed, labelled, and placed in a cooler immediately upon collection.

An additional sample was collected from the excavated soil pile for waste classification sampling. Three individual grab samples were collected by stainless steel spoon and transferred into one sample jar to form composite sample C-11-Pile1.

The soil samples were analyzed for total petroleum hydrocarbons (TPHC). An additional volume of soil sample was collected from each sampling location for volatile organic analysis with a forward library search (VO + 10). VO + 10 analysis would be run on samples with TPHC concentrations greater than 1,000 mg/kg. One field blank (C-33-TB) was collected along with the soil samples. The field blank was submitted for TPHC and VO + 10 analyses. The post-excavation samples and the field blank were submitted to Laboratory Resources, Inc. for analysis.

2.4.3 Tank C-22

During removal of tank overburden, OVM readings of seven units above background were obtained on the overburden soil excavated from the immediate vicinity of the 4-inch fill line. The soil around the fill line, and the top of the tank were stained. All visibly stained soil was removed from the excavation. While headspace analysis of the post-excavation soil samples collected in association with the tank did not indicate elevated OVM readings,

OVM readings from the headspace of the excavated soil disposal grab samples ranged from 12 units above background to 24 units above background.

The tank excavation reached a maximum depth of 7.5 feet BGS. Groundwater was not encountered in the excavation. The soils excavated from the excavation were described as orange to grey sand.

As a result of the field observations (staining, elevated OVM readings on excavated soil), the Navy reported a release to the NJDEP Hotline. The release was called in at the same time as the release reported for Tank C-11. Spill Case No. 94-7-5-0950-19 was assigned to Tank C-22, as well as Tank C-11.

Four post-excitation soil samples (C-22-1 through C-22-4) were collected immediately after removing Tank C-22. Samples C-22-1 and C-22-4 were collected from beneath the tank's centerline, while samples C-22-2 and C-22-3 were collected from the tank's northern and southern perimeters, at approximately midway between the tank's ends. Figure 2-11 shows the approximate locations of the soil samples collected from the excavation.

The post-excitation soil samples were collected in the following manner: A volume of soil was lifted from the excavation via the excavator bucket. The sampler used a decontaminated stainless steel spoon to transfer the requisite quantity of soil from the bucket onto laboratory-prepared sample jars. The sampling technician took care to collect the samples from the central portion of the bucket, in an area that did not contact the bucket sidewalls. The samples were sealed, labelled, and placed in a cooler immediately upon collection.

Two additional samples were collected from the excavated soil piles. Sample C-22-5Pile was collected from the clean fill pile to confirm the soils suitability as backfill. Sample C-22-6Pile was collected for waste classification of the excavated potentially contaminated fill. Four individual grab samples were collected for each "Pile" sample using a stainless steel spoon and transferred into the sample jars to form the composite samples.

The soil samples were analyzed for TPHC, with an additional volume of soil sample was collected for VO + 10 analysis from each sampling location. VO + 10 analysis would be run on samples with TPHC concentrations greater than 1,000 mg/kg. One field blank (C-22-FB) was collected along with the soil samples. The field blank was submitted for TPHC and VO + 10 analyses. The post-excitation and field blank samples were submitted to Laboratory Resources, Inc. for analysis.

2.4.4 Tank C-25

Odors and staining around the fill line was observed upon removal of the asphalt surface above the tank location. Approximately three cubic yards of potentially contaminated soil

was removed from the immediate vicinity of the fill line and staged. During removal of additional tank overburden, OVM readings of up to four units above background were observed. While headspace analysis of the post-excavation soil samples collected in association with the tank did not indicate elevated OVM readings, OVM readings from the headspace of the excavated soil disposal grab samples indicated approximately 2 units above background.

The tank excavation reached a maximum depth of 7.5 feet BGS. Groundwater was not encountered in the excavation.

As a result of the holes observed in the product piping (see Section 2.2.4) the Navy reported a release to the NJDEP Hotline. The release was called in at the same time as the release reported for Tanks C-11 and C-22. Spill Case No. 94-7-5-0950-19 was assigned to the three tanks.

Four post-excavation soil samples (C-25-2 through C-25-5) were collected immediately after removing Tank C-25. Samples C-25-2 and C-25-3 were collected from beneath the tank's centerline, while samples C-25-4 and C-25-5 were collected from the tank's western and eastern perimeters, at approximately midway between the tank's ends. Figure 2-12 shows the approximate locations of the soil samples collected from the excavation. Sample C-25-2 was collected in triple volume, for matrix spike/matrix spike duplicate (MS/MSD) analysis. Sample C-25-5 was collected in duplicate. The duplicate sample was designated "Duplicate 1".

The post-excavation soil samples were collected in the following manner: A volume of soil was lifted from the excavation via the excavator bucket. The sampler used a decontaminated stainless steel spoon to transfer the requisite quantity of soil from the bucket onto laboratory-prepared sample jars. The sampling technician took care to collect the samples from the central portion of the bucket, in an area that did not contact the bucket sidewalls. The samples were sealed, labelled, and placed in a cooler immediately upon collection.

An additional sample was collected from the excavated soil. Sample C-25-1Pile was collected for waste classification of the excavated potentially contaminated fill. Four individual grab samples were collected for sample C-25-1Pile using a stainless steel spoon. The grab samples were transferred into the sample jars to form composite sample.

The soil samples were analyzed for TPHC, with an additional volume of soil sample was collected for VO + 10 analysis from each sampling location. VO + 10 analysis would be run on samples with TPHC concentrations greater than 1,000 mg/kg. One field blank (C-25-FB) and one trip blank (C-25-TB) were collected along with the soil samples. Both the field blank and trip blank samples were submitted for TPHC and VO + 10 analyses. The post-excavation and blank samples were submitted to Laboratory Resources, Inc. for analysis.

SECTION 3

ANALYTICAL RESULTS

3.1 SOIL SAMPLING RESULTS

As indicated in Section 2.4 of this report, soil samples obtained from the tank excavations were analyzed for TPHC, with additional sample volumes collected for VO + 10 analysis. A summary of all samples collected in association with Tanks C-1, C-11, C-22, and C-25 is presented in Table 3-1.

The following subsections discuss the analytical results for the soil samples. The soil results were compared to the proposed Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D), superseded by NJDEP's draft Impact to Ground Water Soil Cleanup Criteria dated 3 February 1994. The summary tables for each tank present only those compounds which were either detected in any sample collected in association with that tank, or were not detected, but at a quantitation limit greater than the applicable remediation standard.

3.1.1 Tank C-1

A total of four post-excavation soil samples (C-1-1 through C-1-4) were collected from beneath Tank C-1. An additional soil sample (C-1-5 Pile) was collected from the excavated soil, for waste characterization purposes. A summary of analytical results for these samples is presented in Table 3-2. A copy of the full analytical data package is provided in Appendix D.

Laboratory results for the post-excavation samples indicated the presence of TPHC in concentrations ranging from 55 mg/kg to 150 mg/kg. Since all concentrations of TPHC were less than 1,000 mg/kg, analysis of the samples for VO+10 was not required. The concentration of TPHC in all samples was below the 10,000 mg/kg limit for total organic compounds, therefore, the C-1 excavation does not require further soil removal.

The sample collected from the excavated soils indicated the presence of TPHC at a concentration of 90 mg/kg. This result indicated that the excavated soil could be disposed of as non-hazardous material.

3.1.2 Tank C-11

A total of three post-excavation soil samples (C-11-1 through C-11-3) were collected from beneath Tank C-1. An additional soil sample (C-11-Pile1) was collected from the excavated soil, for waste characterization purposes. A summary of analytical results for these samples

is presented in Table 3-3. A copy of the full analytical data package is provided in Appendix D.

Laboratory results for the post-excavation samples indicated the presence of TPHC in concentrations ranging from not detectable at 58 mg/kg to 3900 mg/kg. The concentration of TPHC exceeded 1,000 mg/kg in one sample (C-11-3); that sample was further analyzed for VO+10.

Laboratory results for VO+10 indicated the presence of two target compounds, ethylbenzene and xylenes in sample C-11-3. While ethylbenzene was detected at a concentration below its Impact to Ground Water Soil Cleanup Criteria, the concentration of xylenes was 19 mg/kg, greater than its Cleanup Criteria of 10 mg/kg. Ten tentatively identified compounds (TICs) were detected in sample C-11-3 at concentrations ranging from 36 mg/kg to 120 mg/kg. The total concentration of VO+10 (TICs plus target compounds) was 673 mg/kg, less than the criteria of 1,000 mg/kg. The total organic concentration (the sum of TPHC and VO+10) was 4,570 mg/kg, less than the 10,000 mg/kg limit.

The TPHC concentration in the excavated soil sample (C-11-Pile1) was 2,300 mg/kg. Analysis of this sample indicated the presence of two target compounds (methylene chloride and ethylbenzene), and eight TICs. The concentrations of all compounds detected in this sample indicate that the excavated soil could be disposed of as non-hazardous waste.

3.1.3 Tank C-22

A total of four post-excavation soil samples (C-22-1 through C-22-4) were collected from beneath Tank C-22. Two additional soil samples (C-22-5Pile and C-22-6Pile) were collected from the excavated soil for waste characterization purposes. A summary of analytical results for these samples is presented in Table 3-4. A copy of the full analytical data package is provided in Appendix D.

Laboratory analysis of the post-excavation soil samples did not detect TPHC at detection limits ranging from 47 mg/kg to 49 mg/kg. Since TPHC was not detected in the samples, analysis for VO+10 was not required. The analytical results for these samples indicate the C-22 excavation does not require further soil removal.

Laboratory analysis on sample C-22-5Pile did not detect TPHC at detection limit of 47 mg/kg. The TPHC concentration detected in sample C-22-6Pile was 12,000 mg/kg. Analysis for VO+10 on this sample indicated the presence of three target compounds (methylene chloride, tetrachloroethylene, and styrene) and six TICs. These result indicate that the excavated soil could be disposed of as non-hazardous material.

3.1.4 Tank C-25

A total of four post-excavation soil samples (C-25-2 through C-25-5) were collected from beneath Tank C-25. Sample C-25-5 was collected in duplicate (sample Duplicate1), and sample C-25-2 was analyzed as a matrix spike/matrix spike duplicate (MS/MSD). An additional soil sample (C-25-1Pile) was collected from the excavated soil, for waste characterization purposes. A summary of analytical results for these samples is presented in Table 3-5. A copy of the full analytical data package is provided in Appendix D.

Laboratory results for the post-excavation samples indicated the presence of TPHC in concentrations ranging from not detectable at 54 mg/kg to 270 mg/kg. Since all concentrations of TPHC were less than 1,000 mg/kg, analysis of the samples for VO+10 was not required. The concentration of TPHC in all samples was below the 10,000 mg/kg limit for total organic compounds, therefore, the C-25 excavation does not require further soil removal.

The sample collected from the excavated soils indicated the presence of TPHC at a concentration of 210 mg/kg. This result indicated that the excavated soil could be disposed of as non-hazardous material.

3.2 RELIABILITY OF ANALYTICAL DATA

In order to generate analytical data of known and defensible quality, adherence to established quality assurance protocols were used. To ensure that the samples obtained in the field represented the particular environment from which they were collected and were of satisfactory quality, field sampling and laboratory analysis were performed in accordance with NJDEP's Field Sampling Procedure Manual (May 1992) and the Technical Requirements for Site Remediation (N.J.A.C. 7:26E-1 et seq.) The following sections discuss the sampling and handling procedures used. Table 3-6 summarizes the analytical methods and quality assurance information pertaining to the post-excavation samples collected during the Site Investigation field programs for Tanks C-1, C-11, C-22, and C-25.

3.2.1 Sampling Methods

For safety reasons, field personnel did not enter the excavations. Post excavation soil samples were obtained from each tank excavation using a backhoe bucket to collect a large volume of soil, from which a decontaminated stainless steel spoon was used to collect the soil samples submitted to the laboratory for analysis. The stainless steel spoons were decontaminated using the following steps:

1. Detergent scrub
2. Tap water rinse
3. Distilled water rinse
4. Methyl alcohol rinse
5. Distilled water rinse

6. Air dry

Field blanks were collected by pouring analyte-free water over the decontaminated stainless steel spoon into the sample bottles. Trip blanks were obtained from the laboratory performing the analysis.

3.2.2 Sample Handling and Preservation

Post-excavation soil samples were removed from the backhoe bucket and placed into laboratory prepared jars with decontaminated stainless steel spoons. The type and size of the jars were matched to the intended analytical procedure. Two laboratory prepared sample bottles were filled for each sample location. The VO + 10 sample bottle was filled and sealed before collection of the TPHC sample. Soil samples were labeled and placed into a cooler filled with ice to maintain the temperature at approximately 4 degrees Centigrade for transport to the laboratory.

Each field blank was obtained by pouring analyte-free water over a field decontaminated stainless steel spoon. The field blanks were preserved as required by the analytical method, sealed, labelled, and placed into the ice filled cooler with its associated soil samples for transportation to the laboratory.

3.2.3 Sample Handling Times

From a comparison of the sampling and analysis dates, all analyses were performed within the NJDEP's prescribed sample holding times.

3.2.4 Quality Assurance Samples

Field blanks were collected for the soil samples as required by the NJDEPE's Field Sampling Procedures Manual. Since only twelve (12) samples were collected, one field blank was collected. The field blank was analyzed for all of the parameters being tested.

The Field Sampling Procedures Manual does not require trip blanks for soil (non-aqueous) samples. No trip blanks were taken. Duplicate samples were not obtained as part of this sampling effort.

3.2.5 Method Detection Limits

All of the analyses performed had method detection limits (MDLs) that were at or below the NJDEP's proposed Impact to Ground Water Soil Cleanup Criteria levels, with the following exceptions:

- Seventeen volatile organic compounds (chloromethane, bromomethane, vinyl chloride, methylene chloride, chloroform, 1,2-dichloroethane, carbon tetrachloride, bromodichloromethane, cis 1,3-dichloropropene, trichloroethene, dibromochloromethane, 1,1,2-trichloroethane, benzene, trans 1,3-dichloropropene, bromoform, tetrachloroethene, and 1,1,2,2-tetrachloroethane) in samples C-11-3 and C-11-Pile1; and
- One volatile organic compound (bromomethane) in sample C-22-6Pile.

It is important to note that if these compounds had been present, they would likely have been detected as estimated concentrations lower than the method detection limits.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

In May and June, 1994, the United States Navy closed Tanks C-1, C-11, C-22, and C-25 at the Naval Weapons Station Earle, in Colts Neck, New Jersey. The tanks were removed per the New Jersey Department of Environmental Protection (NJDEP) Closure Approval Nos. (TMS Nos.) C94-0268, C94-0269, C94-0271, and C94-0272.

Closure of the tanks were performed by removing overburden material, emptying the tanks and piping, remotely cleaning the tanks, cutting the piping at the building, and removing the piping and tanks from the excavations.

Visual examination of the tanks and appurtenant piping indicated that Tank C-11 had a hole its end seam, that the fill line associated with Tank C-22 had leaked, and that dime-sized holes were observed in the product piping associated with Tank C-25. As a result of these observations, a release was reported to the NJDEP Hotline. Spill Case No. 92-7-5-0950-19 was assigned. Closure of the tanks was completed by backfilling the excavation with certified clean fill, compacted in approximately 24-inch lifts.

The following sampling was performed prior to backfilling the tank excavations:

- Tank C-1 - Four post-excavation soil samples were collected and analyzed for TPHC. The results indicated the presence of TPHC at concentrations ranging from 55 mg/kg to 120 mg/kg, less than the 10,000 mg/kg limit for total organic concentrations set by the NJDEP Soil Cleanup Criteria. VO + 10 analysis was not required on these samples.
- Tank C-11 - Three post-excavation soil samples were collected and analyzed for TPHC. According to the analytical results, all contaminated soil was removed with the exception of the western end of the excavation. Analytical results indicated TPHC was not detectable in all post-excavation soil samples but C-11-3. Sample C-11-3 was also analyzed for VO+10. The total VO+10 level (including TICs) was 673 mg/kg, below the 1,000 mg/kg limit for total VO+10. The concentration of TPHC and VO+10 in this sample was 4570, below the 10,000 mg/kg limit for total organic compounds. However, xylenes were present in sample C-11-3 at a concentration of 19 mg/kg, which is above the proposed NJDEP Impact to Ground Water Soil Cleanup Criteria. All other indentified VO+10. Compounds did not exceed their proposed cleanup criteria.

- Tank C-22 - Four post-excavation soil samples were collected and analyzed for TPHC. The results indicated TPHC was not present in any sample (at quantitation limits ranging from 47 mg/kg to 49 mg/kg). VO + 10 analysis was not required on these samples.
- Tank C-25 - Four post-excavation soil samples were collected and analyzed for TPHC. The results indicated the presence of TPHC at concentrations ranging from not detectable at 54 mg/kg to 270 mg/kg, less than the 10,000 mg/kg limit for total organic concentrations set by the NJDEP Soil Cleanup Criteria. VO + 10 analysis was not required on these samples.

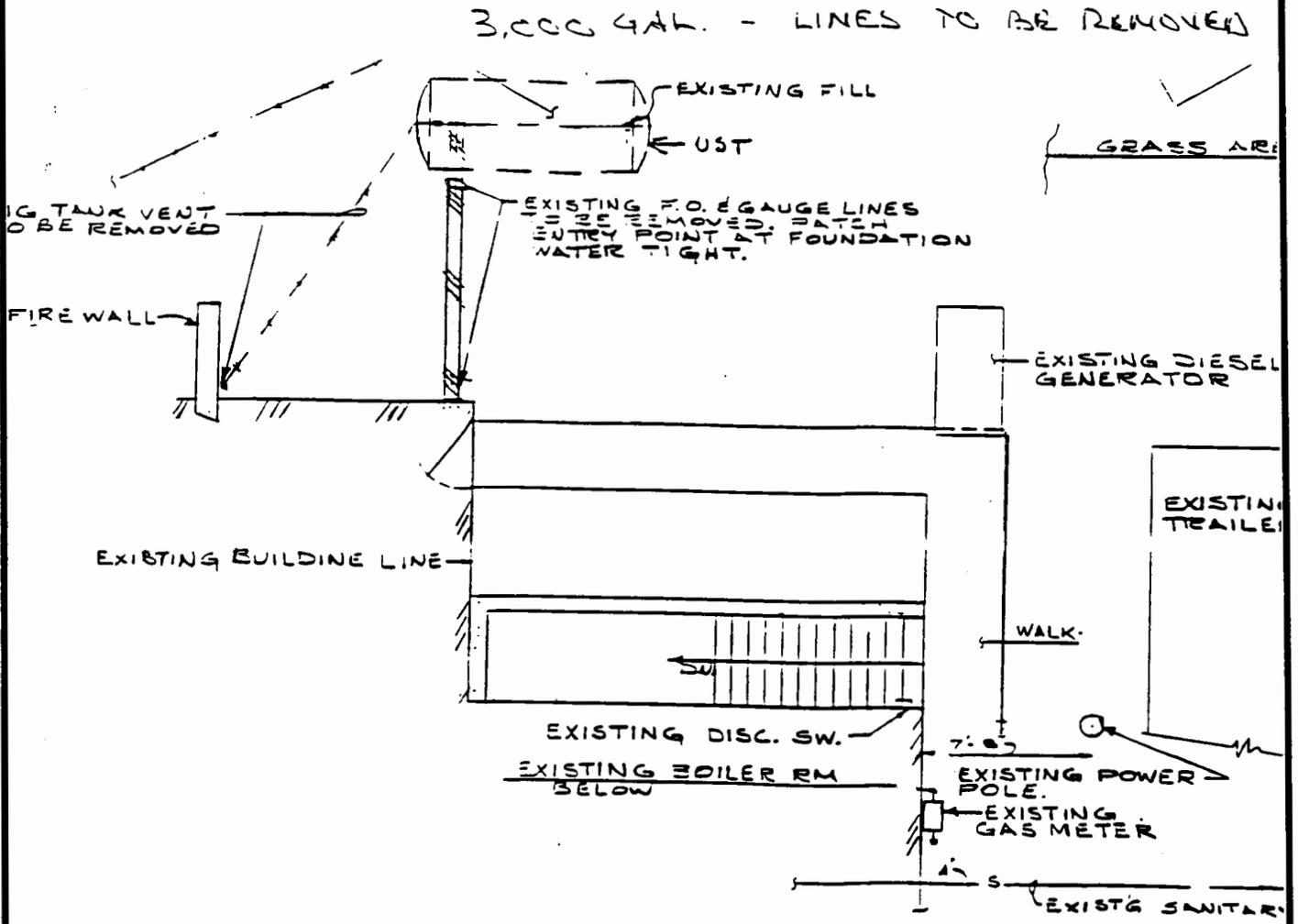
In summary, with the exception of one compound (xylenes) in one sample associated with Tank C-11, the analytical results for all post-excavation samples indicated that the tanks did not have an adverse impact on the environment.

4.2 RECOMMENDATIONS

Based on the findings of the site investigation, the following recommendations are made:

- Tank C-1 - No further action.
- Tank C-11 - No further action, since only one compound in only one soil sample exceeded cleanup criteria by less than a factor of two.
- Tank C-22 - No further action.
- Tank C-25 - No further action.

FIGURES



BUILDING C-1 PARTIAL SITE PLAN

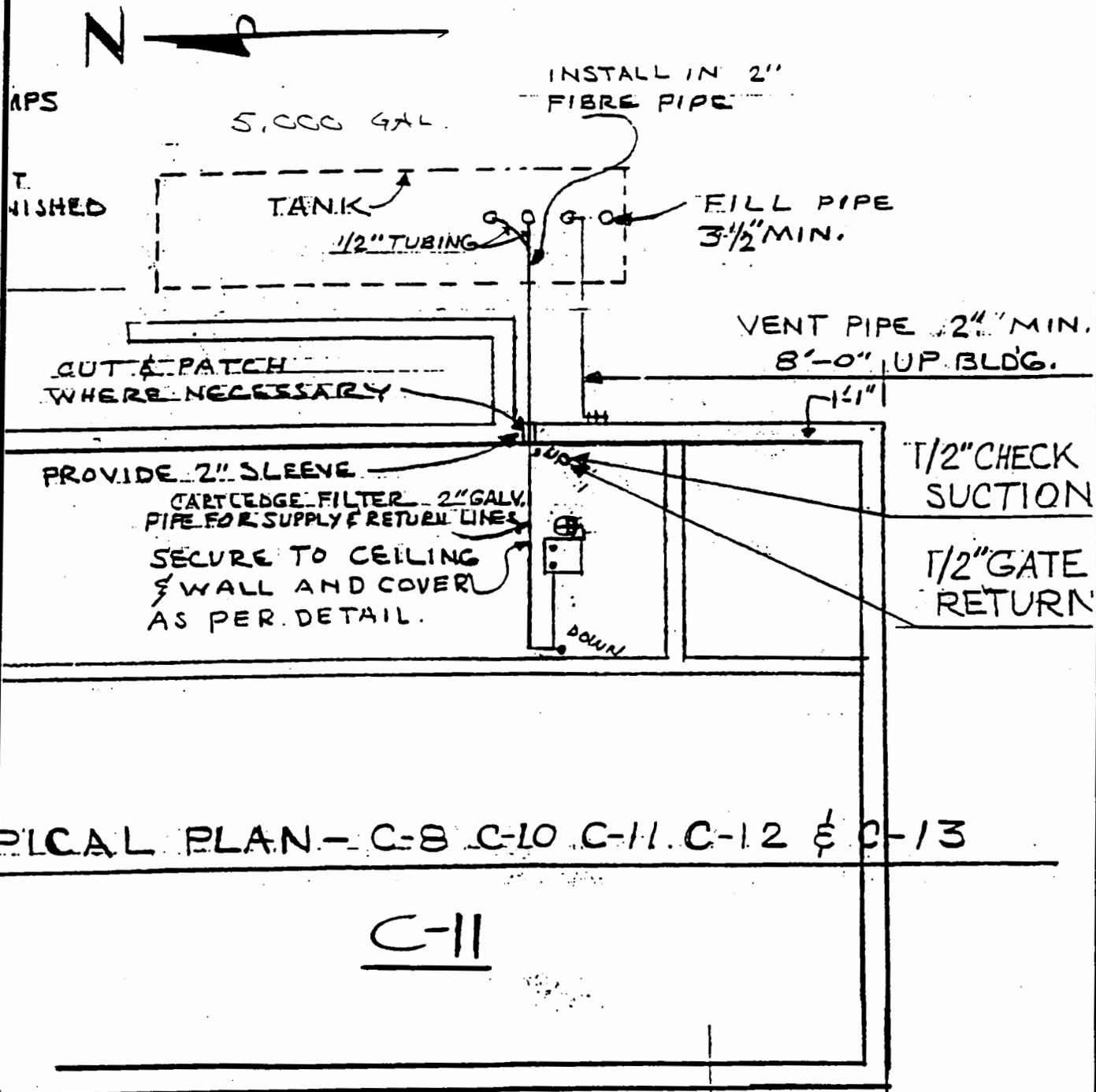
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PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURES
 NAVAL WEAPON STATION EARLE
 COLTS NECK, NEW JERSEY
 CLIENT NAME: DEPARTMENT OF THE NAVY
 NAVFAC CONTRACTS

SITE LOCATION MAP
 TANK C-1
 DATE: 31 AUGUST 1994
 FIGURE #: 2-1

TANK LOCATION PLAN



REVISION # 0000 DATE 8/24/94 PLOT NAME 00000000
 FILE NAME 0000000.DWG DRAWN BY B. MAC



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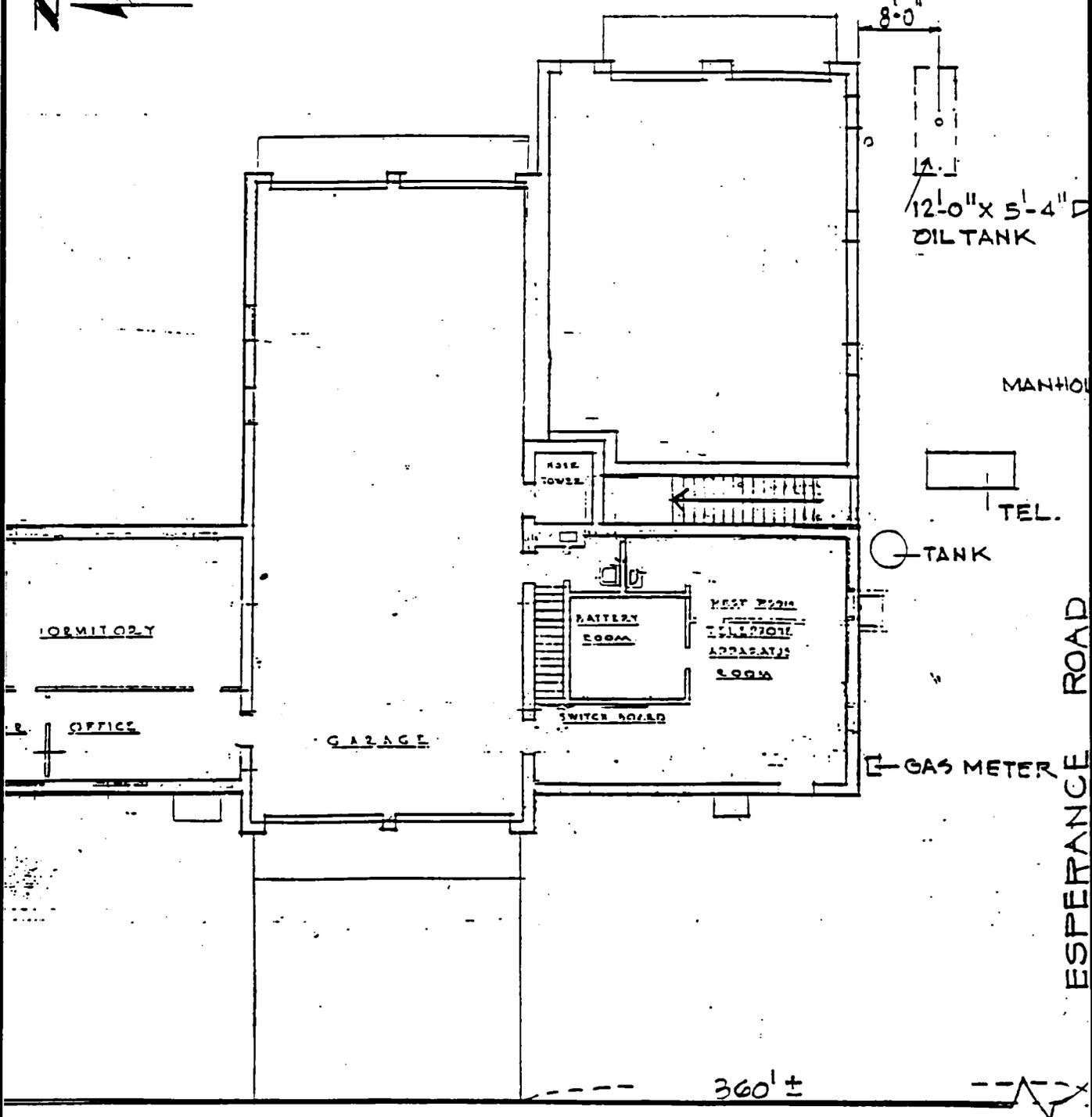
SITE LOCATION MAP
 TANK C-11

DATE: 31 AUGUST 1994

FIGURE #: 2-2



2,000 GAL.
TANK AND LINES TO BE
REMOVED.



