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New England Division

FINAL

CLOSURE REPORT
STUDY AREA 15
FORT DEVENS, MASSACHUSETTS

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FORT DEVENS, MASSACHUSETTS

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EXECUTIVE SUMMARY

Fort Devens was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendments and Reauthorization Act on December 21, 1989. Subsequently, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens was selected for cessation of operations and closure. In accordance with these acts, several studies have been conducted that address Study Area 15, which was identified in the Federal Facilities Agreement between the U.S. Environmental Protection Agency and the U.S. Department of Defense as a potential site of contamination.

This closure report documents the historical information and investigation results leading to the recommendation to remove soil at Study Area 15, the implementation of the soil removal response action, and the post-removal site conditions and recommendations for future actions at Study Area 15.

Study Area 15, also known as Landfill No. 11 in the Fort Devens Master Environmental Plan, allegedly consisted of a series of pits in which No. 4 and No. 6 fuel oil was disposed and burned during the period between 1963 and 1966. Investigations conducted in 1985 and 1991 resulted in the identification of soil contamination associated with the historical disposal and burning of fuel oil at Study Area 15. The contaminated soil was characterized by black staining and a strong petroleum odor. Laboratory analysis revealed that the stained soil was contaminated with petroleum hydrocarbon compounds. The extent of contamination was shown to be distributed in discrete layers of varying thickness. Evidence of significant reworking of subsurface soils suggested that the burn pit was used on multiple occasions for the disposal and burning of fuel oil.

The response action designed to remove this petroleum hydrocarbon contaminated soil was implemented in two phases, begun in March 1993 and completed in December 1993. Visual observation and the results of field screening analyses conducted during the removal efforts showed that the contamination was distributed over an approximate 50-foot long by 20-foot wide area and extended from 2 feet below ground surface to a maximum depth of 12 feet below the surface in the

center of the burn pit. The lateral extent of contamination in the burn pit was easily distinguished from clean soils. Burn pit contamination was also observed to be present in the uppermost 2 feet in thin layers or seams. Excavated soils were hauled from Fort Devens and recycled off site by cold mix asphalt batching.

Confirmatory laboratory samples were collected at the conclusion of the removal efforts from the bottom and side walls of the excavation. The excavation was backfilled and the surface restored to pre-excavated conditions to the extent practical. Risk evaluations conducted using the confirmatory laboratory sampling results qualitatively determined that the residual concentrations of petroleum hydrocarbons at Study Area 15 pose no significant threat to human health or the environment. Residual material resembling asphalt was discovered west of the excavation. Though similar in appearance to contamination observed in the excavated soils, the Army believes that this material is degraded paving material. Because of its limited areal extent, exposure to the material was determined to be minimal, posing no unacceptable risk. With the contamination identified at Study Area 15 adequately characterized and removed, and in the absence of any significant residual risk, the Army has recommended no further action for Study Area 15.

1.0 INTRODUCTION

Fort Devens was placed on the National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 on December 21, 1989. In addition, under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, Fort Devens has been selected for cessation of operations and closure. This closure report has been prepared as part of the U.S. Department of Defense Base Realignment and Closure program to assess the nature and extent of contamination associated with site operations at Fort Devens. This report contains a summary of activities conducted under CERCLA at Study Area (SA) 15 - Landfill No. 11 on the South Post in support of this mission.

In conjunction with the Army's Installation Restoration Program, Fort Devens and the U.S. Army Environmental Center (USAEC; formerly the U.S. Army Toxic and Hazardous Materials Agency) initiated a Master Environmental Plan (MEP) in 1988. The MEP consists of assessments of the environmental status of SAs, specifies necessary investigations, and provides recommendations for response actions with the objective of identifying priorities for environmental restoration at Fort Devens. SA 15 was identified as a potential source of contamination in the MEP (Biang, et al., 1992). Contaminated soil was discovered during subsequent investigations and a soil removal response action was recommended. The New England Division of the U.S. Army Corps of Engineers (NED) was tasked with the removal effort. This closure report documents the historical findings leading to the response action recommendation and the measures taken during the removal of contaminated soil at SA 15.

1.1 SITE HISTORY AND BACKGROUND

SA 15 (Landfill No. 11) is located on the southwestern side of the intersection of Jackson and Dixie Roads on the South Post (Figure 1). The area around SA 15 is a mostly flat, sparsely vegetated surface with well drained soils consisting of sand with varying amounts of gravel and silt. SA 15 was first identified by the U.S. Army Environmental Hygiene Agency (AEHA) during an environmental audit in 1985. Landfilling activities allegedly consisted of the dumping and burning of No. 4 and No. 6 fuel oil in a series of excavated pits between the years 1963 and 1966. The MEP described SA 15 as a series of fuel oil burn pits within a three acre area adjacent to the helipad. After 1966, the pits were closed leaving no surficial

evidence of past disposal activities.

An investigation was conducted by AEHA in 1985 to determine the nature and extent of potential contamination at SA 15 (Gates et al., 1986). Five test trenches were excavated to a depth of five feet in the area presumed to be contaminated. Contamination was discovered in the form of black stained soil in near surface soils. Because no significant staining was observed at depth, AEHA concluded that contamination was isolated to near surface soil and exhibited limited downward migration (Gates, 1987). This characteristic distribution may have been attributable to the viscous nature of the fuel oils. Laboratory analysis of soil samples collected from the five test excavations clearly identified petroleum hydrocarbon contamination. Concentrations of inorganic analytes, polychlorinated biphenyls (PCBs), and pesticides were not significant in the samples (Gates, 1989). Due to the preliminary nature of the investigation, detailed test trench logs were not kept.

Considering these findings, the authors of the MEP recommended that an investigation to further characterize the subsurface distribution of petroleum hydrocarbon contamination be implemented. The investigation was to include a geophysical survey to define the locations of any SA 15 disposal pits and an examination of historical aerial photographs to identify evidence of past disposal practices. Soil borings were also recommended in the MEP to delineate the downward extent of contamination. An optional recommendation to install groundwater monitoring wells was contingent upon observing contamination at depth (Biang, et al., 1992).

1.2 SITE INVESTIGATION

In response to the MEP recommendations, a site investigation (SI) was implemented by the USAEC to further characterize the nature and extent of subsurface contamination. In 1991, Ecology & Environment, Inc. (E&E) was tasked to conduct the SI. Preliminary investigation activities included a geophysical survey and soil gas survey to better define the limits of potential disposal pits. The geophysical survey had limited success due to inadequate conductivity contrasts between contaminated and uncontaminated soil and to interference of ground communications network cables located in the area. The absence of adequate volatile constituents in the waste limited the success of the soil gas survey, as well. Aerial photographs from the late 1960s were used by E&E to select boring locations

for subsurface investigation. Four soil borings were installed along Jackson Road; their approximate locations are shown in Figure 2.

Each soil boring was advanced to a depth of roughly 25 feet below grade (E&E, 1992). Soil samples were collected continuously. The results of samples submitted for laboratory analysis are provided in Appendix A. Petroleum hydrocarbon contamination was discovered in only two samples from Borehole 3 (LF11BH3) (collected from zero to two feet and two to four feet). With the exception of suspected laboratory contaminants, no Target Compound List volatile or semivolatile organic compounds (VOCs or SVOCs) or PCBs were detected in any of the borings. In addition, no significant Target Analyte List inorganic analyte concentrations were detected and only low concentrations of pesticides from historical mosquito control were observed.

1.3 SI FINDINGS AND RECOMMENDATIONS

The review of aerial photographs, interpretation of geophysical survey data, and the results of a soil gas survey provided little additional information to locate the alleged disposal pits reported in the MEP. Only samples collected from Borehole 3 in E&E's SI provided evidence of soil contamination presumed to be associated with the former burn pits. Though the concentrations of total petroleum hydrocarbon compounds (TPHC) were significant in the two samples, the results of E&E's SI suggested that contamination associated with the burn pits was probably not as extensive as predicted by the AEHA study and reported in the MEP (E&E, 1992). The results of the E&E study indicated that the contamination was localized in near-surface soils around Borehole 3 in what appeared to be a single burn pit.

Given E&E's findings, a response action for the removal of soils contaminated with petroleum hydrocarbons was recommended. This soil removal effort was to include both the excavation of contaminated soil as a potential source control measure and to further define the limits of petroleum hydrocarbon contamination.

2.0 INITIAL SOIL REMOVAL ACTIVITIES

In 1993, Fort Devens tasked NED to initiate a response action at SA 15 for the purpose of removing contaminated soil from the area around Borehole 3. G. Lopes Construction, Inc. was contracted to excavate and E&E was tasked to provide field screening and analytical laboratory support services during excavation activities. Soil removal activities continued from March 22, 1993 to April 1, 1993. Soil samples were collected during the removal action for field screening and laboratory analysis to monitor removal progress. Prior to completing the removal action, however, excavation activities were suspended and the excavation was backfilled due to a contractual limitation on the volume of soil to be removed. Plans were made by the Army to resume the removal effort and dispose of stockpiled soil under a subsequent procurement.

Soil samples collected during the initial soil removal were field screened for TPHC by non-dispersive infrared spectroscopy (NDIR) using modified EPA Method 418.1. Confirmatory samples were collected and submitted for laboratory analysis of TPHC. A summary of field observations and the results of field screening and laboratory analysis are provided below. A trip report prepared by the Corps of Engineers field oversight personnel is included as part of Appendix B to provide further detail on field activities.

2.1 FIELD OBSERVATIONS

Initial plans for the response action were based on the findings of previous studies and included removal of 50 cubic yards of soil, and assumed that 20 tons (or approximately 25 percent) of the excavated material would be contaminated and require disposal (U. S. Army Corps of Engineers New England Division, 1992). A tire-mounted backhoe was mobilized on March 22, 1993 and soil removal began on the following day. The initial removal effort consisted of a 7-foot by 7-foot area centered on Borehole 3, excavated to a depth of approximately 6 feet. This depth was chosen because TPHC was detected at 288 parts per million (ppm) in the 2.5-foot to 4.5-foot sampling interval, but was not detected in the 5-foot to 7-foot sample in Borehole 3. Due to the difficulty in excavating the frozen topsoil, the excavation was expanded to 9 feet by 9 feet (Figure 3). Excavation soils consisted of light brown medium to coarse grained sand. Black soil was initially encountered

on the west wall of the excavation at a depth of roughly two feet, consistent with earlier AEHA and E&E findings. This zone of contamination appeared as a single large (2-foot-thick) stained pocket on the west wall of the excavation. As the excavation was expanded to the west, the size of the contaminated zone increased on the west wall and extended slightly onto the south wall. In addition to the large, discrete pocket of black soil, contamination was also observed to exist as thin layers or "stringers" (0.5 to one inch thick) of black soil in the uppermost 2 feet, the greatest concentration of which were located near the pocket of contamination on the west and south walls. Excavated soil was stockpiled on polyethylene plastic sheeting to the south of the excavation. A heavy, oily odor was noticed during excavation activities, but no significant VOCs were detected with a photoionization detector (PID) in air over the excavation. TPHC screening results on samples collected at this stage of the excavation revealed that the stained soil was contaminated and there was a clear correlation between the degree of staining and the concentration of TPHC (Table 1).

Excavation continued westward following the contamination pocket to the west and south, and lastly to the north. By March 25, 1993, the excavation measured approximately 21 feet by 22 feet with an average depth of 6 feet. On the southern end of the west wall of the excavation, clean soil was encountered. The vertical extent of the contamination was not clearly defined at this stage given that lightly stained soil was still observable at the bottom of the excavation. Screening results on soil samples continued to exhibit a strong correlation between the degree of soil staining and the concentration of TPHC. The results of soil screening conducted at this stage of the excavation are summarized in Table 1.

On March 26, 1993, digging continued in a northerly direction. Stained soil was observed in a more variable distribution. The contamination was less homogeneous, consisting of multiple layers of bands of black material, 0.5 to one foot thick, coalescing and separating, with dark to light brown stained layers in between. Distinct visual contrasts between clean and contaminated soil were noted laterally within the excavation. Excavated soil was stockpiled to the east and west of the excavation during this phase of digging. Various bits of debris were observed in the excavated soils including: a can, small bottle, brass shell casing, and scrap metal. At this stage of excavation, approximately 120 cubic yards of contaminated soil had been removed, approaching the quantity of soil excavation which could be included within the limits of the existing contracting mechanism. The decision was made to continue excavating to the north in a 3-foot-deep test trench to define the northern

limit of observable contamination while minimizing the quantity of removed soil. An initial, 5-foot-long test trench was excavated on March 26, 1993. This trench was widened and extended an additional 13 feet on March 31, 1993. Clean soil was encountered in the last 5 feet of the test trench, approximately 13 feet north of the northernmost point of the main excavation (see Figure 3).

By the end of the day on March 31, 1993, all soil screening samples were clean except for those collected from stained areas along the northern test trench (Table 1). TPHC was not detected in field screening samples collected from the bottom of the excavation below the staining, defining the downward migration limit of contamination. The deepest areas of contaminated soil were excavated from 12 feet below grade. The overall average floor depth in the excavation was estimated to be 10 feet below grade. The total volume of soil removed and stockpiled outside the southern and western limit of the excavation was estimated at 266 cubic yards.

2.2 INTERIM REMOVAL ACTION STATUS

Because the removal efforts had to be suspended until a subsequent removal contract could be procured, backfilling was begun on April 1, 1993. The deepest portions of the excavation were backfilled first with clean fill material. Polyethylene plastic sheeting was draped over the northern slope of the excavation to a depth of approximately 10 feet to prevent mixing of clean fill with visually contaminated soil observed there. Plastic sheeting was also draped over the remaining sides of the excavation to a depth of five feet. The remainder of the excavation was then backfilled to grade with clean fill material. The limits of the excavation were marked with wooden stakes for future reference. Soil samples were collected from each of the three excavated soil stockpiles for analysis of Resource Conservation and Recovery Act hazardous waste characteristics to evaluate disposal/treatment options. The results of these analyses are presented in Appendix C-1. To reduce the potential for leaching of contaminants, the stockpiles of stained soil were covered with polyethylene plastic sheeting until arrangements could be made for removal off-site.

3.0 CONTINUED SOIL REMOVAL ACTIVITIES

Supplemental soil excavation and stockpiled soil removal resumed in December 1993. NED contracted Webster Engineering of Dorchester, Massachusetts to complete excavation activities at SA 15 and tasked ABB Environmental Services, Inc. (ABB-ES) to perform excavation oversight activities during this final phase of soil removal. ABB-ES provided unexploded ordnance (UXO) escort services, field screening, and laboratory analysis as part of the oversight task.

Stockpiled soils from the March 1993 excavation were removed during the week of December 6, 1993, prior to initiating the final phase of soil excavation. In addition to samples collected from the stockpiles by E&E in April 1993, 11 samples were collected by Webster Engineering from the stockpiled soils for laboratory analysis prior to hauling off site. The samples were analyzed by E3I. Seven of these samples were analyzed for TPHC; six by EPA Method 418.1 and one by EPA Method 8270. Of the remaining four samples, two were analyzed for VOCs by EPA Method 8240, and two for SVOCs and PCBs by EPA Methods 8270 and 8080, respectively. Only TPHC was detected above the reported detection limits, with concentrations ranging from 39 milligrams per kilogram (mg/kg) to 27,000 mg/kg. Petroleum hydrocarbon fingerprinting results identified a good match between one of the samples and the No. 6 fuel oil standard. Based on these analytical results, which are presented in Appendix C-2, the soil was determined to be nonhazardous. A total of 337 tons of soil were transported by Charlton Welding and Repair, Inc. to American Reclamation Corporation (AMREC) in Charlton, Massachusetts for recycling by cold mix asphalt batching (Appendix D).

3.1 EXCAVATION OBSERVATIONS

Using field notes from the initial excavation effort and the reference stakes installed in April, NED estimated the limits and quantity of the remaining contaminated soil at SA 15. NED identified a 20-foot by 30-foot area delineating the limits of an estimated 200 cubic yards of contaminated soil remaining in the burn pit (U. S. Army Corps of Engineers New England Division, 1993). Prior to conducting the field work, the historical use of the SA 15 was evaluated for the potential presence of UXO. The results indicated that UXO could be present. UXB International, Inc. of Chantilly, Virginia (UXB) was subcontracted by ABB-ES to provide UXO clearance. The entire area to be excavated was cleared of UXO to a depth of 2

feet prior to the start of digging. In order to maintain proper UXO clearance, soil was stripped off in lifts during the removal effort. With each lift of soil removed, the exposed surface of the excavation was cleared by UXB. In the near surface lifts, UXO clearance was conducted in 2-foot-depth intervals. UXO clearance was done in 4-foot-depth intervals in deeper lifts, because smaller ordnance was less likely to have penetrated to these depths, and larger ordnance is easier to detect.

The second phase of soil removal began on December 14, 1993 in the vicinity of the former north-trending test trench dug in March 1993. Along with the stockpiled soil from the March 1993 removal effort, soils were excavated with a tracked excavator and transferred directly to trucks for off-site hauling. Additional waste characterization sampling was not required by the waste hauler or the recycling facility because the material was the same as that excavated in March.

The uppermost soil stratum consisted of 1 to 2 feet of topsoil characterized by dark brown silty sand. Beneath the topsoil was a loose, medium to coarse grained, poorly graded, light orange to light yellow sand. A mixture of topsoil, test trench backfill, stained and unstained sand was observed in the top 4 feet of the 20- by 30-foot delineated area. Deeper excavation revealed stained soil only in the southern portion of this newly excavated area. This stained soil was presumed to be the northern extension of the pocket defining the burn pit identified in March 1993. Digging concentrated first on removing this observable contamination in the southern portion and then focused on locating stained soil remnants northward in the excavation. Here, the limits of stained soil were clearly defined on the east and west walls. Continued digging showed the limits of this east and west staining were continuous with the east and west limits observed in the March 1993 excavation.

Excavation then focused on further defining the extent of the contamination pocket at depth. In order to remove contaminated soil from beneath the plastic sheeting that had been draped over the north wall of the March 1993 excavation, the clean backfill (easily identified by a distinct difference in color from the native soils) was removed and stockpiled in three separate piles.

Stringers of stained soil similar to those observed during the March 1993 excavation were noted near the surface on the east and west walls of the pit. An attempt was made to chase a prominent stringer (about 1 foot thick) at the midpoint of the east side of the pit. The stringer thinned as excavation progressed to the east to a point where it became so thin that removal of contaminated soil became impractical.

These stained soil stringers, observed in earlier studies and, in the March 1993 removal effort, were interpreted to be the result of surficial soil reworking. Given the quantity of contaminated soil observed in these layers, they did not constitute a significant proportion of the overall burn pit contamination.

In the process of digging to the east, a cache of small caliber spent shell casings was uncovered just below the surface. The casings appeared to be corroded but not burned, suggesting they were disposed of independently of the burn pit activities. In the process of excavating in an easterly direction, several cables were also exposed. These cables were presumed to be part of the ground communications experiment referenced in E&E's geophysical survey results (E&E, 1992).

On December 14, the excavation reached a depth of approximately 10 feet in the southern half of the new excavation. The north wall and the northern 30 feet of the east and west walls and the floor were free of stained soil. Additional soil removal continued in the southernmost portion of the excavation. Seven soil samples were collected for field screening from the unstained zones within the excavation. Soil samples were screened in ABB-ES' Fort Devens field office for the presence of VOCs by headspace analysis using a PID and for TPHC by NDIR. The analytical method used in field screening for TPHC was adapted from EPA method 418.1. The results of field screening are presented in Table 2. Headspace readings in the seven samples ranged from 1 to 10 ppm, and TPHC concentrations were less than 50 mg/kg dry weight. The results continued to support the correlation between concentrations of TPHC and the degree of soil staining noted in the March 1993 removal effort.

The backfill material re-excavated from the north wall of the March 1993 excavation was field screened for TPHC (Table 2). Headspace readings were below 3 ppm, and TPHC concentrations were below 50 mg/kg dry weight in each of the three samples collected from the stockpiles.

Excavation activities continued on December 16, 1993. Additional stained soil and clean backfill were removed further to the south. Excavation continued until all visibly stained soil was removed from the east and west walls and from beneath the sloped north wall of the March 1993 excavation. A total of eight sample pairs were collected for both a second round of field screening and for confirmatory analysis. Five of these samples were collected from various locations on the excavation walls, and three samples were collected from representative locations on the excavation

floor (Figure 4). Headspace PID readings ranged from zero to 2 ppm and TPHC concentrations were below the 50 mg/kg detection limit in all samples except for EX150212, which exhibited a TPHC concentration of 290 mg/kg (on a dry weight basis). Due to this unexpected result, EX150212 was resampled to confirm that an elevated TPHC concentration existed at this location, but the screening results of the second sample collected from EX150212 exhibited no detectable concentrations of TPHC. The higher concentration was determined to be anomalous, perhaps due to a small amount of localized contaminated soil, and not representative of contaminant migration. Eight soil samples were submitted for laboratory analysis of TPHC to confirm the results of field screening. Laboratory analytical results for sample EX150212 were below the reportable limit.

Because the field screening results revealed no significant concentrations of TPHC, it was determined that the extent of contaminated soil had been adequately delineated and excavated. No further excavation was deemed necessary. Depths within the newly excavated area ranged from 2 to 12 feet in the main portion of the pit with a 2- to 5-foot deep terrace on the north end (Figure 5), below which no contamination was observed. The distribution of stained soil encountered in the southern end of the new excavation coincided well with descriptions of the northern end of the March excavation. The combined dimensions of the March and December excavations shown in Figure 5 measured approximately 17 to 23 feet east to west and 50 feet north to south.

Material resembling asphalt was observed west of the former burn pit. This material is similar in appearance to the petroleum-contaminated soil encountered within the burn pit, but is weathered on the surface. It forms a discontinuous layer approximately 3 inches thick on the ground surface, and fragments of the material are scattered west and southwest of the excavation. The material may have been applied by the Army as a means of dust suppression or to form a hard surface for vehicles. It is not believed to be related to activities at the former burn pit.

3.2 DISPOSAL ACTIVITIES

A total of 300 tons of stained, potentially contaminated soil were removed from the excavation in December 1993. Combined with the volume of soil removed in March 1993, 637 tons of soil were removed from the SA. All of the soil was transported by truck to AMREC in Charlton, Massachusetts for recycling by cold mix asphalt batching. Because the waste hauler and the recycling facility indicated that the results of laboratory analyses performed on stockpiled soil removed during the

March 1993 excavation were sufficient to characterize soil contaminants, additional analyses were not performed prior to asphalt batching (see Appendix C). The Bills of Lading, weight slips, and other recycling documentation are provided in Appendix D.

3.3 BACKFILLING ACTIVITIES

The material used in backfilling the March 1993 excavation that was removed and stockpiled during the December excavation activities was ultimately returned to the excavation as backfill at the completion of soil removal efforts. An additional 198 cubic yards of clean sand backfill material was hauled to the SA on December 16, 1993. The material was deposited directly into the excavation from the hauling trucks as they arrived on site. Backfill was distributed and compacted within the excavation by the tracked excavator.

The backfilling was completed on December 16, 1993. Fill was added to bring the excavation up to grade. Excess fill materials and debris were removed from the site restoring SA 15 to the extent practical to its original condition.

3.4 CONFIRMATORY ANALYSIS RESULTS

The eight soil samples (plus one field duplicate) that were collected for confirmatory analysis were submitted to the Contract Laboratory, CompuChem Environmental Corporation of Research Triangle Park, North Carolina for TPHC analysis. These samples were collected and analyzed to provide confirmation that the limits of contamination at SA 15 had been adequately delineated during the removal action. CompuChem analyzed the soil samples using EPA method 418.1. The laboratory report is provided in Appendix E and results are summarized in Table 3. The TPHC concentrations detected ranged from below detection limit (< 6.3 mg/kg) in EX150212 to 56.2 mg/kg in sample EX150109. The results of the laboratory analysis suggests that the contamination at SA 15 has been adequately characterized and removed from the SA 15 burn pit.

4.0 QUALITATIVE EVALUATION OF RESIDUAL RISK

To evaluate the human health risk associated with TPHC in soil, ABB-ES has developed risk-based concentrations for petroleum products. These concentrations have been calculated using the same exposure assumptions as those used by U.S. Environmental Protection Agency (USEPA) toxicologists in the USEPA Region III Risk-Based Concentration Table (Fourth Quarter, 1993) for commercial/industrial soil and residential soil. A more detailed discussion on the development of these risk-based concentrations is provided in the Fort Devens Final Site Investigation Report for Groups 2, 7, & Historic Gas Stations (ABB-ES, 1993). For commercial/industrial soil and residential soil, the risk-based concentrations are 8,180 mg/kg and 630 mg/kg, respectively.

No. 4 and No. 6 fuel oils were allegedly disposed of at SA 15. Because specific dose/response values are not available for No. 4 or No. 6 fuel oils, ABB-ES selected diesel oil as a surrogate for these fuel oils to develop risk-based concentrations for TPHC in soil. The USEPA recommends the use of its diesel oil dose/response value as a surrogate for No. 2 fuel oil (USEPA, 1992). Although No. 4 and No. 6 fuel oils contain higher molecular weight hydrocarbons (including polynuclear aromatic hydrocarbons [PAHs]) than No. 2 or diesel, the use of the diesel oil dose/response value to evaluate noncarcinogenic effects represents a reasonably conservative approach because PAHs were not detected in soil samples at SA 15. This approach is also conservative because dose/response values available for noncarcinogenic PAHs in No. 4 and No. 6 fuel oils are higher (i.e., less conservative or health-protective) than the dose/response value for diesel oil. For example, the oral reference dose (i.e., non-cancer dose/response value) for diesel oil is 0.008 milligrams per kilogram per day (mg/kg/day) compared to 0.03 mg/kg/day for pyrene. Pyrene has the lowest oral reference dose of the PAHs analyzed for under the Target Compound List.

In addition to the Region III risk-based concentrations, the Massachusetts Department of Environmental Protection (MADEP) has revised the Massachusetts Contingency Plan (MCP) and promulgated Method 1 soil standards (MADEP, 1993). For a Method 1 Risk Characterization under the MCP, compliance with these soil standards constitutes a demonstration of no significant health risk from exposure to oil or hazardous material in soil. In this evaluation of residual risk, Method 1 S-1/GW-1 and S-2/GW-1 soil standards are used as risk-based guidelines along with the Region III risk-based concentrations. Category S-1 soil has the

greatest potential for exposure while Category S-2 soil is less accessible and therefore has a lower potential for exposure. At SA 15, the subsurface soil best fits the S-2 soil category. For TPHC, the S-2 soil standard is 2,500 mg/kg.

The maximum detected TPHC concentration in residual soil remaining at SA 15 (56.2 mg/kg) is well below ABB-ES' calculated risk-based commercial/industrial and residential soil concentrations of 8,180 mg/kg and 630 mg/kg, respectively. It is also well below the MCP S-2/GW-1 soil standard of 2,500 mg/kg. As previously stated, soil samples collected during the SI exhibited no detectable concentrations of VOCs or SVOCs.

The potential for exposure to material resembling asphalt on the ground surface west of the former burn pit has also been considered. This material is similar in appearance to the petroleum-contaminated soil encountered within the burn pit. The area represents a very small portion of the flat, open area (several acres in size) surrounding SA 15. This particular area is similar in characteristics (i.e., flat and unvegetated) to the surrounding area. It does not represent an unusual or especially interesting area that would attract attention and present a greater potential for exposure than the surrounding land. Currently, access to the South Post is restricted, and because the South Post will be retained by the Army, repeated exposure to this material and this limited area is therefore considered unlikely, and is not expected to present an unacceptable health risk.

The Army anticipates it will retain possession of SA 15 and its future use is not expected to change. The low concentrations of residual TPHC, the absence of other related organic compounds, and the low potential for exposure to the material on the surface west of the burn pit suggest that no significant residual risks to human health exist at SA 15.

For ecological risk, residual contamination, in the form of low concentrations of TPHC, is located below the depth to which terrestrial receptors are likely to burrow or otherwise be exposed. Based on this lack of exposure pathways, no comparison of soil analyte concentrations to ecological benchmark reference values was conducted. No evidence of significant residual risk to ecological receptors was identified at SA 15. Further, because the effort was made to restore the SA to pre-disposal site conditions, the temporary disruption of habitat at the surface resulting from the removal effort is also not likely to pose a significant long-term threat to ecological receptors.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Field observations noted during both excavation efforts indicated that the burn pit existed in the form of a 50-foot long by 20-foot wide north-south trending trench (parallel to Jackson Road) with its deepest point approximately 8 feet below grade. This shape suggests the pit may have been originally excavated with a bulldozer. Most of the contaminated soil removed during the excavation effort came from a thick pocket of stained soil 6 to 8 feet below ground surface. Below this depth, slightly stained soil was present to 12 feet below ground surface, interpreted to be the result of vertical migration. The absence of significant concentrations of TPHC in soil located below the bottom of the burn pit suggests no significant downward migration of contaminants has occurred below 12 feet. Other, less significant, staining observed in the surface soils in the form of lateral stringers is likely the result of soil reworking during consecutive disposal events or post-disposal regrading of the site.

The absence of physical evidence locating other alleged burn pits suggests that the available historical information may be inaccurate. Observations made during the removal efforts showed evidence of significant soil reworking. Reworking of the same burn pit during the three year operational history of SA 15 probably constitutes the multiple burn pits referenced in early reports. Further, the known burn pit is located adjacent to Jackson Road where access would have been easiest for the disposal of unused waste fuel oil.

The results of laboratory analysis performed on soil samples collected by E&E during the 1991 SI showed no detectable concentrations of VOCs, SVOCs or PCBs. No significant inorganic or pesticide concentrations were detected. TPHC was, however, detected at significantly elevated concentrations consistent with the historical use of the SA. The combined removal efforts conducted in March and December 1993 removed TPHC-contaminated soils. Both field screening and laboratory data gathered after the removal of contaminated soils confirmed only trace concentrations of TPHC remained in the excavation (TPHC ranging in concentration from below the detection limit to 56.2 mg/kg).

Material resembling asphalt was observed on the ground surface west of the former burn pit. This material is similar in appearance to the petroleum-contaminated soil encountered within the burn pit, but is weathered on the surface. The material may have been applied by the Army as a means of dust suppression or to form a hard

surface for vehicles. It is not believed to be related to activities at the former burn pit. Because the potential for exposure to this material is low due to its location and limited areal extent, no unacceptable risks were identified for these surface soils. The Army believes that remobilization to remove the material is not necessary to protect human health.

Given that contaminants associated with the historical disposal and burning of No. 4 and No. 6 fuel oil identified at SA 15 have been adequately characterized and removed, and in the absence of significant residual risk to human health or the environment, no further action is recommended at SA 15.

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Biang, C.A., R.W. Peters, R.H. Pearl, and S.Y. Tsai, 1992. "Master Environmental Plan for Fort Devens, Massachusetts"; prepared for U.S. Army Toxic and Hazardous Materials Agency; prepared by Argonne National Laboratory, Environmental Assessment and Information Sciences Division; Argonne, IL; Final, April.

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Gates, W.C.B., et al., 1986. "Multimedia Environmental Operational Review No. 37-26-1625-86, Fort Devens, Massachusetts;" 12-22 November 1985; U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground, Maryland; May 28.

Gates, W.C.B., 1987. "Hydrogeologic Assessment Plan No. 38-26-0653-87, Fort Devens, Massachusetts;" U.S. Army Forces Command, Fort Gillem, Forest Park, GA; February 10.

Massachusetts Department of Environmental Protection (MADEP), 1993. Revised Massachusetts Contingency Plan; 310 CMR 40.000; July.

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U.S. Army Corps of Engineers New England Division, 1993. "Contaminated Soil Removal Study Area 15, Fort Devens, Massachusetts;" Solicitation No. DACA33-93-R-0007; May.

U.S. Environmental Protection Agency (USEPA), 1992. "Master List Responses for 2QTR 1992;" Memorandum from Joan S. Dollarhide, Superfund Health Risk Technical Support Center to Ann-Marie Burke, USEPA Region I; June 19.