SAIPAN ROAD

ESPERANCE ROAD

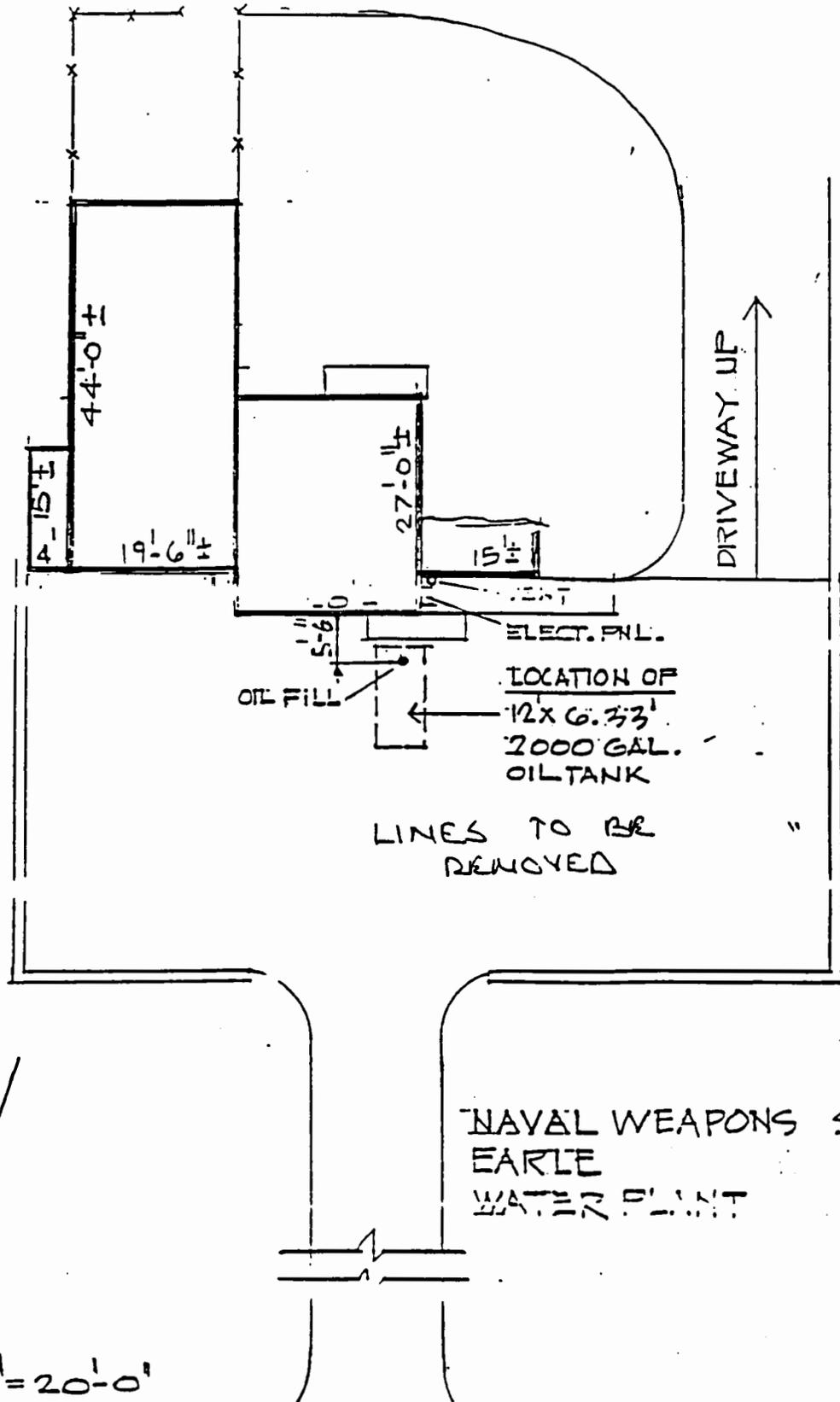
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FILE NAME: 00000000.DWG DRAWN BY: B. MAC



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SITE LOCATION MAP
TANK C-22

DATE: 31 AUGUST 1994
FIGURE #: 2-3

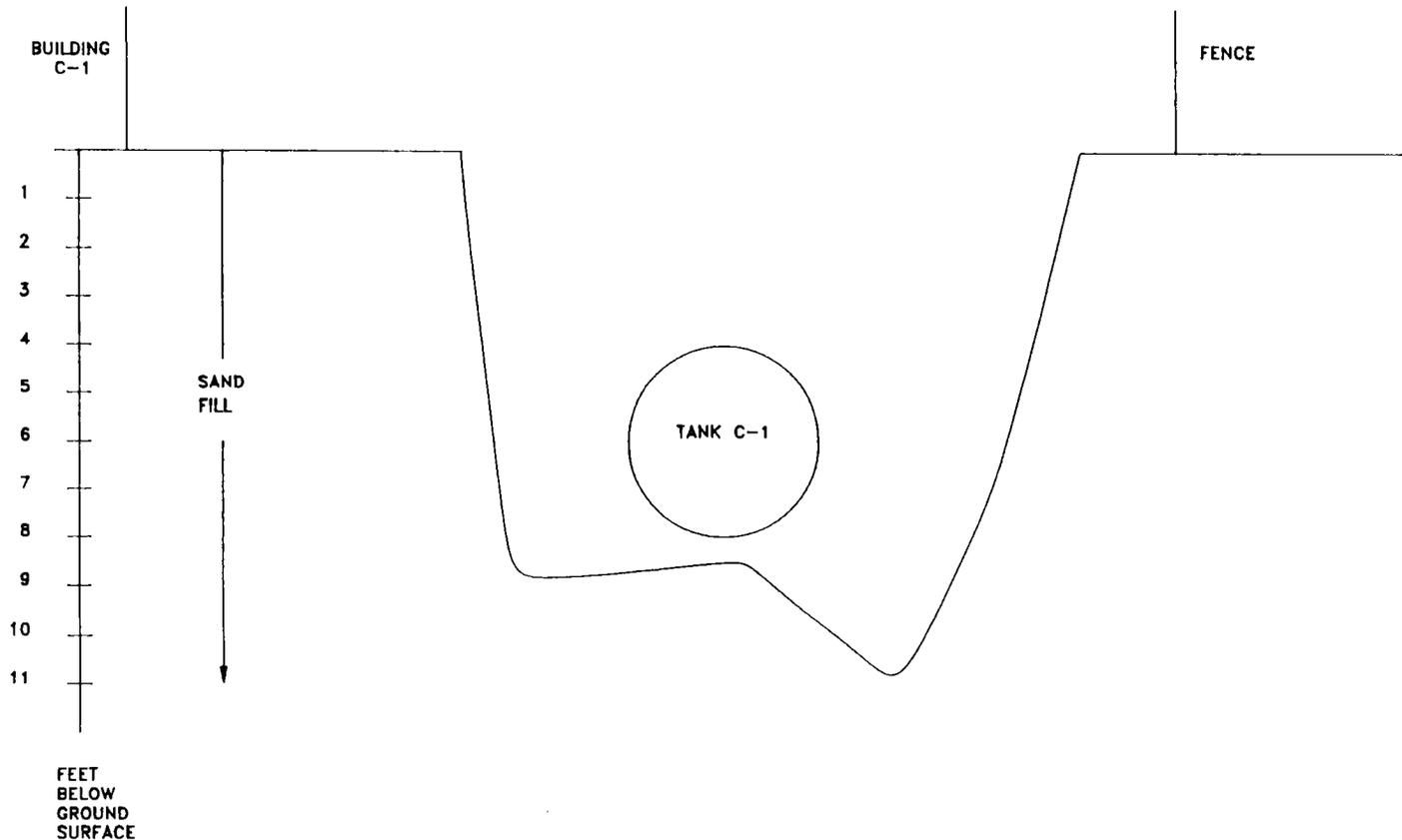


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 FILE NAME: 0000000.DWG DRAWN BY: B. MAC

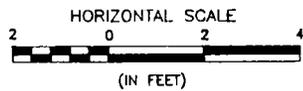


PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURES
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SITE LOCATION MAP
 TANK C-25
 DATE: 31 AUGUST 1994
 FIGURE #: 2-4



REVISION #: 0000 DATE: 8/24/94
 FILE NAME: SUBSURF.DWG DRAWN BY: B. MAC



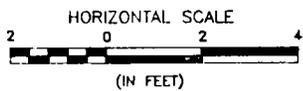
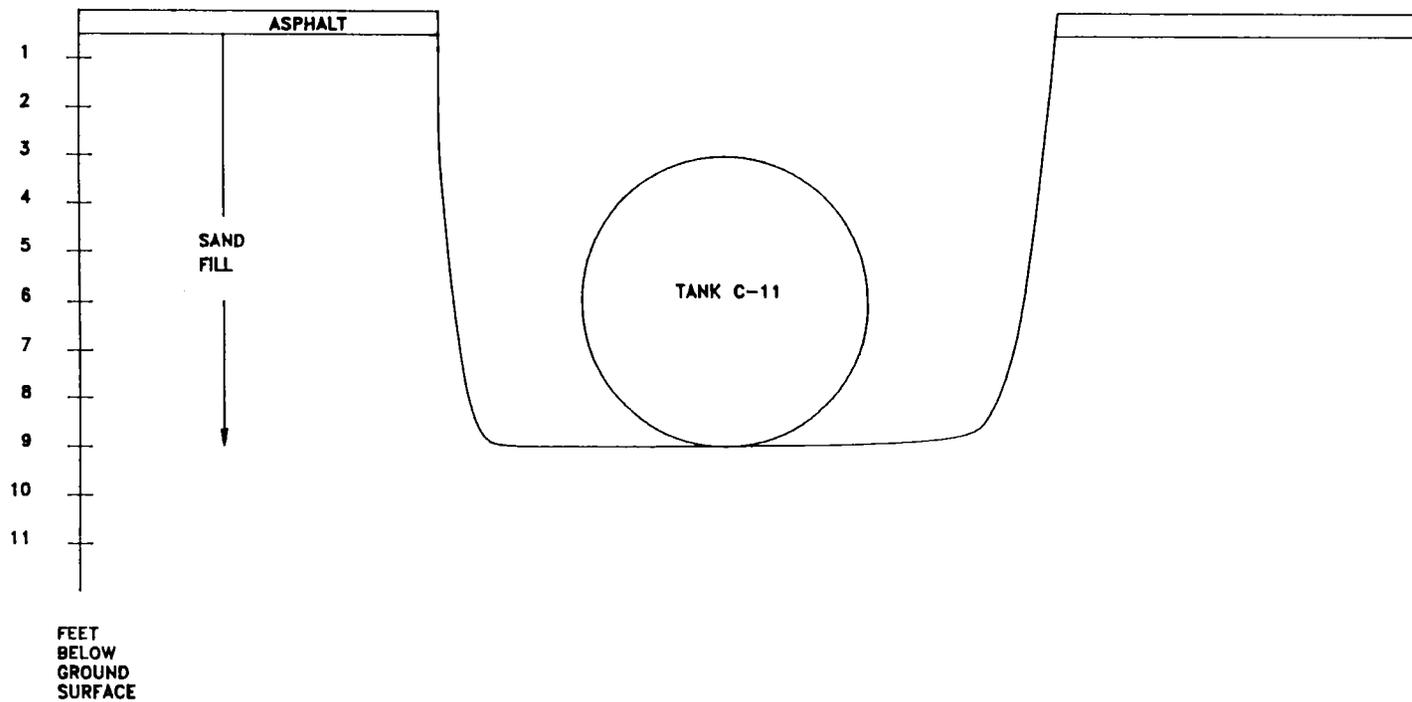
PROJECT NAME:
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 CLIENT NAME: DEPARTMENT OF THE NAVY
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SUBSURFACE CROSS SECTION
 TANK C-1

DATE:
 31 AUGUST 1994

FIGURE #:
 2-5

REVISION # 0000 DATE 8/24/94
FILE NAME: SUBSURF.DWG DRAWN BY: B. MAC

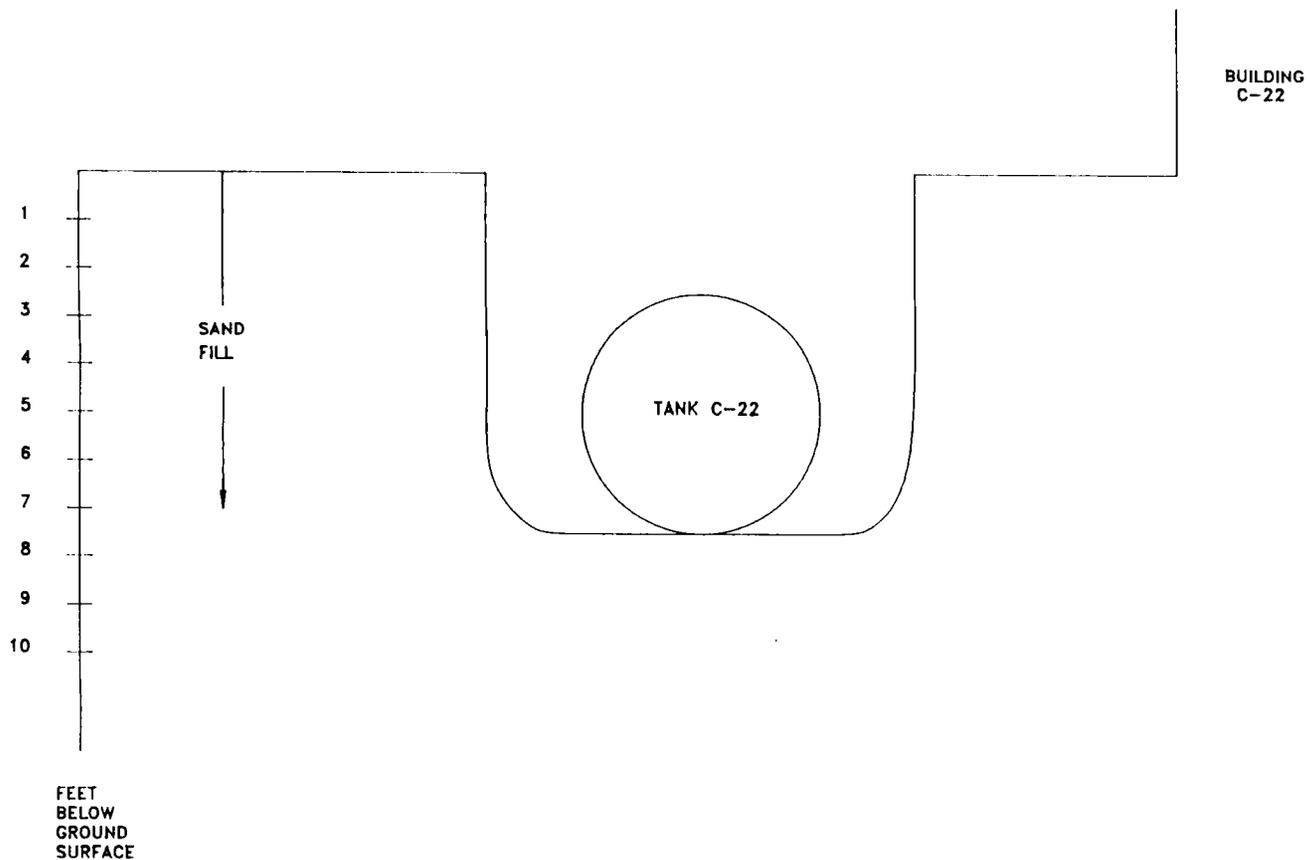


PROJECT NAME:
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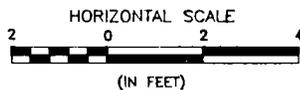
SUBSURFACE CROSS SECTION
TANK C-11

DATE:
31 AUGUST 1994

FIGURE #:
2-6



REVISION # 0000 DATE 8/24/94
 FILE NAME: SUBSURF.DWG DRAWN BY: B. MAC



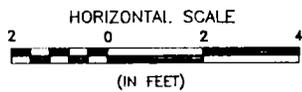
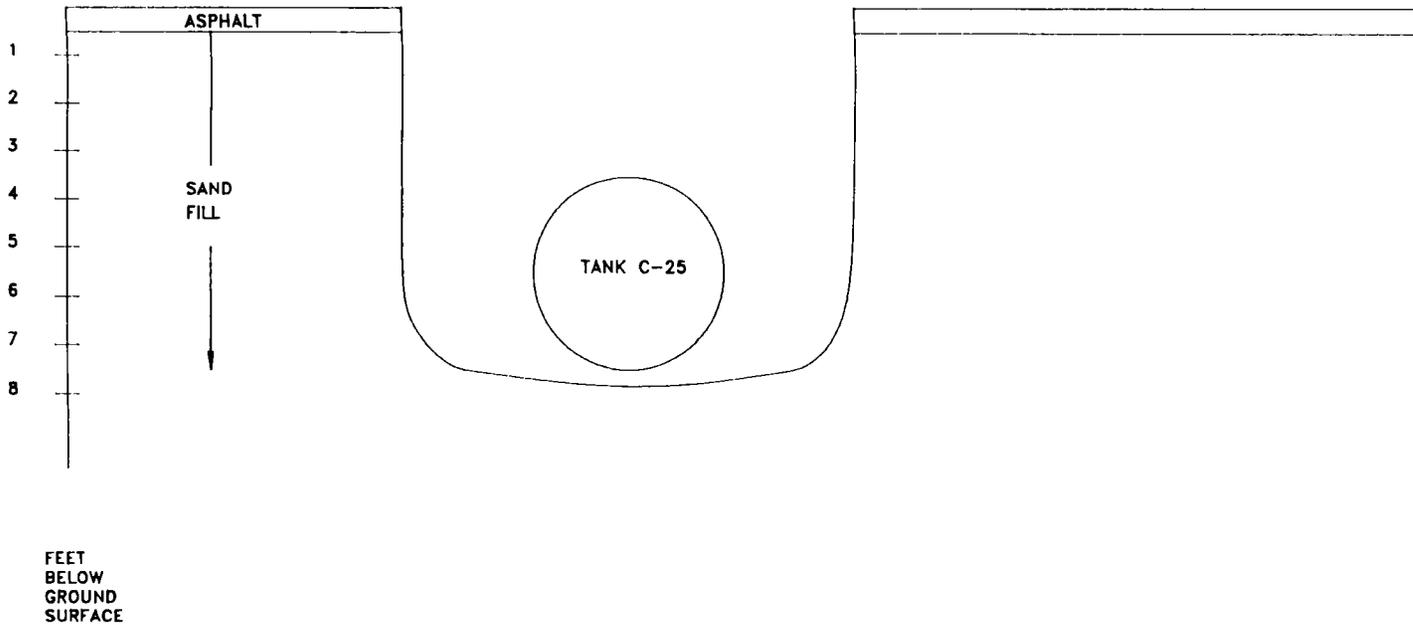
PROJECT NAME:
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 COLTS NECK, NEW JERSEY
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SUBSURFACE CROSS SECTION
 TANK C-22

DATE:
 31 AUGUST 1994

FIGURE #:
 2-7

REVISION #: 0000 DATE: 8/24/94
FILE NAME: SUBSURF.DWG DRAWN BY: B. MAC



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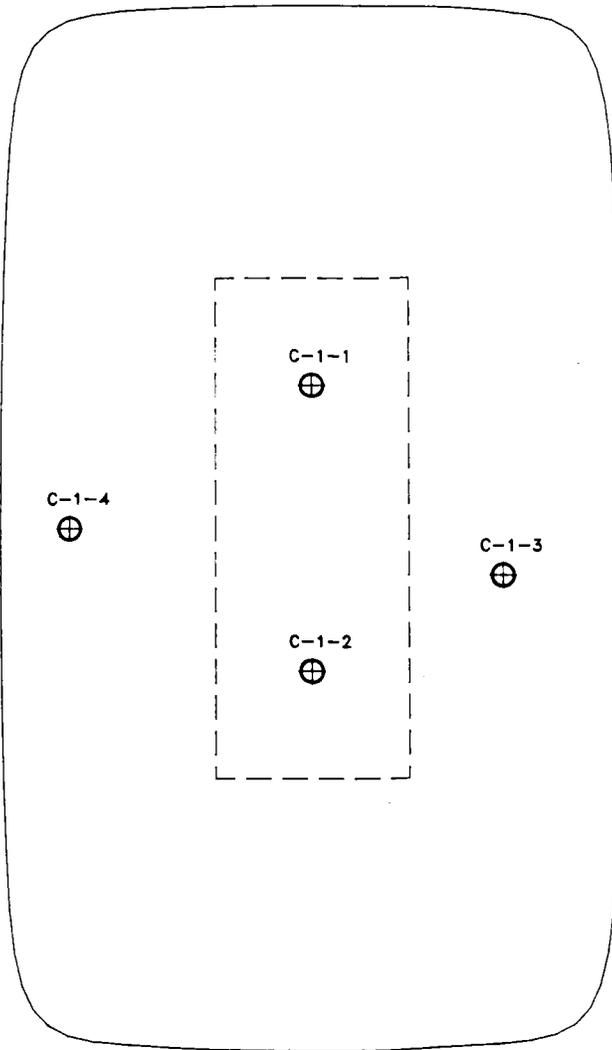
SUBSURFACE CROSS SECTION
TANK C-25

DATE:
31 AUGUST 1994

FIGURE #:
2-8

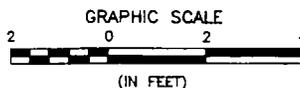


BUILDING
C-1



APPROXIMATE
LIMIT OF
EXCAVATION

--- TANK OUTLINE
⊕ SAMPLE LOCATION



REVISION #: 0000 DATE: 8/24/94 PLDT NAME: D0000000
FILE NAME: SAMPLE.DWG DRAWN BY: B. MAC



PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURES
NAVAL WEAPON STATION EARLE
COLTS NECK, NEW JERSEY
COLTS NECK, NEW JERSEY
CLIENT NAME: DEPARTMENT OF THE NAVY
NAVFAC CONTRACTS

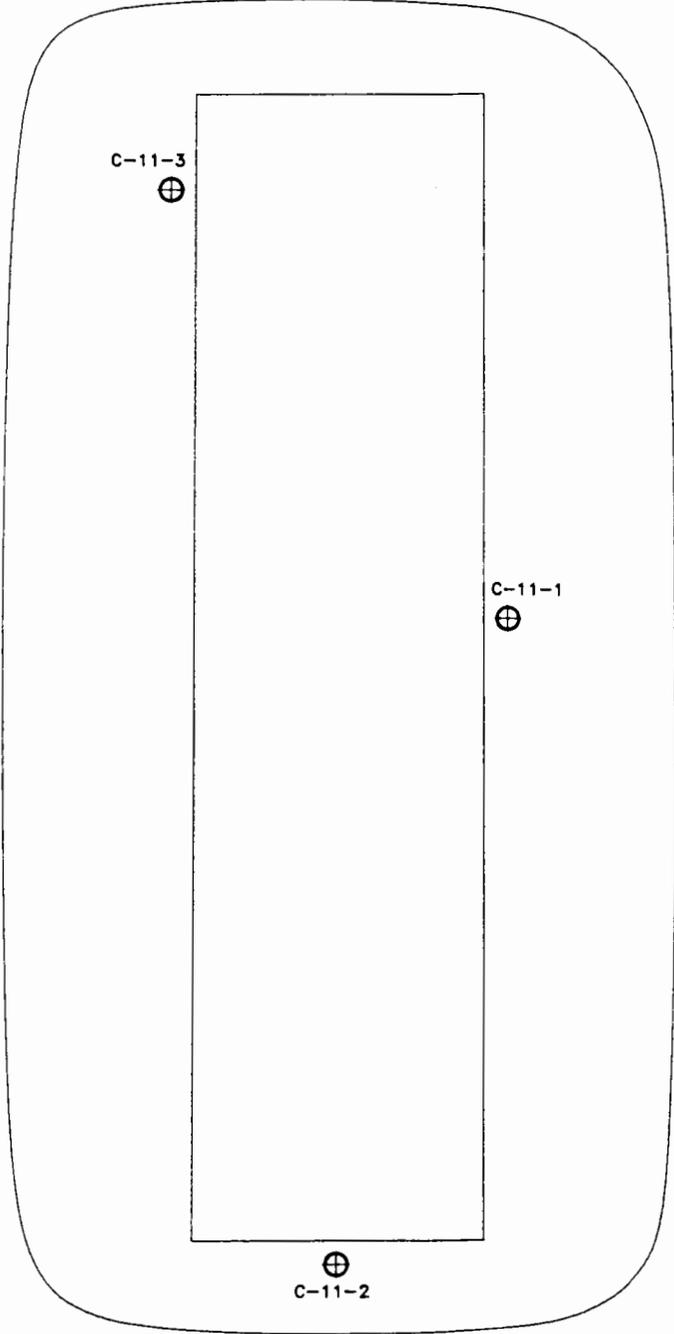
SAMPLE LOCATION MAP
TANK C-1

DATE:
31 AUGUST 1994

FIGURE #:
2-9



16' TO END
OF BUILDING
C-11



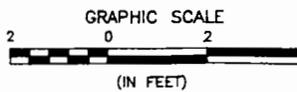
BUILDING
C-11

APPROXIMATE
LIMIT OF
EXCAVATION



TANK OUTLINE

SAMPLE LOCATION



REVISION #: 0000 DATE: 8/24/94 PLOT NAME: 00000000
FILE NAME: SAMPLE.DWG DRAWN BY: B. MAC



PROJECT NAME:
UNDERGROUND STORAGE TANK CLOSURES
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CLIENT NAME: DEPARTMENT OF THE NAVY
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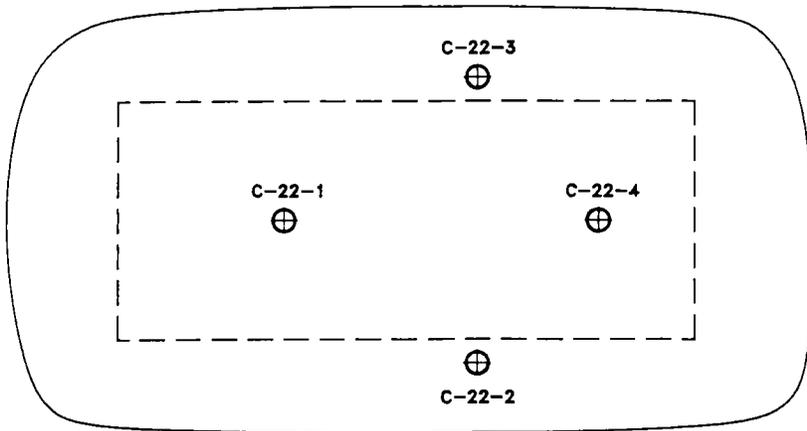
SAMPLE LOCATION MAP
TANK C-11

DATE:
31 AUGUST 1994

FIGURE #:
2-10

BUILDING
C-22

GARDEN

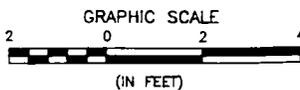


APPROXIMATE
LIMIT OF
EXCAVATION



TANK OUTLINE

SAMPLE LOCATION



GRAPHIC SCALE

(IN FEET)

DRIVEWAY

REVISION #: 0000 DATE: 8/24/94 PLOT NAME: 00000000
FILE NAME: SAMPLE.DWG DRAWN BY: B. MAC



PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURES
NAVAL WEAPON STATION EARLE
COLTS NECK, NEW JERSEY
CLIENT NAME: DEPARTMENT OF THE NAVY
NAVFAC CONTRACTS

SAMPLE LOCATION MAP
TANK C-22

DATE: 31 AUGUST 1994

FIGURE #: 2-11



BUILDING
C-25

RAMP

C-25-2 MS/MSD

⊕
C-25-4

⊕
C-25-5
DUPLICATE 1

⊕
C-25-3

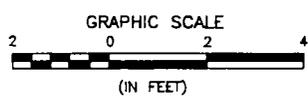
APPROXIMATE
LIMIT OF
EXCAVATION



TANK OUTLINE



SAMPLE LOCATION



GRAPHIC SCALE

(IN FEET)

REVISION #: 0000 DATE: 8/24/84 PLOT NAME: 00000000
FILE NAME: SAMPLING.DWG DRAWN BY: B. MAC



PROJECT NAME: UNDERGROUND STORAGE TANK CLOSURES
NAVAL WEAPON STATION EARLE
COLTS NECK, NEW JERSEY
COLTS NECK, NEW JERSEY
CLIENT NAME: DEPARTMENT OF THE NAVY
NAVFAC CONTRACTS

SAMPLE LOCATION MAP
TANK C-25

DATE: 31 AUGUST 1994

FIGURE #: 2-12

TABLES

TABLE 2-1

TANK INFORMATION SUMMARY

Tank Number	Closure Approval Number	Dimensions and Volume	Tank Content	Material of Construction
C-1	C94-0268	10.5' long by 4' diameter, 3,000 gallons	No. 2 fuel oil	Single wall fiberglass
C-11	C94-0269	23.75' long by 6' diameter, 5,000 gallons	No. 2 fuel oil	Single wall steel
C-22	C94-0271	12' long by 5' diameter, 2,000 gallons	No. 2 fuel oil	Single wall steel
C-25	C94-0272	10' long by 4' diameter, 1,000 gallons	No. 2 fuel oil	Single wall, "Diamond Plate" coated steel

TABLE 3-1

SAMPLING SUMMARY FOR TANKS C-1, C-11, C-22, AND C-25
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

Location	Matrix	Sample Depth	Analytical Parameters	Sampling Method
Post-Excavation Soil Samples – Tank C-1				
C-1-1	Soil	8' – 8.5'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-1-2	Soil	8' – 8.5'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-1-3	Soil	10.5' – 11'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-1-4	Soil	8.5' – 9'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-1-5Pile	Soil	N/A	TPHC, VO + 10*	Stainless steel spoon
C-1-FB1	Water	N/A	TPHC, VO + 10**	Stainless steel spoon
C-1-TB1	Water	N/A	VO + 10**	Prepared at the laboratory
Post-Excavation Soil Samples – Tank C-11				
C-11-1	Soil	8' – 8.5'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-11-2	Soil	8' – 8.5'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-11-3	Soil	8' – 8.5'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-11-Pile1	Soil	N/A	TPHC, VO + 10*	Stainless steel spoon
C-33-TB	Water	N/A	TPHC, VO + 10**	Stainless steel spoon
Post-Excavation Soil Samples – Tank C-22				
C-22-1	Soil	7.5' – 8'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-22-2	Soil	7.5' – 8'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-22-3	Soil	7.5' – 8'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-22-4	Soil	7.5' – 8'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-22-5Pile	Soil	N/A	TPHC, VO + 10*	Stainless steel spoon
C-22-6Pile	Soil	N/A	TPHC, VO + 10*	Stainless steel spoon
C-22-FB1	Water	N/A	TPHC, VO + 10**	Stainless steel spoon
Post-Excavation Soil Samples – Tank C-25				
C-25-1(Pile)	Soil	N/A	TPHC, VO + 10*	Stainless steel spoon
C-25-2	Soil	6.5' – 7'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-25-2 MS	Soil	6.5' – 7'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-25-2 MSD	Soil	6.5' – 7'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-25-3	Soil	6.5' – 7'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-25-4	Soil	5.5' – 6'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-25-5	Soil	5.5' – 6'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
Duplicate 1	Soil	5.5' – 6'	TPHC, VO + 10*	Trackhoe bucket/Stainless steel spoon
C-25-FB1	Water	N/A	TPHC, VO + 10**	Stainless steel spoon
C-25-TB	Water	N/A	VO + 10**	Prepared at the laboratory

NOTES:

TPHC – Total petroleum hydrocarbons.

VO + 10 – Volatile organic compounds with forward library search.

* – Analysis required for 25% samples with TPHC results greater than 1000 mg/kg.

** – Analysis required only if associated soil samples are analyzed for VO + 10.

All samples which indicate "Pile" in their sample designation were collected from excavated soils.

"Pile" samples were collected for disposal purposes only.

TABLE 3-2

SUMMARY OF POST-EXCAVATION ANALYTICAL DATA FOR TANK C-1
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

Sample ID No.	C-1-1	C-1-2	C-1-3	C-1-4	C-1-5 Pile	C-1-FB 1	C-1-TB 1	NJDEPE Impact to Ground Water Soil Cleanup Criteria
Laboratory ID No.	T405332-03	T405332-04	T405332-05	T405332-06	T405332-07	T405332-01	T405332-02	
Matrix	Soil	Soil	Soil	Soil	Soil	Water	Water	
Depth (Feet BGS)	8' - 8.5'	8' - 8.5'	10.5' - 11'	8.5' - 9'	N/A	N/A	N/A	
Analytical Parameters	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	ug/l	
Total Petroleum Hydrocarbons (TPHC)								
TPHC	120	55	57 U	150	90	500 U	NR	NLE
Volatile Organic Compounds (VO + 10)								
VO + 10*	NR	NR	NR	NR	NR	NR	NR	NLE
Total Organics	120	55	57 U	150	90	500 U	NR	10000

N/A - Not applicable

NLE - No limit established

NR - Analysis not required

U - Not detected at quantitation limit specified

* VO + 10 analysis not required since TPHC concentration in all samples were less than 1000 mg/kg

Sample C-1-5Pile was collected from the excavated soil. Its results do not effect compliance with Soil Cleanup Criteria

TABLE 3-3

SUMMARY OF POST-EXCAVATION ANALYTICAL DATA FOR TANK C-11
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Sample ID No.	C-11-1	C-11-2	C-11-3	C-11 Pile1	C-11-FB	C-33-TB	NJDEP Impact to Ground Water Soil Cleanup Criteria
Laboratory ID No.	T406121-2	T406121-3	T406121-4	T406121-5	T406121-1	T406121-6	
Matrix	Soil	Soil	Soil	Soil	Water	Water	
Depth (Feet BGS)	8' - 8.5'	8' - 8.5'	8' - 8.5'	N/A	N/A	N/A	
Analytical Parameters	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	ug/l	
Total Petroleum Hydrocarbons (TPHC)							
TPHC	58 U	60 U	3900	2300	500 U	NR	NLE
Volatile Organic Compounds (VO + 10)							
Targeted VO							
Chloromethane *	NR	NR	14 U	1.5 U	10 U	10 U	10
Bromomethane *	NR	NR	14 U	1.5 U	10 U	10 U	1.0
Vinyl chloride *	NR	NR	14 U	1.5 U	10 U	10 U	10
Methylene Chloride *	NR	NR	7.2 U	0.38 J	5 U	3 J	1.0
Chloroform *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
1,2-Dichloroethane *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Carbon Tetrachloride *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Bromodichloromethane *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
cis 1,3-Dichloropropene *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Trichloroethene *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Dibromochloromethane *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
1,1,2-Trichloroethane *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Benzene *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
trans 1,3-Dichloropropene *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Bromoform *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Tetrachloroethene *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
1,1,2,2-Tetrachloroethane *	NR	NR	7.2 U	0.73 U	5 U	5 U	1.0
Ethylbenzene	NR	NR	6.7 J	1.1	5 U	5 U	100
Xylenes (total)	NR	NR	19	0.73 U	5 U	5 U	10
Tentatively Identified Compounds (TICs)							
Decane	NR	NR	82	ND	ND	ND	NLE
1,2,4-Trimethylbenzene	NR	NR	45	ND	ND	ND	NLE
Undecane	NR	NR	92	ND	ND	ND	NLE
Unknown cycloalkane	NR	NR	62	ND	ND	ND	NLE
Alkyl benzene	NR	NR	55	7.6	ND	ND	NLE
Unknown	NR	NR	55	18.2	ND	ND	NLE
1H-Indene, 2,3-dihydro-1,1	NR	NR	40	6.3	ND	ND	NLE
1H-Indene, 2,3-dihydro-1,2	NR	NR	36	ND	ND	ND	NLE
1H-Indene, 2,3-dihydro-4,7	NR	NR	60	ND	ND	ND	NLE
Naphthalene, 1-methyl-	NR	NR	120	ND	ND	ND	NLE
Unknown alkane	NR	NR	ND	6.3	ND	ND	NLE
Benzene, 4-ethyl-1,2-dime	NR	NR	ND	5.5	ND	ND	NLE
Aromatic hydrocarbon	NR	NR	ND	12.6	ND	ND	NLE
Naphthalene, 1,2,3,4-tetrahy	NR	NR	ND	7.8	ND	ND	NLE
Naphthalene, 2-methyl	NR	NR	ND	17	ND	ND	NLE
Total VO + 10	NR	NR	673	82.8	ND	3	1,000
Total Organics	58 U	60 U	4570	2380	500 U	NR	10,000

N/A - Not applicable

ND - Not detected, no quantitation limit specified

NR - Analysis not required

U - Not detected at quantitation limit specified

* - Quantitation limit exceeds Impact to Ground Water Soil Cleanup Criteria in at least one sample.

J - Concentration exceeds Soil Cleanup Criteria in at least one sample.

Sample C-11 - Pile1 was collected from excavated soil. Its results do not effect compliance with Soil Cleanup Criteria.