LIST OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
AEHA	Army Environmental Hygiene Agency
AMREC	American Reclamation Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
E&E	Ecology & Environment, Inc.
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
MEP	Master Environmental Plan
mg/kg	milligrams per kilogram
mg/kg/day	milligrams per kilogram per day
NDIR	non-dispersive infrared spectroscopy
NED	New England Division
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PID	photoionization detector
ppm	parts per million
SA	Study Area
SI	Site Investigation
TPHC	total petroleum hydrocarbons
USAEC	U.S. Army Environmental Center
USEPA	U.S. Environmental Protection Agency
UXB	UXB International, Inc.
UXO	unexploded ordnance
VOC	volatile organic compound

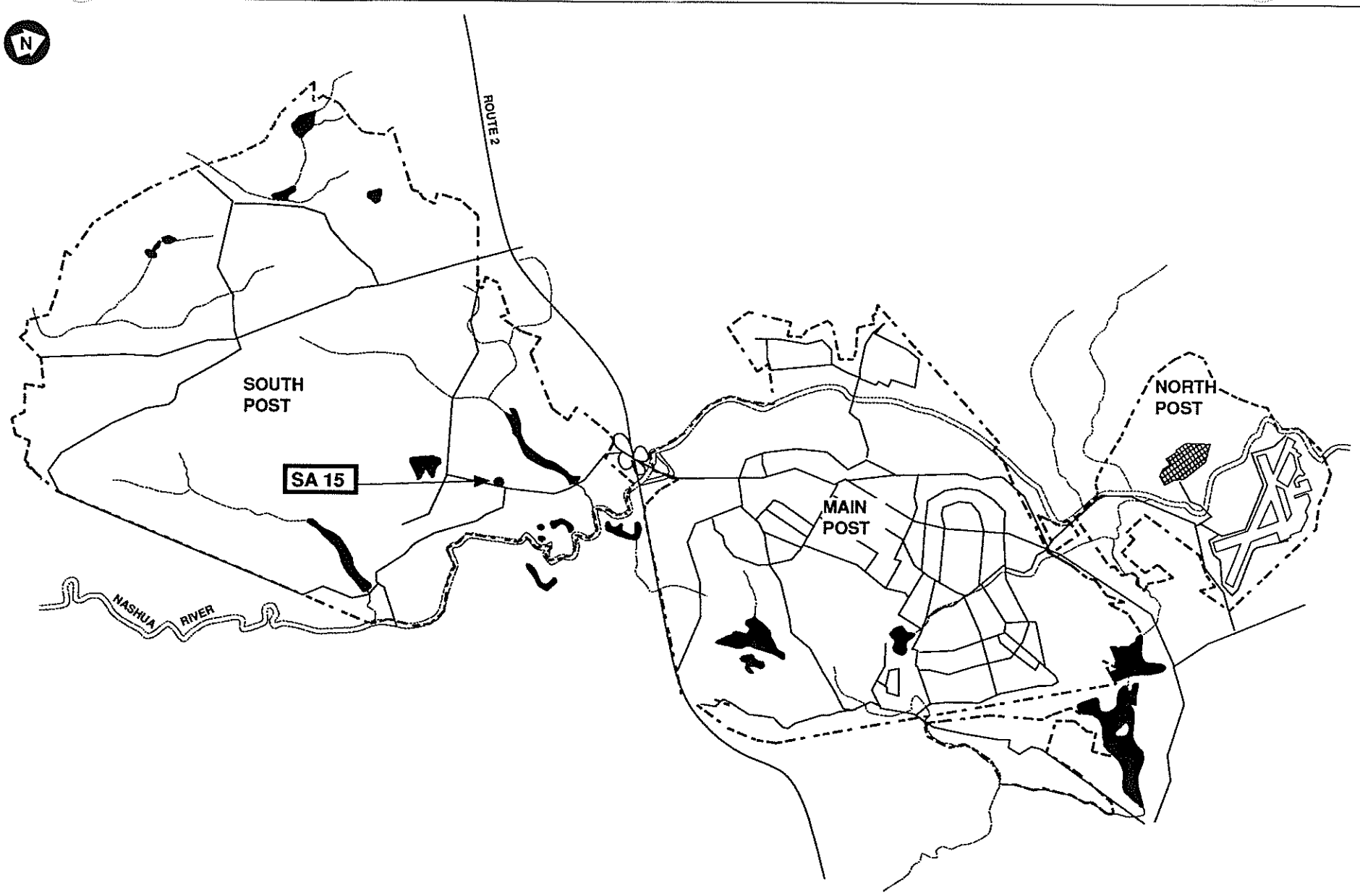
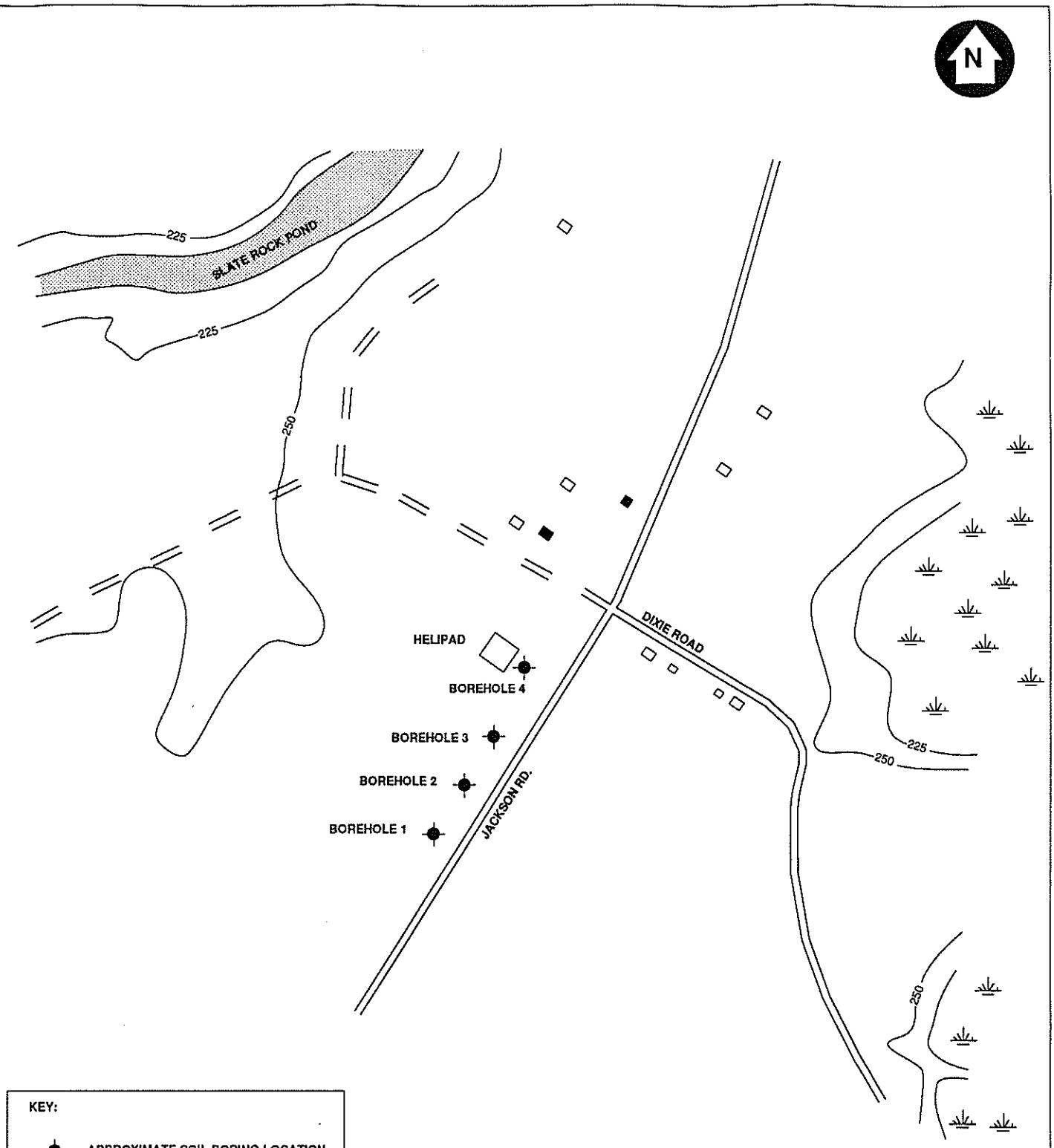


FIGURE 1
SITE LOCATION
STUDY AREA 15 - LANDFILL 11
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

7053-07 AA



SOURCE: ECOLOGY AND ENVIRONMENT, 1992

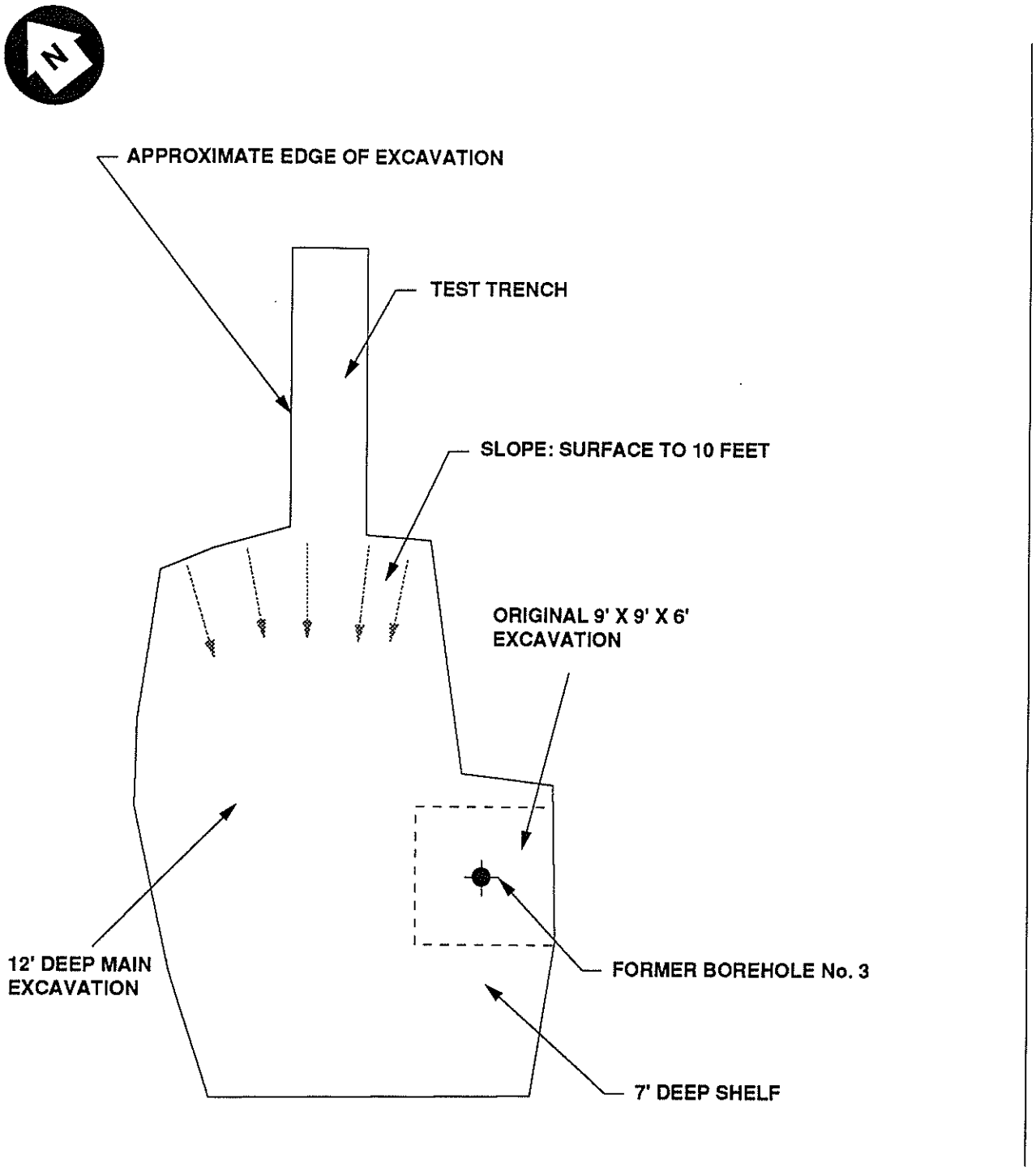
0 400 800

SCALE FEET

FIGURE 2
LOCATION OF E&E SOIL BORINGS
FINAL CLOSURE REPORT
STUDY AREA 15
FORT DEVENS, MA

ABB Environmental Services, Inc.

7136-01C

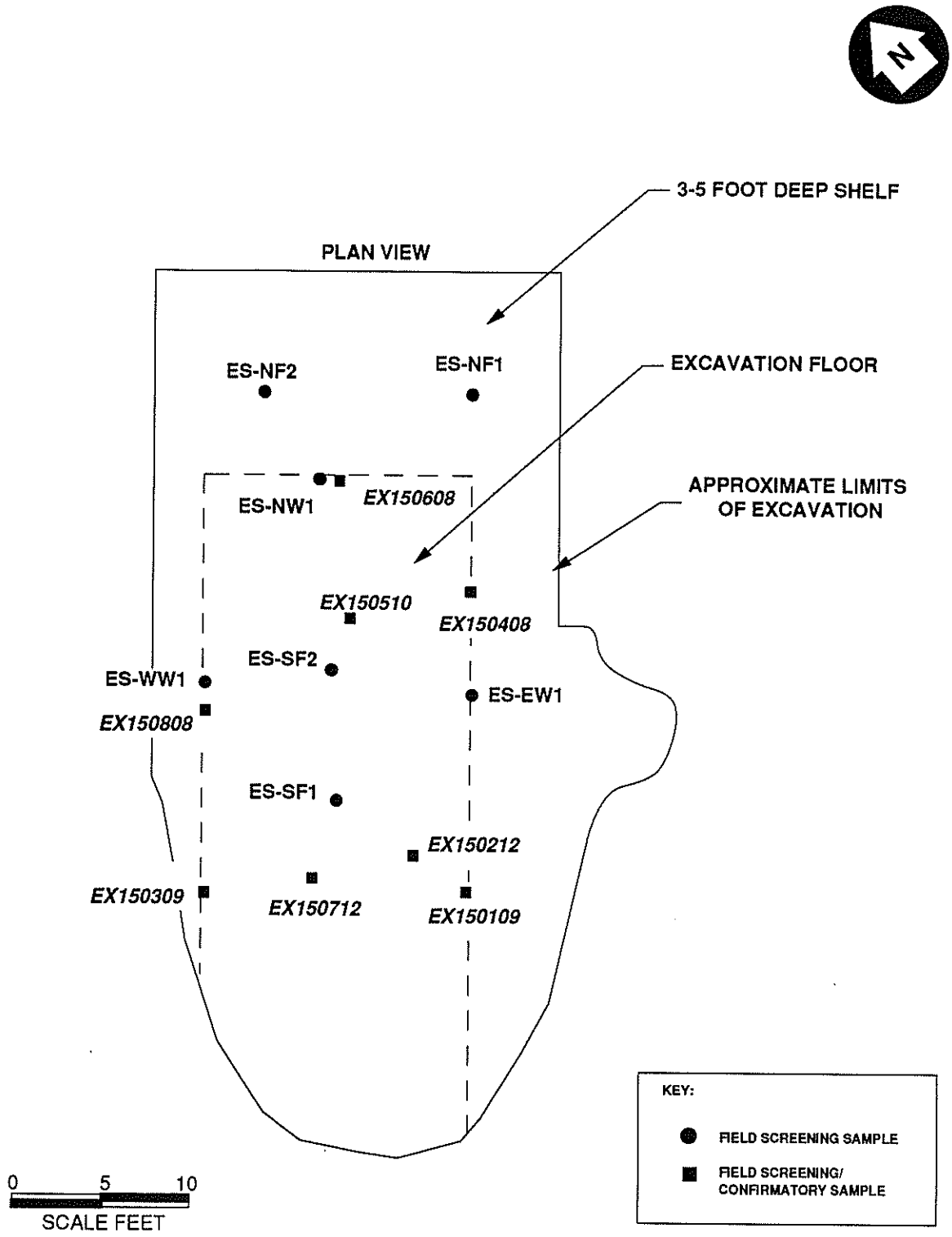


ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

FIGURE 3
LIMITS OF EXCAVATION - MARCH 1993
FINAL CLOSURE REPORT
STUDY AREA 15
FORT DEVENS, MA

ABB Environmental Services, Inc.

7136-00

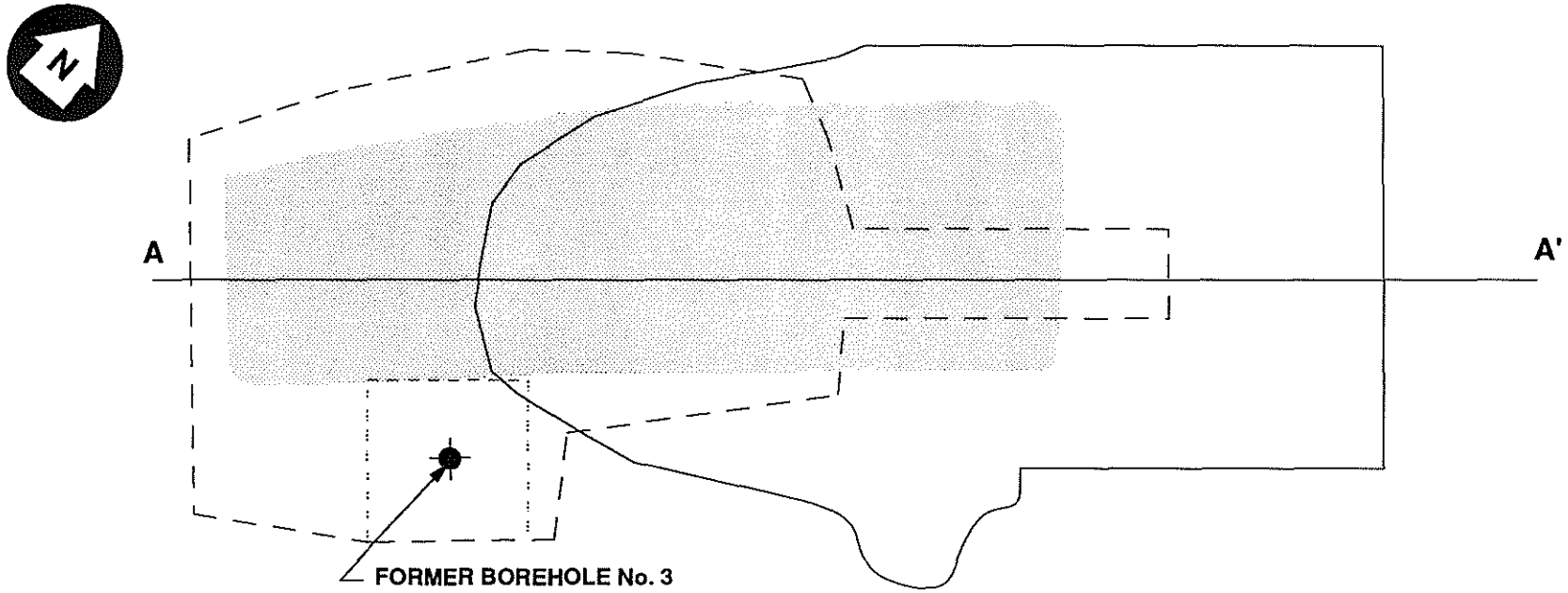


ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

FIGURE 4
LIMITS OF EXCAVATION AND
SAMPLING LOCATIONS - DECEMBER 1993
FINAL CLOSURE REPORT
STUDY AREA 15
FORT DEVENS, MA

ABB Environmental Services, Inc.

7136-01B



PLAN VIEW

CROSS SECTION VIEW

0 5 10 20

SCALE FEET

ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

FIGURE 5
COMBINED HORIZONTAL AND VERTICAL LIMITS OF EXCAVATION
FINAL CLOSURE REPORT
STUDY AREA 15
FORT DEVENS, MA

ABB Environmental Services, Inc.

7136-01A

TABLE 1

Field Screening Results - March 1993
Final Closure Report
Study Area 15

SAMPLING LOCATION	DEPTH	TPHC (ppm)	DESCRIPTION
March 23, 1993			
Floor	6 feet	ND	Unstained Soil
East Wall	3 feet	ND	Unstained Soil
North Wall	3 feet	57	Unstained Soil
South Wall	3 feet	256	Slightly Stained
West Wall	3 feet	> 1,000	Dark Brown or Black Material
North Wall	NR	> 1,000	Stained Soil Stringer
March 25, 1993			
Floor, Southwest Quadrant	8 feet	> 1,000	Slightly Stained
North Wall	3 feet	> 1,000	Dark Brown Soil
West Wall	3 feet	ND	Unstained Soil
March 26, 1993			
North Wall, East of Stained Zone	3 feet	ND	Unstained Soil
North Wall	3 feet	> 1,000	Stained Soil
March 29, 1993			
North end of Test Trench	NR	ND	Unstained Soil
Floor, Southwest Quadrant	8.5 feet	> 1,000	Slightly Stained
West Wall	4 feet	ND	Unstained Soil
Floor, Western Half of Main Excavation	12 feet	ND	Unstained Soil
Bench Wall	8 feet	ND	Unstained Soil
East Wall	4 feet	ND	Unstained Soil
West Wall	4 feet	ND	Unstained Soil
South Wall	3 - 4 feet	ND	Unstained Soil
West Wall of Test Trench	2 feet	> 1,000	Black Material

Notes: TPHC = Total Petroleum Hydrocarbon Compounds
ND = Not Detected
Detection Limit = 50 ppm
NR = Not Reported

TABLE 2

Field Screening Data - December 1993
Final Closure Report
Study Area 15

Sample ID	Sampling Location	Screening Results	
		PID (ppm)	TPHC (mg/kg)
ES-F1	Floor of excavation at south end	3	<50
ES-SF2	Floor of excavation south of center	10	<50
ES-NF1	Floor of northern terrace - east side of excavation	1	<50
ES-NF2	Floor of northern terrace - west side of excavation	1	<50
ES-EW1	East wall of excavation	2	<50
ES-WW1	West wall of excavation	8	<50
ES-NW1	North wall of excavation	9	<50
Soil Pile 1	Re-excavated soil pile No. 1	2	<50
Soil Pile 2	Re-excavated soil pile No. 2	1	<50
Soil Pile 3	Re-excavated soil pile No. 3	1	<50

Notes: PID = Photoionization Detector
TPHC = Total Petroleum Hydrocarbon Compounds
Detection Limit = 50 ppm

TABLE 3

Confirmatory Sample Laboratory Results
Final Closure Report
Study Area 15

Sample ID	Sampling Location	Sample Depth (feet)	Screening Results		Laboratory Results (mg/kg)
			PID (ppm)	TPHC (mg/kg)	
EX150109	Southeast corner near bottom of excavation	9	1	<50	56.2
EX150212	Bottom of excavation - southeast of center	12	1	290	NA
EX150212 (resampled)	Bottom of excavation - southeast of center	12	NR	<50	BRL
EX150309	Southwest corner near bottom of excavation	9	1	<50	15.0
EX150712	Bottom of excavation - southwest of center	12	2	<50	26.5
EX150510	Bottom of excavation near center	10	1	<50	8.20
EX150608	Base of terrace - north of excavation center	8	1	<50	25.2
EX150808	From west wall near midpoint of excavation	8	2	<50	34.6
EX150408	From east wall near midpoint of excavation	8	1	<50	12.9
EX150908 (duplicate of EX150808)	From west wall near midpoint of excavation	8	2	<50	29.5

Notes: PID = Photoionization Detector
TPHC = Total Petroleum Hydrocarbon Compounds
NA = Not Analyzed
NR = Not Recorded
BRL = Below Reportable Limit (6.3 mg/kg)

APPENDIX A

1991 Soil Boring Laboratory Results
Final Closure Report
Study Area 15

Table 4-9

INSTALLATION RESTORATION PROGRAM
CHEMICAL SUMMARY REPORT FOR LANDFILL 11 SOIL BORINGS - FILE TYPE: CSO
STUDY AREA: 15 SITE TYPE: BORE UNITS: UGG

	SITES									
Parameter	LF11-01-01	LF11-01-02	LF11-01-03	LF11-01-04	LF11-01-05	LF11-01-06	LF11-01-07	LF11-01-08	LF11-01-09	LF11-01-10
P,P'-DDT	ND	ND	0.095*	0.053*	ND	0.049*	0.121*	0.055*	0.048*	0.046*
ALPHA-BHC	LT	0.072*	LT	LT	LT	LT	LT	LT	LT	LT
ALUMINUM	4900.000	3300.000	3700.000	3500.000	3300.000	3100.000	3400.000	3800.000	3000.000	2900.000
ANTIMONY	LT	LT	LT	22.700	LT	LT	LT	LT	LT	LT
ARSENIC	3.900	6.000	8.300	5.500	6.200	8.500	11.000	14.000	5.600	4.400
BARIUM	9.550	11.200	15.200	10.100	14.300	11.800	14.500	12.000	12.400	13.300
BERYLLIUM	LT	0.120	0.176	0.129	0.265	0.537	0.235	0.175	0.184	0.179
CADMIUM	LT	LT	LT	7.000	0.574	LT	LT	LT	LT	LT
CALCIUM	300.000	420.000	460.000	360.000	930.000	510.000	970.000	500.000	510.000	630.000
CHROMIUM	5.950	7.600	5.840	5.200	5.660	5.800	6.510	5.830	5.420	LT
COPPER	2.730	LT	4.210	5.810	4.430	12.700	5.150	4.150	2.930	2.810
IRON	7900.000	7800.000	4200.000	5200.000	5600.000	4200.000	5600.000	6100.000	4400.000	4200.000
LEAD	9.500	8.500	6.600	5.800	6.400	7.100	6.300	6.300	ND	7.600
LINDANE	LT	0.016*	LT	LT	LT	LT	LT	LT	LT	LT
MAGNESIUM	790.000	1100.000	1000.000	1100.000	940.000	910.000	1000.000	1300.000	910.000	950.000
MANGANESE	140.000	150.000	83.000	82.000	78.000	58.000	97.000	99.000	58.000	50.000
METHYLENE CHLORIDE	0.006	LT	0.007	0.006	0.005	0.006	0.006	0.009	0.010	0.008
NICKEL	LT	3.370	LT	LT	LT	LT	LT	LT	LT	LT
POTASSIUM	990.000	1200.000	750.000	670.000	690.000	670.000	820.000	650.000	740.000	790.000
SILVER	ND	ND	ND	ND	ND	0.185	0.218	ND	ND	ND
SODIUM	212.000	231.000	69.800	225.000	ND	55.400	66.900	ND	ND	ND
VANADIUM	7.220	8.170	6.670	10.100	6.650	6.490	8.230	7.190	5.670	6.840
ZINC	11.900	14.300	14.000	12.300	14.700	13.600	18.600	13.600	13.900	11.800

RC395

NOTES:

LT = Less than the certified reporting limit
ND = Not Detected

* Result not confirmed on a second column

Source: IRDMIS Level 2/E & E, 1992

Table 4-9 (Cont.)

INSTALLATION RESTORATION PROGRAM
CHEMICAL SUMMARY REPORT FOR LANDFILL 11 SOIL BORINGS - FILE TYPE: CSO
STUDY AREA: 15 SITE TYPE: BORE UNITS: UGG

	SITES								
Parameter	LF11-02-01	LF11-02-02	LF11-02-03	LF11-02-04	LF11-02-05	LF11-02-06	LF11-02-07	LF11-02-08	LF11-02-09
P,P'-DDT	0.114*	0.126*	0.040*	0.043*	0.041*	0.037*	0.074*	0.040*	0.045*
ALUMINUM	4800.000	3600.000	3400.000	3400.000	2300.000	3000.000	3200.000	3600.000	2900.000
ARSENIC	3.800	4.400	4.200	7.200	12.000	9.600	9.400	8.200	6.100
BARIUM	16.800	9.440	12.900	10.300	6.840	10.800	10.500	16.500	12.900
BERYLLIUM	0.218	0.224	0.222	0.247	LT	0.160	0.167	0.218	0.219
CALCIUM	210.000	310.000	520.000	240.000	1200.000	910.000	550.000	830.000	640.000
CHROMIUM	4.950	LT	LT	4.630	LT	4.720	5.220	5.990	5.420
COPPER	3.410	2.930	2.740	2.740	LT	2.890	3.910	4.130	3.340
IRON	4200.000	3700.000	4000.000	5600.000	5200.000	5500.000	5200.000	5100.000	4300.000
LEAD	ND	ND	ND	5.800	ND	ND	ND	ND	ND
MAGNESIUM	1000.000	750.000	900.000	960.000	640.000	1000.000	1100.000	1100.000	880.000
MANGANESE	94.000	59.000	56.000	73.000	89.000	76.000	74.000	73.000	66.000
METHYLENE CHLORIDE	0.007	0.006	LT	0.005	0.006	0.006	0.007	0.007	0.007
POTASSIUM	1000.000	590.000	850.000	690.000	810.000	690.000	660.000	880.000	750.000
SILVER	ND	ND	ND	ND	ND	ND	ND	0.249	ND
SODIUM	56.700	ND	ND	ND	125.000	ND	64.000	76.700	74.100
VANADIUM	6.940	4.900	5.470	5.980	4.900	6.570	5.630	7.310	6.420
ZINC	13.400	10.300	11.600	11.000	LT	10.800	13.000	15.100	17.400

RC395

NOTES:

LT = Less than the certified reporting limit
ND = Not Detected

* Result not confirmed on a second column

Source: IRDMIS Level 2/E & E, 1992

Table 4-9 (Cont.)

INSTALLATION RESTORATION PROGRAM
CHEMICAL SUMMARY REPORT FOR LANDFILL 11 SOIL BORINGS - FILE TYPE: CSO
STUDY AREA: 15 SITE TYPE: BORE UNITS: UGG

	SITES								
Parameter	LF11-02-10	LF11-03-01	LF11-03-02	LF11-03-03	LF11-03-04	LF11-03-05	LF11-03-06	LF11-03-07	LF11-03-08
P,P'-DDD	LT	LT	0.035*	LT	LT	LT	LT	LT	LT
P,P'-DDT	ND	0.230	0.121*	0.045*	0.026*	0.039*	ND	0.030*	0.141*
ACETONE	ND	0.055	ND	0.040	0.044	0.045	0.043	0.044	0.041
ALUMINUM	3300.000	6000.000	4200.000	5200.000	4400.000	3000.000	5500.000	3700.000	9800.000
ARSENIC	8.900	7.400	4.200	4.900	5.800	7.100	8.400	11.000	8.800
BARIUM	11.500	19.000	11.500	9.330	14.100	8.960	20.500	10.100	32.000
BERYLLIUM	0.203	0.171	0.213	0.119	0.175	0.147	0.250	0.159	0.231
BIS(2-ETHYLHEXYL)PHTHALATE	LT	LT	LT	0.745	LT	LT	1.610	LT	1.060
CADMIUM	LT	LT	LT	LT	LT	1.120	LT	LT	LT
CALCIUM	650.000	360.000	600.000	670.000	400.000	670.000	1200.000	640.000	1100.000
CHROMIUM	7.020	LT	LT	10.000	4.830	4.750	6.830	4.980	10.800
COPPER	3.200	3.370	LT	3.990	3.470	2.750	3.280	3.900	6.820
DIELDRIN	LT	0.072*	0.012*	LT	LT	LT	LT	LT	LT
IRON	5300.000	6000.000	4500.000	7500.000	6100.000	5300.000	7400.000	6800.000	9400.000
LEAD	ND	9.920	ND	ND	ND	ND	ND	ND	ND
MAGNESIUM	1000.000	1100.000	960.000	2300.000	1400.000	930.000	1800.000	1300.000	2800.000
MANGANESE	71.000	75.000	63.000	98.000	95.000	81.000	140.000	140.000	160.000
METHYLENE CHLORIDE	0.008	0.009	0.008	0.008	0.008	0.009	0.009	0.010	0.010
NICKEL	LT	LT	LT	5.360	LT	LT	LT	LT	LT
POTASSIUM	830.000	730.000	970.000	670.000	1000.000	670.000	1600.000	780.000	1800.000
SILVER	0.172	ND	0.142	0.108	0.128	ND	1.130	0.198	0.127
SODIUM	78.800	66.800	67.600	62.200	72.000	60.000	91.700	ND	111.000
VANADIUM	6.890	11.600	4.800	10.300	5.030	5.790	8.030	6.330	11.500
ZINC	13.000	15.400	10.700	16.200	12.600	LT	14.900	15.200	21.300
TOTAL PETROLEUM HYDROCARBONS	ND	14600.000	288.000	ND	ND	ND	ND	ND	ND

RC395

NOTES:

LT = Less than the certified reporting limit
ND = Not Detected

* Result not confirmed on a second column

Source: IRDMIS Level 2/E & E, 1992

Table 4-9 (Cont.)

INSTALLATION RESTORATION PROGRAM
CHEMICAL SUMMARY REPORT FOR LANDFILL 11 SOIL BORINGS - FILE TYPE: CSO
STUDY AREA: 15 SITE TYPE: BORE UNITS: UGG

	SITES								
Parameter	LF11-03-09	LF11-03-10	LF11-04-01	LF11-04-02	LF11-04-03	LF11-04-04	LF11-04-05	LF11-04-06	LF11-04-07
ACETONE	0.042	0.019	ND	ND	ND	ND	ND	ND	ND
ALUMINUM	4600.000	3700.000	7500.000	4300.000	3600.000	3700.000	3500.000	3500.000	3200.000
ARSENIC	8.600	6.600	3.900	4.000	5.900	7.000	6.300	4.300	8.100
BARIUM	16.800	12.700	9.760	9.280	10.100	9.870	11.000	LT	9.420
BERYLLIUM	0.131	1.440	0.130	0.142	0.159	0.113	0.169	LT	0.151
CADMIUM	LT	LT	LT	LT	0.832	LT	LT	9.700	1.060
CALCIUM	880.000	700.000	270.000	300.000	400.000	450.000	250.000	400.000	710.000
CHROMIUM	LT	LT	LT	LT	LT	LT	5.120	LT	4.910
COPPER	3.340	2.850	LT	50.000	4.030	5.000	4.900	LT	2.890
ENDOSULFAN SULFATE	0.072*	0.068*	0.052*	0.048*	0.055*	0.018*	ND	0.161*	0.030*
IRON	7000.000	5500.000	5600.000	5100.000	5000.000	5000.000	5700.000	4600.000	5400.000
LEAD	ND	ND	5.820	10.100	ND	ND	ND	ND	ND
MAGNESIUM	1500.000	1200.000	740.000	1000.000	1000.000	1000.000	1100.000	1400.000	960.000
MANGANESE	100.000	94.000	91.000	81.000	81.000	70.000	150.000	81.000	91.000
METHYLENE CHLORIDE	0.010	0.010	0.011	0.010	0.009	0.008	0.005	0.006	0.006
POTASSIUM	1400.000	900.000	490.000	610.000	650.000	910.000	690.000	930.000	620.000
SILVER	0.239	ND	ND	ND	ND	ND	ND	ND	ND
SODIUM	86.500	68.000	ND	60.100	56.800	64.100	66.700	ND	82.300
VANADIUM	7.570	4.810	4.640	4.200	5.600	4.880	5.370	LT	5.520
ZINC	LT	LT	9.830	9.560	LT	9.550	12.000	LT	LT

RC395

NOTES:

LT = Less than the certified reporting limit
ND = Not Detected

* Result not confirmed on a second column

Source: IRDMIS Level 2/E & E, 1992

Table 4-9 (Cont.)