TABLE 3-4

SUMMARY OF POST-EXCAVATION ANALYTICAL DATA FOR TANK C-22
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Sample ID No.	C-22-1	C-22-2	C-22-3	C-22-4	C-22-5Pile	C-22-6Pile	C-22-FB	NJDEPE
Laboratory ID No.	T405349-2	T405349-3	T405349-4	T405349-5	T405349-6	T405349-7	T405349-1	Impact to
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Water	Ground Water
Depth (Feet BGS)	7.5' - 8'	7.5' - 8'	7.5' - 8'		N/A	N/A	N/A	Soil Cleanup
Analytical Parameters	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	Criteria
Total Petroleum Hydrocarbons (TPHC)								
TPHC	47 U	49 U	48 U	48 U	47 U	12000	500 U	NLE
Volatile Organic Compounds (VO + 10)								
Targeted VO								
Chloromethane	NR	NR	NR	NR	NR	1.5 U	10 U	10
Bromomethane *	NR	NR	NR	NR	NR	1.5 U	10 U	1.0
Methylene Chloride	NR	NR	NR	NR	NR	1.8 B	3 J	1.0
Tetrachloroethene	NR	NR	NR	NR	NR	0.72 J	5 U	1.0
Styrene	NR	NR	NR	NR	NR	0.62 J	5 U	100
Tentatively Identified Compounds (TICs)								
Trimethyl benzene isomer	NR	NR	NR	NR	NR	5.1	ND	NLE
Unknown alkane	NR	NR	NR	NR	NR	15	8	NLE
Unknown cycloalkane	NR	NR	NR	NR	NR	5.8	ND	NLE
Unknown	NR	NR	NR	NR	NR	33	18	NLE
Alkyl benzene	NR	NR	NR	NR	NR	4.6	ND	NLE
Aromatic hydrocarbon	NR	NR	NR	NR	NR	26	ND	NLE
Trichlorotrifluoroethane	NR	NR	NR	NR	NR	ND	9	NLE
Total VO + 10	NR	NR	NR	NR	NR	92.6	38	1,000
Total Organics	47 U	49 U	48 U	48 U	47 U	12100	38	10,000

N/A -- Not applicable

ND -- Not detected, no quantitation limit specified

NR -- Analysis not required

U -- Not detected at quantitation limit specified

* -- Quantitation limit exceeds Impact to Ground Water Soil Cleanup Criteria in at least one sample

☐ -- Concentration exceeds Impact to Ground Water Soil Cleanup Criteria in at least one sample

Samples C-22-5Pile and C-22-6Pile were collected from excavated soil. Their results do not effect compliance with Soil Cleanup Criteria

TABLE 3-5

SUMMARY OF POST-EXCAVATION ANALYTICAL DATA FOR TANK C-25
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

Sample ID No.	C-25-1Pile	C-25-2	C-25-2MS	C-25-2MSD	C-25-3	C-25-4	C-25-5	Duplicate1	C-25-FB	C-25-TB	NJDEPE
Laboratory ID No.	T405307-3	T405307-4	T405307-9	T405307-10	T405307-5	T405307-6	T405307-7	T405307-8	T405307-1	T405307-2	Impact to
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Water	Water	Ground Water
Depth (Feet BGS)	N/A	6.5' - 7'	6.5' - 7'	6.5' - 7'	6.5' - 7'	5.5' - 6'	5.5' - 6'	5.5' - 6'	N/A	N/A	Soil Cleanup
Analytical Parameters	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	ug/l	Criteria
Total Petroleum Hydrocarbons (TPHC)											
TPHC	210	54 U	55	58 U	170	54 U	57 U	270	500 U	500 U	NLE
Volatile Organic Compounds (VO + 10)											
VO + 10	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,000
Total Organics	210	54 U	55	58 U	170	54 U	57 U	270	500 U	500 U	10,000

N/A - Not applicable

NR - Analysis not required

U - Not detected at quantitation limit specified

Sample C-25-1Pile was collected from excavated soil. Its results do not effect compliance with Soil Cleanup Criteria

TABLE 3-6

ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

Analytical Parameter	No. of Samples Collected	Matrix	Date Collected	Date Analysis Completed	Preservation Method	US EPA Analytical Method
Post Excavation Soil Samples – Tank C-1						
TPHC	5	Soil	5/25/94	5/26/94	Cool to 4 C	418.1
TPHC	1	Water	5/25/94	5/26/94	Cool to 4 C	418.1
Post Excavation Soil Samples – Tank C-11						
TPHC	4	Soil	6/8/94	6/10/94	Cool to 4 C	418.1
TPHC	1	Water	6/8/94	6/10/94	Cool to 4 C	418.1
VO + 10	2	Soil	6/8/94	6/15/94	Cool to 4 C	5030/8240
VO + 10	2	Water	6/8/94	6/13/94	HCl to pH < 2, Cool to 4 C	624
Post-Excavation Soil Samples – Tank C-22						
TPHC	5	Soil	5/26/94	5/27/94	Cool to 4 C	418.1
TPHC	1	Water	5/26/94	5/27/94	Cool to 4 C	418.1
VO + 10	1	Soil	5/26/94	6/2/94	Cool to 4 C	5030/8240
VO + 10	1	Water	5/26/94	6/2/94	HCl to pH < 2, Cool to 4 C	624
Post Excavation Soil Samples – Tank C-25						
TPHC	8	Soil	5/23/94	5/24/94	Cool to 4 C	418.1
TPHC	2	Water	5/23/94	5/24/94	Cool to 4 C	418.1

TPHC – Total Petroleum Hydrocarbons

VO + 10 – Volatile Organic Compounds with forward library search

APPENDIX A

NJDEPE UST CLOSURE APPROVAL FORMS

**UNDERGROUND STORAGE TANK SYSTEM
CLOSURE APPROVAL**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY

**DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
CN-028, TRENTON, NJ 08625-0028**

MAR 28 1994

TMS # C94-0268

UST # 0151003

Naval Weapons Station Earle
Colts Neck, NJ
(Monmouth)

**THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14b-1 et. seq:**

REMOVAL OF: one 3,000 gallon #2 fuel oil/Heating oil UST(s); and
appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet
along the center line of each tank and one (1) soil sample for
every 15 feet along all associated piping. Two (2) additional
samples will be taken per excavation and biased to the areas of
highest field screened readings. Samples will be analyzed for
TPHC. Analyze 25% of the samples over 1,000 ppm PHC for VO+10.

ON-SITE MANAGER:

George Weiss

TELEPHONE:

908-225-3990

EFFECTIVE DATE:

03\22\94

**THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTIONS AT ALL TIMES.**

H. R. Patel (for)
BARBARA MURRAY, CHIEF
BUREAU OF APPLICABILITY AND COMPLIANCE

**UNDERGROUND STORAGE TANK SYSTEM
CLOSURE APPROVAL**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY

**DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
CN-028, TRENTON, NJ 08625-0028**

TMS # c94-0269

UST # 0151003

Naval Weapons Station Earle
Colts Neck, NJ
(Monmouth)

**THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14b-1 et seq:**

REMOVAL OF: one 5,000 gallon #2 fuel oil/Heating oil UST(s); and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet along the center line of each tank and one (1) soil sample for every 15 feet along all associated piping. Two (2) additional samples will be taken per excavation and biased to the areas of highest field screened readings. Samples will be analyzed for TPHC. Analyze 25% of the samples over 1,000 ppm PHC for VO+10.

ON-SITE MANAGER:

George Weiss

TELEPHONE:

908-225-3990

EFFECTIVE DATE:

03\22\94

**THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTIONS AT ALL TIMES.**

H. R. Paltz (for)
BARBARA MURRAY, CHIEF
BUREAU OF APPLICABILITY AND COMPLIANCE

**UNDERGROUND STORAGE TANK SYSTEM
CLOSURE APPROVAL**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY

DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
CN-028, TRENTON, NJ 08625-0028

TMS # C94-0271

UST # 0151003

Naval Weapons Station Earle
Colts Neck, NJ
(Monmouth)

**THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14b-1 et seq:**

REMOVAL OF: one 2,000 gallon #2 fuel oil/Heating oil UST(s); and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet along the center line of each tank and one (1) soil sample for every 15 feet along all associated piping. Two (2) additional samples will be taken per excavation and biased to the areas of highest field screened readings. Samples will be analyzed for TPHC. Analyze 25% of the samples over 1,000 ppm PHC for VO+10.

ON-SITE MANAGER:

George Weiss

TELEPHONE:

908-225-3990

EFFECTIVE DATE:

03\22\94

**THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTIONS AT ALL TIMES.**

H. R. Patel (for)
BARBARA MURRAY, CHIEF
BUREAU OF APPLICABILITY AND COMPLIANCE

**UNDERGROUND STORAGE TANK SYSTEM
CLOSURE APPROVAL**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ENERGY

**DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION
BUREAU OF APPLICABILITY AND COMPLIANCE
CN-028, TRENTON, NJ 08625-0028**

TMS # C94-0272

UST # 0151003

Naval Weapons Station Earle
Colts Neck, NJ
(Monmouth)

**THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14b-1 et seq:**

REMOVAL OF: one 2,000 gallon #2 fuel oil/Heating oil UST(s); and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet along the center line of each tank and one (1) soil sample for every 15 feet along all associated piping. Two (2) additional samples will be taken per excavation and biased to the areas of highest field screened readings. Samples will be analyzed for TPHC. Analyze 25% of the samples over 1,000 ppm PHC for VO+10.

ON-SITE MANAGER:

George Weiss

TELEPHONE:

908-225-3990

EFFECTIVE DATE:

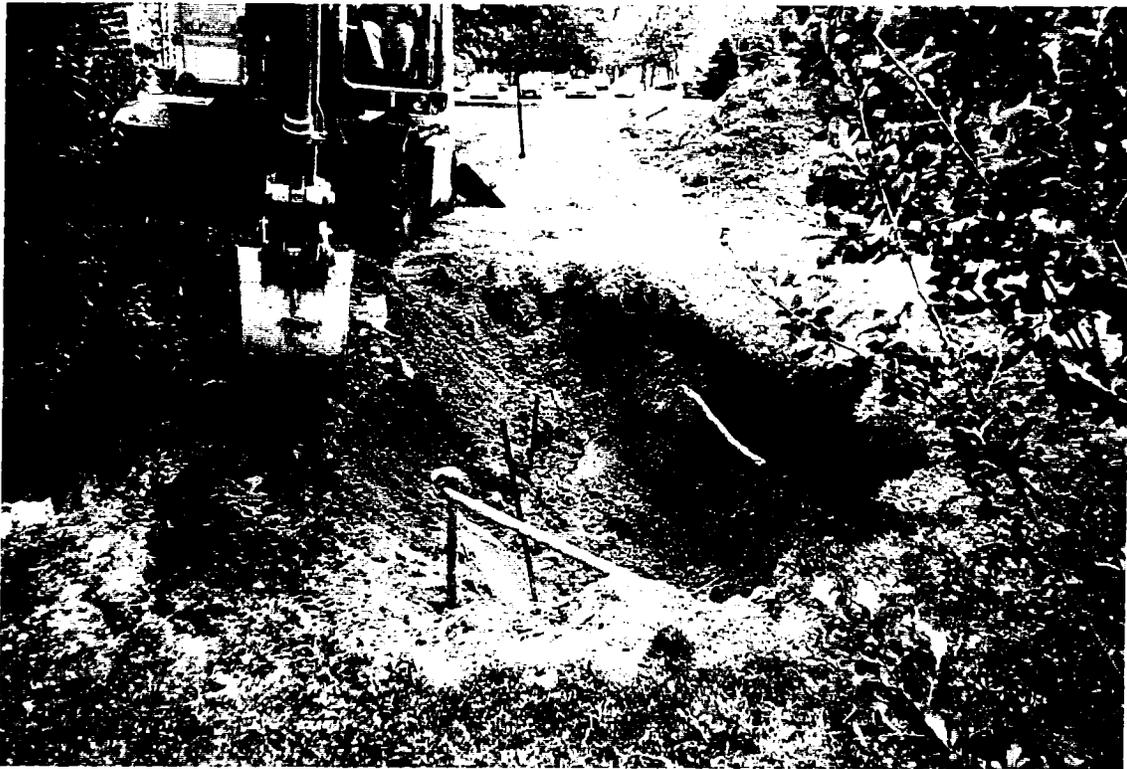
03\22\94

**THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTIONS AT ALL TIMES.**

H. R. Patel (for)
BARBARA MURRAY, CHIEF
BUREAU OF APPLICABILITY AND COMPLIANCE

APPENDIX B

PHOTOGRAPHS

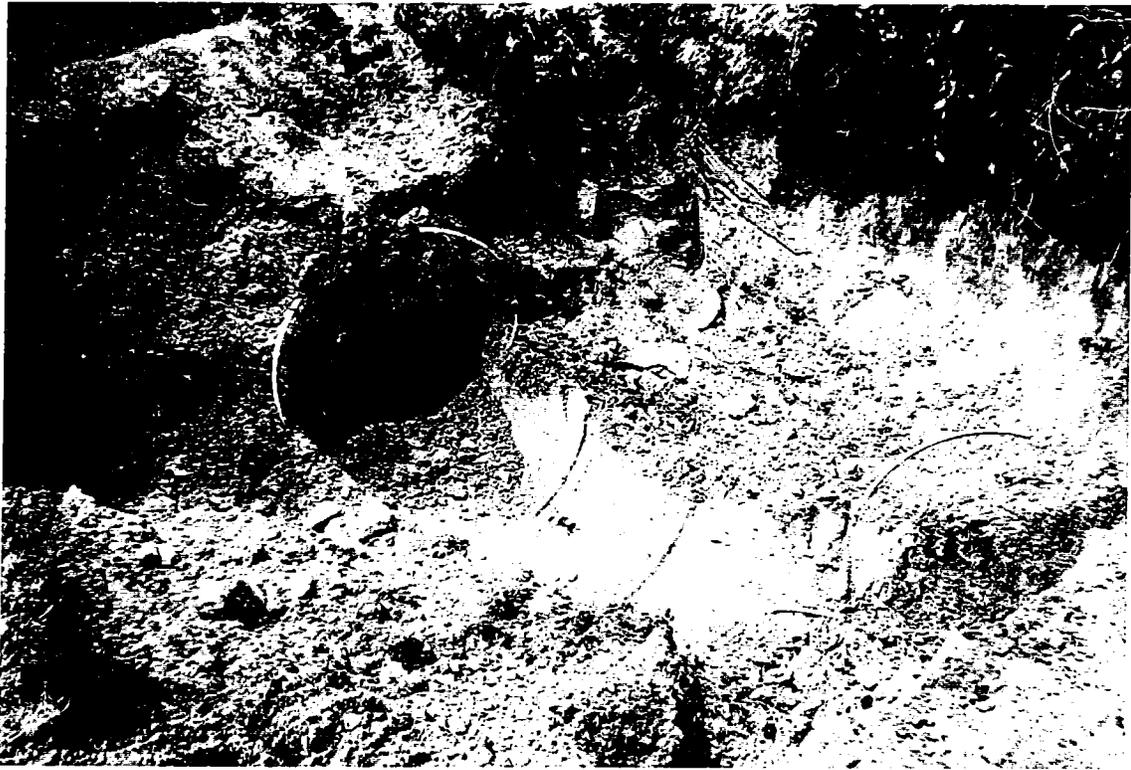


Photograph No. 1: Overburden removed from Tank C-1.



Photograph No. 2: Tank C-1, removed from excavation.

00321 FBIY



Photograph No. 3: Excavation after removal of Tank C-1.



Photograph No. 4: Cleaning Tank C-11.



Photograph No. 5: Tank C-11 being removed from the ground.



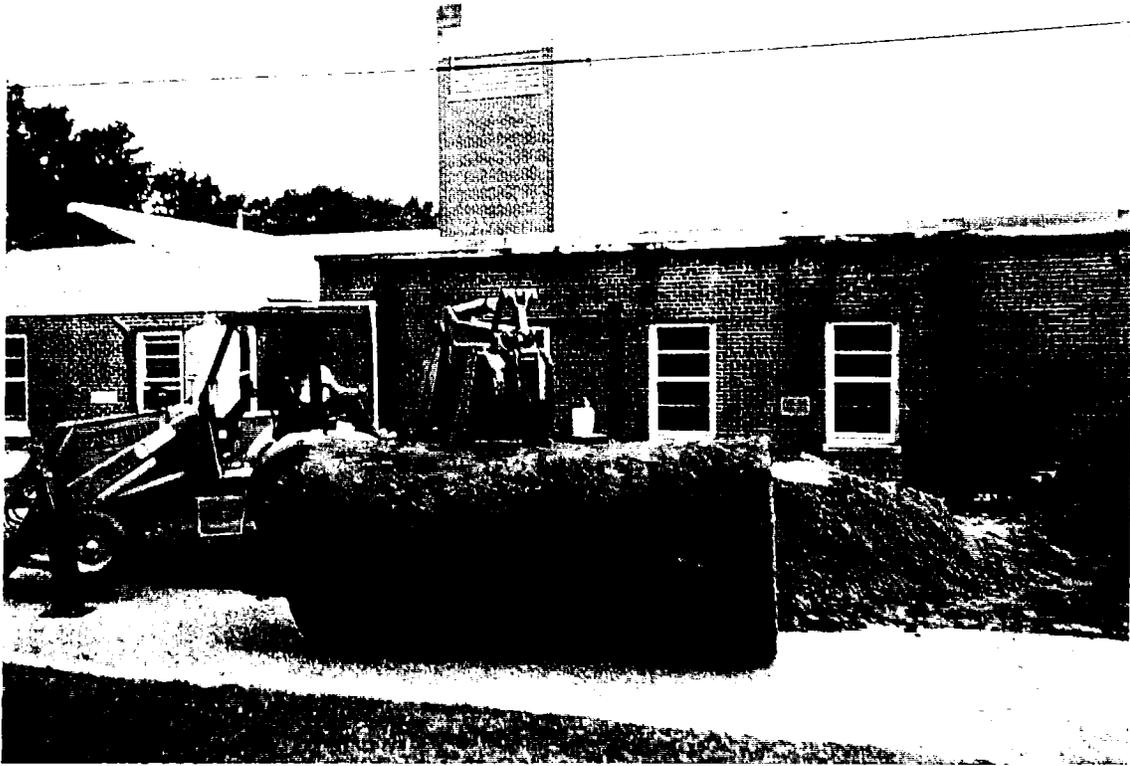
Photograph No. 6: Tank C-11 after excavation. Note groundwater in the excavation.



Photograph No. 7: Hole in bottom of Tank C-11.



Photograph No. 8: Excavating overburden from Tank C-22.



Photograph No. 9: Tank C-22, removed from the excavation.



Photograph No. 10: Removing contaminated soil from Building C-22.



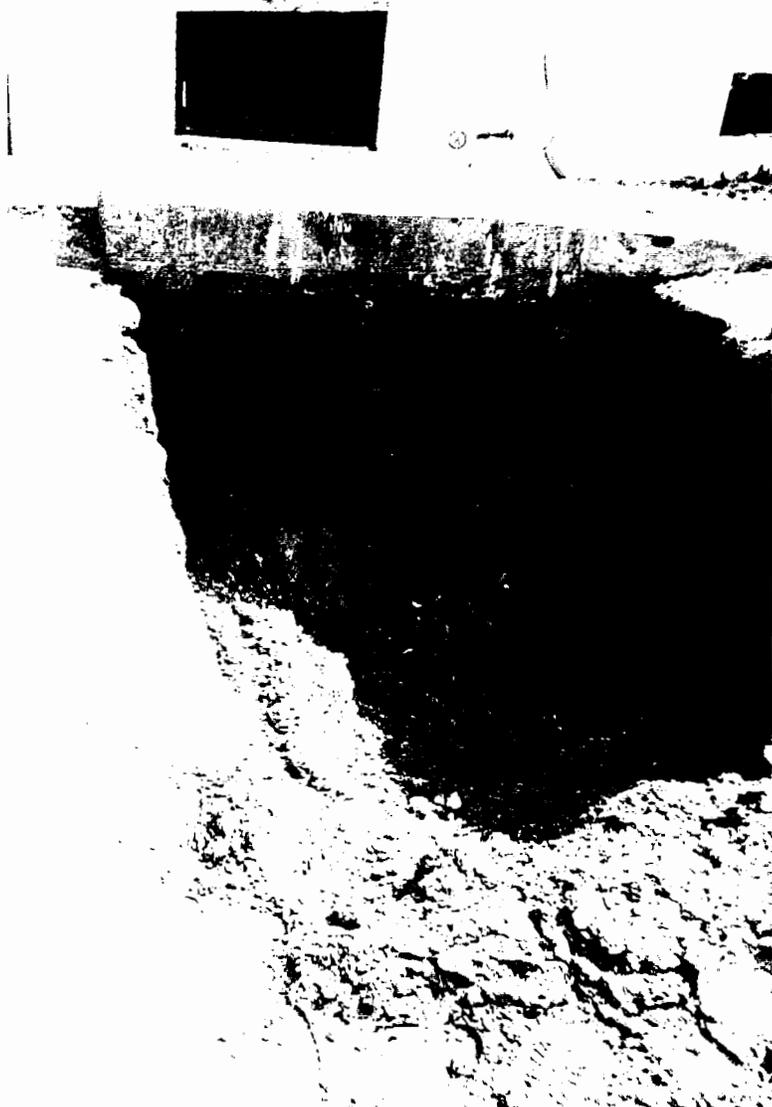
Photograph No. 11: Stained foundation wall at Building C-22.



Photograph No. 12: Removing Tank C-25.



Photograph No. 13: Tank C-25 removed from the excavation.



Photograph No. 14: Tank C-25 excavation after tank removal.

APPENDIX C

DISPOSAL DOCUMENTATION

**Tank Scrap Receipts
Soil Recycling Receipts
Tank Fluid Receipts**



THE
EARLE ENVIRONMENTAL
CORP.

P.O. Drawer 43 • Farmingdale, NJ 07727
Tel: 908-323-0053 Fax: 908-462-9626

CONTAMINATED SOIL REMEDIATION RECORD

Roy F. Weston, Inc.
1 Weston Way
West Chester, Pa. 19380-3186
ATTN: Steve Rock

Dear Steve

Earle Environmental has reviewed the analytical reports for approximately 680.28 tons of ID-27 NON-HAZARDOUS PETROLEUM HYDROCARBON CONTAMINATED SOIL for: Sites C-9 C-25 C-33/1 QH-8 C-22 C-34 C-11 Removal from Earle Naval Depot on 6-20-94 6-24-94 & 7-1-94
CONTRACT N62472-92-C-0415
GENERATOR: WPNSTA Earle

ADDRESS: RTE. 34
Colts Neck, N.J. 07722-5025

CONTACT: Steve Rock Proj. Mgr. TELE: 610-701-3022

The Earle Environmental Corp. finds this Petroleum Hydrocarbon Contaminated Soil acceptable for thermal treatment at our Jackson N.J. facility in accordance with our N.J.D.E.P.E. Permit #1-90-5116.

This ID-27 NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL has been processed and used as an aggregate in our Bituminous Concrete.

Sincerely,

Marianne Earle
Marketing Director



Recyclers of Ferrous and Non-Ferrous Scrap
Since 1911

August 19, 1994

Mr. Steve Rock
ROY F. WESTON, INC.
One Weston Way
West Chester, PA 19380-1499

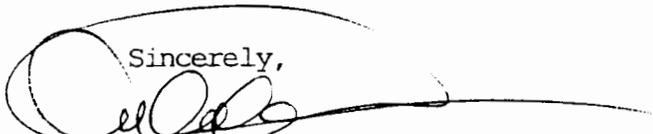
Dear Steve:

This is to certify that during the period from 06/10/94 through 08/09/94, we picked up a total of sixteen (16) tanks from the Earle Naval Weapons Station.

These tanks had been cleaned and upon arrival at our facility were cut up for scrap metal.

Should you have any questions or would like any further information, please do not hesitate to contact me.

Sincerely,



Mike Leonard

<u>DATE</u>	<u>TANK ID</u>	<u>CAPACITY</u>
6/10	C-11	5,000 GAL
	C-25	2,000 GAL
	C-22	2,000 GAL
	C-34	1,000 GAL
	C-33/1	550 GAL
6/22	C-9	10,000 GAL
7/05	C-4	5,000 GAL
	C-2	5,000 GAL
7/06	QH-8	750 GAL
	C-52	2,000 GAL
7/21	C-3/2	10,000 GAL
7/26	C-31	15,000 GAL
7/27	C-31	15,000 GAL
7/29	C-21	2,000 GAL
	C-46	5,000 GAL
8/08	R-22	15,000 GAL
8/17	R-4B	5,000 GAL
	R-5	5,000 GAL

DATE 6/10/94
 CUSTOMER Western
 COMMODITY SCRAP
 GROSS TANK 47060
 TARE 4120
 NET 5,940
 COMMENTS Sonny

DATE 6/10/94
 CUSTOMER Eastern
 COMMODITY BASE SCRAP
 GROSS 46820
 TARE 4120
 NET 5,700
 COMMENTS Sonny
4 TANKS

DATE 6/22/94
 CUSTOMER Westin
 COMMODITY Scrap
 GROSS 47700
 TARE 34860
 NET 12840
 COMMENTS 89

DATE 7/5/94
 CUSTOMER Westin
 COMMODITY Scrap
 GROSS 47980
 TARE 41400
 NET 6580
 COMMENTS Sony

TANK 3

DATE 7⁵ / ~~10~~ / 94
 CUSTOMER Wester
 COMMODITY Scrap
 GROSS 47165
 TARE 41460
 NET 5,700
 COMMENTS Sony

1 PAK

DATE 7-6-94
 CUSTOMER Wester
 COMMODITY Scrap
 GROSS 46940
 TARE 41200
 NET _____
 COMMENTS _____

Sony PAK
2

DATE 7/21/94
 CUSTOMER Westin
 COMMODITY Scrap
 GROSS 44700
 TARE 33000
 NET 11700
 COMMENTS 89
1 Tank

DATE 7/20/94
 CUSTOMER Westin
 COMMODITY Scrap
 GROSS 49080
 TARE 35200
 NET ~~13880~~ 13880
 COMMENTS 89
1 Tank

D
C

DATE 7/27/94
 CUSTOMER Westin
 COMMODITY SCRAP
 GROSS 50,980
 TARE 34,980
 NET 16,000
 COMMENTS 84

1 TANK

DATE 7/29/94
 CUSTOMER Westin
 COMMODITY SCRAP
 GROSS 44,620
 TARE 39,360
 NET 5,260
 COMMENTS 89

2 TANKS

DATE 8-8-94
 CUSTOMER WESTIN
 COMMODITY SCRAP
 GROSS 47000
 TARE 30300
 NET 1 TANK
 COMMENTS 89-242
~~ALL DAY TO LOAD~~

DATE 8/17/94
 CUSTOMER Westin
 COMMODITY SCRAP
 GROSS 44980
 TARE 38960
 NET 6020
 COMMENTS 89
2 TANKS

APPENDIX D

ANALYTICAL DATA PACKAGES

Tank C-1
Tank C-11
Tank C-22
Tank C-25

LABORATORY ANALYSIS REPORT

Client: Roy F. Weston, Inc.
One Weston Way
West Chester PA, 19380

Project Manager: Mr. Steve Rock

Project: Earle NWS Tank C-22
Colts Neck, NJ

Laboratory Report #: T405349

<u>Lab ID No.:</u>	<u>Sample Reference</u>	<u>Matrix</u>	<u>Collection Date & Time</u>	
T405349-01	C-22-FB1	Aqueous	05/26/94	14:45
T405349-02	C-22-1	Soil	05/26/94	10:35
T405349-03	C-22-2	Soil	05/26/94	10:40
T405349-04	C-22-3	Soil	05/26/94	10:45
T405349-05	C-22-4	Soil	05/26/94	10:55
T405349-06	C-22-5 Pile	Soil	05/26/94	10:05
T405349-07	C-22-6 Pile	Soil	05/26/94	13:20

Date Received: May 26, 1994

Date of Report: June 15, 1994

N.J. Certification #02046
N.Y. Certification #11321
P.A. Certification #68-420


Moe R. Amirsoleymani
Quality Assurance Manager

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CUSTOMER INFORMATION

CUSTOMER: Roy F. Weston Inc
 ADDRESS: Eurle Naval Weapons Base
Rt 34
Colts Neck NJ
 TELEPHONE: 908-577-6921
 FAX: 908-577-7607

PROJECT INFORMATION

PROJECT: Earle NWS Tank C-22
 PROJECT LOCATION: Colts Neck STATE: NJ
 PROJECT MANAGER: Steven Rock
 IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:
 NAME: Harold Hornung
 TELEPHONE: 908-577-6921
 FAX: 908-577-7607

CLIENT INFORMATION

BILL TO: Roy F. Weston Inc
 ADDRESS: One Weston Way
West Chester PA 19380
 ATTENTION: Elisa Kohr
 TELEPHONE: 610-701-3781
 PO #: LL-1734-F1

LAB ID CODE	SAMPLE IDENTIFICATION	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE		SAMPLE MATRIX	# OF BOTTLES	ANALYSIS		PRESERVATIVE									
				COMPOSITE	GRAB			VOA	TPHC	H2SO4	HCL	HNO3	NACH	NON-PRES					
01	C-22-FB1	5/26	1445		X	H ₂ O	5	V	V						X	X			
02	C-22-1	5/26	10:35		X	Soil	2	V	V										
03	C-22-2	5/26	10:40		X	Soil	2	V	V										
04	C-22-3	5/26	10:45		X	Soil	2	V	V										
05	C-22-4	5/26	10:55		X	Soil	2	V	V										
06	C-22-5 pile	5/26	10:05	X		Soil	2	V	V										
07	C-22-6 pile	5/26	13:20	X		Soil	2	V	V										

TURNAROUND (INDICATE IN CALENDAR DAYS): 1 FAX HARD COPY _____ DELIV. PKG. _____

NAME OF LAB PERSONNEL CONFIRMING: Don Glen

DELIVERABLES / (CIRCLE ONE): DATA DATA/QC RED/DELIV NJ/CLP I NJ/CLP II
 C NJ/REGI NY/ASP CLP OTHER NJ DEPE TIC II

SAMPLER / AFFILIATION: Harold Hornung DATE: 5/26/94
 RECEIVED / AFFILIATION: Eric... TIME: 1500
 RELINQUISHED / AFFILIATION: ... DATE: 5/26/94
 RECEIVED / AFFILIATION: ... TIME: 17:05
 RELINQUISHED / AFFILIATION: ... DATE: _____
 RECEIVED / AFFILIATION: _____ TIME: _____

RETURN TO CLIENT FOR DISPOSAL LAB DISPOSAL
 KNOWN HAZARD (FLAMMABLE, EXPLOSIVE, TOXIC)
 YES NO (IF YES EXPLAIN UNDER COMMENTS)

LAB USE CONDITIONS OF BOTTLES AND COOLER AT RECEIPT:
 COMPLIANT NOT COMPLIANT (IF NOT EXPLAIN UNDER COMMENTS)

COMMENTS: If TPHC sample is > 1000ppm run VOA sample. If TPHC sample < 1000ppm do not run VOA sample

INTERNAL CHAIN OF CUSTODY

INSTRUCTIONS: Use 1 form for each 20 samples or aliquot.

Laboratory Person Breaking Field: _____
 Responsibility for Sample: _____
 Laboratory: Laboratory Resources Location: Teterboro
 Name: Roseann Morra Title: Spl. Mgmt. - Supervisor

Field Sample Seal No. _____ Date Broken 05.26.94 Military Time Seal Broken 3:00PM

Case No. _____ Analytical Parameter/Fraction _____

SAMPLE NO.	ALIQUT/EXTRACT NO.	SAMPLE NO.	ALIQUT/EXTRACT NO.
<u>7405349-01</u>			
<u>-02</u>			
<u>-03</u>			
<u>-04</u>			
<u>-05</u>			
<u>-06</u>			
<u>-07</u>			

Date	Time	RELINQUISHED BY	RECEIVED BY	PURPOSE OF CHANGE OF CUSTODY
<u>5/27</u>	<u>11:27</u>	PRINTED NAME <u>B. MODI</u> SIGNATURE <u>[Signature]</u>	PRINTED NAME <u>JOHN CALINDAS</u> SIGNATURE <u>[Signature]</u>	<u>PHC - SX / WX</u> <u>2-7</u>
<u>5/27</u>	<u>11:00</u>	PRINTED NAME <u>JOHN CALINDAS</u> SIGNATURE <u>[Signature]</u>	PRINTED NAME <u>B. MODI</u> SIGNATURE <u>[Signature]</u>	<u>Ret</u>
<u>6/1</u>	<u>11:25 AM</u>	PRINTED NAME <u>B. MODI</u> SIGNATURE <u>[Signature]</u>	PRINTED NAME <u>E. SMITH</u> SIGNATURE <u>[Signature]</u>	<u>01, 07.</u> <u>GC/MS VOA</u>
<u>6/8</u>	<u>10:00</u>	PRINTED NAME <u>B. MODI</u> SIGNATURE <u>[Signature]</u>	PRINTED NAME <u>E. SMITH</u> SIGNATURE <u>[Signature]</u>	<u>01</u> <u>GC/MS depleted</u>
<u>6/2</u>	<u>15:00</u>	PRINTED NAME <u>E. SMITH</u> SIGNATURE <u>[Signature]</u>	PRINTED NAME <u>B. MODI</u> SIGNATURE <u>[Signature]</u>	<u>ret 07</u> <u>GC/MS VOA</u>
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	<u>UU2</u>
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	

VOLATILE ORGANICS METHODOLOGY

EXTRACTION AND ANALYSIS, AQUEOUS

Code of Federal Regulations, Title 40, Part 136, Office of the Federal Register, National Archives and Records Administration, EPA/CLP internal and surrogate standards.

SAMPLE EXTRACTION, NON-AQUEOUS

Test Methods for Evaluating Solid Waste (SW-846), USEPA Office of Solid Waste and Emergency Response, Washington, DC 20460, 3rd Edition, November 1986, Method 5030, "Purge-and-Trap."

ANALYSIS, NON-AQUEOUS

Test Methods for Evaluating Solid Waste (SW-846), USEPA Office of Solid Waste and Emergency Response, Washington, DC 20460, 3rd Edition, November 1986, Method 8240, "Gas Chromatography/Mass Spectrometry for Volatile Organics."

METHODOLOGY SUMMARY

GENERAL CHEMISTRY

Reference: EPA 600/4-79-020, 1983 revision.

Potable water, aqueous wastes and surface water are conducted in accordance with EPA methods 305.1 for Acidity, 310.1 for Alkalinity, 325.3 for Chloride, 330.5 for Residual Chlorine, 120.1 for Conductivity, 335.2 for Total Cyanide, 335.1 for Amenable Cyanide, 130.2 for Hardness, 350.1 for Ammonia-NH₃, 353.1 for Nitrate-NO₃, 354.1 for Nitrite-NO₂, 351.2 for Kjeldahl Nitrogen, 140.1 for Odor, 413.1 for Oil & Grease (Gr), 418.1 for Petroleum Hydrocarbons (IR), 150.1 for pH, 420.1 for Total Phenolics, 365.2 for Total Phosphorus, 160.1 for Dissolved Solids, 160.2 for Suspended Solids, 375.4 for Sulfate, 376.1 for Sulfide, 377.1 for Sulfite, 415.1 for Total Organic Carbon and 180.1 for Turbidity.

Reference: Hach Handbook of Water Analysis, 1979. Approved in the Federal Register, April 21, 1980; pg. 26811.

Potable water, aqueous wastes and surface water are conducted according to Hach method 8000.

Reference: Standard Methods, 16th Edition, 1986.

Potable water, aqueous wastes and surface water are conducted according to method 507 for Biochemical Oxygen Demand (5 and 20 Day), 512B for MBAS (Surfactants), 421B for Dissolved Oxygen and 209B for Volatile Solids.

004

LABORATORY RESOURCES, INC. - TETERBORO 1993
 GENERAL CHEMISTRY METHODOLOGY
 SOIL MATRIX

PARAMETER	METHOD (1)
Acidity	305.1
Alkalinity	310.1
BOD, 5 day	507(4)
BOD, 20 day	507(4)
Chloride	9252
Chlorine, Residual	330.5
COO	HACH
Conductivity	9050
Cyanide, Total	9010
Cyanide, Amenable	9010
Ignitability	1010
MBAS, Surfactants	512B(4)
Nitrogen, NH3	350.1(2)
Nitrogen, NO3	9200
Nitrogen, NO2	354.1
Nitrogen, TNH	351.2(2)
Odor	140.1
Petroleum Hydro, Soil	418.1(5)
pH	9045
Phenolics, Total	9065
Phosphorous, Total	365.2(2)
Solids, Fixed	2090(4)
Solids, Total	CLP
Solids, Volatile	2090(4)
Sulfate	9038
Sulfide	9030
Sulfite	377.1(2)
TDC	415.1
Turbidity	180.1

- (1) = Solid and hazardous waste methods approved by NJDEP ECRA and RCRA and listed in EPS SW 846 3rd Edition, 1986.
- (2) = Water and wastewater methods approved in the Federal Register in section 40 CFR 136 and listed in EPA 600/4-79-020.
- (4) = Methods cited in Standard Methods 16th Edition, 1986.
- (5) = NJDEP modification of EPA Method 418.1.
- CLP = Contract Laboratory Program procedure for total solids determination, SOW 7/88, Part F, page D-83.
- HACH = Method 8000, Hach Handbook of Water Analysis, 1979. Approved in the federal Register, April 21, 1980, page 26811.

ORGANIC NON-CONFORMANCE SUMMARY

GC/MS VOLATILES

1. The quantitation limits are elevated due to matrix interference for sample T405349-07.
2. Methylene Chloride was detected above the quantitation limit in method blanks B4393 and B4394.

006

INORGANIC NON-CONFORMANCE SUMMARY

There were no non-conformances encountered during the analyses of these samples.

007



Teterboro Division
100 Hollister Road
Teterboro, New Jersey 07603
FAX: 201-288-5311
201-288-3700 800-729-0852

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Name	Container ¹	Preservation	Maximum holding time
<u>Bacterial Tests:</u>			
Coliform, fecal and total	P, G	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	6 hours
Fecal streptococci	P, G	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	6 hours
<u>Inorganic Tests:</u>			
Acidity	P, G	Cool, 4°C	14 days
Alkalinity	P, G	Cool, 4°C	14 days
Ammonia	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Biochemical oxygen demand	P, G	Cool, 4°C	48 hours
Bromide	P, G	None required	28 days
Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours
Chemical oxygen demand	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Chloride	P, G	None required	28 days
Chlorine, total residual	P, G	None required	Analyze immediately
Color	P, G	Cool, 4°C	48 hours
Cyanide, total and amenable to chlorination	P, G	Cool, 4°C, NaOH to pH12, 0.6g ascorbic acid	14 days
Fluoride	P	None required	28 days
Hardness	P, G	HNO ₃ to pH2, H ₂ SO ₄ to pH2	6 months
Hydrogen ion (pH)	P, G	None required	Analyze immediately
Kjeldahl and organic nitrogen	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
<u>Metals:</u>			
Chromium VI	P, G	Cool, 4°C	24 hours
Mercury	P, G	HNO ₃ to pH2	28 days
Metals, except chromium VI and mercury	P, G	HNO ₃ to pH2	6 months
Nitrate	P, G	Cool, 4°C	48 hours
Nitrate-nitrite	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Nitrite	P, G	Cool, 4°C	48 hours
Oil and grease	G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Organic carbon	P, G	Cool, 4°C, HCl or H ₂ SO ₄ to pH2	28 days
Orthophosphate	P, G	Filter immediately, cool, 4°C	48 hours
Oxygen, Dissolved Probe	G Bottle and top	None required	Analyze immediately
Winkler	do	Fix on site and store in dark	8 hours
Phenols	G only	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Phosphorus (elemental)	G	Cool, 4°C	48 hours
Phosphorus, total	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Residue, total	P, G	Cool, 4°C	7 days
Residue, Filterable	P, G	Cool, 4°C	7 days
Residue, Nonfilterable (TSS)	P, G	Cool, 4°C	7 days
Residue, Settleable	P, G	Cool, 4°C	48 hours
Residue, volatile	P, G	Cool, 4°C	7 days
Silica	P	Cool, 4°C	28 days
Specific conductance	P, G	Cool, 4°C	28 days

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES (CONTINUED)

Name	Container ¹	Preservation	Maximum holding time
Sulfate	P, G	Cool, 4°C	28 days
Sulfide	P, G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH 9	7 days
Sulfite	P, G	None required	Analyze immediately
Surfactants	P, G	Cool, 4°C	48 hours
Temperature	P, G	None required	Analyze
Turbidity	P, G	Cool, 4°C	48 hours
<u>Organic Tests:</u>			
Purgeable Halocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	14 days
Purgeable aromatic hydrocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , HCl to pH 2	14 days
Acrolein and acrylonitrile	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , Adjust pH to 4-5	14 days
Phenols	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	7 days until extraction, 40 days after extraction
Benzidines	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	7 days until extraction
Phthalate esters	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitrosamines	G, Teflon-lined cap	Cool, 4°C, store in dark, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
PCBs, acrylonitrile	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
Nitroaromatics and isophorone	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Polynuclear aromatic hydrocarbons	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Haloethers	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
Chlorinated hydrocarbons	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
TCDD	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
Total organic halogens	G, Teflon-lined cap	Cool, 4°C; H ₂ SO ₄ to pH < 2	7 days
<u>Pesticides Tests:</u>			
Pesticides	G, Teflon-lined cap	Cool, 4°C, pH 5-9	40 days after extraction
<u>Radiological Tests:</u>			
Alpha, beta and radium	P, G	HNO ₃ to pH < 2	6 months

¹ Polyethylene (P) or Glass (G)

CASE NARRATIVE

Laboratory Resources, New Jersey Division, received six soil samples plus a field blank blank for Reduced Deliverables Format on May 26, 1994. The samples were analyzed for the parameters outlined in the chain of custody.

The samples were analyzed within the required holding time. Any parameters which were outside of their respective quality control ranges are noted in the non-conformance summaries.

All soil, sludge and sediment results are reported in dry weight.

Please contact us if there are any questions regarding the enclosed results.

011

GC/MS CONFORMANCE/NONCONFORMANCE SUMMARY

work order No. T405349

	No	Yes
1. Chromatograms Labeled/Compounds Identified	—	✓
2. Tune Specifications		
a. BFB Meets Criteria	—	✓
b. DFTPP Meets Criteria	—	✓
3. Tuning Frequency		
Performed every 24 hours for 600 series and 12 hours for 8000 series	—	✓
4. Calibration Frequency		
Initial calibration performed within 30 days before sample analysis and continuing calibration performed within 24 hours of sample analysis for 600 series and 12 hours for 8000 series	—	✓
5. Calibration Requirements		
a. Calibration Check Compounds (CCCs)	—	✓
b. System Performance Check Compounds (SPCCs)	—	✓
6. Blank Contamination		
If yes, list compounds and concentrations in each blank:		
a. VOA Fraction		
b. B/N Fraction		
c. Acid Fraction		
<u>methylene chloride = 8 PPB</u>		
7. Surrogate Recoveries Meet Criteria		
If not met, list those compounds and their recoveries which fall outside the acceptable range:		
a. VOA Fraction		
b. B/N Fraction		
c. Acid Fraction		
If not met, were the calculations checked and the results qualified as estimated?	—	—
8. Matrix Spike/Matrix Spike Duplicate Recoveries Meet Criteria		
If not met, list those compounds and their recoveries which fall outside the acceptable range:		
a. VOA Fraction		
b. B/N Fraction		
c. Acid Fraction		
9. Internal Standard Areas and Retention Time Shifts Meet Criteria		
Internal standard areas between -50% and +100% of daily standard	—	✓
10. Extraction Holding Time Met		
If not met, list number of days exceeded for each sample:		

11. Analysis Holding Time Met		
If not met, list number of days exceeded for each sample:		

Laboratory Supervisor: _____

George Lee

Date: _____

6/8/94

U12

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Lab Name: LRI
 Lab Sample ID: T405349-01
 Matrix: [soil/water] WATER
 Sample wt/vol: 5.0 [g/mL] ML
 Level: [low/med] LOW
 % Moisture: NA
 GC Column: CAP ID: 0.53 (mm)

Client Sample ID No.
 IC-22-FB1
 Lab File ID: >B4408
 Run Type: 8240UOA
 Date Received: 05/26/94
 Date Analyzed: 06/02/94
 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		UG/L	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	3	JB
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
156-60-5	-----trans-1,2-Dichloroethene	5	U
156-59-2	-----cis-1,2-Dichloroethene	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
108-38-3	-----meta + para-Xylenes	5	U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Lab Name: LRI

Client Sample ID No.

Lab Sample ID: T405349-01

D-22-FB1

Matrix: [soil/water] WATER

Lab File ID: >B4408

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 824000A

Level: [low/med] LOW

Date Received: 05/26/94

% Moisture: NA

Date Analyzed : 06/02/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

UG/L

Q

95-47-6-----ortho-Xylene

51 U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Lab Name: LRI

Client Sample ID No.

Lab Sample ID: T405349-07

IC-22-6 Pile

Matrix: [soil/water] SOIL

Lab File ID: >B4403

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240VOA

Level: [low/med] MED

Date Received: 05/26/94

% Moisture: 16.0

Date Analyzed: 06/02/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	-----Chloromethane	1500	U
74-83-9	-----Bromomethane	1500	U
75-01-4	-----Vinyl Chloride	1500	U
75-00-3	-----Chloroethane	1500	U
75-69-4	-----Trichlorofluoromethane	740	U
75-09-2	-----Methylene Chloride	1800	B
67-64-1	-----Acetone	1500	U
75-15-0	-----Carbon Disulfide	740	U
75-35-4	-----1,1-Dichloroethene	740	U
75-34-3	-----1,1-Dichloroethane	740	U
156-60-5	-----trans-1,2-Dichloroethene	740	U
67-66-3	-----Chloroform	740	U
107-06-2	-----1,2-Dichloroethane	740	U
78-93-3	-----2-Butanone	1500	U
71-55-6	-----1,1,1-Trichloroethane	740	U
56-23-5	-----Carbon Tetrachloride	740	U
108-05-4	-----Vinyl Acetate	1500	U
75-27-4	-----Bromodichloromethane	740	U
78-87-5	-----1,2-Dichloropropane	740	U
10061-01-5	-----cis-1,3-Dichloropropene	740	U
79-01-6	-----Trichloroethene	740	U
124-48-1	-----Dibromochloromethane	740	U
110-75-8	-----2-Chloroethyl vinyl ether	740	U
79-00-5	-----1,1,2-Trichloroethane	740	U
71-43-2	-----Benzene	740	U
10061-02-6	-----trans-1,3-Dichloropropene	740	U
75-25-2	-----Bromoform	740	U
591-78-6	-----2-Hexanone	1500	U
108-10-1	-----4-Methyl-2-Pentanone	1500	U
127-18-4	-----Tetrachloroethene	720	J
79-34-5	-----1,1,2,2-Tetrachloroethane	740	U
108-88-3	-----Toluene	740	U
108-90-7	-----Chlorobenzene	740	U
100-41-4	-----Ethylbenzene	740	U

016

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Lab Name: LRI
 Lab Sample ID: T405349-07
 Matrix: [soil/water] SOIL
 Sample wt/vol: 4.0 [g/mL] G
 Level: [low/med] MED
 % Moisture: 16.0
 GC Column: CAP. ID: 0.53 (mm)
 Soil Extract Volume: 10000 (uL)

Client Sample ID No.
 C-22-6 Pile
 Lab File ID: >B4403
 Run Type: 8240UDA
 Date Received: 05/26/94
 Date Analyzed: 06/02/94
 Dilution Factor: 1.0
 Soil Aliquot Volume: 100.0(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		UG/KG	Q
100-42-5-----	Styrene	620	J
108-38-3-----	meta + para-Xylenes	740	U
95-47-6-----	ortho-Xylene	740	U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK-QB0602

UBLL02

Matrix: [soil/water] WATER

Lab File ID: >84393

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240UOA

Level: [low/med] LOW

Date Received:

% Moisture: NA

Date Analyzed : 06/02/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND UG/L Q

CAS NO.	COMPOUND	UG/L	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	8	
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
156-60-5	-----trans-1,2-Dichloroethene	5	U
156-59-2	-----cis-1,2-Dichloroethene	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
108-38-3	-----meta + para-Xylenes	5	U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK-QB0602

UBLL02

Matrix: [soil/water] WATER

Lab File ID: >B4393

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240UDA

Level: [low/med] LOW

Date Received:

% Moisture: NA

Date Analyzed : 06/02/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

UG/L

Q

95-47-6-----ortho-Xylene

5 U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK-380602

UBLK02

Matrix: [soil/water] SOIL

Lab File ID: >B4394

Sample wt/vol: 4.0 [g/mL] G

Run Type: 824000A

Level: [low/med] MED

Date Received:

% Moisture: NA

Date Analyzed: 06/02/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	-----Chloromethane	1300	U
74-83-9	-----Bromomethane	1300	U
75-01-4	-----Vinyl Chloride	1300	U
75-00-3	-----Chloroethane	1300	U
75-69-4	-----Trichlorofluoromethane	630	U
75-09-2	-----Methylene Chloride	960	
67-64-1	-----Acetone	1300	U
75-15-0	-----Carbon Disulfide	630	U
75-35-4	-----1,1-Dichloroethene	630	U
75-34-3	-----1,1-Dichloroethane	630	U
156-60-5	-----trans-1,2-Dichloroethene	630	U
67-66-3	-----Chloroform	630	U
107-06-2	-----1,2-Dichloroethane	630	U
78-93-3	-----2-Butanone	1300	U
71-55-6	-----1,1,1-Trichloroethane	630	U
56-23-5	-----Carbon Tetrachloride	630	U
108-05-4	-----Vinyl Acetate	1300	U
75-27-4	-----Bromodichloromethane	630	U
78-87-5	-----1,2-Dichloropropane	630	U
10061-01-5	-----cis-1,3-Dichloropropene	630	U
79-01-6	-----Trichloroethene	630	U
124-48-1	-----Dibromochloromethane	630	U
110-75-8	-----2-Chloroethyl vinyl ether	630	U
79-00-5	-----1,1,2-Trichloroethane	630	U
71-43-2	-----Benzene	630	U
10061-02-6	-----trans-1,3-Dichloropropene	630	U
75-25-2	-----Bromoform	630	U
591-78-6	-----2-Hexanone	1300	U
108-10-1	-----4-Methyl-2-Pentanone	1300	U
127-18-4	-----Tetrachloroethene	630	U
79-34-5	-----1,1,2,2-Tetrachloroethane	630	U
108-88-3	-----Toluene	630	U
108-90-7	-----Chlorobenzene	630	U
100-41-4	-----Ethylbenzene	630	U

022

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK-QB0602

UBLS02

Matrix: [soil/water] SOIL

Lab File ID: >B4394

Sample wt/vol: 4.0 (g/mL) G

Run Type: 8240VDA

Level: [low/med] MED

Date Received:

% Moisture: NA

Date Analyzed: 06/02/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

UG/KG

Q

100-42-5-----	Styrene	630	U
108-38-3-----	meta + para-Xylenes	630	U
95-47-6-----	ortho-Xylene	630	U

023

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: LRI

Lab Code: LRI

Lab File ID: >B4147

BFB Injection Date: 5/17/94

Instrument ID: MSD/B

BFB Injection Time: 12:54

GC Column : CAP ID: 0.53

Heated Purge: (Y/N) Y

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.2
75	30.0 - 60.0% of mass 95	43.2
95	Base Peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.8
173	Less than 1.0% of mass 95	0.0(0.0)1
174	Greater than 50% of mass 95	82.5
175	5.0 - 9.0 % of mass 174	5.9(7.1)1
176	95.0 - 101.0% of mass 174	81.6(99.0)1
177	5.0 - 9.0% of mass 176	5.2(6.4)2

1-Value is % mass 174

2-Value is % mass 176

S CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANK, AND STANDARDS:

CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1 USTD020	USTD020	>B4148	940517	13:23
2 USTD050	USTD050	>B4149	940517	14:03
3 USTD100	USTD100	>B4150	940517	14:42
4 USTD150	USTD150	>B4151	940517	15:22
5 USTD200	USTD200	>B4152	940517	16:01

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: LRI

Lab Code: LRI

Lab File ID: >B4390

BFB Injection Date: 6/12/94

Instrument ID: MSD/B

BFB Injection Time: 10:02

Column: CAP ID: 0.53

Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.2
75	30.0 - 60.0% of mass 95	41.0
95	Base Peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.7
173	Less than 1.0% of mass 95	1.40 1.501
174	Greater than 50% of mass 95	77.7
175	5.0 - 9.0 % of mass 174	5.40 7.001
176	95.0 - 101.0% of mass 174	77.80 100.201
177	5.0 - 9.0% of mass 176	5.10 6.602

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANK, AND STANDARDS:

CLIENT	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
1 USTD050	IUSTD050	>B4392	940602	11:13
2 UBL02	IUBLK-QB0602	>B4393	940602	11:53
3 UBLS02	IUBLK-QB0602	>B4394	940602	12:32
4 FB-5-1994	IT405275-07	>B4395	940602	13:11
5 Trip Blank	IT405295-02	>B4396	940602	13:50
6 E3-SS2	IT405275-09	>B4397	940602	14:29
7 DRUM 003	IT405295-01	>B4398	940602	15:09
8 E3-SS6 Bias	IT405275-13	>B4399 ✓	940602	15:48
9 E3-SS6 Bias MS	IT405275-13MS	>B4400 ✓	940602	16:27
10 E3-SS6 Bias MS	IT405275-13MSD	>B4401 ✓	940602	17:07
11 C-22-6 Pile	IT405349-07	>B4403 ✓	940602	18:30
12 SLUDGE 1	IT405348-02	>B4404	940602	19:12
13 Trip Blank	IT405362-05	>B4405	940602	19:53
14 94.0045	IT405362-04	>B4406	940602	20:33
15 94.0019	IT405362-02	>B4407	940602	21:13
16 C-22-FB1	IT405349-01	>B4408 ✓	940602	21:53

Initial Calibration Data
HSL Compounds

Instrument ID: 2637A0 1713

Factor: LAB RESOURCES

Calibration Date: ~~05/18/94~~ 05/17/94 *ES*

Print No:

Minimum RF for SPCC is 0.3 Maximum % RSD for CCC is 30%

Laboratory ID: >B4148 >B4149 >B4150 >B4151 >B4152

Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	RRT	RF	% RSD	CCC	SPCC
Acetone	1.65673	1.41683	1.40467	1.16121	1.01727	.234	1.33134	18.633		**
Acetyl Chloride	1.55099	1.45283	1.42250	1.19020	1.04158	.251	1.33162	15.716	*	
Acetone	1.62931	1.45095	1.41447	1.20278	1.02069	.300	1.34364	17.544		
Acetone	.81645	.69756	.68222	.57556	.49950	.320	.65426	18.580		
Acetone	.06887	.06982	.06895	.07470	.06696	.467	.06986	4.157		(Conc=40.0,100.0,200.0,
Acetone	2.40998	1.75657	1.60728	1.77611	1.51074	.365	1.81214	19.405		
1,1-Dichloroethane	1.65868	1.45252	1.30764	1.46910	1.27095	.468	1.43178	10.740	*	
1,2-Dichloroethane	3.88242	3.70361	3.44771	4.01293	3.62708	.490	3.73475	5.899		
1,1,1-Trifluoroethane	-	-	-	-	-	-	-	-		
Acetone	.28255	.22795	.18625	.21274	.20374	.517	.22265	16.498		
Acetonitrile	.04473	.05849	.04526	.04750	.04210	.585	.04761	13.388		(Conc=200.0,500.0,1000.
Acetonitrile	.22558	.23668	.24275	.26268	.24956	.696	.24345	5.709		
Acetylene Chloride	2.24839	1.87373	1.68556	1.84287	1.67954	.609	1.86602	12.400		
1,1,2-Trichloroethane	1.79517	1.66431	1.49961	1.66224	1.48770	.681	1.62181	7.945		
n-Butyl Methyl Ether	2.49430	2.31814	2.50390	2.62887	2.31622	.708	2.45228	5.475		
n-Butyl Alcohol	.07526	.07394	.08065	.08436	.07848	.745	.07854	5.336		(Conc=40.0,100.0,200.0,
1,1-Dichloroethane	3.24695	3.03944	2.76762	3.06388	2.78026	.795	2.97963	6.854		**
Diisopropyl Ether	6.68782	5.65117	6.28024	6.44820	5.60670	.858	6.13483	7.893		
1,1,2-Trichloroethane	1.91186	1.74054	1.57218	1.70805	1.54685	.947	1.69590	8.661		
Chloroform	3.33611	3.11359	2.76878	3.02113	2.72161	1.039	2.99224	8.471	*	
1,1-Dichloroethane	1.96389	1.80213	1.62464	1.75457	1.61239	1.154	1.75152	8.231		
1,1-Dichloroethane-d4 (S)	1.47743	1.36559	1.28535	1.20045	1.11730	1.136	1.28922	10.881		
Ethyl Acetate	1.23406	1.20846	1.17965	1.28669	.80057	.674	1.14189	17.061		
Acetone	.11761	.11267	.09786	.11206	.10903	.778	.10985	6.713		
1,1,1-Trichloroethane	.62083	.58986	.54393	.59757	.55250	.839	.58094	5.528		
Carbon Tetrachloride	.57972	.54321	.50656	.56551	.52256	.867	.54351	5.519		
Acetone	1.21367	1.02585	.93474	1.00605	.92305	.907	1.02067	11.426		
1,1-Dichloroethane	.55328	.47767	.42542	.45951	.42215	1.034	.46761	11.393		
1,2-Dichloropropane	.47595	.43685	.39820	.43483	.40333	1.071	.42983	7.269	*	
1,1-Dichloromethane	.74685	.80978	.74219	.82300	.77907	1.134	.78018	4.650		

- Response Factor (Subscript is amount in ppb)

- Average Relative Retention Time (RT Std/RT Istd)

- Average Response Factor

- Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Instrument ID: 2637A0 1713

LAB RESOURCES

Calibration Date: ~~05/18/94~~ 05/17/94 *LS*

Minimum RF for SPCC is 0.3

Maximum % RSD for CCC is 30%

Laboratory ID: >B4148 >B4149 >B4150 >B4151 >B4152

Compound	RF					RRT	RF	% RSD	CCC	SPCC
	20.00	50.00	100.00	150.00	200.00					
Methyl vinyl ether	.24039	.23367	.21202	.23403	.22720	1.206	.22946	4.710		
1,2-Dichloropropene	.47235	.46726	.44136	.49838	.46489	1.329	.46885	4.343		
1,3-Dichloropropene	.64864	.62899	.58394	.64927	.60066	1.218	.62230	4.689		
1,1,2-Trichloroethane	.43691	.40185	.35681	.38465	.35480	1.359	.38700	8.824		
1,1-Dichloroethane	.79933	.76027	.69181	.76127	.70602	1.425	.74374	5.934		
1,1,1-Trichloroethane	.64447	.63665	.59153	.66182	.62662	1.697	.63222	4.135	**	
Methyl-2-Pentanone	.43460	.40318	.36348	.40572	.38357	.825	.39811	6.676		
1,4-Dioxane (S)	1.40604	1.17889	1.09084	1.09720	.97717	.823	1.15003	13.923		
1,2-Dichloroethane	.98913	.86948	.76713	.84171	.76645	.831	.84678	10.824	*	
1,1-Dichloroethane	.74796	.66900	.58290	.63322	.56620	.895	.63985	11.391		
1,2-Dichloroethane	.26186	.24619	.21886	.24526	.22959	.930	.24035	6.895		
1,2,4-Trichlorobenzene	1.27872	1.12100	.98703	1.07220	.98381	1.003	1.08855	11.134	**	
1,3-Dichlorobenzene	.60402	.52813	.46841	.50572	.45743	1.024	.51274	11.390	*	
1,4-Dichlorobenzene	.72254	.63932	.55717	.59111	.52408	1.041	.60684	12.765		(Conc=40.0,100.0,200.0,
1,2,5-Trichlorobenzene	.71142	.62051	.55154	.58346	.51999	1.089	.59738	12.365		
1,2,4-Trichlorobenzene	1.24025	1.09642	.97148	1.03878	.93300	1.093	1.05598	11.418		
1,2,3-Trichlorobenzene (S)	1.26197	.95277	.90239	.88065	.78770	1.156	.95710	18.872		
1,1,1-Trichloroethane	.79831	.73664	.67795	.75090	.68829	1.188	.73042	6.706	**	
1,2-Dichlorobenzene	1.39555	1.19390	1.07630	1.14929	1.04379	1.298	1.17177	11.807		
1,3-Dichlorobenzene	1.38011	1.19733	1.09496	1.17456	1.05216	1.312	1.17982	10.717		
1,4-Dichlorobenzene	1.31914	1.11137	1.00227	1.06631	.97753	1.358	1.09532	12.395		
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-		

- Response Factor (Subscript is amount in ppb)

- Average Relative Retention Time (RT Std/RT Istd)

- Average Response Factor

- Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Use No: _____ Calibration Date: 06/02/94
 Instructor: LAB RESOURCES Time: 11:13
 Contract No: _____ Laboratory ID: >B4392
 Instrument ID: 2637A0 1713 Initial Calibration Date: ~~05/18/94~~ 05/17/94 *BL*

Minimum RF for SPCC is 0.3 Maximum % Diff for CCC is 25%

Compound	RF	RF	%Diff	CCC	SPCC
Chloromethane	1.33134	.97271	26.94	**	
Vinyl Chloride	1.33162	1.09009	18.14	*	
Bromomethane	1.34364	1.09353	18.61		
Chloroethane	.65426	.56137	14.20		
Acrolein	.06986	.05740	17.83		(Conc=100.00)
Trichlorofluoromethane	1.81214	1.29365	28.61		
1,1-Dichloroethene	1.43178	1.19703	16.40	*	
Carbon Disulfide	3.73475	2.69744	27.77		
Trichlorotrifluoroethane	-	-	-		
acetone	.22265	.22111	.69		
acetonitrile	.04761	.04469	6.15		(Conc=500.00)
Acrylonitrile	.24345	.17693	27.32		
Methylene Chloride	1.86602	1.81363	2.81		
trans-1,2-Dichloroethene	1.62181	1.45189	10.48		
tert-Butyl Methyl Ether	2.45228	2.09012	14.77		
tert-Butyl Alcohol	.07854	.06594	16.05		(Conc=100.00)
1,1-Dichloroethane	2.97963	2.76167	7.32	**	
Diisopropyl Ether	6.13483	5.56279	9.32		
cis-1,2-Dichloroethene	1.69590	1.56393	7.78		
Chloroform	2.99224	2.77906	7.12	*	
1,2-Dichloroethane	1.75152	1.61808	7.62		
1,2-Dichloroethane-d4 (S)	1.28922	1.42446	10.49		
Vinyl Acetate	1.14189	1.18192	3.51		
2-Butanone	.10985	.10783	1.84		
1,1,1-Trichloroethane	.58094	.49374	15.01		
Carbon Tetrachloride	.54351	.43769	19.47		
Benzene	1.02067	.91539	10.31		
Trichloroethene	.46761	.39154	16.27		
1,2-Dichloropropane	.42983	.38955	9.37	*	
Bromodichloromethane	.78018	.72548	7.01		
1-Chloroethyl vinyl ether	.22946	.20547	10.46		
trans-1,3-Dichloropropene	.46885	.41729	11.00		

RF - Response Factor from daily standard file at 50.00 ppb

RF - Average Response Factor from initial Calibration Form UI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 06/02/94
 Contractor: LAB RESOURCES _____ Time: 11:13
 Contract No: _____ Laboratory ID: >B4392
 Instrument ID: 2637A0 1713 _____ Initial Calibration Date: ~~05/18/94~~ 05/17/94 *ll*

Minimum RF for SPCC is 0.3 Maximum % Diff for CCC is 25%

Compound	RF	RF	%Diff	CCC	SPCC
is-1,3-Dichloropropene	.62230	.56848	8.65		
1,1,2-Trichloroethane	.38700	.35048	9.44		
Bromochloromethane	.74374	.64629	13.10		
Dimoform	.63222	.55565	12.11	**	
is-Methyl-2-Pentanone	.39811	.35687	10.36		
Toluene-d8 (S)	1.15003	1.17093	1.82		
luene	.84678	.73035	13.75	*	
trachloroethene	.63985	.54467	14.88		
2-Hexanone	.24035	.21177	11.89		
lorobenzene	1.08855	.93050	14.52	**	
hylbenzene	.51274	.43543	15.08	*	
meta + para-Xylenes	.60684	.52123	14.11		(Conc=100.00)
tho-Xylene	.59738	.51419	13.93		
ylene	1.05598	.91158	13.67		
Bromofluorobenzene (S)	.95710	.99760	4.23		
1,1,2,2-Tetrachloroethane	.73042	.63332	13.29	**	
3-Dichlorobenzene	1.17177	1.00164	14.52		
4-Dichlorobenzene	1.17982	1.01194	14.23		
1,2-Dichlorobenzene	1.09532	.93329	14.79		
phthalene	-	-	-		

RF - Response Factor from daily standard file at 50.00 ppt
 RF - Average Response Factor from Initial Calibration Form VI
 %Diff - % Difference from original average or curve
 CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

VOLATILE SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: LRI

Sample ID: T405275-13

Sample Data File: >B4399

Spiked Sample Data File: >B4400

Spike Duplicate Data File: >B4401

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	14881	ND	10744	72	159-172
Trichloroethene	14881	ND	12872	87	162-137
Benzene	14881	ND	12424	83	166-142
Toluene	14881	1642	13523	80	159-139
Chlorobenzene	14881	ND	13143	88	160-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	14881	11423	77	7	22 159-172
Trichloroethene	14881	13192	89	2	24 162-137
Benzene	14881	13066	88	6	21 166-142
Toluene	14881	14514	86	7	21 159-139
Chlorobenzene	14881	14159	95	8	21 160-133

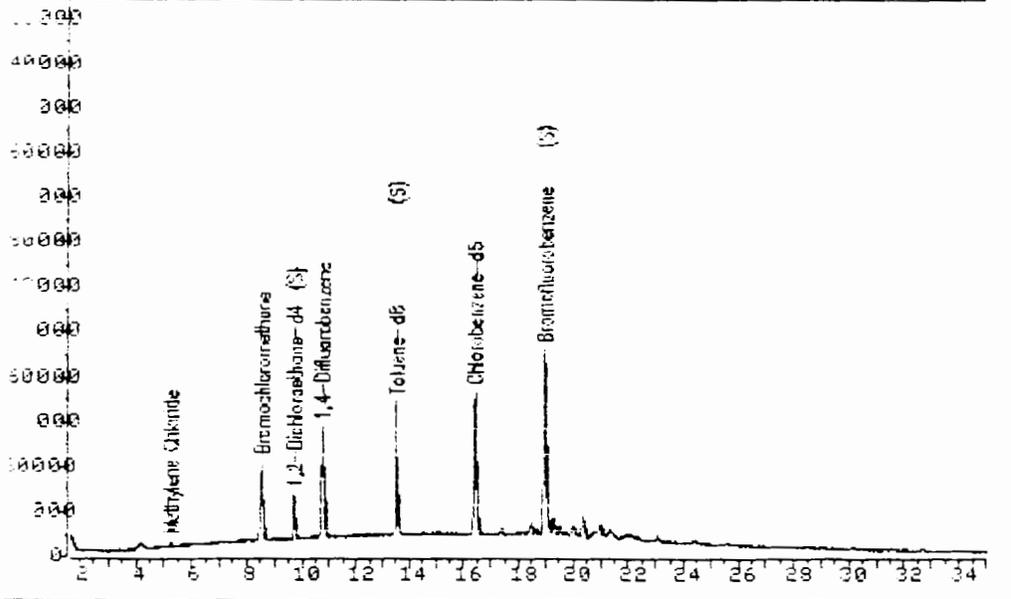
RPD: 0 out of 5 outside limits
 RECOVERY: 0 out of 10 outside limits

Comment: _____

EPL ION CHROMATOGRAM

1e 84408 35.0-250.000000, 1405349-01,L,5.0,C-22-FB1

400 800 1200 1600 2000 2400 2800 3200



Data File: >B4408::B1

Quant Output File: ^B4408::QT

Name: MSD/B,

Instrument ID: B

Misc: T405349-01,L,5.0,C-22-FB1,

Id File: IDDBL::C2

Title: EPA METHOD 8240A, UOA FOR SW-846.