INSTALLATION RESTORATION PROGRAM
CHEMICAL SUMMARY REPORT FOR LANDFILL 11 SOIL BORINGS - FILE TYPE: CSO
STUDY AREA: 15 SITE TYPE: BORE UNITS: UGG

	SITES		
Parameter	LF11-04-08	LF11-04-09	LF11-04-10
ACETONE	ND	ND	0.013
ALUMINUM	4500.000	4400.000	4000.000
ARSENIC	8.700	8.200	7.300
BARIUM	10.400	10.100	11.400
BERYLLIUM	0.117	0.159	0.128
CADMIUM	LT	0.761	LT
CALCIUM	370.000	320.000	520.000
CHROMIUM	6.440	6.940	LT
COPPER	4.670	4.940	3.860
ENDOSULFAN SULFATE	ND	0.051*	0.094*
IRON	8100.000	7300.000	6000.000
MAGNESIUM	1900.000	1700.000	1500.000
MANGANESE	120.000	140.000	140.000
METHYLENE CHLORIDE	0.007	0.006	0.008
NICKEL	LT	5.590	4.240
POTASSIUM	940.000	610.000	1100.000
SILVER	0.255	ND	ND
SODIUM	67.100	ND	82.800
VANADIUM	5.860	5.240	4.960
ZINC	14.800	15.000	11.900

RC395

NOTES:

LT = Less than the certified reporting limit
ND = Not Detected

* Result not confirmed on a second column

Source: IRDMIS Level 2/E & E, 1992

APPENDIX B

Trip Report and Field Photographs
Final Closure Report
Study Area 15

CENED-ED-GG

16 April 1993
Ms. Schmidt/rs/7345

MEMORANDUM FOR Chief, GED

SUBJECT: Trip Report - Study Area 15, Ft Devens
Ayer, MA

1. Summary: At the request of Ft Devens, NED contracted excavation services to assist in the Removal Action at Study Area 15. Contract/Purchase Order No. DACA33-93-M-0195 was awarded to G. Lopes Construction, Inc. on 20 November 1993. Once the necessary submittals were received from the Contractor and approved, work was scheduled to start the week of 22 March 1993. Ecology and Environment (E & E), the consultant to the Army Environmental Center (AEC; formerly USATHAMA), provided personnel on-site to perform field screening, and analytical sampling and testing support work.

2. Purpose: Field contract oversight and technical assistance for the removal of contaminated soil.

3. Personnel:

Rose Schmidt, Geologist, CENED-ED-GG
Mark Terra, Operator, Lopes Construction (SSHO)
Dave Seekel, Laborer, Lopes Construction
Keith Davison, Scientist, Ecology and Environment
Ken Kanige, Chemist, Ecology and Environment
Jon Kullberg, Engineer, CENED-ED-GD (23 March 93 only)
Sheila Stanton, Engineer, CENED-ED-GD (31 March 93 only)
Art Siliviera, Supervisor, Lopes Construction (all days except 26 March 93)

4. Conclusions and Recommendations: A former burn pit was apparently encountered during this excavation. The approximate dimensions of the pit were 50 ft north-south, and 15 to 20 ft east-west. Approximately 266 cu yds of contaminated soil were excavated under this Purchase Order. It is estimated that approximately 200 cu yds of contaminated soil remain beyond the northern extent of the subject excavation, based on trenching that was performed north of the main excavation. The excavation has been backfilled, with the sidewalls lined with poly. Because the cost of removal and disposal of the stockpiled soil is beyond the capability of the Purchase Order contractual mechanism, this line item is being deleted from this contract. A separate contract shall be issued for removal and disposal of the contaminated soil stockpiles, as expeditiously as possible, in consideration of the 120 day time limit.

Thin black seams (1/2" to 1") were encountered in the uppermost 18" typically, on the south, west, and north walls of the excavation. These seams may be explained by the regrading of this area. Equipment moving over burn pit locations would tend to smear out this material on the surface. The successive addition of fill

and regrading would also explain the layering where multiple seams are present. Alternatively, the seams could represent more recent burn areas that covered larger areas, but were not used as extensively. Where such seams are present very near the surface, the possibility exists that they could be related to the highly weathered asphalt pavement observed at the surface in some places.

5. Narrative:

(1) General. The plan was to initially excavate a 7 ft square area, centered on the staked location of boring LF11-BH3, to a depth of 6 ft. This depth was chosen because the 2.5 ft to 4.5 ft sample from the boring had a high TPH value (288 ppm), while the 5 ft to 7 ft sample was clean. An excavation of this size would also result in a tonnage of soil for removal and disposal to be approximately equal to or less than the contract amount (20 tons). The quantities in the contract were based on the assumption that only about 25 % of all the excavated material (50 cu yds), or approximately 12.5 cu yds, would be subject to removal and disposal.

(2) 22 March 1993. Contractor mobilized backhoe and cleared snow. Established Exclusion Zone (approximately 40 ft radius from the staked location of LF11-BH3).

(3) 23 March 1993. Contractor obtained water from specified watering point after receiving instruction on use of this water supply. Set up Decontamination Pad. Started excavating a square centered on the stake, and stockpiling soil assumed to be contaminated on poly on the east side of the excavation (between the road and the excavation). See Figures 1 and 2 for location of excavation. Excavation was difficult because of the 1 ft frost depth. This uppermost 1 ft appeared darker in color because it was frozen, and also because it contained topsoil. Below this zone, soil consisted chiefly of light brown, poorly graded, medium to coarse-grained sand, with occasional pebbles less than 1/2" diameter (SP).

A pocket of black and very dark brown soil was encountered at a depth of 2 ft on the west wall during the initial excavation (see Photo 1). Air monitoring with a Photoionization Dectector (PID) in the vicinity of the contaminated excavation wall detected no elevated readings (above background), although the material had a heavy, oily smell. As the initial excavation was expanded to the west, the extent of the pocket grew on the west wall, and spread partially onto the south wall. At the end of this first phase, the excavation measured approximately 9 ft square and 6 ft deep (18 cu yds). See Figures 1 and 2.

Contamination was observed to occur in two settings in the excavation:

1) the large pocket of black and dark brown soil at a depth of 2 ft on the west and south walls, approximately 2 ft thick, with a maximum diameter of 6 ft exposed; and

2) thin seams/layers of black to very dark brown material, 1/4 " to 2" thick (1/2" to 1" typical), in the uppermost 2 ft., occurring most conspicuously above the pocket, but a few of these seams could be traced all along the south, west, and north walls at a depth of 12" to 18." These seams were not observed on the east wall.

At this point, E & E collected 5 samples for TPH analysis by Non-Dispersive Infrared, or NDIR (Modified EPA Method 418.1); one from the floor, and one from each wall at a depth of 3 ft. A lunch break was taken while the analysis was being performed. At this time, the Resident Engineer informed the Contracting Officer that the Removal and Disposal line item would be exceeded. After lunch, test results were provided verbally by E & E:

Sample Location	TPH (ppm)	
Floor	ND	ND = Not Detected
East Wall	ND	
North Wall	57	Note: Detection Limit
South Wall	256	is 50 ppm.
West Wall	>1,000	

In the second phase of excavation, an attempt was made at removing the thin black seams from the south and north walls. This was done prior to excavating the main pocket because access to these areas, especially the south wall, would have been difficult once the west wall was cut back. The original excavation was expanded 10 ft to the south in the process of chasing these seams. The seams thinned and thickened with no apparent pattern, and because their extent could be widespread, this effort was discontinued at this point. A similar attempt on the north wall was also discontinued when the same conclusion was reached after expanding the original excavation an additional 2 ft to the north. E & E collected one sample from a seam on the north wall, for NDIR analysis (> 1,000 ppm TPH).

At the end of this second phase, the excavation measured approximately 21 ft by 5 to 10 ft wide, with a 4 ft average depth (approximately 24 cu yds). In the process of expanding the excavation north and south, the pocket of contamination exposed on the west wall grew to be 13 ft wide (see Photo 2).

(4) 24 March 1993. Site work called off due to heavy snow. Plans for continued excavation were discussed in telephone conversation between Resident Engineer and Mr. Mullen (Ft Devens, EMO), Mr. Deleppo (CENED-PD-L), and Mr. George (AEC). The decision was made to pursue the main pocket, but leave the thin layers in the uppermost 2 ft to be addressed at a later date.

(5) 25 March 1993. Excavated back the west wall of the excavation, stockpiling soil on the south side of the excavation (see Photos 3 and 4). Some black, highly contaminated material was encountered at the south end of the west wall. At the end of the morning, the excavation was approximately 21 ft by 15 ft, with a 4

ft average depth (47 cu yds). Given the unknown extent of the contamination, and the limits of the Purchase Order, the Resident Engineer in conference with Mr. Yatsevitch (CENED-ED-GG), decided to take one last pass of the bucket along the west wall, and then poly and backfill if the contamination still continued. The Resident Engineer then contacted Mr. Mullen to inform him of the plan. During this last pass, the south end of the west wall started to clean up (see Photos 5, 6, and 7). Dark, stained sand would slough off, revealing clean-looking, light brown sand behind it. Excavation continued along the south and west walls with equal success, such that contamination remained exposed only on the west end of the north wall, as a pocket approximately 12 ft wide (see Photo 8). The depth of contamination had not yet been established, but soils on the floor of the excavation still appeared to be slightly stained, medium brown. At the end of this third phase of excavation, the hole measured approximately 21 ft by 22 ft, with depths ranging between 4 ft and 8 ft, 6 ft average depth (approximately 93 cu yds). E & E took three samples for NDIR analysis from the locations listed below. Test results were provided verbally on 26 March 1993.

Sample Location	TPH (ppm)
Floor, southwest quadrant, 8 ft depth	>1,000
North Wall, dark brown soil, 3 ft depth	>1,000
West Wall, clean-looking soil, 3 ft depth	ND

(6) 26 March 1993. Continued excavation to the north, and started stockpiling soil to the west of the excavation. At times the contamination appeared as discrete bands, 0.5 ft to 1 ft thick, and with continued excavation, these bands coalesced (see Photos 9 and 10). E & E collected two samples for NDIR analysis. The first was from the north wall, just east of the contaminated zone, at a depth of 3 ft (ND); and the second was from the dark brown material on the north wall, at a depth of 3 ft (>1,000 ppm). The contact between the contaminated soil and the clean-looking material was very distinct visually, and the NDIR results supported this observation. It would appear that contaminant migration has been esssentially vertical, with little lateral migration.

Miscellaneous items were found in the excavation; a can at 2 ft depth (not charred); a small brown bottle, with the year "68" stamped on the bottom, at approximately 2 to 3 ft depth. After expanding the excavation approximately 12 ft north, it was decided to try trenching to define the northern extent of the contamination. After trenching north about 5 ft, a spent brass shell casing, with the year "49" stamped on the bottom, was found at a depth of approximately 3 ft (see Photo 11). Conversations between the Resident Engineer and Mr. Deleppo and Mr. Yatsevitch concluded that northward excavation should be halted at this time, with approximately 120 cu yds total excavated.

(7) 29 March 1993. Resident Engineer, Mr. Applebee (CENED-ED-EM), and Art Silviera (Lopes) met at site and discussed status of excavation, and contract options.

(8) 31 March 1993. Continued excavation work with larger piece of excavating equipment mobilized by Contractor. Excavated floor of western portion of hole to approximately 8 ft depth. Continued trench northward, after checking area with metal detector and digging up several pieces of scrap metal. Ran out of contamination approximately 8 ft beyond point previously reached on 26 March 1993, and approximately 25 ft north of the previous northern edge of the excavation (see Photos 12 and 13). The total north-south extent of the former burn pit appeared to be approximately 50 ft. E & E collected samples from the following locations: the clean-looking material at the north end of the trench (ND); the floor in the southwest quadrant of the excavation, at a depth of approximately 8.5 ft (>1,000); and from the west wall at a depth of 4 ft (ND). Continued excavation of floor. E & E collected another floor sample, from a depth of approximately 10.5 ft (ND). Attempted to clean up more of the north end of the main excavation, and deepened excavation slightly, in preparation for taking final confirmatory samples (see Photo 14). Decontaminated the bucket of the excavator. E & E collected six samples, for NDIR and laboratory TPH analysis, at the following locations:

Sample Location	TPH (ppm)
Floor, western half of main excavation, 12 ft depth	ND
Bench wall between main excavation (12 ft deep), and initial excavation (7 ft deep), at 8 ft depth	ND
East Wall, 4 ft depth	ND
West Wall, 4 ft depth	ND
South Wall, 3 ft to 4 ft depth	ND
West Wall of Trench, black material, 2 ft depth	>1,000

Took final measurements of excavation (approximately 266 cu yds total) while waiting for results of NDIR analysis. Results were provided verbally by E & E, and Contractor started backfilling the excavation. Backfilled deepest portion of excavation first, then draped poly over north slope, to a depth of approximately 10 ft, to prevent clean backfill material from coming in contact with contaminated soil left in-place (see Photo 15). In addition, poly was draped over the edges of the remaining sidewalls, to a depth of approximately 5 ft, to prevent sloughing of material containing thin seams of contamination into the clean backfill.

(9) 1 April 1993. More clean fill was delivered to site; backfilling continued. First 3 loads contained some large boulders; these were segregated, and ultimately used to help weight down the poly covering the stockpiles. E & E collected 3 samples, one from each stockpile, to be analyzed for TCLP and RCRA constituents to characterize the material for disposal. Contractor sampled decontamination wash water, containerized in a drum, and left on site until test results come back. Contractor also left a drum of soiled PPE on site, to be removed when they come back for the drum of water. Completed backfill, staking corners of trench and main excavation (see Photo 16).