Last Calibration: 940518 10:40

Last Qcal Time: 940602 11:13

Operator ID: EILEEN

Quant Time : 940602 22:51

Injected at: 940602 21:53

QUANT REPORT

Operator ID: EILEEN
 File: 084408::QT
 File: 084408::81
 MS048,
 T405349-01,L,5.0,C-22-FB1,

Quant Rev: 7 Quant Time: 940602 22:51
 Injected at: 940602 21:53
 Dilution Factor: 1.00000
 Instrument ID: 8

File: IDDBL::02
 EPA METHOD 8240A, UGA FOR SW-846.
 Calibration: 940518 10:40

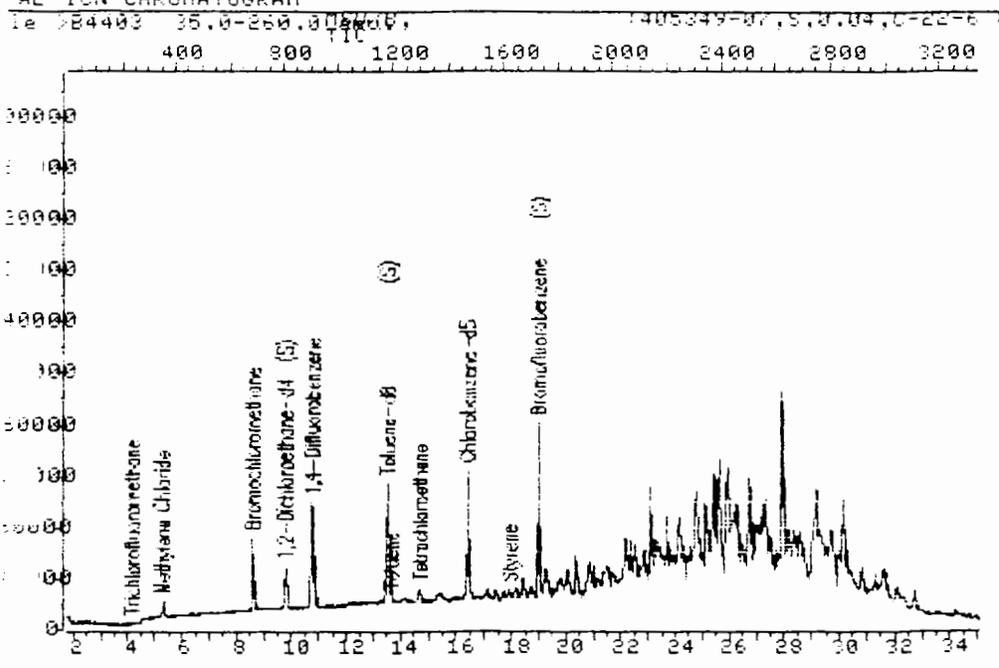
Last Qual Time: 940602 11:13

Compound	R.T.	Q	Ion	Area	Conc	Units	q
*Bromochloromethane	8.52	127.9		53427	50.00	ppb	78
Methylene Chloride	9.20	84.0		5614	2.90	ppb	94
1,2-Dichloroethane-d4 (S)	9.69	65.0		75126	49.36	ppb	84
*1,4-Difluorobenzene	10.70	114.0		231587	50.00	ppb	96
*Chlorobenzene-d5	16.36	117.0		218904	50.00	ppb	98
Toluene-d8 (S)	13.48	98.0		247834	48.34	ppb	99
Bromofluorobenzene (S)	18.93	95.0		221478	50.71	ppb	86

Compound is ISTD

1 hit
ds 6-6-94

AL ION CHROMATOGRAM



Data File: >B4403::B1

Quant Output File: ^B4403::QT

Name: MSD/B,

Instrument ID: B

Misc: T405349-07,S,0.04,C-22-6 Pile,

Id File: IDDBL::C2

Title: EPA METHOD 8240A, UOA FOR SW-846.

Last Calibration: 940518 10:40

Last Qual Time: 940602 11:13

Operator ID: EILEEN

Quant Time : 940602 19:53

Injected at: 940602 18:30

QUANT REPORT

Station ID: EILEEN
File: 084403::QT
File: 084403::B1
MSD/B,
T405349-07,S,0.04,C-22-6 Pile,

Quant Rev: 7 Quant Time: 940602 19:53
Injected at: 940602 18:30
Dilution Factor: 1.00000
Instrument ID: B

File: IDDBL::C2
EPA METHOD 8240A, VOA FOR SW-846.
Calibration: 940518 10:40

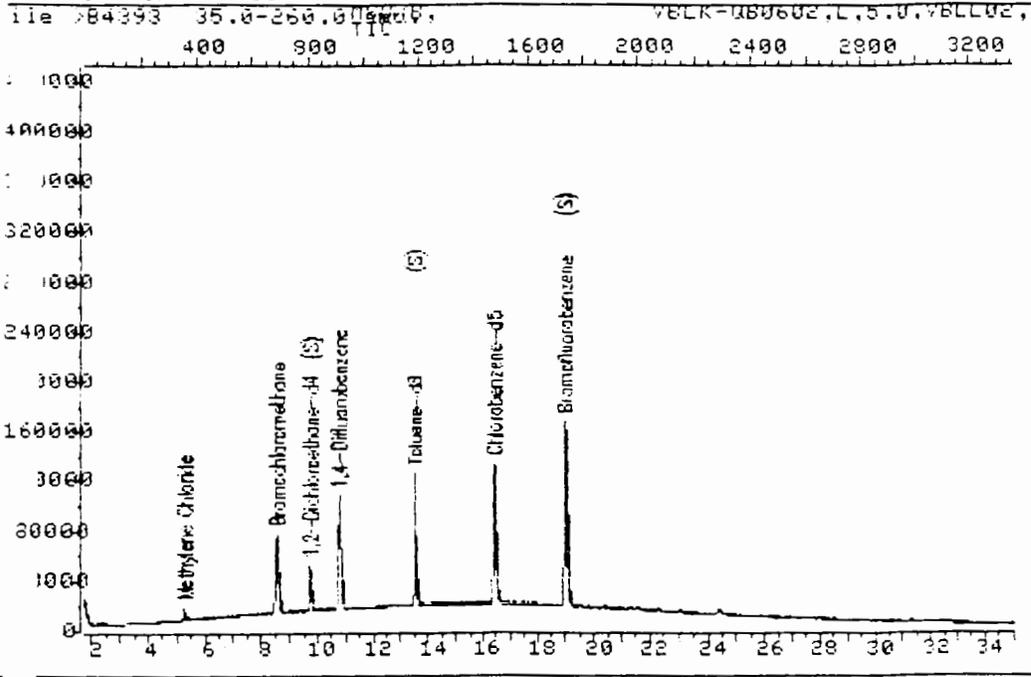
Last Qual Time: 940602 11:13

Compound	R.T.	Q Ion	Area	Conc	Units	q
*Bromochloromethane	8.59	127.9	44007	50.00	ppb	73
Trichlorofluoromethane	4.14	101.0	735	1.646	ppb	89
Methylene Chloride	5.25	84.0	18856	11.81	ppb	84
1,2-Dichloroethane-d4 (S)	9.75	65.0	66080	52.71	ppb	88
*1,4-Difluorobenzene	10.75	114.0	193858	50.00	ppb	95
*Chlorobenzene-d5	16.39	117.0	179672	50.00	ppb	97
Toluene-d8 (S)	13.51	98.0	205251	48.78	ppb	97
Toluene	13.64	92.0	1131	431	ppb	87
Tetrachloroethene	14.70	164.0	9416	4.81	ppb	96
Styrene	17.91	104.0	13647	4.17	ppb	93
Bromofluorobenzene (S)	18.96	95.0	180950	50.48	ppb	88

Compound is ISTD

3 Hits
JP
06-03-96

DUAL ION CHROMATOGRAM



Data File: >B4393::B1
Name: MSD/B,
Misc: VBLK-QB0602,L,5.0,VBLL02,

Quant Output File: ^B4393::QT
Instrument ID: B

Id File: IDDBL::C2
Title: EPA METHOD 8240A, UGA FOR SW-846.
Last Calibration: 940518 10:40 Last Qual Time: 940602 11:13

Operator ID: EILEEN
Quant Time : 940602 12:29
Injected at: 940602 11:53

QUANT REPORT

Page 1

Operator ID: EILEEN
 Sample File: ^B4393::QT
 File: >B4393::B1
 Reagent: MSD/B,
 VBLK-080602,L,5.0,VBL02,

Quant Rev: 7 Quant Time: 940602 12:29
 Injected at: 940602 11:53
 Dilution Factor: 1.00000
 Instrument ID: 8

File: IDDBL::C2
 Method: EPA METHOD 8240A, VOA FOR SW-846.
 Calibration: 940518 10:40

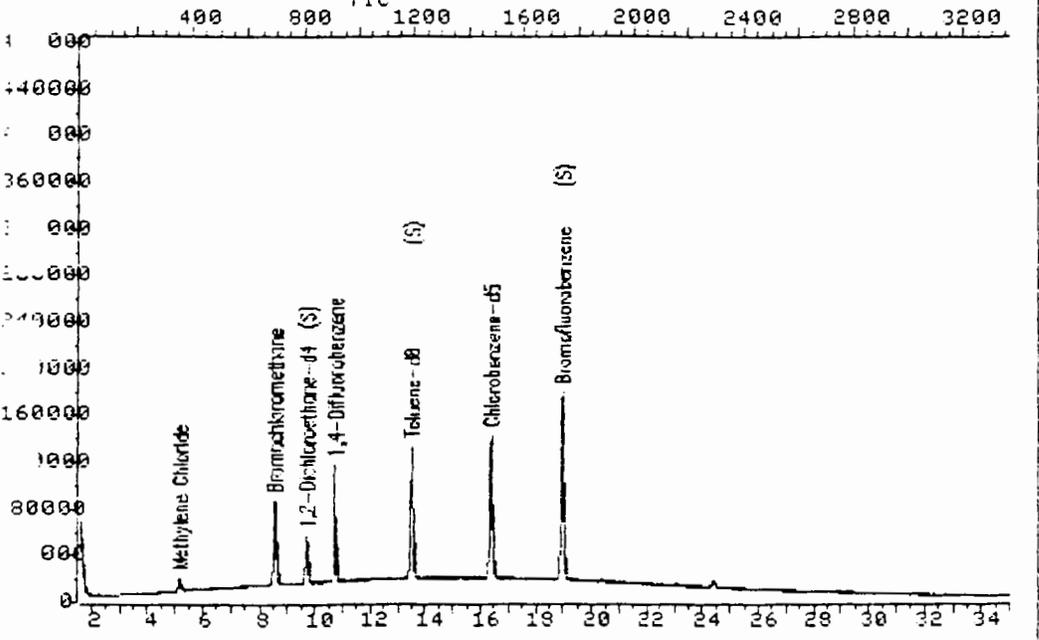
Last Qual Time: 940602 11:13

Compound	R.T.	Q	Ion	Area	Conc	Units	q
*Bromochloromethane	8.56	127.9		49496	50.00	ppb	80
Methylene Chloride	5.26	84.0		13787	7.68	ppb	92
1,2-Dichloroethane-d4 (S)	9.73	65.0		67657	47.98	ppb	88
*1,4-Difluorobenzene	10.74	114.0		216651	50.00	ppb	98
*Chlorobenzene-d5	16.39	117.0		197270	50.00	ppb	99
Toluene-d8 (S)	13.50	98.0		226748	49.08	ppb	95
Bromofluorobenzene (S)	18.96	95.0		195711	49.72	ppb	91

Compound is ISTD

DIAL ION CHROMATOGRAM

File >B4394 35.0-260.000000 VBLK-QB0602,S,0.04,VBLS02



Data File: >B4394::B1

Quant Output File: ^B4394::QT

Name: MSD/B,

Instrument ID: B

Misc: VBLK-QB0602,S,0.04,VBLS02,

Id File: IDDBL::C2

Title: EPA METHOD 8240A, VOA FOR SW-846.

Last Calibration: 940518 10:40

Last Qcal Time: 940602 11:13

Operator ID: EILEEN

Quant Time : 940602 13:08

Injected at: 940602 12:32

QUANT REPORT

Page 1

Operator ID: EILEEN
 : t File: ^84394::QT
 : File: >84394::81
 : MSD/B,
 : UBLK-QB0602,S,0.04,VBLS02,

Quant Rev: 7 Quant Time: 940602 13:08
 Injected at: 940602 12:32
 Dilution Factor: 1.00000
 Instrument ID: B

File: IDDBL::C2
 : EPA METHOD 8240A, VOA FOR SW-846.
 : Calibration: 940518 10:40

Last Qual Time: 940602 11:13

Compound	R.T.	Q ion	Area	Conc	Units	q
*Bromochloromethane	8.49	127.9	56622	50.00	ppb	82
Methylene Chloride	5.17	84.0	15804	7.69	ppb	96
1,2-Dichloroethane-d4 (S)	9.66	65.0	76646	47.51	ppb	91
*1,4-Difluorobenzene	10.69	114.0	237458	50.00	ppb	98
*Chlorobenzene-d5	16.35	117.0	212768	50.00	ppb	97
Toluene-d8 (S)	13.45	98.0	247399	49.65	ppb	95
Bromofluorobenzene (S)	18.92	95.0	211485	49.82	ppb	95

Compound is ISTD

PETROLEUM HYDROCARBONS CONFORMANCE/NONCONFORMANCE SUMMARY

7405349

No Yes

1. Blank Contamination X —
 If yes, list concentrations in each blank:

2. Matrix Spike Recoveries Meet Criteria — X
 If not met, list those recoveries which fall outside the acceptable range:

3. Sample Duplicate Analyses Meet QC Criteria — X
 If not met, list those criteria which fall outside the acceptable range:

4. GC Fingerprinting Chromatograms Submitted for All Standards, Blanks, and Samples (if applicable) N/A —

5. Extraction Holding Time Met — X
 If not met, list number of days exceeded for each sample:

6. Analysis Holding Time Met — X
 If not met, list number of days exceeded for each sample:

NOTE: EPA method 418.1 permits the use of either a scanning or fixed wavelength infrared (IR) spectrophotometer for determining petroleum hydrocarbon concentrations. Laboratory Resources, Inc., uses fixed wavelength instruments; therefore, IR spectra are not included in this data package.

Laboratory Supervisor: Deqa DeLam

Date: 6/09/94
045

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405349
LRI Sample No: 1

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-22-FB1

Date Collected: 05/26/94
Date Received: 05/26/94

Matrix: Water
Percent Moisture: N/A
Units in Wet Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	0.50 U	0.50	mg/L	05/27/94	JC		JWC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Customer: Roy F. Weston, Inc.

Division: New Jersey

Location: NJ

LRI Report No: T405349

Project: Colts Neck PHC

LRI Sample No: 2

Sample Description: C-22-1

Date Collected: 05/26/94

Matrix: Soil

Date Received: 05/26/94

Percent Moisture: 11.3%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	47 U	47	mg/kg	05/27/94	JC	05/27/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Customer: Roy F. Weston, Inc.

Division: New Jersey

Location: NJ

LRI Report No: T405349

Project: Colts Neck PHC

LRI Sample No: 3

Sample Description: C-22-2

Date Collected: 05/26/94

Matrix: Soil

Date Received: 05/26/94

Percent Moisture: 7.8%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	49 U	49	mg/kg	05/27/94	JC	05/27/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405349
LRI Sample No: 4

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-22-3

Date Collected: 05/26/94
Date Received: 05/26/94

Matrix: Soil
Percent Moisture: 15.0%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	48 U	48	mg/kg	05/27/94	JC	05/27/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405349
LRI Sample No: 5

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-22-4

Date Collected: 05/26/94
Date Received: 05/26/94

Matrix: Soil
Percent Moisture: 6.6%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
<u>PHC (TPH) by 418.1</u>								
Petroleum Hydrocarbons, Total Recoverable	48 U	48	mg/kg	05/27/94	JC	05/27/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Customer: Roy F. Weston, Inc.

Division: New Jersey

Location: NJ

LRI Report No: T405349

Project: Colts Neck PHC

LRI Sample No: 6

Sample Description: C-22-5 PILE

Date Collected: 05/26/94

Matrix: Soil

Date Received: 05/26/94

Percent Moisture: 10.5%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
<u>PHC (TPH) by 418.1</u>								
Petroleum Hydrocarbons, Total Recoverable	47 U	47	mg/kg	05/27/94	JC	05/27/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405349
LRI Sample No: 7

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-22-6 PILE

Date Collected: 05/26/94
Date Received: 05/26/94

Matrix: Soil
Percent Moisture: 15.8%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	12000	2400	mg/kg	05/27/94	JC	05/27/94	JC	50

General Chemistry Method Blank Analysis

This blank was analyzed concurrent with the analysis of the workorder:
T4-05-349

Element	Result mg/L		MDL mg/L	Dil.
Ammonia-NH3	U		0.50	1
BOD	U		NA	1
COD	U		10	1
Chloride, Total	U		2.0	1
Chromium Hexavalent	U		0.05	1
Cyanide, Total	U		0.01	1
MBAS	U		1.5	1
Nitrate	U		0.10	1
Nitrite	U		0.01	1
Oil & Grease	U		10	1
pH	U		NA	1
Pet. Hydrocarbons	U	X	0.50	1
Phenolics, Total	U		0.05	1
Phosphorus, Total	U		0.025	1
Sulfate	U		5.0	1
Sulfite	U		1.0	1
Sulfide	U		1.0	1
Dissolved Solids	U		10	1
Suspended Solids	U		5.0	1
Kjeldahl Nitrogen	U		0.50	1
TOC	U		10	1
Turbidity	U		0.20	1
Conductivity	U		1.0	1
Alkalinity	U		2.0	1
Color	U		5.0	1
Fluoride	U		0.20	1
Orthophosphate	U		0.01	1
Hardness	U		5.0	1

(*) Elevated MDLs due to dilution for range
 (**) Elevated MDLs due to dilution for interferences
 X = Undetected analyte of required analyses.

Workorder No.:

T4-05-349

Matrix: Non-Aqueous

Parameters	Blank Spike	Sample Result	Spike Added	Spiked Sample		Sample Result	Sample Dup.	% Rec.	RPD		Batch QC Sample ID
	% Rec	mg/Kg **	mg/Kg **	mg/Kg **	% Rec.	mg/Kg**	mg/Kg **	Limits	%RES	%Limit	
Ammonia								75-125		15	
Cr Hexavalent								85-115		10	
Cyanide								70-125		5	
Ignitability								----		3 °F	
Kjeldahl Nitrogen								65-135		20	
Nitrate								75-125		10	
Oil & Grease								70-135		50	
pH (Corrosivity)								----		0.2 pH	
Pet. Hydrocarbons	102	<49.0	489	391	80	<49.0	<49.0	50-140	ND	30	T405332-07
Phenolics								70-135		50	
% Moisture						17.8	17.8	----	0	20	T405293-10
Reactive Cyanide								80-120		10	
Reactive Sulfide								80-120		10	

Note: The QC is based on a batch system in which a sample is chosen at random for matrix spike and/or duplicate analyses for a given matrix and represents all of the samples included in that batch.

* = Duplicate analysis outside of required quality control limits.

** = Results expressed in mg/Kg wet weight.

N = Matrix Spike recovery outside of required quality control limits.

NA=Not applicable since the sample concentration is 4X the amount of spike added.

ND=Not Determinable

The RPD limits for pH is 0.2 pH units.

The RPD for Ignitability is 3 degrees Fahrenheit.

TABLE OF ABBREVIATIONS

ORGANIC QUALIFIERS

B= Compound also detected in method blank
J= Below method detection limit
E= Exceeds calibration range
D= Dilution performed
U= Undetected
RE= Re-analysis performed

INORGANIC QUALIFIERS

EC= Estimated count
TNTC= Too numerous to count
QL= Quantitation limit
U= Undetected
S= Result quantitated by Method of Standard Additions
*= Duplicate analysis outside of required quality control
limits
N= Matrix spike recovery outside of required quality control
limits
ND= Not determinable
T= True Color
A= Apparent Color

LABORATORY ANALYSIS REPORT

Client: Roy F. Weston
One Weston Way
West Chester, PA 19380

Project Manager: Mr. Steve Rock

Project: NWS Earle Tank C-11

Laboratory Report #: T406121

<u>Lab ID No.:</u>	<u>Sample Reference</u>	<u>Matrix</u>	<u>Collection Date & Time</u>	
T406121-01	C-22-FB1	WATER	06/08/94	12:50
T406121-02	C-11-1	SOIL	06/08/94	12:00
T406121-03	C-11-2	SOIL	06/08/94	12:30
T406121-04	C-11-3	SOIL	06/08/94	12:35
T406121-05	C-11-PILE 1	SOIL	06/08/94	13:10
T406121-06	C-33-TB	WATER	-----	-----

Date Received: June 09, 1994

Date of Report: June 23, 1994

N.J. Certification #02046
N.Y. Certification #11321
P.A. Certification #68-420


Moe R. Amirsoleymani
Quality Assurance Manager

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Date: 6/10/94

LABORATORY RESOURCES INC.
CHANGE ORDER FORM

Date Notified by Client: 6/10/94

Work Order Number: T406121

Client Name: Weston

Informed by: _____

- Verbal
- Fax
- Written
- Per Chain of Custody

Departments Notified by: ce

Changed in LIMS by: ce Date: 6/10/94

Departments Notified:

- Extractions
- Volatiles 8240
- Semi-Volatiles
- Metals
- Wet Chem
- Report Gen
- Sample Mngmt.

Original filed with chain of custody / data file

<u>Sample Number(s)</u>	<u>Addition(s)</u>	<u>Deletion(s)</u>
<u>01, 04, 05, 06</u>	<u>8240 R-1L</u>	<u>due 6/14/94</u>

Comments: Added due to FF/Th. PHC > 1000

Due Date: / /

Signature or Initials: _____

VOLATILE ORGANICS METHODOLOGY

EXTRACTION AND ANALYSIS, AQUEOUS

Code of Federal Regulations, Title 40, Part 136, Office of the Federal Register, National Archives and Records Administration, EPA/CLP internal and surrogate standards.

SAMPLE EXTRACTION, NON-AQUEOUS

Test Methods for Evaluating Solid Waste (SW-846), USEPA Office of Solid Waste and Emergency Response, Washington, DC 20460, 3rd Edition, November 1986, Method 5030, "Purge-and-Trap."

ANALYSIS, NON-AQUEOUS

Test Methods for Evaluating Solid Waste (SW-846), USEPA Office of Solid Waste and Emergency Response, Washington, DC 20460, 3rd Edition, November 1986, Method 8240, "Gas Chromatography/Mass Spectrometry for Volatile Organics."

LABORATORY RESOURCES, INC. - PETERSBORO 1993
 GENERAL CHEMISTRY METHODOLOGY
 SOIL MATRIX

PARAMETER	METHOD (1)
Acidity	305.1
Alkalinity	310.1
BOD, 5 day	507(4)
BOD, 20 day	507(4)
Chloride	9252
Chlorine, Residual	330.5
COO	HACH
Conductivity	9050
Cyanide, Total	9010
Cyanide, Amenable	9010
Ignitability	1010
MBAS, Surfactants	512B(4)
Nitrogen, NH3	350.1(2)
Nitrogen, NO3	9200
Nitrogen, NO2	354.1
Nitrogen, TN	351.2(2)
Odor	140.1
Petroleum Hydro, Soil	418.1(5)
pH	9045
Phenolics, Total	9065
Phosphorous, Total	365.2(2)
Solids, Fixed	2090(4)
Solids, Total	CLP
Solids, Volatile	2090(4)
Sulfate	9038
Sulfide	9030
Sulfite	377.1(2)
TOC	415.1
Turbidity	180.1

- (1) = Solid and hazardous waste methods approved by NJDEP ECRA and RCRA and listed in EPS SW 846 3rd Edition, 1986.
- (2) = Water and wastewater methods approved in the Federal Register in section 40 CFR 136 and listed in EPA 600/4-79-020.
- (4) = Methods cited in Standard Methods 16th Edition, 1986.
- (5) = NJDEP modification of EPA Method 418.1.
- CLP = Contract Laboratory Program procedure for total solids determination, SDW 7/88, Part F, page D-83.
- HACH = Method 8000, Hach Handbook of Water Analysis, 1979. Approved in the federal Register, April 21, 1980, page 26811.

METHODOLOGY SUMMARY

GENERAL CHEMISTRY

Reference: EPA 600/4-79-020, 1983 revision.

Potable water, aqueous wastes and surface water are conducted in accordance with EPA methods 305.1 for Acidity, 310.1 for Alkalinity, 325.3 for Chloride, 330.5 for Residual Chlorine, 120.1 for Conductivity, 335.2 for Total Cyanide, 335.1 for Amenable Cyanide, 130.2 for Hardness, 350.1 for Ammonia-NH₃, 353.1 for Nitrate-NO₃, 354.1 for Nitrite-NO₂, 351.2 for Kjeldahl Nitrogen, 140.1 for Odor, 413.1 for Oil & Grease (Gr), 418.1 for Petroleum Hydrocarbons (IR), 150.1 for pH, 420.1 for Total Phenolics, 365.2 for Total Phosphorus, 160.1 for Dissolved Solids, 160.2 for Suspended Solids, 375.4 for Sulfate, 376.1 for Sulfide, 377.1 for Sulfite, 415.1 for Total Organic Carbon and 180.1 for Turbidity.

Reference: Hach Handbook of Water Analysis, 1979. Approved in the Federal Register, April 21, 1980; pg. 26811.

Potable water, aqueous wastes and surface water are conducted according to Hach method 8000.

Reference: Standard Methods, 16th Edition, 1986.

Potable water, aqueous wastes and surface water are conducted according to method 507 for Biochemical Oxygen Demand (5 and 20 Day), 512B for MBAS (Surfactants), 421B for Dissolved Oxygen and 209B for Volatile Solids.

ORGANIC NON-CONFORMANCE SUMMARY

GC/MS VOLATILE

1. An unknown alkane was present in the library search of method blank C4633.
2. The quantitation limits are elevated due to matrix interference for samples T406121-04 and 05.
3. MS/MSD is outside of the required quality control limits for 1,1-Dichloroethene in sample T4305121-05.

007

INORGANIC NON-CONFORMANCE SUMMARY

There were no non-conformances encountered during the analyses of these samples.

008

06/14/94

LRI Laboratory Chronicle
MS Volatiles

Report # T406121

Port: 06/23/94

Received: 06/09/94

Client: Roy F. Weston, Inc.

Deliverable: Reduced Deliverables

Disk Due:

Regulation: Bureau of Underground Storage Tanks

Special Requirements:

Page: 1

6/17/94

1:12:59 PM

p	b	H	Sample	mat	Test Type	Collected		Analysis		Batch	Data File	Dil File	Calc	% Sol	# Ht
						Date	By	Date	By						
			4: C-11-3	S	8240VOA-10/8240	06/08		6/15	AW	C4638	QC0615		1436.78	86.6	3
			5: C-11-PILE 1	S	8240VOA-10/8240	06/08		6/15	↓	C4635	↓		145.35	86.4	2
			1B: C-11-FB1	W	8240VOA-/8240	06/08		6/13	AW	C4591	QC0613		1.00	N/A	0
			6: C-33-TB	W	8240VOA-/8240	06/08		↓	↓	C4592	↓		↓	N/A	1

QC CHRONICLE

Blanks			Spikes			
#	mat		sample	M file	MS file	MSD file
0613	L	CC4586				
0615	S	^C4633	121-05	^C4635	^C4636	^C4637

Calibration

	Date	File	MS
init	5/17	C	
chk	5/13	CC4585	
	6/15	^C4631	

LIST: DL8240

REVIEWED: *an wa* LAB TAT:
6/20/94

CHECKED: CL 6/20/94



Teterboro Division
 100 Hollister Road
 Teterboro, New Jersey 07605
 FAX: 201-298-5311
 201-288-3700

800-729-0852

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Name	Container ¹	Preservation	Maximum holding time
<u>Bacterial Tests:</u>			
Coliform, fecal and total	P, G	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	6 hours
Fecal streptococci	P, G	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	6 hours
<u>Inorganic Tests:</u>			
Acidity	P, G	Cool, 4°C	14 days
Alkalinity	P, G	Cool, 4°C	14 days
Ammonia	P, G	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
Biochemical oxygen demand	P, G	Cool, 4°C	48 hours
Bromide	P, G	None required	28 days
Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours
Chemical oxygen demand	P, G	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
Chloride	P, G	None required	28 days
Chlorine, total residual	P, G	None required	Analyze immediately
Color	P, G	Cool, 4°C	48 hours
Cyanide, total and amenable to chlorination	P, G	Cool, 4°C, NaOH to pH 12, 0.6g ascorbic acid	14 days
Fluoride	P	None required	28 days
Hardness	P, G	HNO ₃ to pH 2, H ₂ SO ₄ to pH 2	6 months
Hydrogen ion (pH)	P, G	None required	Analyze immediately
Kjeldahl and organic nitrogen	P, G	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
<u>Metals:</u>			
Chromium VI	P, G	Cool, 4°C	24 hours
Mercury	P, G	HNO ₃ to pH 2	28 days
Metals, except chromium VI and mercury	P, G	HNO ₃ to pH 2	6 months
Nitrate	P, G	Cool, 4°C	48 hours
Nitrate-nitrite	P, G	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
Nitrite	P, G	Cool, 4°C	48 hours
Oil and grease	G	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
Organic carbon	P, G	Cool, 4°C, HCl or H ₂ SO ₄ to pH 2	28 days
Orthophosphate	P, G	Filter immediately, cool, 4°C	48 hours
Oxygen, Dissolved Probe Winkler	G Bottle and top do	None required	Analyze immediately
Phenols	G only	Fix on site and store in dark	8 hours
Phenols	G only	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
Phosphorus (elemental)	G	Cool, 4°C	48 hours
Phosphorus, total	P, G	Cool, 4°C, H ₂ SO ₄ to pH 2	28 days
Residue, total	P, G	Cool, 4°C	7 days
Residue, Filterable	P, G	Cool, 4°C	7 days
Residue, Nonfilterable (TSS)	P, G	Cool, 4°C	7 days
Residue, Settleable	P, G	Cool, 4°C	48 hours
Residue, volatile	P, G	Cool, 4°C	7 days
Silica	P	Cool, 4°C	28 days
Specific conductance	P, G	Cool, 4°C	28 days

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES (CONTINUED)

Name	Container ¹	Preservation	Maximum holding time
Sulfate	P, G	Cool, 4°C	28 days
Sulfide	P, G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH 9	7 days
Sulfite	P, G	None required	Analyze immediately
Surfactants	P, G	Cool, 4°C	48 hours
Temperature	P, G	None required	Analyze
Turbidity	P, G	Cool, 4°C	48 hours
<u>Organic Tests:</u>			
Purgeable Halocarbons	G, Teflon-lined septum	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	14 days
Purgeable aromatic hydrocarbons	G, Teflon-lined septum	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃ , HCl to pH 2	14 days
Acrolein and acrylonitrile	G, Teflon-lined septum	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃ , Adjust pH to 4-5	14 days
Phenols	G, Teflon-lined cap	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	7 days until extraction, 40 days after extraction
Benzidines	G, Teflon-lined cap	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	7 days until extraction
Phthalate esters	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitrosamines	G, Teflon-lined cap	Cool, 4°C, store in dark, 0.005% Na ₂ S ₂ O ₃	40 days after extraction
PCBs, acrylonitrile	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
Nitroaromatics and Isophorone	G, Teflon-lined cap	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Polynuclear aromatic hydrocarbons	G, Teflon-lined cap	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Haloethers	G, Teflon-lined cap	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	40 days after extraction
Chlorinated hydrocarbons	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
TCDD	G, Teflon-lined cap	Cool, 4°C, 0.005% Na ₂ S ₂ O ₃	40 days after extraction
Total organic halogens	G, Teflon-lined cap	Cool, 4°C; H ₂ SO ₄ to pH < 2	7 days
<u>Pesticides Tests:</u>			
Pesticides	G, Teflon-lined cap	Cool, 4°C, pH 5-9	40 days after extraction
<u>Radiological Tests:</u>			
Alpha, beta and radium	P, G	HNO ₃ to pH < 2	6 months

¹ Polyethylene (P) or Glass (G)

CASE NARRATIVE

Laboratory Resources, New Jersey Division, received four soil samples plus a field and trip blank for Reduced Deliverables Format on June 9, 1994. The samples were analyzed for the parameters outlined in the chain of custody.