Rosemary A. Schmidt, Geologist

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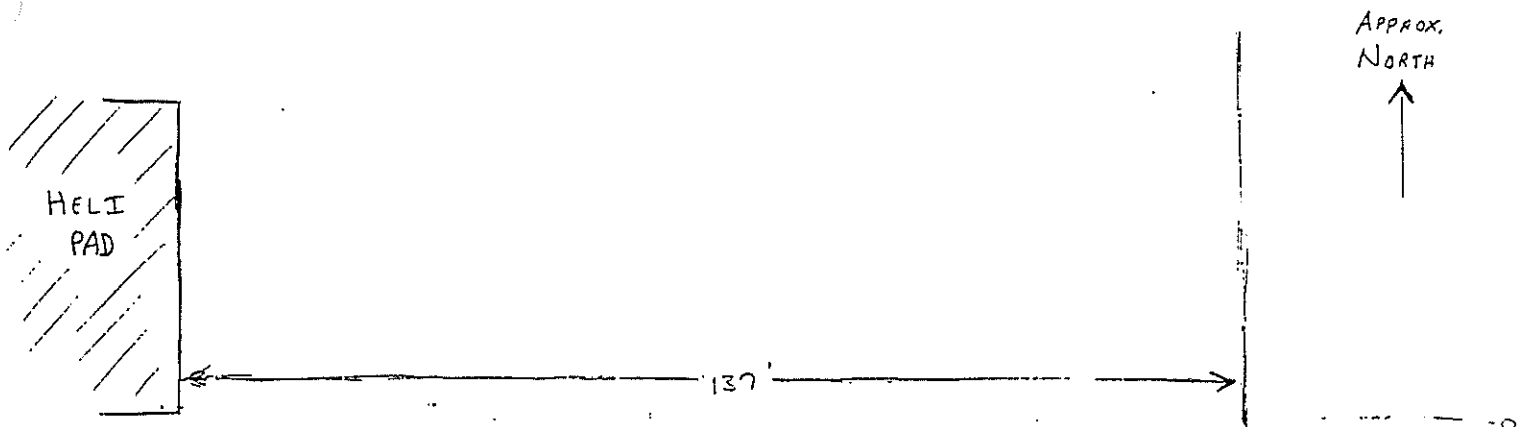
PAGE

SUBJECT Ft. Devens SA 15

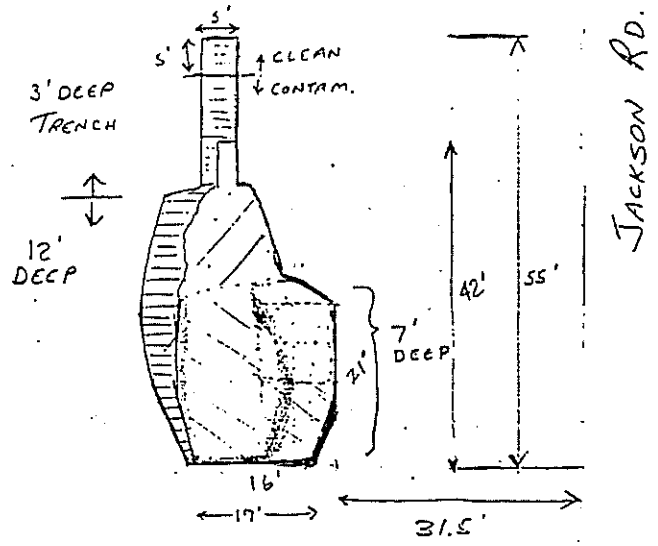
COMPUTATION

COMPUTED BY Rose Schmidt CHECKED BY DATE 15 April 93



Remaining Contamination:

↕ 25' x 18' → x 12' deep
200 cu yds.



Cumulative Total (cu yds)		
18		Original 9'x9'x6' deep Excavation } 3/23/93
24		Additional Excavation N-S
93		Excavation on 3/25/93
120		Excavation on 3/26/93
266		Excavation on 3/31/93

Scale: 1" = 25'

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27 Sept 49

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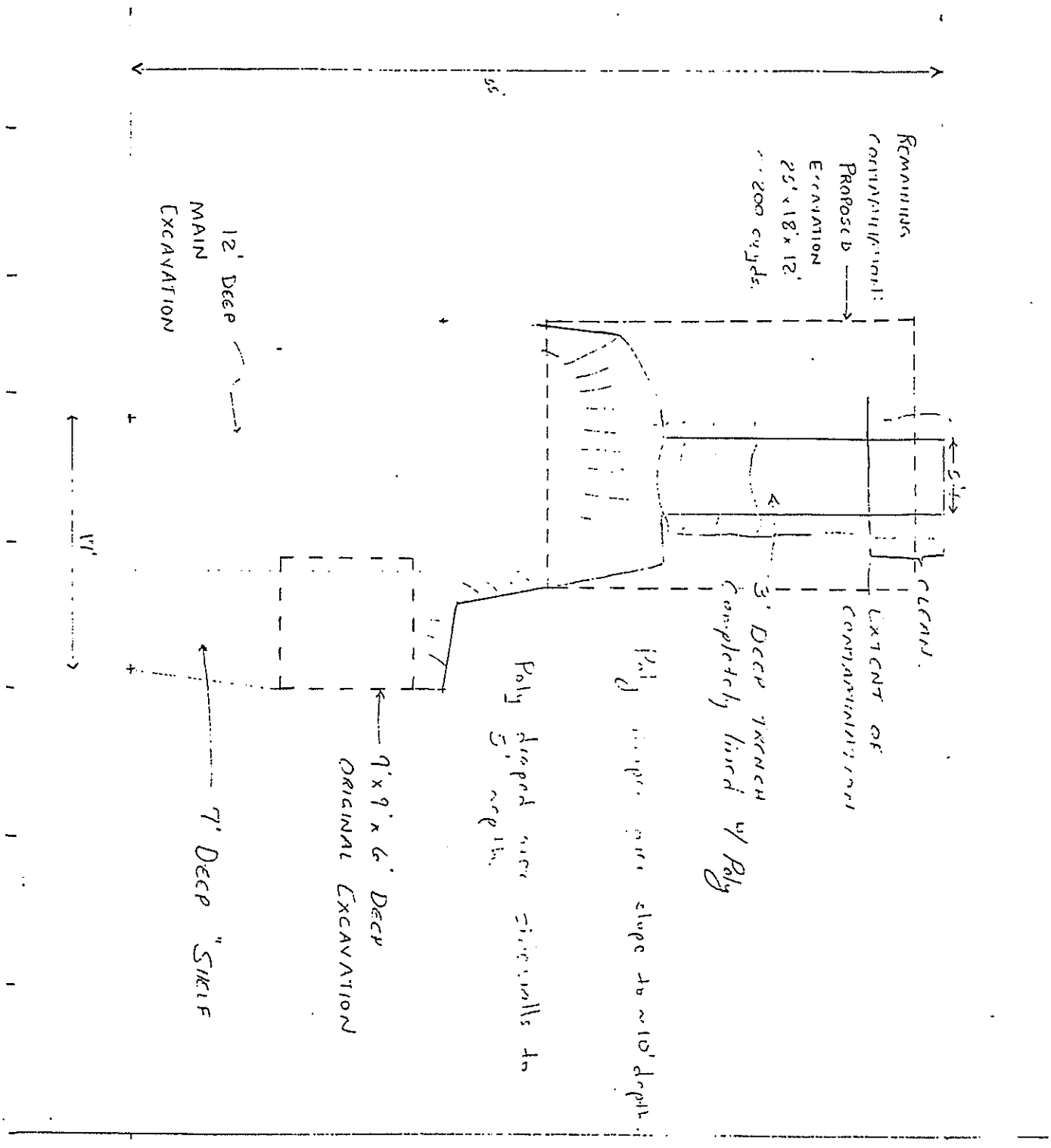
PAGE

SUBJECT Ft Devens CA 15

COMPUTATION

COMPUTED BY Rose Schmidt CHECKED BY DATE 15 Apr 93



Scale
1" = 10'

Figure 2

1. Contamination at 2-foot depth on west wall - March 23

2. Extent of stained soil on west wall - March 23

3. Start of westward excavation - March 25

4. Continued excavation of west wall - March 25

5. Clean soil on south end of west wall - March 25

6. Close-up of Photograph No. 5 - March 25

7. Continued excavation of west wall - March 25

8. Contamination exposed on north wall - March 25

9. Continued excavation on north wall - March 26

10. Coalescing bands on north wall - March 26

11. Northern test trench started - March 26

12. Clean soil at end of test trench - March 31

13. Remaining contamination on west wall - March 31

14. Backfilling and compaction - April 1

15. Backfilling complete - April 1

16. Start of excavation activities - December 14

17. Excavation at the 2- to 4-foot depth - December 14

18. Stained soil encountered on south side - December 14

19. Close-up of Photograph No. 18 - December 14

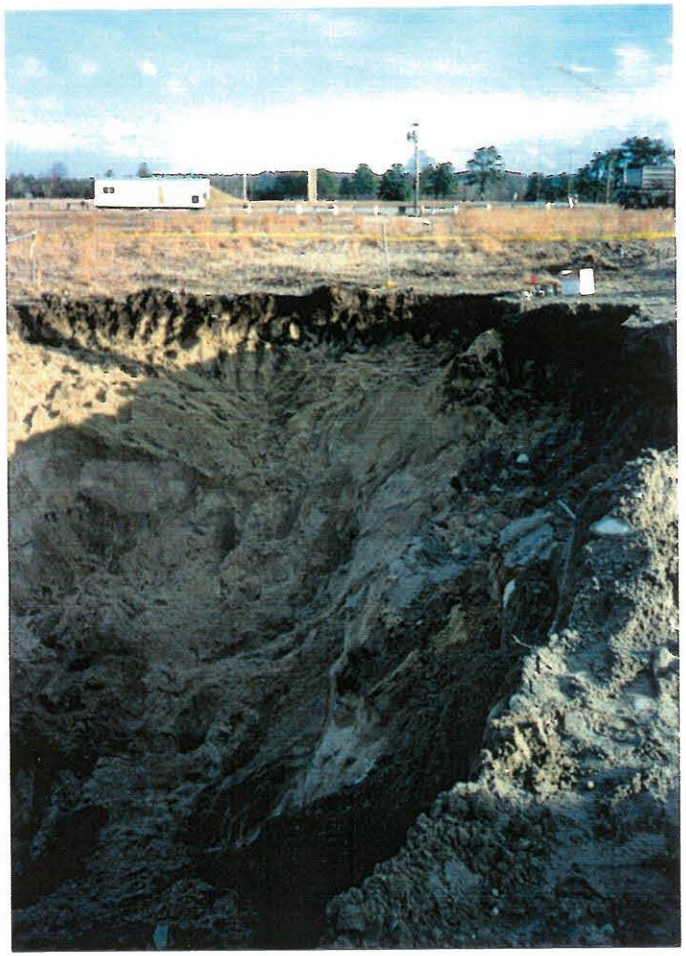
20. Limits of soil staining on east wall - December 14

21. Plastic sheeting encountered on south wall - December 14

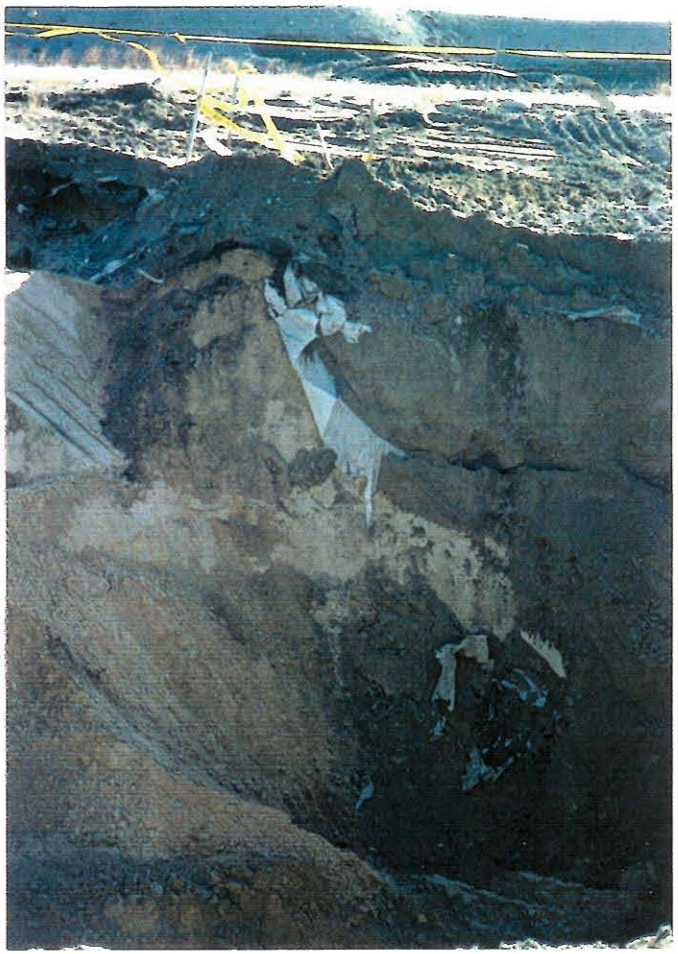
22. East wall excavation - December 14

23. South view, east and west walls clean - December 16

24. Removal of stained soil from bottom - December 16



25. North view with removal complete - December 16



26. East view, contact between excavations - December 16

APPENDIX C
Waste Characterization Results on Stockpiled Soils
Final Closure Report
Study Area 15

APPENDIX C-1
Environmental Science & Engineering, Inc. Data Reports - May 1993
Final Closure Report
Study Area 15

Environmental
Science &
Engineering, Inc.

SA-15
Unknown Source
based on Test
Results can
go in State (MA)

May 12, 1993
ESE # 3924065G-0400-3200

Keith Davison
Ecology and Environment
1700 N Moore St., Suite 1610
Arlington, Va. 22209

RE: Ft. Devens, Final TCLP Data for Army Total Environmental Program Support, Contract # DAAA15-90-D-0012.

Dear Mr. Davison:

Enclosed are the final data reports for soil samples received at ESE from Ft Devens. The samples were collected on March 31 and April 1, 1993 for TPHC and TCLP analysis, respectively.

The samples were analyzed according to procedures specified in our subcontract agreement as applicable to the analytes of interest. The TCLP methods and the Total Petroleum Hydrocarbons (TPHC) followed procedures in Test Methods for Evaluating Solid Wastes, SW846, November, 1986. The methods utilized were not certified by USATHAMA due the type of analysis requested.

Thank you for letting ESE be of service to you and we hope we may continue to provide our professional services under this existing work authorization.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Joseph J. Vondrick
Sr. Project Scientist

P.O. Box 1703 Gainesville, FL 32602-1703 Phone (904) 332-3318 (800) 874-7872 Fax (904) 332-0507

ecology and environment, inc.
338 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:	Project Manager:
UC2090	FORT DEVENS (SA 15)	R J KING
Samplers: (Signature)		**Field Team Leader:**
Keith Davison		K DAVISON

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION (SAMPLE TYPE / EXPECTED COMPOUNDS / Concentration / SAMP NO / TAT)	STATION LOCATION (SITE ID)	NUMBER OF CONTAINERS	16 oz amber	amber VOA					REMARKS
DV	1500	3/31/93	X			SO EX1501X1 EXCV	15E-93-01X	1	1						TPHC
DV	1505	3/31/93	X			SO EX1502X1 EXCV	15E-93-02X	1	1						TPHC
DV	1510	3/31/93	X			SO EX1503X1 EXCV	15E-93-03X	1	1						TPHC
DV	0910	4/1/93	X			SO EX1504X1 EXCV	15E-93-04X	2	1	1					TCLP/RCRA characteristics
DV	0915	4/1/93	X			SO EX1505X1 EXCV	15E-93-05X	2	1	1					TCLP/RCRA characteristics
DV	0920	4/1/93	X			SO EX1506X1 EXCV	15E-93-06X	2	1	1					TCLP/RCRA characteristics

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Keith Davison	4/1/93 1300	FEDEX				FEDEX
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: 587392062
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Date:

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

234088

PROJECT NUMBER 3924065G 0200 PROJECT NAME E & E - FT. DEVENS
FIELD GROUP DV1BS PROJECT MANAGER J.J. VONDRICK
ALL LAB COORDINATOR JOE VONDRICK

SAMPLE ID'S			15E-93-04X	15E-93-05X	15E-93-06X
PARAMETERS	UNITS	STORET METHOD	DV1BS 211	DV1BS 212	DV1BS 213
DATE			04/01/93	04/01/93	04/01/93
TIME			09:10	09:15	09:20
SAMPLE TYPE		71999 0	SO	SO	SO
SITE TYPE 1		99759 0	EXCV	EXCV	EXCV
DEPTH	FEET	72015 0	0.0	0.0	0.0
SAMPLING TECHNIQUE		72005 0	C	C	C
INSTALLATION CODE	SAMPLE	99720 0	DV	DV	DV
FIELD I.D.	#	29 0	ET1504X1	ET1505X1	ET1506X1
TCLP EXTRACTION - METALS		97160 M	EX04/07	EX04/07	EX04/07
TCLP EXTRACTION - PESTS		97160 P	EX04/07	EX04/07	EX04/07
TCLP EXTRACTION - BNAS		97160 BNA	EX04/07	EX04/07	EX04/07
TCLP EXTRACTION - VOAS		97160 ZHE	EX04/07	EX04/07	EX04/07
TCLP EXTRACTION - HERBS		97160 H	EX04/07	EX04/07	EX04/07
IGNITABILITY	DEG-C	99741 I	>60	>60	>60
REACTIVITY		99342 I	0.0	0.0	0.0
CORROSIVITY,SW846	MM/YR	98724 I	NA	NA	NA
PH,SOIL	STD UNITS	99218 I	5.4	4.8	5.2

PROJECT NUMBER 3924065G 0200 PROJECT NAME E & E - FT. DEVENS
FIELD GROUP DV1BT PROJECT MANAGER J.J. VONDRICK
ALL LAB COORDINATOR JOE VONDRICK

SAMPLE ID'S		15E-93-04X	15E-93-05X	15E-93-06X
PARAMETERS	STORET	DV1BT	DV1BT	DV1BT
UNITS	METHOD	5	6	7
DATE		04/07/93	04/07/93	04/07/93
TIME				
SAMPLE TYPE	71999	SO	SO	SO
	0			
SITE TYPE 1	99759	EXCV	EXCV	EXCV
	0			
DEPTH	72015	0.0	0.0	0.0
FEET	0			
SAMPLING TECHNIQUE	72005	C	C	C
	0			
INSTALLATION CODE	99720	DV	DV	DV
SAMPLE	0			
FIELD I.D.	29	ET1504X1	ET1505X1	ET1506X1
#	0			
ARSENIC	1002	<100	<100	<100
UG/L	TCLP			
BARIUM	1007	110	220	230
UG/L	TCLP			
CADMIUM	1027	<5.0	<5.0	<5.0
UG/L	TCLP			
CHROMIUM	1034	<5.0	<5.0	<5.0
UG/L	TCLP			
LEAD	1051	<50	<50	<50
UG/L	TCLP			
MERCURY	71900	<0.2	<0.2	<0.2
UG/L	TCLP			
SELENIUM	1147	<100	<100	<100
UG/L	TCLP			
SILVER	1077	<5.0	<5.0	<5.0
UG/L	TCLP			
BHC,G(LINDANE)	39340	<0.05	<0.05	<0.05
UG/L	TCLP			
CHLORDANE	39350	<0.3	<0.3	<0.3
UG/L	TCLP			
ENDRIN	39390	<0.05	<0.05	<0.05
UG/L	TCLP			
HEPTACHLOR	39410	<0.05	<0.05	<0.05
UG/L	TCLP			
HEPTACHLOR EPOXIDE	39420	<0.05	<0.05	<0.05
UG/L	TCLP			
TOXAPHENE	39400	<5.0	<5.0	<5.0
UG/L	TCLP			
METHOXYCHLOR	39480	<0.05	<0.05	<0.05
UG/L	TCLP			
2,4-D, TOTAL	39730	<0.3	<0.3	<0.3
UG/L	TCLP			
2,4,5-TP/SILVEX+DER.	39045	<0.2	<0.2	<0.2
UG/L	TCLP			
BENZENE	34030	<1.0	<1.0	<1.0
UG/L	TCLP			
CARBON TETRACHLORIDE	32102	<2.6	<2.6	<2.6
UG/L	TCLP			
CHLOROBENZENE	34301	<1.4	<1.4	<1.4
UG/L	TCLP			
CHLOROFORM	32106	<2.5	<2.5	<2.5
UG/L	TCLP			
1,2-DICHLOROETHANE	34531	<2.5	<2.5	<2.5
UG/L	TCLP			
1,1-DICHLOROETHYLENE	34501	<3.2	<3.2	<3.2
UG/L	TCLP			
METHYL ETHYL KETONE	81595	<10.0	<10.0	<10.0
UG/L	TCLP			
TETRACHLOROETHENE	34475	<1.9	<1.9	<1.9
UG/L	TCLP			
TRICHLOROETHENE	39180	<3.0	<3.0	<3.0
UG/L	TCLP			
VINYL CHLORIDE	39175	<4.6	<4.6	<4.6
UG/L	TCLP			

PROJECT NUMBER 3924065G 0200 PROJECT NAME E & E - FT. DEVENS
FIELD GROUP DV1BT PROJECT MANAGER J.J. VONDRICK
ALL LAB COORDINATOR JOE VONDRICK

SAMPLE ID'S			15E-93-04X	15E-93-05X	15E-93-06X
PARAMETERS	UNITS	STORET METHOD	DV1BT 5	DV1BT 6	DV1BT 7
DATE			04/07/93	04/07/93	04/07/93
TIME					
2-METHYL PHENOL	UG/L	99073 TCLP	<20	<20	<20
3-METHYL PHENOL	UG/L	97206 TCLP	<20	<20	<20
4-METHYL PHENOL	UG/L	99874 TCLP	<20	<20	<20
1,4-DICHLOROBENZENE	UG/L	34571 TCLP	<10.0	<10.0	<10.0
2,4-DINITROTOLUENE	UG/L	34611 TCLP	<20	<20	<20
HEXACHLOROBENZENE	UG/L	39700 TCLP	<20	<20	<20
HEXACHLOROBUTADIENE	UG/L	34391 TCLP	<20	<20	<20
HEXACHLOROETHANE	UG/L	34396 TCLP	<15	<15	<15
NITROBENZENE	UG/L	34447 TCLP	<10.0	<10.0	<10.0
PENTACHLOROPHENOL	UG/L	39032 TCLP	<35	<35	<35
PYRIDINE	UG/L	97208 TCLP	<100	<100	<100
2,4,5-TRICHL'PHENOL	UG/L	77687 TCLP	<25	<25	<25
2,4,6-TRICHL'PHENOL	UG/L	34621 TCLP	<25	<25	<25

PROJECT NUMBER 39240650 0200 PROJECT NAME E & E - FT. DEVENS
FIELD GROUP DV1BS PROJECT MANAGER J.J. VONDRICK
ALL LAB COORDINATOR JOE VONDRICK

SAMPLE ID'S		15E-93-01X1	5E-93-02X1	5E-93-03X
PARAMETERS	STORET	DV1BS	DV1BS	DV1BS
UNITS	METHOD	208	209	210
DATE		03/31/93	03/31/93	03/31/93
TIME		15:00	15:05	15:10
SAMPLE TYPE	71999	SO	SO	SO
	0			
SITE TYPE 1	99759	EXCV	EXCV	EXCV
	0			
DEPTH	72015	2.5	12.0	3.5
FEET	0			
SAMPLING TECHNIQUE	72005	C	C	C
	0			
INSTALLATION CODE	99720	DV	DV	DV
SAMPLE	0			
FIELD I.D.	29	EX1501X1	EX1502X1	EX1503X1
#	0			
MOISTURE	70320	4.5	5.6	5.2
%WET WT	1			
HYDROCARBONS,PETROL	98233	<29.3	<29.7	<29.5
UG/G-DRY	1			

QC SUMMARY

Method Blank (MB) Sample Summary

NAME	UNITS	STOR*METH	BATCH	SAMPLE	DATE	FOUND	C.D.L.	FOOTNOTE
MOISTURE	%WET WT	70320*1	G36468	MB*QC*1	04/07/93	<0.5	0.50	
MOISTURE	%WET WT			MB*QC*2		<0.5	0.50	
MOISTURE	%WET WT			MB*QC*3		<0.5	0.50	
MOISTURE	%WET WT			MB*QC*4		<0.5	0.50	
MOISTURE	%WET WT		G36571	MB*QC*1	04/13/93	<0.5	0.50	
MOISTURE	%WET WT			MB*QC*2		<0.5	0.50	
MOISTURE	%WET WT			MB*QC*3		<0.5	0.50	
MOISTURE	%WET WT			MB*QC*4		<0.5	0.50	
MOISTURE	%WET WT			MB*QC*5		<0.5	0.50	
HYDROCARBONS,PETROL	UG/G-DRY	98233*1	G36838	MB*THAMA*1	04/27/93	32.9	1.6796	
IGNITABILITY	DEG-C	99741*1	G36606	MB*THAMA*1	04/15/93	>60	NC	
REACTIVITY		99342*1	G36583	MB*THAMA*1	04/12/93	0.0	NDL	
PH,SOIL	STD UNITS	99218*1	G36843	MB*THAMA*1	04/27/93	6.0	NDL	
ARSENIC	UG/L	1002*TCLP	G36735	MB*QC*1	04/22/93	<100	100	
ARSENIC	UG/L			MB*TCLP*1		<100	100	
BARIUM	UG/L	1007*TCLP		MB*QC*1		<25	25.0	
BARIUM	UG/L			MB*TCLP*1		32	25.0	
CADMIUM	UG/L	1027*TCLP		MB*QC*1		<5.0	5.0	
CADMIUM	UG/L			MB*TCLP*1		<5.0	5.0	
CHROMIUM	UG/L	1034*TCLP		MB*QC*1		<5.0	5.0	
CHROMIUM	UG/L			MB*TCLP*1		<5.0	5.0	
LEAD	UG/L	1051*TCLP		MB*QC*1		<50	50.0	
LEAD	UG/L			MB*TCLP*1		<50	50.0	
MERCURY	UG/L	71900*TCLP	G36747	MB*THAMA*1		<0.2	0.2	
MERCURY	UG/L			MB*TCLP-BLANK*1		<0.2	0.2	
SELENIUM	UG/L	1147*TCLP	G36735	MB*QC*1		<100	100	
SELENIUM	UG/L			MB*TCLP*1		<100	100	
SILVER	UG/L	1077*TCLP		MB*QC*1		<5.0	5.0	
SILVER	UG/L			MB*TCLP*1		<5.0	5.0	
BHC,G(LINDANE)	UG/L	39340*TCLP	G36796	MB*THAMA*1	04/23/93	<0.05	1	
CHLORDANE	UG/L	39350*TCLP		MB*THAMA*1		<0.3	5	
ENDRIN	UG/L	39390*TCLP		MB*THAMA*1		<0.05	1	
HEPTACHLOR	UG/L	39410*TCLP		MB*THAMA*1		<0.05	1	
HEPTACHLOR EPOXIDE	UG/L	39420*TCLP		MB*THAMA*1		<0.05	1	
TOXAPHENE	UG/L	39400*TCLP		MB*THAMA*1		<5.0	100	
METHOXYCHLOR	UG/L	39480*TCLP		MB*THAMA*1		<0.05	1	
2,4-D, TOTAL	UG/L	39730*TCLP	G36650	MB*THAMA*1	04/19/93	<0.3	2.5	
2,4,5-TP/SILVEX+DER.	UG/L	39045*TCLP		MB*THAMA*1		<0.2	2.1	
BENZENE	UG/L	34030*TCLP	G36567	MB*THAMA*1	04/12/93	<1.0	1.0	
CARBON TETRACHLORIDE	UG/L	32102*TCLP		MB*THAMA*1		<2.6	2.6	
CHLOROBENZENE	UG/L	34301*TCLP		MB*THAMA*1		<1.4	1.4	
CHLOROFORM	UG/L	32106*TCLP		MB*THAMA*1		<2.5	2.5	
1,2-DICHLOROETHANE	UG/L	34531*TCLP		MB*THAMA*1		<2.5	2.5	
1,1-DICHLOROETHYLENE	UG/L	34501*TCLP		MB*THAMA*1		<3.2	3.2	
METHYL ETHYL KETONE	UG/L	81595*TCLP		MB*THAMA*1		<10.0	10	
TETRACHLOROETHENE	UG/L	34475*TCLP		MB*THAMA*1		<1.9	1.9	
TRICHLOROETHENE	UG/L	39180*TCLP		MB*THAMA*1		<3.0	3.0	
VINYL CHLORIDE	UG/L	39175*TCLP		MB*THAMA*1		<4.6	4.6	
2-METHYL PHENOL	UG/L	95873*TCLP	G36599	MB*THAMA*1	04/13/93	<20	2.0	
3-METHYL PHENOL	UG/L	97206*TCLP		MB*THAMA*1		<20	2.0	
4-METHYL PHENOL	UG/L	99074*TCLP		MB*THAMA*1		<20	2.0	
1,4-DICHLOROBENZENE	UG/L	34571*TCLP		MB*THAMA*1		<10.0	1.0	
2,4-DINITROTOLUENE	UG/L	34611*TCLP		MB*THAMA*1		<20	2.0	

QC SUMMARY

Method Blank (MB) Sample Summary

NAME	UNITS	STOR*METH	BATCH	SAMPLE	DATE	FOUND	C.D.L.	FOOTNOTE
HEXACHLOROBENZENE	UG/L	39700*TCLP	G36599	MB*THAMA*1	04/13/93	<20	2.0	
HEXACHLOROBUTADIENE	UG/L	34391*TCLP		MB*THAMA*1		<20	2.0	
HEXACHLOROETHANE	UG/L	34396*TCLP		MB*THAMA*1		<15	1.5	
NITROBENZENE	UG/L	34447*TCLP		MB*THAMA*1		<10.0	1.0	
PENTACHLOROPHENOL	UG/L	39032*TCLP		MB*THAMA*1		<35	3.5	
PYRIDINE	UG/L	97200*TCLP		MB*THAMA*1		<100	10	
2,4,5-TRICHL'PHENOL	UG/L	77687*TCLP		MB*THAMA*1		<25	2.5	
2,4,6-TRICHL'PHENOL	UG/L	34621*TCLP		MB*THAMA*1		<25	2.5	

QC SUMMARY

Sample Matrix Spike (SPM) Recovery Summary

NAME	UNITS	STOR*METH	BATCH	SAMPLE	DATE	TARGET	FOUND	%RECV	RECV CRIT	UNSPIKE
HYDROCARBONS,PETROL	UG/G-DRY	98233*I	G36838	SPM1*DV1BS*209	04/27/93	1190	1160	98.1	76-122	6.91
HYDROCARBONS,PETROL	UG/G-DRY			SPM2*DV1BS*209		1190	1120	94.7	76-122	6.91
ARSENIC	UG/L	1002*TCLP	G36735	SPM*DV1BT*7	04/22/93	1000	1000	100.0	75-125	0.0
BARIUM	UG/L	1007*TCLP		SPM*DV1BT*7		5000	4700	93.4	86-106	230
CADMIUM	UG/L	1027*TCLP		SPM*DV1BT*7		200	190	95.0	80-108	0.0
CHROMIUM	UG/L	1034*TCLP		SPM*DV1BT*7		1000	920	92.0	79-109	0.0
LEAD	UG/L	1051*TCLP		SPM*DV1BT*7		1000	930	93.0	79-109	0.0
MERCURY	UG/L	71900*TCLP	G36747	SPM*DV1BT*7		5.0	5.0	100.0	83-125	0.0
SELENIUM	UG/L	1147*TCLP	G36735	SPM*DV1BT*7		200	230	115.0	75-125	0.0
SILVER	UG/L	1077*TCLP		SPM*DV1BT*7		1000	940	94.0	73-107	0.0
BHC,G(LINDANE)	UG/L	39340*TCLP	G36796	SPM1*DV1BT*7	04/23/93	3.0	2.8	92.7	43-145	0.02
ENDRIN	UG/L	39390*TCLP		SPM1*DV1BT*7		3.0	2.6	86.4	35-155	0.008
HEPTACHLOR	UG/L	39410*TCLP		SPM1*DV1BT*7		3.0	2.9	96.7	48-124	0.0
HEPTACHLOR EPOXIDE	UG/L	39420*TCLP		SPM1*DV1BT*7		3.0	3.1	103.3	60-130	0.0006
METHOXYCHLOR	UG/L	39480*TCLP		SPM1*DV1BT*7		30	29	96.7	80-120	0.0
2,4-D, TOTAL	UG/L	39730*TCLP	G36650	SPM1*DV1BT*7	04/19/93	23	18	79.7	9-119	0.0
2,4,5-TP/SILVEX+DER.	UG/L	39045*TCLP		SPM1*DV1BT*7		21	21	99.6	33-135	0.0
BENZENE	UG/L	34030*TCLP	G36567	SPM1*DV1BT*5	04/12/93	50	58	116.0	37-151	0.0
CARBON TETRACHLORIDE	UG/L	32102*TCLP		SPM1*DV1BT*5		50	66	132.0	70-140	0.0
CHLOROBENZENE	UG/L	34301*TCLP		SPM1*DV1BT*5		50	59	118.0	36-160	0.0
CHLOROFORM	UG/L	32106*TCLP		SPM1*DV1BT*5		50	54	108.0	52-138	0.0
1,2-DICHLOROETHANE	UG/L	34531*TCLP		SPM1*DV1BT*5		50	56	112.0	49-155	0.0
1,1-DICHLOROETHYLENE	UG/L	34501*TCLP		SPM1*DV1BT*5		50	54	108.0	0-234	0.0
METHYL ETHYL KETONE	UG/L	81595*TCLP		SPM1*DV1BT*5		100	87	87.0	50-150	0.0
TETRACHLOROETHENE	UG/L	34475*TCLP		SPM1*DV1BT*5		50	63	126.0	64-148	0.0
TRICHLOROETHENE	UG/L	39180*TCLP		SPM1*DV1BT*5		50	60	120.0	71-157	0.0
VINYL CHLORIDE	UG/L	39175*TCLP		SPM1*DV1BT*5		50	42	84.0	0-250	0.0
2-METHYL PHENOL	UG/L	99073*TCLP	G36599	SPM1*DV1BT*7	04/13/93	500	440	88.0	31-119	0.0
3-METHYL PHENOL	UG/L	97206*TCLP		SPM1*DV1BT*7		500	390	78.0	31-119	0.0
4-METHYL PHENOL	UG/L	99074*TCLP		SPM1*DV1BT*7		500	430	86.0	31-119	0.0
1,4-DICHLOROBENZENE	UG/L	34571*TCLP		SPM1*DV1BT*7		500	400	80.0	20-124	0.0
2,4-DINITROTOLUENE	UG/L	34611*TCLP		SPM1*DV1BT*7		500	470	94.0	39-139	0.0
HEXACHLOROBENZENE	UG/L	39700*TCLP		SPM1*DV1BT*7		500	550	110.0	0-152	0.0
HEXACHLOROBUTADIENE	UG/L	34391*TCLP		SPM1*DV1BT*7		500	400	80.0	24-116	0.0
HEXACHLOROETHANE	UG/L	34396*TCLP		SPM1*DV1BT*7		500	370	74.0	41-113	0.0
NITROBENZENE	UG/L	34447*TCLP		SPM1*DV1BT*7		500	510	102.0	34-180	0.0
PENTACHLOROPHENOL	UG/L	39032*TCLP		SPM1*DV1BT*7		500	480	96.0	14-176	0.0
PYRIDINE	UG/L	97208*TCLP		SPM1*DV1BT*7		500	360	72.0	50-150	0.0
2,4,5-TRICHL'PHENOL	UG/L	77687*TCLP		SPM1*DV1BT*7		500	550	110.0	36-144	0.0
2,4,6-TRICHL'PHENOL	UG/L	34621*TCLP		SPM1*DV1BT*7		500	490	98.0	36-144	0.0

Environmental Science and Engineering, Inc.