The samples were analyzed within the required holding time. Any parameters which were outside of their respective quality control ranges are noted in the non-conformance summaries.

All soil, sludge and sediment samples are reported in dry weight.

Please contact us if there are any questions regarding the enclosed results.

GC/MS CONFORMANCE/NONCONFORMANCE SUMMARY

work order No. 7406121

MSD
No. Yes.

- | | | | |
|---|---|-------------------------------------|-------------------------------------|
| Chromatograms Labeled/Compounds Identified | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Tune Specifications | | | |
| a. BFB Meets Criteria | | | <input checked="" type="checkbox"/> |
| b. DFTPP Meets Criteria | | | <input checked="" type="checkbox"/> |
| 3. Tuning Frequency | | | |
| Performed every 24 hours for 600 series and 12 hours for 8000 series | | | <input checked="" type="checkbox"/> |
| 4. Calibration Frequency | | | |
| Initial calibration performed within 30 days before sample analysis and continuing calibration performed within 24 hours of sample analysis for 600 series and 12 hours for 8000 series | | | <input checked="" type="checkbox"/> |
| 5. Calibration Requirements | | | |
| a. Calibration Check Compounds (CCCs) | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> |
| b. System Performance Check Compounds (SPCCs) | | | <input type="checkbox"/> |
| 6. Blank Contamination | | | |
| If yes, list compounds and concentrations in each blank: | <input checked="" type="checkbox"/> | | <input type="checkbox"/> |
| a. VOA Fraction | _____ | | |
| b. B/N Fraction | _____ | | |
| c. Acid Fraction | _____ | | |
| 7. Surrogate Recoveries Meet Criteria | | | |
| If not met, list these compounds and their recoveries which fall outside the acceptable range: | | | <input checked="" type="checkbox"/> |
| a. VOA Fraction | _____ | | |
| b. B/N Fraction | _____ | | |
| c. Acid Fraction | _____ | | |
| If not met, were the calculations checked and the results qualified as estimated? | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Matrix Spike/Matrix Spike Duplicate Recoveries Meet Criteria | | | |
| If not met, list these compounds and their recoveries which fall outside the acceptable range: | | | |
| a. VOA Fraction | <u>1,1-Dichloroethene = 55% (MS), 53% (MSD)</u> | | |
| b. B/N Fraction | _____ | | |
| c. Acid Fraction | _____ | | |
| 9. Internal Standard Area and Retention Time Shifts Meet Criteria | | | |
| Internal standard area between -50% and +100% of daily standard | | | <input checked="" type="checkbox"/> |
| 10. Extraction Holding Time Met | | | |
| If not met, list number of days exceeded for each sample: | | <u>NA</u> | <input type="checkbox"/> |
| _____ | | | |
| _____ | | | |
| 11. Analysis Holding Time Met | | | |
| If not met, list number of days exceeded for each sample: | | | <input checked="" type="checkbox"/> |
| _____ | | | |
| _____ | | | |

Laboratory Supervisor: _____

Chongli Lee

Date: _____

6/20/94

013

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

C-11-FB1

Lab Sample ID: T406121-1B

Matrix: [soil/water] WATER

Lab File ID: >C4591

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240VOA

Level: [low/med] LOW

Date Received: 06/09/94

% Moisture: NA

Date Analyzed : 06/13/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/L	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-69-4	-----Trichlorofluoromethane	5	U
75-09-2	-----Methylene Chloride	5	U
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
156-60-5	-----trans-1,2-Dichloroethene	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
110-75-8	-----2-Chloroethyl vinyl ether	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
75-25-2	-----Bromoform	5	U
591-78-6	-----2-Hexanone	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

C-11-FB1

Lab Sample ID: T406121-1B

Matrix: [soil/water] WATER

Lab File ID: >C4591

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240UOA

Level: [low/med] LOW

Date Received: 06/09/94

% Moisture: NA

Date Analyzed : 06/13/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/L	Q
100-42-5-----	Styrene	5	U
108-38-3-----	meta + para-Xylenes	5	U
95-47-6-----	ortho-Xylene	5	U

015

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

C-11-3

Lab Sample ID: T406121-04

Matrix: [soil/water] SOIL

Lab File ID: >C4638

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240UOA

Level: [low/med] MED

Date Received: 06/09/94

% Moisture: 13.0

Date Analyzed : 06/15/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 10.0(uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	-----Chloromethane	14000	U
74-83-9	-----Bromomethane	14000	U
75-01-4	-----Vinyl Chloride	14000	U
75-00-3	-----Chloroethane	14000	U
75-69-4	-----Trichlorofluoromethane	7200	U
75-09-2	-----Methylene Chloride	7200	U
67-64-1	-----Acetone	14000	U
75-15-0	-----Carbon Disulfide	7200	U
75-35-4	-----1,1-Dichloroethene	7200	U
75-34-3	-----1,1-Dichloroethane	7200	U
156-60-5	-----trans-1,2-Dichloroethene	7200	U
67-66-3	-----Chloroform	7200	U
107-06-2	-----1,2-Dichloroethane	7200	U
78-93-3	-----2-Butanone	14000	U
71-55-6	-----1,1,1-Trichloroethane	7200	U
56-23-5	-----Carbon Tetrachloride	7200	U
108-05-4	-----Vinyl Acetate	14000	U
75-27-4	-----Bromodichloromethane	7200	U
78-87-5	-----1,2-Dichloropropane	7200	U
10061-01-5	-----cis-1,3-Dichloropropene	7200	U
79-01-6	-----Trichloroethene	7200	U
124-48-1	-----Dibromochloromethane	7200	U
110-75-8	-----2-Chloroethyl vinyl ether	7200	U
79-00-5	-----1,1,2-Trichloroethane	7200	U
71-43-2	-----Benzene	7200	U
10061-02-6	-----trans-1,3-Dichloropropene	7200	U
75-25-2	-----Bromoform	7200	U
591-78-6	-----2-Hexanone	14000	U
108-10-1	-----4-Methyl-2-Pentanone	14000	U
127-18-4	-----Tetrachloroethene	7200	U
79-34-5	-----1,1,2,2-Tetrachloroethane	7200	U
108-88-3	-----Toluene	7200	U
108-90-7	-----Chlorobenzene	7200	U
100-41-4	-----Ethylbenzene	6700	J

\$16

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

Lab Sample ID: T406121-04

C-11-3

Matrix: [soil/water] SOIL

Lab File ID: >C4638

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240VOA

Level: [low/med] MED

Date Received: 06/09/94

% Moisture: 13.0

Date Analyzed : 06/15/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 10.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 10.0(uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/KG	Q
100-42-5-----	Styrene	7200	U
108-38-3-----	meta + para-Xylenes	17000	
95-47-6-----	ortho-Xylene	2000	J

017

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

C-11-PILE 1

Lab Sample ID: T406121-05

Matrix: [soil/water] SOIL

Lab File ID: >C4635

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240VDA

Level: [low/med] MED

Date Received: 06/09/94

% Moisture: 14.0

Date Analyzed : 06/15/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	-----Chloromethane	1500	U
74-83-9	-----Bromomethane	1500	U
75-01-4	-----Vinyl Chloride	1500	U
75-00-3	-----Chloroethane	1500	U
75-69-4	-----Trichlorofluoromethane	730	U
75-09-2	-----Methylene Chloride	380	J
67-64-1	-----Acetone	1500	U
75-15-0	-----Carbon Disulfide	730	U
75-35-4	-----1,1-Dichloroethene	730	U
75-34-3	-----1,1-Dichloroethane	730	U
156-60-5	-----trans-1,2-Dichloroethene	730	U
67-66-3	-----Chloroform	730	U
107-06-2	-----1,2-Dichloroethane	730	U
78-93-3	-----2-Butanone	1500	U
71-55-6	-----1,1,1-Trichloroethane	730	U
56-23-5	-----Carbon Tetrachloride	730	U
108-05-4	-----Vinyl Acetate	1500	U
75-27-4	-----Bromodichloromethane	730	U
78-87-5	-----1,2-Dichloropropane	730	U
10061-01-5	-----cis-1,3-Dichloropropene	730	U
79-01-6	-----Trichloroethene	730	U
124-48-1	-----Dibromochloromethane	730	U
110-75-8	-----2-Chloroethyl vinyl ether	730	U
79-00-5	-----1,1,2-Trichloroethane	730	U
71-43-2	-----Benzene	730	U
10061-02-6	-----trans-1,3-Dichloropropene	730	U
75-25-2	-----Bromoform	730	U
591-78-6	-----2-Hexanone	1500	U
108-10-1	-----4-Methyl-2-Pentanone	1500	U
127-18-4	-----Tetrachloroethene	730	U
79-34-5	-----1,1,2,2-Tetrachloroethane	730	U
108-88-3	-----Toluene	730	U
108-90-7	-----Chlorobenzene	730	U
100-41-4	-----Ethylbenzene	1100	

019

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

Lab Sample ID: T406121-05

C-11-PILE 1

Matrix: [soil/water] SOIL

Lab File ID: >C4635

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240VOA

Level: [low/med] MED

Date Received: 06/09/94

% Moisture: 14.0

Date Analyzed : 06/15/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

UG/KG

Q

100-42-5-----	Styrene	730	U
108-38-3-----	meta + para-Xylenes	730	U
95-47-6-----	ortho-Xylene	730	U

020

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

C-33-TB

Lab Sample ID: T406121-06

Matrix: [soil/water] WATER

Lab File ID: >C4592

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240VOA

Level: [low/med] LOW

Date Received: 06/09/94

% Moisture: NA

Date Analyzed : 06/13/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/L	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-69-4	-----Trichlorofluoromethane	5	U
75-09-2	-----Methylene Chloride	3	J
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
156-60-5	-----trans-1,2-Dichloroethene	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropane	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
110-75-8	-----2-Chloroethyl vinyl ether	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropane	5	U
75-25-2	-----Bromoform	5	U
591-78-6	-----2-Hexanone	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U

022

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

Client Sample ID No.

Lab Name: LRI

IC-33-TB

Lab Sample ID: T406121-06

Matrix: [soil/water] WATER

Lab File ID: >C4592

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240UOA

Level: [low/med] LOW

Date Received: 06/09/94

% Moisture: NA

Date Analyzed : 06/13/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/L	Q
100-42-5	Styrene	5	U
108-38-3	meta + para-Xylenes	5	U
95-47-6	ortho-Xylene	5	U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK-QC0613

UBLK13

Matrix: [soil/water] WATER

Lab File ID: >C4586

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240VOA

Level: [low/med] LDW

Date Received:

% Moisture: NA

Date Analyzed : 06/13/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/L	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-69-4	-----Trichlorofluoromethane	5	U
75-09-2	-----Methylene Chloride	5	U
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
156-60-5	-----trans-1,2-Dichloroethene	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
110-75-8	-----2-Chloroethyl vinyl ether	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
75-25-2	-----Bromoform	5	U
591-78-6	-----2-Hexanone	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK-QC0613

UBLK13

Matrix: [soil/water] WATER

Lab File ID: >C4586

Sample wt/vol: 5.0 [g/mL] ML

Run Type: 8240UOA

Level: [low/med] LOW

Date Received:

% Moisture: NA

Date Analyzed : 06/13/94

GC Column : CAP ID: 0.53 (mm)

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/L	Q
100-42-5-----	Styrene	5	U
108-38-3-----	meta + para-Xylenes	5	U
95-47-6-----	ortho-Xylene	5	U

025

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK15-QC0615

UBLK15

Matrix: [soil/water] SOIL

Lab File ID: >C4633

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240VDA

Level: [low/med] MED

Date Received:

% Moisture: NA

Date Analyzed: 06/15/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	UG/KG	Q
74-87-3	-----Chloromethane	1300	U
74-83-9	-----Bromomethane	1300	U
75-01-4	-----Vinyl Chloride	1300	U
75-00-3	-----Chloroethane	1300	U
75-69-4	-----Trichlorofluoromethane	630	U
75-09-2	-----Methylene Chloride	630	U
67-64-1	-----Acetone	1300	U
75-15-0	-----Carbon Disulfide	630	U
75-35-4	-----1,1-Dichloroethene	630	U
75-34-3	-----1,1-Dichloroethane	630	U
156-60-5	-----trans-1,2-Dichloroethene	630	U
67-66-3	-----Chloroform	630	U
107-06-2	-----1,2-Dichloroethane	630	U
78-93-3	-----2-Butanone	1300	U
71-55-6	-----1,1,1-Trichloroethane	630	U
56-23-5	-----Carbon Tetrachloride	630	U
108-05-4	-----Vinyl Acetate	1300	U
75-27-4	-----Bromodichloromethane	630	U
78-87-5	-----1,2-Dichloropropane	630	U
10061-01-5	-----cis-1,3-Dichloropropene	630	U
79-01-6	-----Trichloroethene	630	U
124-48-1	-----Dibromochloromethane	630	U
110-75-8	-----2-Chloroethyl vinyl ether	630	U
79-00-5	-----1,1,2-Trichloroethane	630	U
71-43-2	-----Benzene	630	U
10061-02-6	-----trans-1,3-Dichloropropene	630	U
75-25-2	-----Bromoform	630	U
591-78-6	-----2-Hexanone	1300	U
108-10-1	-----4-Methyl-2-Pentanone	1300	U
127-18-4	-----Tetrachloroethene	630	U
79-34-5	-----1,1,2,2-Tetrachloroethane	630	U
108-88-3	-----Toluene	630	U
108-90-7	-----Chlorobenzene	630	U
100-41-4	-----Ethylbenzene	630	U

026

ORGANICS ANALYSIS DATA SHEET-VOLATILE COMPOUNDS

METHOD BLANK

Lab Name: LRI

Lab Sample ID: UBLK15-QC0615

UBLK15

Matrix: [soil/water] SOIL

Lab File ID: >C4633

Sample wt/vol: 4.0 [g/mL] G

Run Type: 8240VOA

Level: [low/med] MED

Date Received:

% Moisture: NA

Date Analyzed : 06/15/94

GC Column: CAP. ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 100.0(uL)

CONCENTRATION UNITS:

CAS NO.

COMPOUND

UG/KG

Q

100-42-5-----	Styrene	630	U
108-38-3-----	meta + para-Xylenes	630	U
95-47-6-----	ortho-Xylene	630	U

027

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOBENZENE (BFB)

Lab Code: LRI

Lab File ID: >C4181

BFB Injection Date: 5/17/94

Instrument ID: MSD/C

BFB Injection Time: 11:35

Column: CAP ID: 0.53

Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.4
75	30.0 - 60.0% of mass 95	45.8
95	Base Peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.9
173	Less than 1.0% of mass 95	0.0(0.0)1
174	Greater than 50% of mass 95	84.8
175	5.0 - 9.0 % of mass 174	6.4(7.5)1
176	95.0 - 101.0% of mass 174	81.6(96.2)1
177	5.0 - 9.0% of mass 176	5.3(6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANK, AND STANDARDS:

CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1 USTD050	IUSTD050	>C4182	940517	12:16
2 USTD010	IUSTD010	>C4183	940517	12:53
3 USTD020	IUSTD020	>C4184	940517	13:30
4 USTD100	IUSTD100	>C4185	940517	14:08
5 USTD150	IUSTD150	>C4186	940517	14:45
6 USTD200	IUSTD200	>C4187	940517	15:22

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: LRI

Lab Code: LRI

Lab File ID: >C4582

BFB Injection Date: 6/13/94

Instrument ID: MSD/C

BFB Injection Time: 10:24

GC Column : CAP ID: 0.53

Heated Purge: (Y/N)N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	46.3
95	Base Peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.4
173	Less than 1.0% of mass 95	0.0(0.0)1
174	Greater than 50% of mass 95	75.9
175	5.0 - 9.0 % of mass 174	5.6(7.4)1
176	95.0 - 101.0% of mass 174	75.6(99.6)1
177	5.0 - 9.0% of mass 176	4.9(6.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANK, AND STANDARDS:

CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1 USTD050	USTD050	>C4585	940613	12:38
2 UBLK13	UBLK-QC0613	>C4586	940613	13:27
3 UBLK13	UBLK13-QC0613	>C4587	940613	14:17
4 IC-11-FB1	T406121-1B	>C4591	940613	16:50
5 IC-33-TB	T406121-06	>C4592	940613	17:26
6 136-A-DRM-01	T406097-01TCLP	>C4594	940613	18:44

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: LRI

Lab Code: LRI

Lab File ID: >C4630

BFB Injection Date: 6/15/94

Instrument ID: MSD/C

BFB Injection Time: 10:21

GC Column : CAP ID:0.53

Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	47.5
95	Base Peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.6
173	Less than 1.0% of mass 95	0.0(0.0)1
174	Greater than 50% of mass 95	85.5
175	5.0 - 9.0 % of mass 174	6.5(7.7)1
176	95.0 - 101.0% of mass 174	82.4(96.4)1
177	5.0 - 9.0% of mass 176	5.2(6.3)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANK, AND STANDARDS:

CLIENT	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
1 USTD050	USTD050	>C4631	940615	10:59
2 UBLK15	UBLK-QC0615	>C4632	940615	11:56
3 UBLK15	UBLK15-QC0615	>C4633	940615	12:33
4 IFB	IT406131-11	>C4634	940615	13:10
✓ 5 IC-11-PILE 1	IT406121-05	>C4635	940615	13:59
✓ 6 IC-11-PILE 1 MS	IT406121-05MS	>C4636	940615	14:37
✓ 7 IC-11-PILE 1 MS	IT406121-05MSD	>C4637	940615	15:15
✓ 8 IC-11-3	IT406121-04	>C4638	940615	15:56
9 IB-4 1-3'	IT406165-05	>C4639	940615	16:33
10 IB-4 5-7'	IT406165-06	>C4640	940615	17:10
11 IB-5 1-3'	IT406165-07	>C4641	940615	17:48
12 IWST-1	IT406090-1BTCLP	>C4643	940615	19:03
13 IWST-3	IT406090-3BTCLP	>C4644	940615	19:42
14 IWST-4	IT406090-4BTCLP	>C4645	940615	20:21

Initial Calibration Data
HSL Compounds

No: Instrument ID: 2824A11 191

 Operator: LAB RESOURCES Calibration Date: 05/17/94

 Contract No: -----

Minimum RF for SPCC is .3 Maximum % RSD for CCC is 30%

Laboratory ID: >C4184 >C4182 >C4185 >C4186 >C4187

Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	RRT	RF	% RSD	CCC	SPCC
Bromomethane	1.17424	.90036	.88334	1.01346	.96411	.202	.98710	11.829		**
Chloride	1.48829	1.21628	1.13520	1.28896	1.22496	.218	1.27074	10.491	*	
Methane	1.09647	.76217	.62521	.77032	.70983	.265	.79280	22.619		
Methane	.84867	.67866	.61600	.68171	.65192	.285	.69539	12.893		
olein	.10442	.10297	.10640	.12006	.13281	.423	.11333	11.328		(Conc=40.0,100.0,200.0,30
Perfluoromethane	1.82034	2.07376	1.80841	1.94024	2.13370	.331	1.95529	7.494		
chloroethene	1.15077	1.45343	1.26804	1.34100	1.48917	.428	1.34048	10.290	*	
chlorotrifluoroethane										
non Disulfide	3.40924	4.05181	3.69452	3.88470	4.36558	.449	3.88117	9.302		
	.23505	.30211	.29888	.29079	.37227	.470	.29982	16.282		
acetonitrile	.24873	.26953	.27892	.35778	.38044	.650	.30708	18.960		
ethylene Chloride	1.54821	1.82857	1.70835	1.74685	1.97627	.562	1.76165	8.938		
acetonitrile	.05505	.04586	.06454	.05250	.08413	.535	.06042	24.586		(Conc=200.0,500.0,1000.0,
tert-Butyl Methyl Ether	3.94775	3.73577	3.60201	4.05070	4.18685	.667	3.90461	6.046		
tert-Butyl Alcohol	.10096	.11015	.12622	.14636	.17504	.720	.13175	22.556		(Conc=40.0,100.0,200.0,30
1,2-Dichloroethene	1.34434	1.67762	1.46143	1.52136	1.71590	.642	1.54413	9.959		
propyl Ether	8.04190	7.47245	7.19945	8.35862	8.47143	.840	7.90877	7.012		
1,1-Dichloroethane	2.63358	3.05424	2.94815	3.08109	3.45718	.770	3.03485	9.739	**	
1,2-Dichloroethene	1.36846	1.74579	1.57129	1.62516	1.78210	.941	1.61856	10.141		
form	2.61112	2.98930	2.85212	2.92945	3.30342	1.046	2.93708	8.520	*	
1,1-Dichloroethane	1.98727	2.27393	2.24237	2.29293	2.61859	1.173	2.28302	9.841		
-Dichloroethane-d4 (S)	2.01276	2.45697	2.09644	1.60366	2.24068	1.155	2.08210	15.180		
Acetate	1.21868	.90029	1.18308	1.25463	.99239	.646	1.10982	13.950		
none	.04713	.10510	.10828	.11488	.15227	.752	.10553	35.742		
1,1-Trichloroethane	.50417	.58388	.53478	.55617	.60043	.824	.55589	6.902		
Tetrachloride	.38179	.45091	.40394	.45685	.48690	.856	.43608	9.738		
e	.88330	1.00446	.96500	.98212	1.09276	.898	.98553	7.651		
chloroethene	.35642	.42137	.39758	.40269	.44275	1.038	.40416	7.931		
-Dichloropropane	.35044	.40259	.40667	.42109	.47355	1.075	.41087	10.728	*	
1,1-Dichloromethane	.56273	.61658	.58411	.62489	.66046	1.144	.60975	6.199		

- Response Factor (Subscript is amount in ppb)
- Average Relative Retention Time (RT Std/RT Istd)
- Average Response Factor
- Percent Relative Standard Deviation
- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: 2824A11 191
 Director: LAB RESOURCES Calibration Date: 05/17/94
 Contract No: _____

Minimum RF for SPCC is .3 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >C4184 >C4182 >C4185 >C4186 >C4187					RRT	RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF					
	20.00	50.00	100.00	150.00	200.00					
Chloroethyl vinyl ether	.12471	.18347	.17637	.21507	.26361	1.221	.19264	26.600		
trans-1,3-Dichloropropene	.40936	.47416	.49071	.48846	.57678	1.349	.48789	12.240		
cis-1,3-Dichloropropene	.49977	.57711	.57462	.58361	.65938	1.233	.57889	9.765		
1,1,1-Trichloroethane	.27885	.31490	.31483	.31169	.35776	1.380	.31560	8.883		
bromochloromethane	.47114	.54945	.55919	.56567	.63504	1.449	.55610	10.484		
acetone	.42441	.48782	.48949	.50753	.59315	1.735	.50048	12.115		**
ethyl-2-Pentanone	.35891	.42038	.45285	.45802	.57699	.820	.45343	17.545		
toluene-d8 (S)	1.33252	1.65560	1.35190	1.01699	1.42504	.819	1.35641	16.893		
toluene	.70663	.79818	.77997	.80017	.89934	.827	.79686	8.636		*
1,1-dichloroethene	.45692	.54358	.50188	.51238	.57016	.894	.51698	8.315		
acetone	.20471	.23428	.27114	.27484	.35632	.928	.26826	21.251		
chlorobenzene	.83893	.99429	.94201	.95897	1.07744	1.003	.96233	8.988		**
benzene	.42353	.48915	.47006	.49172	.54343	1.025	.48358	8.936		*
ortho + para-Xylenes	.52945	.60800	.58132	.58510	.62905	1.043	.58658	6.354		(Conc=40.0,100.0,200.0,30
ortho-Xylene	.51596	.58386	.55501	.57294	.62408	1.092	.57037	6.941		
styrene	.88774	.99721	.98346	.98022	1.09317	1.096	.98836	7.379		
chlorofluorobenzene (S)	.98491	1.25286	1.01462	.74492	1.02527	1.161	1.00452	17.946		
1,1,2,2-Tetrachloroethane	.57155	.62304	.64709	.66857	.81624	1.193	.66530	13.797		**
1,3-Dichlorobenzene	.89479	.98715	.96958	.99460	1.08915	1.306	.98705	7.037		
1,4-Dichlorobenzene	.84078	1.04503	.99739	1.02125	1.13241	1.329	1.00737	10.541		
1,2-Dichlorobenzene	.95076	.93621	.91180	.92756	1.02150	1.358	.94957	4.488		
phthalene	-	-	-	-	-	-	-	-		

- Response Factor (Subscript is amount in ppb)
- Average Relative Retention Time (RT Std/RT Istd)
- Average Response Factor
- SD - Percent Relative Standard Deviation
- C - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 06/13/94
 Contractor: LAB RESOURCES Time: 12:38
 Contract No: _____ Laboratory ID: >C4585
 Instrument ID: 2824A11 191 Initial Calibration Date: 05/17/94
SDFFB 5D2 - 8240

Minimum RF for SPCC is .3 Maximum % Diff for CCC is 25%

Compound	RF	RF	%Diff	CCC	SPCC
Chloromethane	.98710	.98403	.31	**	
Vinyl Chloride	1.27074	1.41806	11.59	*	
Bromomethane	.79280	1.01212	27.66		
Chloroethane	.69539	.92682	33.28		
Protein	.11333	.10839	4.36		(Conc=100.00)
Dichlorofluoromethane	1.95529	1.59931	18.21		
1,1-Dichloroethene	1.34048	1.20404	10.18	*	
Dichlorotrifluoroethane	-	-	-		
Carbon Disulfide	3.88117	2.16212	44.29		
Acetone	.29982	.45675	52.34		
Acrylonitrile	.30708	.38623	25.77		
Ethylene Chloride	1.76165	2.08015	18.08		
Acetonitrile	.06042	.08632	42.87		(Conc=500.00)
tert-Butyl Methyl Ether	3.90461	4.49878	15.22		
tert-Butyl Alcohol	.13175	.15070	14.39		(Conc=100.00)
trans-1,2-Dichloroethene	1.54413	1.57898	2.26		
Diisopropyl Ether	7.90877	10.3383	30.72		
1,1-Dichloroethane	3.03485	3.66043	20.61	**	
cis-1,2-Dichloroethene	1.61856	1.93103	19.31		
Chloroform	2.93708	3.55568	21.06	*	
1,2-Dichloroethane	2.28302	2.77438	21.52		
1,2-Dichloroethane-d4 (S)	2.08210	2.21714	6.49		
Vinyl Acetate	1.10982	1.67628	51.04		
2-Butanone	.10553	.13923	31.93		
1,1,1-Trichloroethane	.55589	.59538	7.10		
Carbon Tetrachloride	.43608	.43796	.43		
Benzene	.98553	1.01861	3.36		
Trichloroethene	.40416	.40137	.69		
1,2-Dichloropropane	.41087	.48025	16.89	*	
Bromodichloromethane	.60975	.73393	20.36		
2-Chloroethyl vinyl ether	.19264	.16124	16.30		
trans-1,3-Dichloropropene	.48789	.54588	11.89		

RF - Response Factor from daily standard file at 50.00 ppb

RF - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 06/13/94
 Contractor: LAB RESOURCES _____ Time: 12:38
 Contract No: _____ Laboratory ID: >C4585
 Instrument ID: 2824A11 191 _____ Initial Calibration Date: 05/17/94

Minimum RF for SPCC is .3 Maximum % Diff for CCC is 25%

Compound	\bar{RF}	RF	%Diff	CCC	SPCC
cis-1,3-Dichloropropene	.57889	.64532	11.47		
1,2-Trichloroethane	.31560	.35487	12.44		
o-bromochloromethane	.55610	.60235	8.32		
Bromoform	.50048	.52046	3.99	**	
Methyl-2-Pentanone	.45343	.55945	23.38		
luene-d8 (S)	1.35641	1.12453	17.10		
Toluene	.79686	.82781	3.88	*	
tetrachloroethene	.51698	.46219	10.60		
Hexanone	.26826	.31492	17.39		
Chlorobenzene	.96233	.99106	2.99	**	
ethylbenzene	.48358	.49335	2.02	*	
meta + para-Xylenes	.58658	.61224	4.37		(Conc=100.00)
ortho-Xylene	.57037	.59000	3.44		
Styrene	.98836	1.06082	7.33		
omofluorobenzene (S)	1.00452	1.01583	1.13		
1,1,2,2-Tetrachloroethane	.66530	.71811	7.94	**	
1,3-Dichlorobenzene	.98705	1.03460	4.82		
1,4-Dichlorobenzene	1.00737	1.10073	9.27		
1,2-Dichlorobenzene	.94957	.97340	2.51		
Naphthalene	-	-	-		

RF - Response Factor from daily standard file at 50.00 ppb

\bar{RF} - Average Response Factor from Initial Calibration Form UI

Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

037

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 06/15/94
 Contractor: LAB RESOURCES _____ Time: 10:59
 Contract No: _____ Laboratory ID: >C4631
 _____ *SPCC STD - 8240*
 Instrument ID: 2824A11 191 _____ Initial Calibration Date: 05/17/94

Minimum RF for SPCC is .3 Maximum % Diff for CCC is 25%

Compound	RF	RF	%Diff	CCC	SPCC
Chloromethane	.98710	.73346	25.70		**
Vinyl Chloride	1.27074	1.18273	6.93	*	
Bromomethane	.79280	.88119	11.15		
Chloroethane	.69539	.86347	24.17		
Acrolein	.11333	.06541	42.29		(Conc=100.00)
Dichlorofluoromethane	1.95529	1.47536	24.55		
1,1-Dichloroethane	1.34048	1.14361	14.69	*	
Trichlorotrifluoroethane	-	-	-		
Carbon Disulfide	3.88117	1.83531	52.71		
Acetone	.29982	.42815	42.80		
Acrylonitrile	.30708	.24986	18.63		
Methylene Chloride	1.76165	1.97872	12.32		
Acetonitrile	.06042	.04370	27.67		(Conc=500.00)
n-Butyl Methyl Ether	3.90461	3.35803	14.00		
tert-Butyl Alcohol	.13175	.12213	7.30		(Conc=100.00)
trans-1,2-Dichloroethane	1.54413	1.59077	3.02		
Isopropyl Ether	7.90877	6.64829	15.94		
1,1-Dichloroethane	3.03485	3.30994	9.06		**
cis-1,2-Dichloroethane	1.61856	1.97252	21.87		
Chloroform	2.93708	3.57229	21.63	*	
1,2-Dichloroethane	2.28302	2.63213	15.29		
1,2-Dichloroethane-d4 (S)	2.08210	1.93535	7.05		
Ethyl Acetate	1.10982	1.40716	26.79		
Butanone	.10553	.13306	26.09		
1,1,1-Trichloroethane	.55589	.59859	7.68		
Carbon Tetrachloride	.43608	.34045	21.93		
Benzene	.98553	1.09248	10.85		
Trichloroethane	.40416	.43447	7.50		
1,2-Dichloropropane	.41087	.46296	12.68	*	
1,1-Dichloroethane	.60975	.71550	17.34		
trans-1,2-Dichloroethane	.19264	.24734	28.39		
trans-1,3-Dichloropropene	.48789	.00109	99.78		

RF - Response Factor from daily standard file at 50.00 ppb

RF - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: _____ Calibration Date: 06/15/94
 Contractor: LAB RESOURCES _____ Time: 10:59
 Contract No: _____ Laboratory ID: >C4631
 Instrument ID: 2824A11 191 _____ Initial Calibration Date: 05/17/94

Minimum \bar{RF} for SPCC is .3 Maximum % Diff for CCC is 25%

Compound	\bar{RF}	RF	%Diff	CCC	SPCC
cis-1,3-Dichloropropene	.57889	.67851	17.21		
1,1,2-Trichloroethane	.31560	.36440	15.46		
Bromochloromethane	.55610	.56570	1.73		
Chloroform	.50048	.48008	4.08		**
4-Methyl-2-Pentanone	.45343	.53382	17.73		
Toluene-d8 (S)	1.35641	1.32862	2.05		
Toluene	.79686	.93487	17.32	*	
Tetrachloroethene	.51698	.48824	5.56		
n-Hexanone	.26826	.29440	9.75		
Toluene	.96233	1.07917	12.14		**
o-Xylbenzene	.48358	.54580	12.87	*	
meta + para-Xylenes	.58658	.68423	16.65		(Conc=100.00)
ortho-Xylene	.57037	.66732	17.00		
p-Xylene	.98836	1.20205	21.62		
Bromofluorobenzene (S)	1.00452	.84238	16.14		
1,2,2-Tetrachloroethane	.66530	.70373	5.78		**
3-Dichlorobenzene	.98705	1.10943	12.40		
1,4-Dichlorobenzene	1.00737	1.15505	14.66		
1,2-Dichlorobenzene	.94957	1.07608	13.32		
Phthalene	-	-	-		

RF - Response Factor from daily standard file at 50.00 ppb
 \bar{RF} - Average Response Factor from Initial Calibration Form VI
 %Diff - % Difference from original average or curve
 CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

VOLATILE SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: LRI

Sample ID: T406121-05

Sample Data File: >C4635

Spiked Sample Data File: >C4636

Spike Duplicate Data File: >C4637

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	7267	ND	3984	55*	159-172
Trichloroethene	7267	ND	5713	79	162-137
Benzene	7267	ND	6128	84	166-142
Toluene	7267	ND	6095	84	159-139
Chlorobenzene	7267	ND	6534	90	160-133

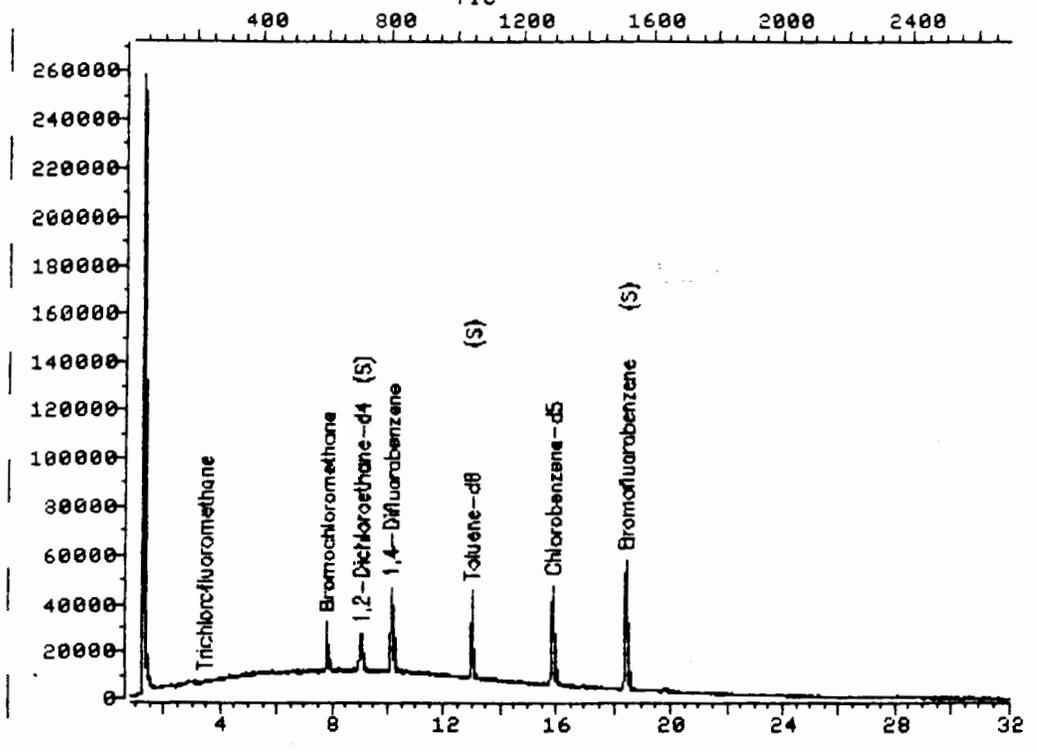
COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	7267	3869	53*	4	22 159-172
Trichloroethene	7267	6035	83	5	24 162-137
Benzene	7267	6141	85	1	21 166-142
Toluene	7267	5844	80	5	21 159-139
Chlorobenzene	7267	6391	88	2	21 160-133

RPD: 0 out of 5 outside limits
 RECOVERY: 2 out of 10 outside limits

Comment: _____

TOTAL ION CHROMATOGRAM

File >C4591 35.0-300.0 amu. MSD/C, T406121-1B,L,5.0,C-1
TIC



Data File: >C4591::C4

Quant Output File: ^C4591::QT

Name: MSD/C,

Instrument ID: C

Misc: T406121-1B,L,5.0,C-11-FB1,

Id File: IDDCL::C2

Title: EPA METHOD 8240A, VOA FOR SW-846.

Last Calibration: 940517 19:04

Last Qcal Time: 940613 12:38

Operator ID: ANDY

Quant Time : 940613 17:23

Injected at: 940613 16:50

QUANT REPORT

Page 1

Operator ID: ANDY
 Output File: ^C4591::QT
 Data File: >C4591::C4
 Line: MSD/C,
 Disc: T406121-1B,L,5.0,C-11-FB1,

Quant Rev: 7 Quant Time: 940613 17:23
 Injected at: 940613 16:50
 Dilution Factor: 1.00000
 Instrument ID: C

File: IDDC1::C2
 Title: EPA METHOD 8240A, UOA FOR SW-846.
 Last Calibration: 940517 19:04

Last Qcal Time: 940613 12:38

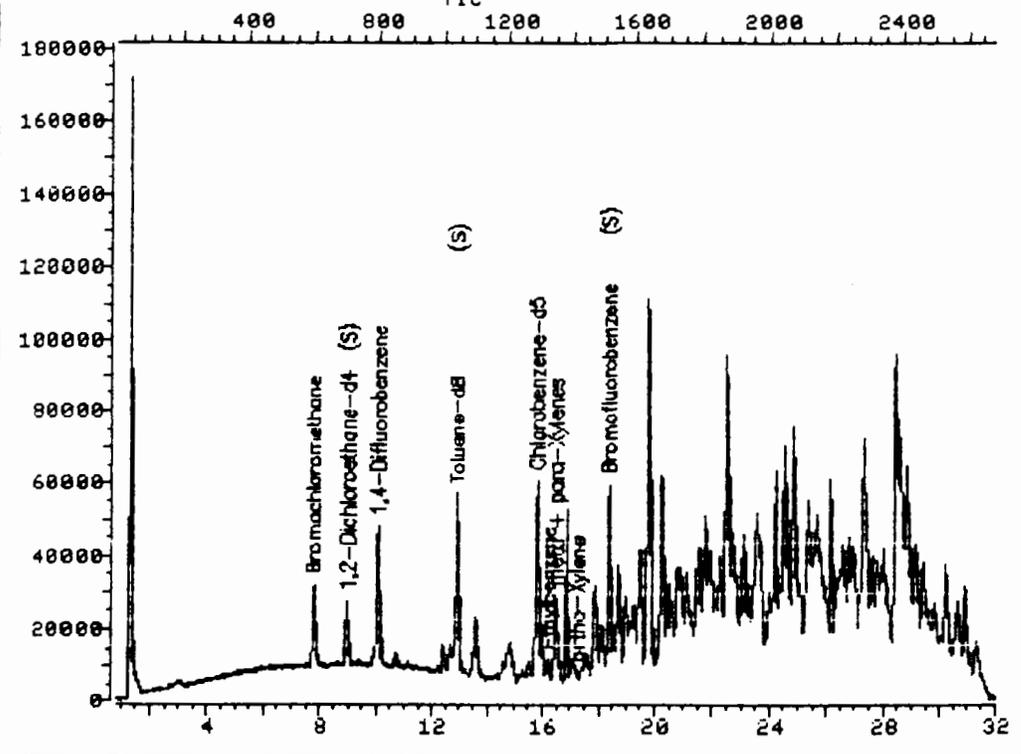
Compound	R.T.	Q ion	Area	Conc	Units	q
1) *Bromochloromethane	7.79	128.0	17372	50.00	ppb	95
7) Trichlorofluoromethane	3.42	101.0	191	344	ppb	70
3) 1,2-Dichloroethane-d4 (S)	9.02	65.0	37426	48.58	ppb	93
24) *1,4-Difluorobenzene	10.11	114.0	89113	50.00	ppb	97
39) *Chlorobenzene-d5	15.87	117.0	74028	50.00	ppb	95
1) Toluene-d8 (S)	12.97	98.0	82696	49.67	ppb	97
3) Bromofluorobenzene (S)	18.43	95.0	76735	51.02	ppb	88

Compound is ISTD

au 6/14/94

TOTAL ION CHROMATOGRAM

File >C4638 35.0-300.0 amu. MSD/C, T406121-04,S,0.004,0



Data File: >C4638::C4
 Name: MSD/C,
 Misc: T406121-04,S,0.004,C-11-3,

Quant Output File: ^C4638::QT
 Instrument ID: C

Id File: IDDCL::C2
 Title: EPA METHOD 8240A, UOA FOR SW-846.
 Last Calibration: 940517 19:04

Last Qcal Time: 940615 10:59

Operator ID: ANN
 Quant Time : 940615 16:29
 Injected at: 940615 15:56

QUANT REPORT

Operator ID: ANN
 Output File: ^C4638::QT
 Data File: >C4638::C4
 Name: MSD/C,
 Desc: T406121-04,S,0.004,C-11-3,

Quant Rev: 7 Quant Time: 940615 16:29
 Injected at: 940615 15:56
 Dilution Factor: 1.00000
 Instrument ID: C

ID File: IDDCL::C2
 Title: EPA METHOD 8240A, UOA FOR SW-846.
 Last Calibration: 940517 19:04

Last Qcal Time: 940615 10:59

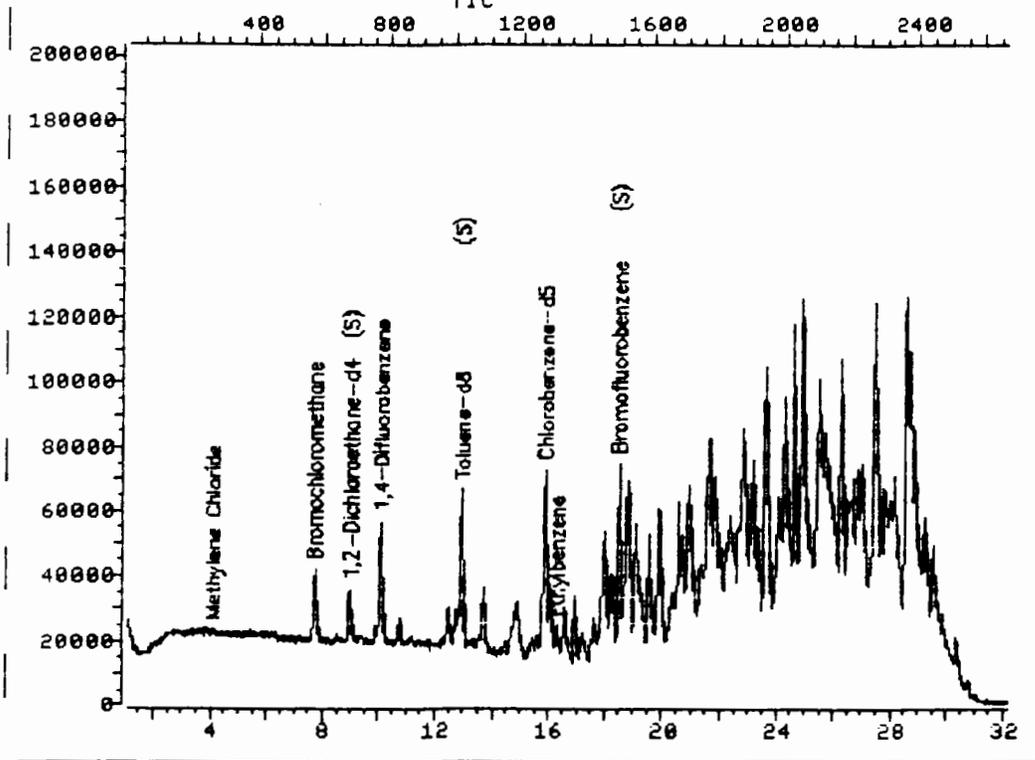
Compound	R.T.	Q ion	Area	Conc	Units	q
1) *Bromochloromethane	7.74	128.0	19980	50.00	ppb	94
3) 1,2-Dichloroethane-d4 (S)	8.96	65.0	40849	52.82	ppb	94
24) *1,4-Difluorobenzene	10.05	114.0	104013	50.00	ppb	98
39) *Chlorobenzene-d5	15.77	117.0	84370	50.00	ppb	94
1) Toluene-d8 (S)	12.88	98.0	109043	48.64	ppb	97
6) Ethylbenzene	16.18	106.0	4290	4.66	ppb	86
47) meta + para-Xylenes	16.45	106.0	13826	11.98	ppb	85
8) ortho-Xylene	17.25	106.0	1541	1.37	ppb	91
0) Bromofluorobenzene (S)	18.35	95.0	76706	53.96	ppb	94

* Compound is ISTD

③ or 6/17/94

TOTAL ION CHROMATOGRAM

File >C4635 35.0-300.0 amu. MSD/C, T406121-05,S,0.04,C- TIC



Data File: >C4635::C4 Quant Output File: ^C4635::QT
 Name: MSD/C, Instrument ID: C
 Misc: T406121-05,S,0.04,C-11-PILE 1,

Id File: IDDC1::C2
 Title: EPA METHOD 8240A, VOA FOR SW-846.
 Last Calibration: 940517 19:04 Last Qcal Time: 940615 10:59

Operator ID: ANN
 Quant Time : 940615 14:33
 Injected at: 940615 13:59

QUANT REPORT

Page 1

Operator ID: ANN
 Output File: ^C4635::QT
 Data File: >C4635::C4
 Name: MSD/C,
 Sample: T406121-05,S,0.04,C-11-PILE 1,
 ID File: IDDCL::C2
 Title: EPA METHOD 8240A, VOA FOR SW-846.
 Last Calibration: 940517 19:04

Quant Rev: 7 Quant Time: 940615 14:33
 Injected at: 940615 13:59
 Dilution Factor: 1.00000
 Instrument ID: C

Last Qcal Time: 940615 10:59

Compound	R.T.	Q ion	Area	Conc	Units	q
1) *Bromochloromethane	7.71	128.0	21600	50.00	ppb	99
3) Methylene Chloride	4.09	84.0	2222M	2.60	ppb	87
23) 1,2-Dichloroethane-d4 (S)	8.98	65.0	44130	52.78	ppb	90
24) *1,4-Difluorobenzene	10.10	114.0	109815	50.00	ppb	99
9) *Chlorobenzene-d5	15.88	117.0	85629	50.00	ppb	98
-1) Toluene-d8 (S)	12.95	98.0	116316	51.12	ppb	94
46) Ethylbenzene	16.30	106.0	6851	7.33	ppb	85
0) Bromofluorobenzene (S)	18.47	95.0	74749	51.81	ppb	89

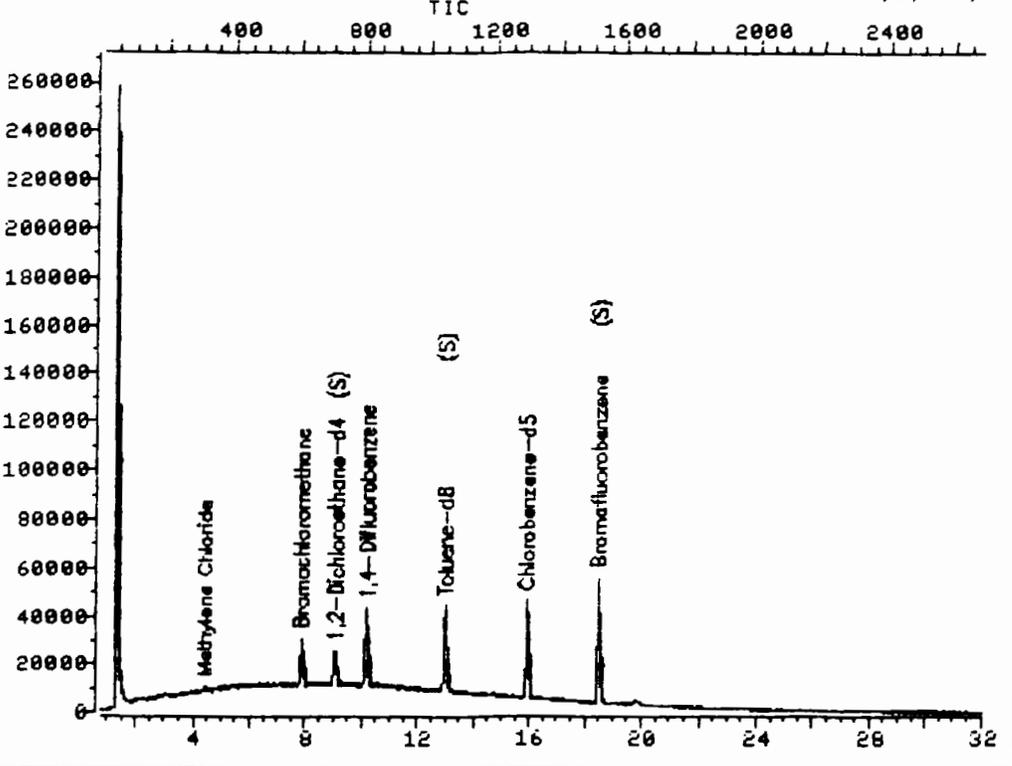
* Compound is ISTD

2

6117194

TOTAL ION CHROMATOGRAM

file >C4592 35.0-300.0 amu. MSD/C, T406121-06,L,5.0,C-3



Data File: >C4592::C4
 Name: MSD/C,
 Misc: T406121-06,L,5.0,C-33-TB,

Quant Output File: ^C4592::QT
 Instrument ID: C

Id File: IDDCL::C2
 Title: EPA METHOD 8240A, VOA FOR SW-846.

Last Calibration: 940517 19:04 Last Qcal Time: 940613 12:38

Operator ID: ANDY
 Quant Time : 940614 10:15
 Injected at: 940613 17:26

QUANT REPORT

Page 1

Operator ID: ANDY
 Input File: ^C4592::QT
 Data File: >C4592::C4
 Name: MSD/C,
 Desc: T406121-06,L,5.0,C-33-TB,

Quant Rev: 7 Quant Time: 940614 10:15
 Injected at: 940613 17:26
 Dilution Factor: 1.00000
 Instrument ID: C

ID File: IDDCCL::C2
 Title: EPA METHOD 8240A, VOA FOR SW-846.
 Last Calibration: 940517 19:04

Last Qcal Time: 940613 12:38

Compound	R.T.	Q ion	Area	Conc	Units	q
1) *Bromochloromethane	7.85	128.0	15593	50.00	ppb	93
3) Methylene Chloride	4.39	84.0	1967M	3.03	ppb	88
23) 1,2-Dichloroethane-d4 (S)	9.07	65.0	33944	49.09	ppb	92
4) *1,4-Difluorobenzene	10.16	114.0	84889	50.00	ppb	89
9) *Chlorobenzene-d5	15.87	117.0	71642	50.00	ppb	92
41) Toluene-d8 (S)	12.98	98.0	82748	51.36	ppb	99
50) Bromofluorobenzene (S)	18.44	95.0	71866	49.37	ppb	94

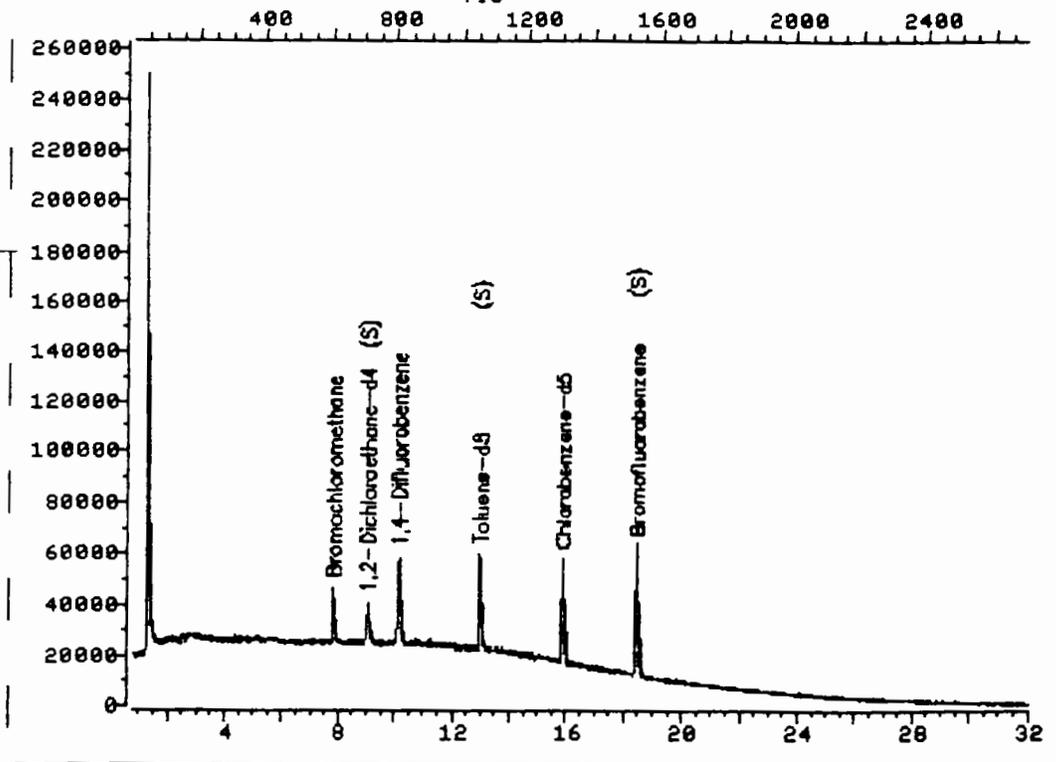
Compound is ISTD

①

ca- 6/17/94

TOTAL ION CHROMATOGRAM

File >C4586 35.0-300.0 amu. MSD/C, VBLK-QC0613,L,5.0,VB
TIC



Data File: >C4586::C4
Name: MSD/C,
Misc: VBLK-QC0613,L,5.0,VBLK13,

Quant Output File: CC4586::QT
Instrument ID: C

Id File: IDDCL::C2
Title: EPA METHOD 8240A, VOA FOR SW-846.
Last Calibration: 940517 19:04 Last Qcal Time: 940613 12:38

Operator ID: ANDY
Quant Time : 940613 16:00
Injected at: 940613 13:27

QUANT REPORT

Page 1

Operator ID: ANDY
 Output File: CC4586::QT
 Data File: >C4586::C4
 Name: MSD/C,
 Misc: VBLK-QC0613,L,5.0,VBLK13,

Quant Rev: 7 Quant Time: 940613 16:00
 Injected at: 940613 13:27
 Dilution Factor: 1.00000
 Instrument ID: C

File: IDDCL::C2
 Title: EPA METHOD 8240A, UOA FOR SW-846.
 Last Calibration: 940517 19:04

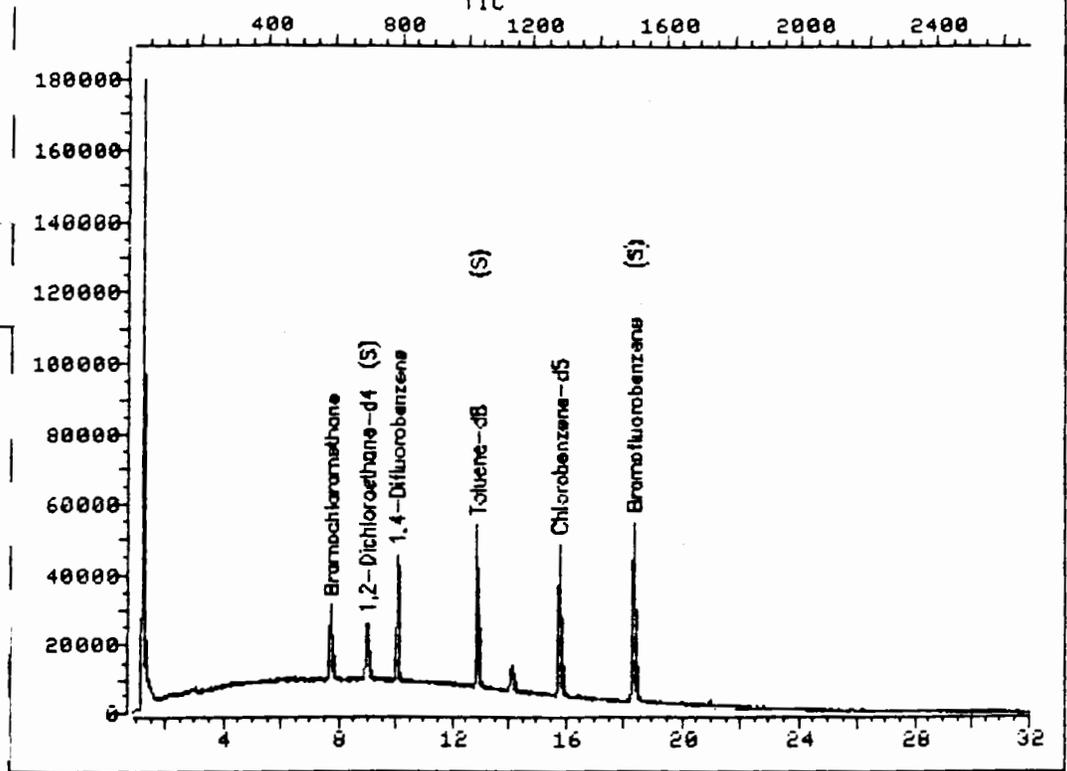
Last Qual Time: 940613 12:38

Compound	R.T.	Q ion	Area	Conc	Units	q
1) *Bromochloromethane	7.81	128.0	18365	50.00	ppb	95
3) 1,2-Dichloroethane-d4 (S)	9.03	65.0	38748	47.58	ppb	97
4) *1,4-Difluorobenzene	10.13	114.0	88271	50.00	ppb	95
39) *Chlorobenzene-d5	15.88	117.0	74046	50.00	ppb	97
41) Toluene-d8 (S)	12.98	98.0	83738	50.28	ppb	94
0) Bromofluorobenzene (S)	18.45	95.0	73783	49.05	ppb	80

* Compound is ISTD

TOTAL ION CHROMATOGRAM

File >C4633 35.0-300.0 amu. MSD/C, VBLK15-QC0615,S,0.04



Data File: >C4633::C4

Quant Output File: ^C4633::QT

Name: MSD/C,

Instrument ID: C

Misc: VBLK15-QC0615,S,0.04,UBLK15,

Id File: IDDCL::C2

Title: EPA METHOD 8240A, VOA FOR SW-846.

Last Calibration: 940517 19:04

Last Qcal Time: 940615 10:59

Operator ID: ANN

Quant Time : 940615 13:07

Injected at: 940615 12:33

PETROLEUM HYDROCARBONS CONFORMANCE/NONCONFORMANCE SUMMARY

WORK ORDER No. 7406 121

No Yes

1. Blank Contamination X —
If yes, list concentrations in each blank:

2. Matrix Spike Recoveries Meet Criteria — X
If not met, list those recoveries which fall outside the acceptable range:

3. Sample Duplicate Analyses Meet QC Criteria — X
If not met, list those criteria which fall outside the acceptable range:

4. GC Fingerprinting Chromatograms Submitted for All Standards, Blanks, and Samples (If applicable) — —

5. Extraction Holding Time Met — X
If not met, list number of days exceeded for each sample:

6. Analysis Holding Time Met — X
If not met, list number of days exceeded for each sample:

NOTE: EPA method 418.1 permits the use of either a scanning or fixed wavelength infrared (IR) spectrophotometer for determining petroleum hydrocarbon concentrations. Laboratory Resources, Inc., uses fixed wavelength instruments; therefore, IR spectra are not included in this data package.

Laboratory Supervisor: Alga L. Linn

Date: 6/22/94
057

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Division: New Jersey

LRI Report No: T406121

LRI Sample No: 1

Customer: Roy F. Weston, Inc.

Location: NJ

Project: Colts Neck PHC

Sample Description: C-11-FB1

Date Collected: 06/08/94

Date Received: 06/09/94

Matrix: Water

Percent Moisture: N/A

Units in Wet Weight

<u>Parameter</u>	<u>Result</u>	<u>QL</u>	<u>Units</u>	<u>Started</u> <u>Date</u>	<u>By</u>	<u>Completed</u> <u>Date</u>	<u>By</u>	<u>Dilution</u>
PHC (TPH) by 418.1 Petroleum Hydrocarbons, Total Recoverable	0.50 U	0.50	mg/L	06/10/94	JC	06/10/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Customer: Roy F. Weston, Inc.

Division: New Jersey

Location: NJ

LRI Report No: T406121

Project: Colts Neck PHC

LRI Sample No: 2

Sample Description: C-11-1

Date Collected: 06/08/94

Matrix: Soil

Date Received: 06/09/94

Percent Moisture: 18.8%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	58 U	58	mg/kg	06/10/94	JC	06/10/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T406121
LRI Sample No: 3

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-11-2

Date Collected: 06/08/94
Date Received: 06/09/94

Matrix: Soil
Percent Moisture: 21.3%
Units in Dry Weight

<u>Parameter</u>	<u>Result</u>	<u>QL</u>	<u>Units</u>	<u>Started</u>		<u>Completed</u>		<u>Dilution</u>
				<u>Date</u>	<u>By</u>	<u>Date</u>	<u>By</u>	
<u>PHC (TPH) by 418.1</u>								
Petroleum Hydrocarbons, Total Recoverable	60 U	60	mg/kg	06/10/94	JC	06/10/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T406121
LRI Sample No: 4

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-11-3

Date Collected: 06/08/94
Date Received: 06/09/94

Matrix: Soil
Percent Moisture: 13.4%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	3900	570	mg/kg	06/10/94	JC	06/10/94	JC	10

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T406121
LRI Sample No: 5

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-11-PILE 1

Date Collected: 06/08/94
Date Received: 06/09/94

Matrix: Soil
Percent Moisture: 13.6%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	2300	270	mg/kg	06/10/94	JC	06/10/94	JC	5

General Chemistry Method Blank Analysis

This blank was analyzed concurrent with the analysis of the workorder:

T406121

Element	Result mg/L		MDL mg/L	Dil.
Ammonia-NH3	U		0.50	1
BOD	U		NA	1
COD	U		10	1
Chloride, Total	U		2.0	1
Chromium Hexavalent	U		0.05	1
Cyanide, Total	U		0.01	1
MBAS	U		1.5	1
Nitrate	U		0.10	1
Nitrite	U		0.01	1
Oil & Grease	U		10	1
pH	U		NA	1
Pet. Hydrocarbons	U	X	0.50	1
Phenolics, Total	U		0.05	1
Phosphorus, Total	U		0.025	1
Sulfate	U		5.0	1
Sulfite	U		1.0	1
Sulfide	U		1.0	1
Dissolved Solids	U		10	1
Suspended Solids	U		5.0	1
Kjeldahl Nitrogen	U		0.50	1
TOC	U		10	1
Turbidity	U		0.20	1
Conductivity	U		1.0	1
Alkalinity	U		2.0	1
Color	U		5.0	1
Fluoride	U		0.20	1
Orthophosphate	U		0.01	1
Hardness	U		5.0	1

(*) Elevated MDLs due to dilution for range
 (**) Elevated MDLs due to dilution for interferences
 X = Undetected analyte of required analyses.

Workorder No.: T406121

Matrix: Non-Aqueous

Parameters	Blank Spike	Sample Result	Spike Added	Spiked Sample		Sample Result	Sample Dup.	% Rec.	RPD		Batch QC Sample ID
	% Rec	mg/Kg **	mg/Kg **	mg/Kg **	% Rec.	mg/Kg**	mg/Kg **	Limits	%RES	%Limit	
Ammonia								75-125		15	
Cr Hexavalent								85-115		10	
Cyanide								70-125		5	
Ignitability								----		3 °F	
Kjeldahl Nitrogen								65-135		20	
Nitrate								75-125		10	
Oil & Grease								70-135		50	
pH (Corrosivity)								----		0.2 pH	
Pet. Hydrocarbons	85	<47.0	467	304	65	<47.0	<47.0	50-140	ND	40	T406041-02
Phenolics								70-135		50	
% Moisture						8.00	8.50	----	5	20	T405352-04
Reactive Cyanide								80-120		10	
Reactive Sulfide								80-120		10	

Note: The QC is based on a batch system in which a sample is chosen at random for matrix spike and/or duplicate analyses for a given matrix and represents all of the samples included in that batch.

* = Duplicate analysis outside of required quality control limits.

** = Results expressed in mg/Kg wet weight.

N = Matrix Spike recovery outside of required quality control limits.

NA=Not applicable since the sample concentration is 4X the amount of spike added.

ND=Not Determinable

The RPD limits for pH is 0.2 pH units.

The RPD for Ignitability is 3 degrees Fahrenheit.

065

TABLE OF ABBREVIATIONS

ORGANIC QUALIFIERS

B= Compound also detected in method blank
J= Below method detection limit
E= Exceeds calibration range
D= Dilution performed
U= Undetected
RE= Re-analysis performed

INORGANIC QUALIFIERS

EC= Estimated count
TNTC= Too numerous to count
QL= Quantitation limit
U= Undetected
S= Result quantitated by Method of Standard Additions
*= Duplicate analysis outside of required quality control
limits
N= Matrix spike recovery outside of required quality control
limits
ND= Not determinable
T= True Color
A= Apparent Color

LABORATORY ANALYSIS REPORT

Client: Roy F. Weston, Inc.
One Weston Way
West Chester, PA 19389

Project Manager: Mr. Steve Rock

Project: Earle NWB Tank C-1
Colts Neck, NJ

Laboratory Report #: T405332

<u>Lab ID No.:</u>	<u>Sample Reference</u>	<u>Matrix</u>	<u>Collection Date & Time</u>	
T405332-01	C-1-FB 1	Aqueous	05/25/94	11:10
T405332-02	C-1-TB 1	Aqueous	05/25/94	-----
T405332-03	C-1-1	Soil	05/25/94	13:15
T405332-04	C-1-2	Soil	05/25/94	13:20
T405332-05	C-1-3	Soil	05/25/94	13:30
T405332-06	C-1-4	Soil	05/25/94	13:40
T405332-07	C-1-5 PILE	Soil	05/25/94	14:40

Date Received: May 25, 1994

Date of Report: June 7, 1994

N.J. Certification #02046
N.Y. Certification #11321
P.A. Certification #68-420


Moe R. Amirsoleymani
Quality Assurance Manager

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METHODOLOGY SUMMARY

GENERAL CHEMISTRY

Reference: EPA 600/4-79-020, 1983 revision.

Potable water, aqueous wastes and surface water are conducted in accordance with EPA methods 305.1 for Acidity, 310.1 for Alkalinity, 325.3 for Chloride, 330.5 for Residual Chlorine, 120.1 for Conductivity, 335.2 for Total Cyanide, 335.1 for Amenable Cyanide, 130.2 for Hardness, 350.1 for Ammonia-NH₃, 353.1 for Nitrate-NO₃, 354.1 for Nitrite-NO₂, 351.2 for Kjeldahl Nitrogen, 140.1 for Odor, 413.1 for Oil & Grease (Gr), 418.1 for Petroleum Hydrocarbons (IR), 150.1 for pH, 420.1 for Total Phenolics, 365.2 for Total Phosphorus, 160.1 for Dissolved Solids, 160.2 for Suspended Solids, 375.4 for Sulfate, 376.1 for Sulfide, 377.1 for Sulfite, 415.1 for Total Organic Carbon and 180.1 for Turbidity.

Reference: Hach Handbook of Water Analysis, 1979. Approved in the Federal Register, April 21, 1980; pg. 26811.

Potable water, aqueous wastes and surface water are conducted according to Hach method 8000.

Reference: Standard Methods, 16th Edition, 1986.

Potable water, aqueous wastes and surface water are conducted according to method 507 for Biochemical Oxygen Demand (5 and 20 Day), 512B for MBAS (Surfactants), 421B for Dissolved Oxygen and 209B for Volatile Solids.

LABORATORY RESOURCES, INC. - TETERBORO 1993
 GENERAL CHEMISTRY METHODOLOGY
 SOIL MATRIX

PARAMETER	METHOD (1)
Acidity	305.1
Alkalinity	310.1
BOD, 5 day	507(4)
BOD, 20 day	507(4)
Chloride	9252
Chlorine, Residual	330.5
COO	HACH
Conductivity	9050
Cyanide, Total	9010
Cyanide, Amenable	9010
Ignitability	1010
MBAS, Surfactants	5128(4)
Nitrogen, NH3	350.1(2)
Nitrogen, NO3	9200
Nitrogen, NO2	354.1
Nitrogen, TKN	351.2(2)
Odor	140.1
Petroleum Hydro, Soil	418.1(5)
pH	9045
Phenolics, Total	9065
Phosphorous, Total	365.2(2)
Solids, Fixed	2090(4)
Solids, Total	CLP
Solids, Volatile	2090(4)
Sulfate	9038
Sulfide	9030
Sulfite	377.1(2)
TDC	415.1
Turbidity	180.1

- (1) = Solid and hazardous waste methods approved by NJDEP ECRA and RCRA and listed in EPS SW 846 3rd Edition, 1986.
- (2) = Water and wastewater methods approved in the Federal Register in section 40 CFR 136 and listed in EPA 600/4-79-020.
- (4) = Methods cited in Standard Methods 16th Edition, 1986.
- (5) = NJDEP modification of EPA Method 418.1.
- CLP = Contract Laboratory Program procedure for total solids determination, SOU 7/88, Part F, page D-83.
- HACH = Method 8000, Hach Handbook of Water Analysis, 1979. Approved in the federal Register, April 21, 1980, page 26811.

INORGANIC NON-CONFORMANCE SUMMARY

There were no non-conformances encountered during the analyses of these samples.

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Name	Container ¹	Preservation	Maximum holding time
Bacterial Tests:			
Coliform, fecal and total	P, G	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	6 hours
Fecal streptococci	P, G	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	6 hours
Inorganic Tests:			
Acidity	P, G	Cool, 4°C	14 days
Alkalinity	P, G	Cool, 4°C	14 days
Ammonia	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Biochemical oxygen demand	P, G	Cool, 4°C	48 hours
Bromide	P, G	None required	28 days
Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours
Chemical oxygen demand	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Chloride	P, G	None required	28 days
Chlorine, total residual	P, G	None required	Analyze immediately
Color	P, G	Cool, 4°C	48 hours
Cyanide, total and amenable to chlorination	P, G	Cool, 4°C, NaOH to pH12, 0.6g ascorbic acid	14 days
Fluoride	P	None required	28 days
Hardness	P, G	HNO ₃ to pH2, H ₂ SO ₄ to pH2	6 months
Hydrogen ion (pH)	P, G	None required	Analyze immediately
Kjeldahl and organic nitrogen	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Metals:			
Chromium VI	P, G	Cool, 4°C	24 hours
Mercury	P, G	HNO ₃ to pH2	28 days
Metals, except chromium VI and mercury	P, G	HNO ₃ to pH2	6 months
Nitrate	P, G	Cool, 4°C	48 hours
Nitrate-nitrite	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Nitrite	P, G	Cool, 4°C	48 hours
Oil and grease	G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Organic carbon	P, G	Cool, 4°C, HCl or H ₂ SO ₄ to pH2	28 days
Orthophosphate	P, G	Filter immediately, cool, 4°C	48 hours
Oxygen, Dissolved Probe Winkler	G Bottle and top do	None required	Analyze immediately
Phenols	G only	Fix on site and store in dark	8 hours
Phosphorus (elemental)	G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Phosphorus, total	P, G	Cool, 4°C	48 hours
Residue, total	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Residue, Filterable	P, G	Cool, 4°C	7 days
Residue, Nonfilterable (TSS)	P, G	Cool, 4°C	7 days
Residue, Settleable	P, G	Cool, 4°C	7 days
Residue, volatile	P, G	Cool, 4°C	48 hours
Silica	P	Cool, 4°C	7 days
Specific conductance	P, G	Cool, 4°C	28 days

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES (CONTINUED)

Name	Container ¹	Preservation	Maximum holding time
Sulfate	P, G	Cool, 4°C	28 days
Sulfide	P, G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH 9	7 days
Sulfite	P, G	None required	Analyze immediately
Surfactants	P, G	Cool, 4°C	48 hours
Temperature	P, G	None required	Analyze
Turbidity	P, G	Cool, 4°C	48 hours
<u>Organic Tests:</u>			
Purgeable Halocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	14 days
Purgeable aromatic hydrocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , HCl to pH 2	14 days
Acrolein and acrylonitrile	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , Adjust pH to 4-5	14 days
Phenols	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	7 days until extraction, 40 days after extraction
Benzidines	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	7 days until extraction
Phthalate esters	G, Teflon-lined cap	Cool, 4°C	7 days until extraction 40 days after extraction
Nitrosamines	G, Teflon-lined cap	Cool, 4°C, store in dark, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
PCBs, acrylonitrile	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
Nitroaromatics and isophorone	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Polynuclear aromatic hydrocarbons	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Haloethers	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
Chlorinated hydrocarbons	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
TCDD	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
Total organic halogens	G, Teflon-lined cap	Cool, 4°C; H ₂ SO ₄ to pH < 2	7 days
<u>Pesticides Tests:</u>			
Pesticides	G, Teflon-lined cap	Cool, 4°C, pH 5-9	40 days after extraction
<u>Radiological Tests:</u>			
Alpha, beta and radium	P, G	HNO ₃ to pH 2	6 months

¹ Polyethylene (P) or Glass (G)

CASE NARRATIVE

Laboratory Resources, New Jersey Division, received five soil samples plus a field and trip blank for Reduced Deliverables Format on May 25, 1994. The samples were analyzed for the parameters outlined in the chain of custody.

The samples were analyzed within the required holding time. Any parameters which were outside of their respective quality control ranges are noted in the non-conformance summary.

All soil, sludge and sediment results are reported in dry weight.

Please contact us if there are any questions regarding the enclosed results.

PETROLEUM HYDROCARBONS CONFORMANCE/NONCONFORMANCE SUMMARY

7405332

No Yes

1. Blank Contamination
If yes, list concentrations in each blank:

2. Matrix Spike Recoveries Meet Criteria
If not met, list those recoveries which fall outside the acceptable range:

3. Sample Duplicate Analyses Meet QC Criteria
If not met, list those criteria which fall outside the acceptable range:

4. GC Fingerprinting Chromatograms Submitted for All Standards, Blanks, and Samples (If applicable)

N/A

5. Extraction Holding Time Met
If not met, list number of days exceeded for each sample:

6. Analysis Holding Time Met
If not met, list number of days exceeded for each sample:

NOTE: EPA method 418.1 permits the use of either a scanning or fixed wavelength infrared (IR) spectrophotometer for determining petroleum hydrocarbon concentrations. Laboratory Resources, Inc., uses fixed wavelength instruments; therefore, IR spectra are not included in this data package.

Laboratory Supervisor:

Alga Lulu

Date:

6/02/94
09

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405332
LRI Sample No: 1

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-1-FB1

Date Collected: 05/25/94
Date Received: 05/25/94

Matrix: Water
Percent Moisture: N/A
Units in Wet Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	0.50 U	0.50	mg/L	05/26/94	JC	05/26/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405332
LRI Sample No: 3

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-1-1

Date Collected: 05/25/94
Date Received: 05/25/94

Matrix: Soil
Percent Moisture: 17.0%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
<u>PHC (TPH) by 418.1</u>								
Petroleum Hydrocarbons, Total Recoverable	120	56	mg/kg	05/26/94	JC	05/26/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405332
LRI Sample No: 4

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-1-2

Date Collected: 05/25/94
Date Received: 05/25/94

Matrix: Soil
Percent Moisture: 16.2%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	55	55	mg/kg	05/26/94	JC	05/26/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405332
LRI Sample No: 5

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-1-3

Date Collected: 05/25/94
Date Received: 05/25/94

Matrix: Soil
Percent Moisture: 13.8%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	57 U	57	mg/kg	05/26/94	JC	05/26/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Customer: Roy F. Weston, Inc.

Division: New Jersey

Location: NJ

LRI Report No: T405332

Project: Colts Neck PHC

LRI Sample No: 6

Sample Description: C-1-4

Date Collected: 05/25/94

Matrix: Soil

Date Received: 05/25/94

Percent Moisture: 13.9%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
<u>PHC (TPH) by 418.1</u>								
Petroleum Hydrocarbons, Total Recoverable	150	55	mg/kg	05/26/94	JC	05/26/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405332
LRI Sample No: 7

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-1-5 Pile

Date Collected: 05/25/94
Date Received: 05/25/94

Matrix: Soil
Percent Moisture: 14.0%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	90	56	mg/kg	05/26/94	JC	05/26/94	JC	

General Chemistry Method Blank Analysis

This blank was analyzed concurrent with the analysis of the workorder:
T4-05-332

Element	Result mg/L	MDL mg/L	Dil.
Ammonia-NH3	U	0.50	1
BOD	U	NA	1
COD	U	10	1
Chloride, Total	U	2.0	1
Chromium Hexavalent	U	0.05	1
Cyanide, Total	U	0.01	1
MBAS	U	1.5	1
Nitrate	U	0.10	1
Nitrite	U	0.01	1
Oil & Grease	U	10	1
pH	U	NA	1
Pet. Hydrocarbons	U	X	0.50
Phenolics, Total	U	0.05	1
Phosphorus, Total	U	0.025	1
Sulfate	U	5.0	1
Sulfite	U	1.0	1
Sulfide	U	1.0	1
Dissolved Solids	U	10	1
Suspended Solids	U	5.0	1
Kjeldahl Nitrogen	U	0.50	1
TOC	U	10	1
Turbidity	U	0.20	1
Conductivity	U	1.0	1
Alkalinity	U	2.0	1
Color	U	5.0	1
Fluoride	U	0.20	1
Orthophosphate	U	0.01	1
Hardness	U	5.0	1

(*) Elevated MDLs due to dilution for range
 (**) Elevated MDLs due to dilution for interferences
 X = Undetected analyte of required analyses.

Workorder No.:

T4-05-332

Matrix: Non-Aqueous

Parameters	Blank Spike	Sample Result	Spike Added	Spiked Sample		Sample Result	Sample Dup.	% Rec.	RPD		Batch QC Sample ID
	% Rec	mg/Kg **	mg/Kg **	mg/Kg **	% Rec.	mg/Kg**	mg/Kg **	Limits	%RES	%Limit	
Ammonia								75-125		15	
Cr Hexavalent								85-115		10	
Cyanide								70-125		5	
Ignitability								----		3 °F	
Kjeldahl Nitrogen								65-135		20	
Nitrate								75-125		10	
Oil & Grease								70-135		50	
pH (Corrosivity)								----		0.2 pH	
Pet. Hydrocarbons	97	<49.0	490	395	81	<49.0	<49.0	50-140	ND	30	T405001-21
Phenolics								70-135		50	
% Moisture						42.3	38.1	----	10	20	T405213-21
Reactive Cyanide								80-120		10	
Reactive Sulfide								80-120		10	

Note: The QC is based on a batch system in which a sample is chosen at random for matrix spike and/or duplicate analyses for a given matrix and represents all of the samples included in that batch.

* = Duplicate analysis outside of required quality control limits.

** = Results expressed in mg/Kg wet weight.

N = Matrix Spike recovery outside of required quality control limits.

NA=Not applicable since the sample concentration is 4X the amount of spike added.

ND=Not Determinable

The RPD limits for pH is 0.2 pH units.

The RPD for Ignitability is 3 degrees Fahrenheit.

TABLE OF ABBREVIATIONS

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J= Below method detection limit
E= Exceeds calibration range
D= Dilution performed
U= Undetected
RE= Re-analysis performed

INORGANIC QUALIFIERS

EC= Estimated count
TNTC= Too numerous to count
QL= Quantitation limit
U= Undetected
S= Result quantitated by Method of Standard Additions
*= Duplicate analysis outside of required quality control
limits
N= Matrix spike recovery outside of required quality control
limits
ND= Not determinable
T= True Color
A= Apparent Color

LABORATORY ANALYSIS REPORT

Client: Roy F. Weston, Inc.
One Weston Way
West Chester, PA 19380

Project Manager: Mr. Steve Rock

Project: Earle Naval Weapons Base
Colts Neck, NJ

Laboratory Report #: T405307

<u>Lab ID No.:</u>	<u>Sample Reference</u>	<u>Matrix</u>	<u>Collection Date & Time</u>	
T405307-01	FB-1	Aqueous	05/23/94	11:40
T405307-02	TB	Aqueous	05/23/94	-----
T405307-03	C-25-1	Soil	05/23/94	11:30
T405307-04	C-25-2	Soil	05/23/94	14:55
T405307-05	C-25-3	Soil	05/23/94	15:00
T405307-06	C-25-4	Soil	05/23/94	15:05
T405307-07	C-25-5	Soil	05/23/94	15:10
T405307-08	DUPLICATE 1	Soil	05/23/94	-----
T405307-09	C-25-2 MS	Soil	05/23/94	14:55
T405307-10	C-25-2 MSD	Soil	05/23/94	14:55

Date Received: May 23, 1994

Date of Report: May 31, 1994

N.J. Certification #02046
N.Y. Certification #11321
P.A. Certification #68-420

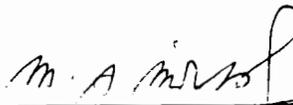

Moe R. Amirsoleymani
Quality Assurance Manager

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Date: 5 / 25 / 94

LABORATORY RESOURCES INC.
CHANGE ORDER FORM

Date Notified by Client: 5 / 25 / 94

Work Order Number: 7405307

Client Name: Waste

Informed by: Steve Rock

Verbal Fax Written Per Chain of Custody

Departments Notified by: 6

Changed in LIMS by: 6 Date: 5/25

Departments Notified:

Extractions Metals Report Gen
 Volatiles P240 Wet Chem Sample Mngmt.
 Semi-Volatiles

Original filed with chain of cutody / data file

<u>Sample Number(s)</u>	<u>Addition(s)</u>	<u>Deletion(s)</u>
01		UOA
02		↓

Comments: IF Then PHC / UOA c// PHC < 1000 is
do not analyze UOA samples

Due Date: / /

Signature or Initials: _____

INTERNAL CHAIN OF CUSTODY

INSTRUCTIONS: Use 1 form for each 20 samples or aliquot.

Laboratory Person Breaking Field Seal on Sample Shuttle & Accepting Responsibility for Sample
 Laboratory: Laboratory Resources, Location: Teterboro
 Name: Roseann Morra - Title: Spl. Mgmt. - Supervisor

Field Sample Seal No. _____ Date Broken 5/23/94 Military Time Seal Broken 17:00
 Case No. _____ Analytical Parameter/Fraction _____

SAMPLE NO.	ALIQUT/EXTRACT NO.	SAMPLE NO.	ALIQUT/EXTRACT NO.
740 5 307 - 01			
02			
03			
04			
05			
06			
07			
08			
09			
10			

Date	Time	RELINQUISHED BY	RECEIVED BY	PURPOSE OF CHANGE OF CUSTODY
5/24	4:00	PRINTED NAME K. DAGGUMATI	PRINTED NAME JIM CALINOS	3-10 PHC-SX #1 PHC-WX DEPLETED
		SIGNATURE <i>K. Daggumati</i>	SIGNATURE <i>Jim Calinos</i>	
5/24	18:00	PRINTED NAME JIM CALINOS	PRINTED NAME K. DAGGUMATI	3-10 <i>return</i>
		SIGNATURE <i>Jim Calinos</i>	SIGNATURE <i>K. Daggumati</i>	
		PRINTED NAME	PRINTED NAME	
		SIGNATURE	SIGNATURE	
		PRINTED NAME	PRINTED NAME	
		SIGNATURE	SIGNATURE	
		PRINTED NAME	PRINTED NAME	
		SIGNATURE	SIGNATURE	
		PRINTED NAME	PRINTED NAME	
		SIGNATURE	SIGNATURE	
		PRINTED NAME	PRINTED NAME	
		SIGNATURE	SIGNATURE	
		PRINTED NAME	PRINTED NAME	
		SIGNATURE	SIGNATURE	

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METHODOLOGY SUMMARY

GENERAL CHEMISTRY

Reference: EPA 600/4-79-020, 1983 revision.

Potable water, aqueous wastes and surface water are conducted in accordance with EPA methods 305.1 for Acidity, 310.1 for Alkalinity, 325.3 for Chloride, 330.5 for Residual Chlorine, 120.1 for Conductivity, 335.2 for Total Cyanide, 335.1 for Amenable Cyanide, 130.2 for Hardness, 350.1 for Ammonia-NH₃, 353.1 for Nitrate-NO₃, 354.1 for Nitrite-NO₂, 351.2 for Kjeldahl Nitrogen, 140.1 for Odor, 413.1 for Oil & Grease (Gr), 418.1 for Petroleum Hydrocarbons (IR), 150.1 for pH, 420.1 for Total Phenolics, 365.2 for Total Phosphorus, 160.1 for Dissolved Solids, 160.2 for Suspended Solids, 375.4 for Sulfate, 376.1 for Sulfide, 377.1 for Sulfite, 415.1 for Total Organic Carbon and 180.1 for Turbidity.

Reference: Hach Handbook of Water Analysis, 1979. Approved in the Federal Register, April 21, 1980; pg. 26811.

Potable water, aqueous wastes and surface water are conducted according to Hach method 8000.

Reference: Standard Methods, 16th Edition, 1986.

Potable water, aqueous wastes and surface water are conducted according to method 507 for Biochemical Oxygen Demand (5 and 20 Day), 512B for MBAS (Surfactants), 421B for Dissolved Oxygen and 209B for Volatile Solids.

LABORATORY RESOURCES, INC. - TETERSORO 1993
 GENERAL CHEMISTRY METHODOLOGY
 SOIL MATRIX

PARAMETER	METHOD (1)
Acidity	305.1
Alkalinity	310.1
BOD, 5 day	507(4)
BOD, 20 day	507(4)
Chloride	9252
Chlorine, Residual	330.5
COO	HACH
Conductivity	9050
Cyanide, Total	9010
Cyanide, Amenable	9010
Ignitability	1010
MBAS, Surfactants	5128(4)
Nitrogen, NH3	350.1(2)
Nitrogen, NO3	9200
Nitrogen, NO2	354.1
Nitrogen, TKW	351.2(2)
Odor	140.1
Petroleum Hydro, Soil	418.1(5)
pH	9045
Phenolics, Total	9065
Phosphorous, Total	365.2(2)
Solids, Fixed	2090(4)
Solids, Total	CLP
Solids, Volatile	2090(4)
Sulfate	9038
Sulfide	9030
Sulfite	377.1(2)
TDC	415.1
Turbidity	180.1

- (1) = Solid and hazardous waste methods approved by NJDEP ECRA and RCRA and listed in EPS SW 846 3rd Edition, 1986.
- (2) = Water and wastewater methods approved in the Federal Register in section 40 CFR 136 and listed in EPA 600/4-79-020.
- (4) = Methods cited in Standard Methods 16th Edition, 1986.
- (5) = NJDEP modification of EPA Method 418.1.
- CLP = Contract Laboratory Program procedure for total solids determination, SDW 7/88, Part F, page D-83.
- HACH = Method 8000, Hach Handbook of Water Analysis, 1979. Approved in the federal Register, April 21, 1980, page 26811.

INORGANIC NON-CONFORMANCE SUMMARY

There were no non-conformances encountered during the analyses of these samples.

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Teterboro Division
100 Hollister Road
Teterboro, New Jersey 07608
FAX: 201-268-5311
201-268-3700 800-729-0852

TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Name	Container ¹	Preservation	Maximum holding time
<u>Bacterial Tests:</u>			
Coliform, fecal and total	P, G	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	6 hours
Fecal streptococci	P, G	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	6 hours
<u>Inorganic Tests:</u>			
Acidity	P, G	Cool, 4°C	14 days
Alkalinity	P, G	Cool, 4°C	14 days
Ammonia	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Biochemical oxygen demand	P, G	Cool, 4°C	48 hours
Bromide	P, G	None required	28 days
Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours
Chemical oxygen demand	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Chloride	P, G	None required	28 days
Chlorine, total residual	P, G	None required	Analyze immediately
Color	P, G	Cool, 4°C	48 hours
Cyanide, total and amenable to chlorination	P, G	Cool, 4°C, NaOH to pH12, 0.6g ascorbic acid	14 days
Fluoride	P	None required	28 days
Hardness	P, G	HNO ₃ to pH2, H ₂ SO ₄ to pH2	6 months
Hydrogen ion (pH)	P, G	None required	Analyze immediately
Kjeldahl and organic nitrogen	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
<u>Metals:</u>			
Chromium VI	P, G	Cool, 4°C	24 hours
Mercury	P, G	HNO ₃ to pH2	28 days
Metals, except chromium VI and mercury	P, G	HNO ₃ to pH2	6 months
Nitrate	P, G	Cool, 4°C	48 hours
Nitrate-nitrite	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Nitrite	P, G	Cool, 4°C	48 hours
Oil and grease	G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Organic carbon	P, G	Cool, 4°C, HCl or H ₂ SO ₄ to pH2	28 days
Orthophosphate	P, G	Filter immediately, cool, 4°C	48 hours
Oxygen, Dissolved Probe Winkler	G Bottle and top do	None required	Analyze immediately
Phenols	G only	Fix on site and store in dark	8 hours
Phenols	G only	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Phosphorus (elemental)	G	Cool, 4°C	48 hours
Phosphorus, total	P, G	Cool, 4°C, H ₂ SO ₄ to pH2	28 days
Residue, total	P, G	Cool, 4°C	7 days
Residue, Filterable	P, G	Cool, 4°C	7 days
Residue, Nonfilterable (TSS)	P, G	Cool, 4°C	7 days
Residue, Settleable	P, G	Cool, 4°C	48 hours
Residue, volatile	P, G	Cool, 4°C	7 days
Silica	P	Cool, 4°C	28 days
Specific conductance	P, G	Cool, 4°C	28 days

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TABLE 2-16. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES (CONTINUED)

Name	Container ¹	Preservation	Maximum holding time
Sulfate	P, G	Cool, 4°C	28 days
Sulfide	P, G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH 9	7 days
Sulfite	P, G	None required	Analyze immediately
Surfactants	P, G	Cool, 4°C	48 hours
Temperature	P, G	None required	Analyze
Turbidity	P, G	Cool, 4°C	48 hours
<u>Organic Tests:</u>			
Purgeable Halocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	14 days
Purgeable aromatic hydrocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , HCl to pH 2	14 days
Acrolein and acrylonitrile	G, Teflon-lined septum	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , Adjust pH to 4-5	14 days
Phenols	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	7 days until extraction, 40 days after extraction
Benzidines	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	7 days until extraction
Phthalate esters	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitrosamines	G, Teflon-lined cap	Cool, 4°C, store in dark, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
PCBs, acrylonitrile	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
Nitroaromatics and isophorone	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Polynuclear aromatic hydrocarbons	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃ , store in dark	40 days after extraction
Haloethers	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
Chlorinated hydrocarbons	G, Teflon-lined cap	Cool, 4°C	40 days after extraction
TCDD	G, Teflon-lined cap	Cool, 4°C, 0.008% Na ₂ S ₂ O ₃	40 days after extraction
Total organic halogens	G, Teflon-lined cap	Cool, 4°C; H ₂ SO ₄ to pH < 2	7 days
<u>Pesticides Tests:</u>			
Pesticides	G, Teflon-lined cap	Cool, 4°C, pH 5-9	40 days after extraction
<u>Radiological Tests:</u>			
Alpha, beta and radium	P, G	HNO ₃ to pH 2	6 months

¹ Polyethylene (P) or Glass (G)

CASE NARRATIVE

Laboratory Resources, New Jersey Division, received eight soil samples plus a field and trip blank blank for Reduced Deliverables Format on May 23, 1994. The samples were analyzed for the parameters outlined in the chain of custody.

The samples were analyzed within the required holding time. Any parameters which were outside of their respective quality control ranges are noted in the non-conformance summary.

All soil, sludge and sediment results are reported in dry weight.

Please contact us if there are any questions regarding the enclosed results.

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T40530+

PETROLEUM HYDROCARBONS CONFORMANCE/NONCONFORMANCE SUMMARY

No Yes

1. Blank Contamination No Yes
If yes, list concentrations in each blank:

2. Matrix Spike Recoveries Meet Criteria No Yes
If not met, list those recoveries which fall outside the acceptable range:

3. Sample Duplicate Analyses Meet QC Criteria No Yes
If not met, list those criteria which fall outside the acceptable range:

4. GC Fingerprinting Chromatograms Submitted for All Standards, Blanks, and Samples (If applicable) No Yes

5. Extraction Holding Time Met No Yes
If not met, list number of days exceeded for each sample:

6. Analysis Holding Time Met No Yes
If not met, list number of days exceeded for each sample:

NOTE: EPA method 418.1 permits the use of either a scanning or fixed wavelength infrared (IR) spectrophotometer for determining petroleum hydrocarbon concentrations. Laboratory Resources, Inc., uses fixed wavelength instruments; therefore, IR spectra are not included in this data package.

Laboratory Supervisor: _____



Date: _____

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05/27/94

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405307
LRI Sample No: 1

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: FB-1

Date Collected: 05/23/94
Date Received: 05/23/94

Matrix: Water
Percent Moisture: N/A
Units in Wet Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	0.50 U	0.50	mg/L	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405307
LRI Sample No: 3

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-25-1

Date Collected: 05/23/94
Date Received: 05/23/94

Matrix: Soil
Percent Moisture: 12.2%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	210	56	mg/kg	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Customer: Roy F. Weston, Inc.

Division: New Jersey

Location: NJ

LRI Report No: T405307

Project: Colts Neck PHC

LRI Sample No: 4

Sample Description: C-25-2

Date Collected: 05/23/94

Matrix: Soil

Date Received: 05/23/94

Percent Moisture: 14.0%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	54 U	54	mg/kg	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405307
LRI Sample No: 5

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-25-3

Date Collected: 05/23/94
Date Received: 05/23/94

Matrix: Soil
Percent Moisture: 12.8%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
<u>PHC (TPH) by 418.1</u>								
Petroleum Hydrocarbons, Total Recoverable	170	55	mg/kg	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405307
LRI Sample No: 6

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-25-4

Date Collected: 05/23/94
Date Received: 05/23/94

Matrix: Soil
Percent Moisture: 11.9%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	54 U	54	mg/kg	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405307
LRI Sample No: 7

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-25-5

Date Collected: 05/23/94
Date Received: 05/23/94

Matrix: Soil
Percent Moisture: 14.6%
Units in Dry Weight

<u>Parameter</u>	<u>Result</u>	<u>QL</u>	<u>Units</u>	<u>Started</u>	<u>Completed</u>	<u>Dilution</u>	
				<u>Date</u>	<u>By</u>	<u>Date</u>	<u>By</u>
PHC (TPH) by 418.1							
Petroleum Hydrocarbons, Total Recoverable	57 U	57	mg/kg	05/24/94	JC	05/24/94	JC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Division: New Jersey

LRI Report No: T405307

LRI Sample No: 8

Customer: Roy F. Weston, Inc.

Location: NJ

Project: Colts Neck PHC

Sample Description: DUPLICATE

Date Collected: 05/23/94

Date Received: 05/23/94

Matrix: Soil

Percent Moisture: 12.5%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	270	54	mg/kg	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.

Division: New Jersey

LRI Report No: T405307

LRI Sample No: 9

Customer: Roy F. Weston, Inc.

Location: NJ

Project: Colts Neck PHC

Sample Description: C-25-2 MS

Date Collected: 05/23/94

Date Received: 05/23/94

Matrix: Soil

Percent Moisture: 13.7%

Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	55	55	mg/kg	05/24/94	JC	05/24/94	JC	

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Laboratory: Laboratory Resources, Inc.
Division: New Jersey
LRI Report No: T405307
LRI Sample No: 10

Customer: Roy F. Weston, Inc.
Location: NJ
Project: Colts Neck PHC
Sample Description: C-25-2 MSD

Date Collected: 05/23/94
Date Received: 05/23/94

Matrix: Soil
Percent Moisture: 14.1%
Units in Dry Weight

Parameter	Result	QL	Units	Started		Completed		Dilution
				Date	By	Date	By	
PHC (TPH) by 418.1								
Petroleum Hydrocarbons, Total Recoverable	58 U	58	mg/kg	05/24/94	JC	05/24/94	JC	

General Chemistry Method Blank Analysis

This blank was analyzed concurrent with the analysis of the workorder:
T4-05-307

Element	Result mg/L	MDL mg/L	Dil.
Ammonia-NH3	U	0.50	1
BOD	U	NA	1
COD	U	10	1
Chloride, Total	U	2.0	1
Chromium Hexavalent	U	0.05	1
Cyanide, Total	U	0.01	1
MBAS	U	1.5	1
Nitrate	U	0.10	1
Nitrite	U	0.01	1
Oil & Grease	U	10	1
pH	U	NA	1
Pet. Hydrocarbons	U	X	0.50
Phenolics, Total	U	0.05	1
Phosphorus, Total	U	0.025	1
Sulfate	U	5.0	1
Sulfite	U	1.0	1
Sulfide	U	1.0	1
Dissolved Solids	U	10	1
Suspended Solids	U	5.0	1
Kjeldahl Nitrogen	U	0.50	1
TOC	U	10	1
Turbidity	U	0.20	1
Conductivity	U	1.0	1
Alkalinity	U	2.0	1
Color	U	5.0	1
Fluoride	U	0.20	1
Orthophosphate	U	0.01	1
Hardness	U	5.0	1

(*) Elevated MDLs due to dilution for range
(**) Elevated MDLs due to dilution for interferences
X = Undetected analyte of required analyses.