QC SUMMARY

Sample Matrix Spike Recovery Statistics Summary

STORET*METHOD	NAME	N	MINIMUM	MAXIMUM	AVERAGE	STANDARD DEVIATION
98233*I	HYDROCARBONS,PETROL	2	94.7	98.1	96.4	2.4
1002*TCLP	ARSENIC	1	100.0	100.0	100.0	0.0
1007*TCLP	BARIUM	1	93.4	93.4	93.4	0.0
1027*TCLP	CADMIUM	1	95.0	95.0	95.0	0.0
1034*TCLP	CHROMIUM	1	92.0	92.0	92.0	0.0
051*TCLP	LEAD	1	93.0	93.0	93.0	0.0
71900*TCLP	MERCURY	1	100.0	100.0	100.0	0.0
1147*TCLP	SELENIUM	1	115.0	115.0	115.0	0.0
1077*TCLP	SILVER	1	94.0	94.0	94.0	0.0
39340*TCLP	BHC,G(LINDANE)	1	92.7	92.7	92.7	0.0
39390*TCLP	ENDRIN	1	86.4	86.4	86.4	0.0
39410*TCLP	HEPTACHLOR	1	96.7	96.7	96.7	0.0
39420*TCLP	HEPTACHLOR EPOXIDE	1	103.3	103.3	103.3	0.0
39480*TCLP	METHOXYCHLOR	1	96.7	96.7	96.7	0.0
39730*TCLP	2,4-D, TOTAL	1	79.7	79.7	79.7	0.0
39045*TCLP	2,4,5-TP/SILVEX+DER.	1	99.6	99.6	99.6	0.0
34030*TCLP	BENZENE	1	116.0	116.0	116.0	0.0
32102*TCLP	CARBON TETRACHLORIDE	1	132.0	132.0	132.0	0.0
34301*TCLP	CHLOROBENZENE	1	118.0	118.0	118.0	0.0
32106*TCLP	CHLOROFORM	1	108.0	108.0	108.0	0.0
34531*TCLP	1,2-DICHLOROETHANE	1	112.0	112.0	112.0	0.0
34501*TCLP	1,1-DICHLOROETHYLENE	1	108.0	108.0	108.0	0.0
81595*TCLP	METHYL ETHYL KETONE	1	87.0	87.0	87.0	0.0
34475*TCLP	TETRACHLOROETHENE	1	126.0	126.0	126.0	0.0
39180*TCLP	TRICHLOROETHENE	1	120.0	120.0	120.0	0.0
39175*TCLP	VINYL CHLORIDE	1	84.0	84.0	84.0	0.0
99073*TCLP	2-METHYL PHENOL	1	88.0	88.0	88.0	0.0
97206*TCLP	3-METHYL PHENOL	1	78.0	78.0	78.0	0.0
99074*TCLP	4-METHYL PHENOL	1	86.0	86.0	86.0	0.0
34571*TCLP	1,4-DICHLOROBENZENE	1	80.0	80.0	80.0	0.0
34611*TCLP	2,4-DINITROTOLUENE	1	94.0	94.0	94.0	0.0
39700*TCLP	HEXACHLOROBENZENE	1	110.0	110.0	110.0	0.0
34391*TCLP	HEXACHLOROBUTADIENE	1	80.0	80.0	80.0	0.0
34396*TCLP	HEXACHLOROETHANE	1	74.0	74.0	74.0	0.0
34447*TCLP	NITROBENZENE	1	102.0	102.0	102.0	0.0
39032*TCLP	PENTACHLOROPHENOL	1	96.0	96.0	96.0	0.0
97208*TCLP	PYRIDINE	1	72.0	72.0	72.0	0.0
77687*TCLP	2,4,5-TRICHL'PHENOL	1	110.0	110.0	110.0	0.0
34621*TCLP	2,4,6-TRICHL'PHENOL	1	98.0	98.0	98.0	0.0

APPENDIX C-2
E3I Data Reports - November 1993
Final Closure Report
Study Area 15

11/16/93

E3I PRICE QUOTATION
FOR
WEBSTER ENGINEERING

Requested on: November 16, 1993 E3I RFP #: 2462
Requested by: Joseph V. Polsinello
Telephone #: (617) 265-5500
Fax #: (617) 826-9332

Project Description: Fort Devens; Soil Analysis
No. DACAB3-93-R-0007

Parameter	Method	Price ($)/Sample
VOA	Mod 8240	165
ABN	Mod 8270	320
PCB	Mod 8080	95
TPH (IR)	418.1	55
TPH GC/MS	Mod 8270	155

NOTES:

1. Turnaround time is one week with a 50% surcharge.

2. MS/MSD, spikes, duplicates, field blanks and trip blanks will be billed at unit price.

3. E3I will provide sample bottles, preservatives and coolers and assume the cost of ground transportation of these supplies to the client. Ground transportation can only be used with sufficient warning of request for supplies. Supplies sent via air transportation will be billed to the client.

Nicholas P. Corso
Executive Vice President

11-17-93
Date

CHAIN OF CUSTODY RECORD

WORK ORDER # : - -

DUE DATE : - -

COMPANY: WEBSTER ENGINEERING CO. INC
ADDRESS : P.O. BOX 275
DORCHESTER, MA 02121
PHONE # : (617) 265 - 5500 FAX #: (617) 298 - 3054
P.O. # :
CLIENT CONTACT : JOSEPH POLSINELLO 617 8261128
PROJECT ID/LOCATION: DACA 33 - 93 - R0007
FORT DEVENS, AYER MA

SAMPLE TYPE
1. WATER
2. SOIL
3. SLUDGE
4. OIL
5. TISSUE
6. DRINKING WATER
OTHER

CONTAINER TYPE
P - PLASTIC
G - GLASS
V - VOA

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	TPH (IR)	TPH (GC FID)	VOC 8240	PCB 8080	semi. VOA's 8270	COMMENT
	S01	2	250 ml	G	1	11/16	11:12A	cold	X					
	S02	2		G	1		11:17A		X					
	S03	2		G	1		11:21A		X					
	S04	2		G	1		11:25A		X					
	S05	2		G	1		11:33A		X					
	S06	2		G	1		11:35A		X					
	S07	2		G	1					X				
	S08C	2	500 ml	G	1		11:49-12:05A					X	X	
	S09C	2	500 ml	G	1		11:12-11:47A					X	X	
	S010	2	VOA	V	2		11:54A				X			
	S011	2	VOA	V	2		11:51A				X			

RELINQUISHED BY:	DATE: 11 - 16 - 93	RECEIVED BY:	DATE: 11 - 16 - 93
	TIME: 12 - 05 - PM		TIME: 12 - 06 - PM
RELINQUISHED BY:	DATE: - -	RECEIVED BY:	DATE: - -
	TIME: - -		TIME: - -
RELINQUISHED BY	DATE: - -	RECEIVED FOR LAB BY:	DATE: - -
	TIME: - -		TIME: - -
METHOD OF SHIPMENT			

SPECIAL INSTRUCTIONS

☒ RUSH, 3-4 BUSINESS DAY TURNAROUND

☐ ROUTINE

Sample Disposal Information

Are there any other known or suspected contaminants in these samples other than those listed above ?

E3I FORM 13

VOLATILE ORGANIC SURROGATE RECOVERY

Project Name: WEBSTER

Client Project: SA15

Date Received: 11/17/93

E3I Project #: 940258

Level: LOW

	CLIENT SAMPLE ID	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	VBLK 11/22	103	100	102		0
2	3010	127	108	99		0
3	VBLK 11/23	100	98	96		0
4	S011	137	88	102		0
5	S011RE	121	89	105		0
6						
7						
8						
9						
10						
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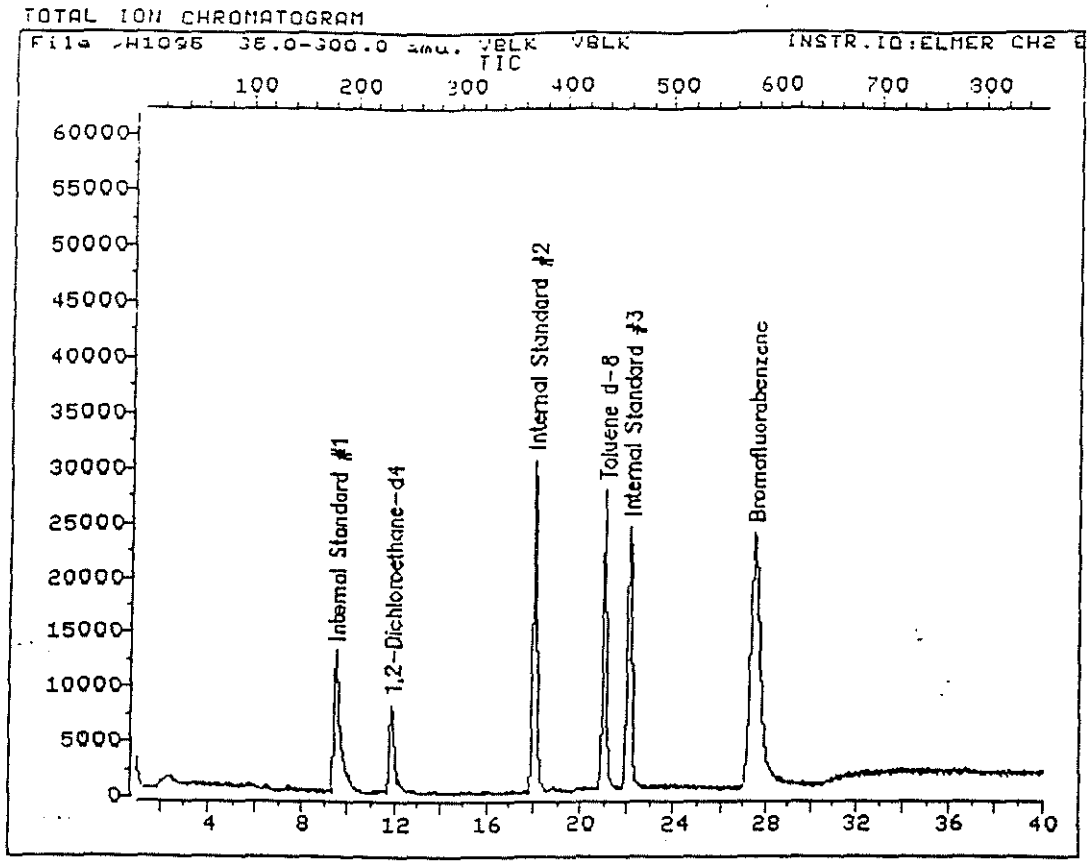
27						
28						
29						
30						

QC LIMITS

S1 (TOL)	= Toluene-d8:	84-138
S2 (BFB)	= Bromofluorobenzene:	59-113
S3 (DCE)	= 1,2-Dichloroethane-d4:	70-121

* Values outside of required QC limits

TOTAL ION CHROMATOGRAM



MM 11-23-93

Data File: >H1095::D4 Quant Output File: ^H1095::D2
Name: VBLK VBLK Instrument ID: ELMER
Misc: INSTR.ID:ELMER CH2 E3I 5.0 G

Id File: ET-CLP::SC
Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624
Last Calibration: 930522 17:42 Last Qcal Time: 931123 10:21

Operator ID: VOA
Quant Time : 931123 12:25
Injected at: 931123 11:44

EDI FORM 1A
VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO

VBLK 11/23

Client Name: WEBSTER
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 5.0 G
% Moisture: 0.0

EDI Sample ID: VBLK -
EDI File Name: H1095
Associated Blank: H1095

Date Received: / /
Date Extracted: / /
Date Analyzed: 11/23/93

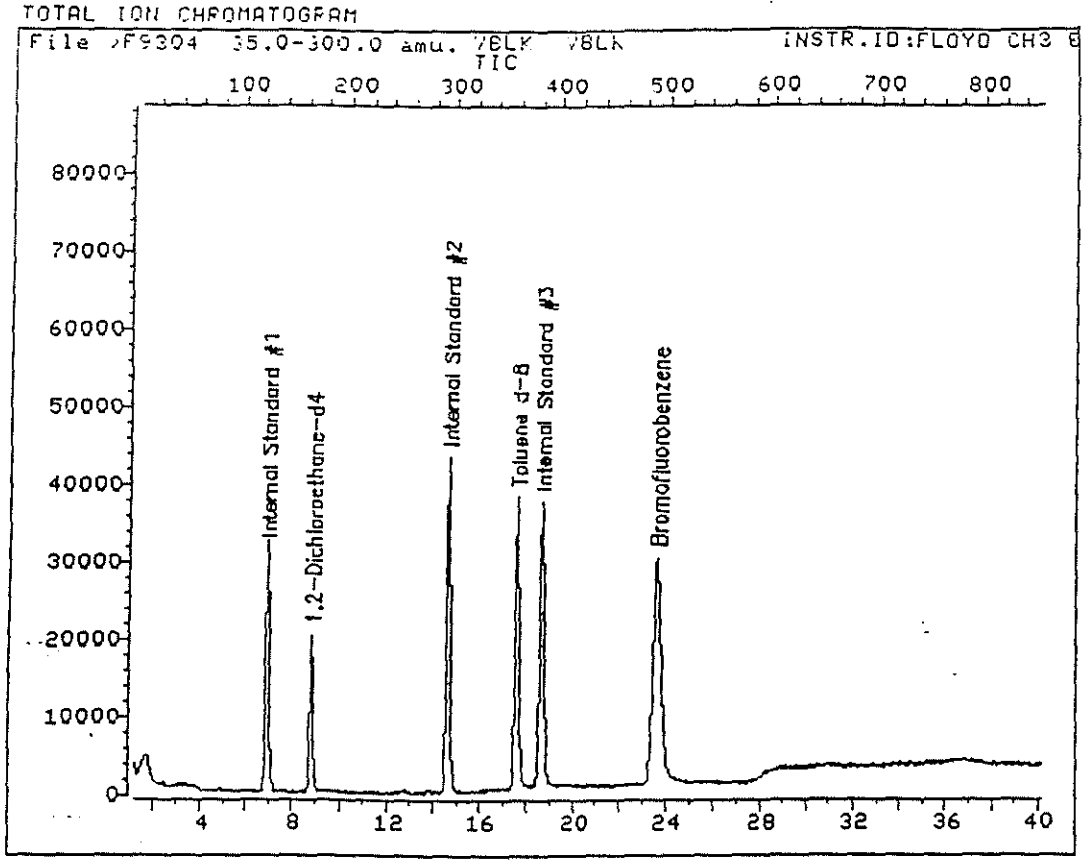
Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	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	1	J
67-64-1	Acetone	23	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
78-93-3	2-Butanone	10	U
107-06-2	1,2-Dichloroethane	5	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
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
1330-20-7	Xylene (total)	5	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

TOTAL ION CHROMATOGRAM



MM 11-23-93

Data File: >F9304::D5 Quant Output File: ^F9304::D2
Name: VBLK VBLK Instrument ID: FLOYD
Misc: INSTR.ID:FLOYD CH3 E3I 5.0 G

Id File: FT-CLP::SC
Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624
Last Calibration: : Last Qcal Time: 931122 10:35

Operator ID: VOA
Quant Time : 931122 14:20
Injected at: 931122 13:39

EDI [illegible]

[illegible] ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK 11/22

Client Name: WESTEP
Client Project: DAIS

Matrix: SOIL
Level: LOW

Sample wt/vol: 5.0 G
% Moisture: 0.0

EDI Sample ID: VBLK -
EDI File Name: F9304
Associated Blank: F9304

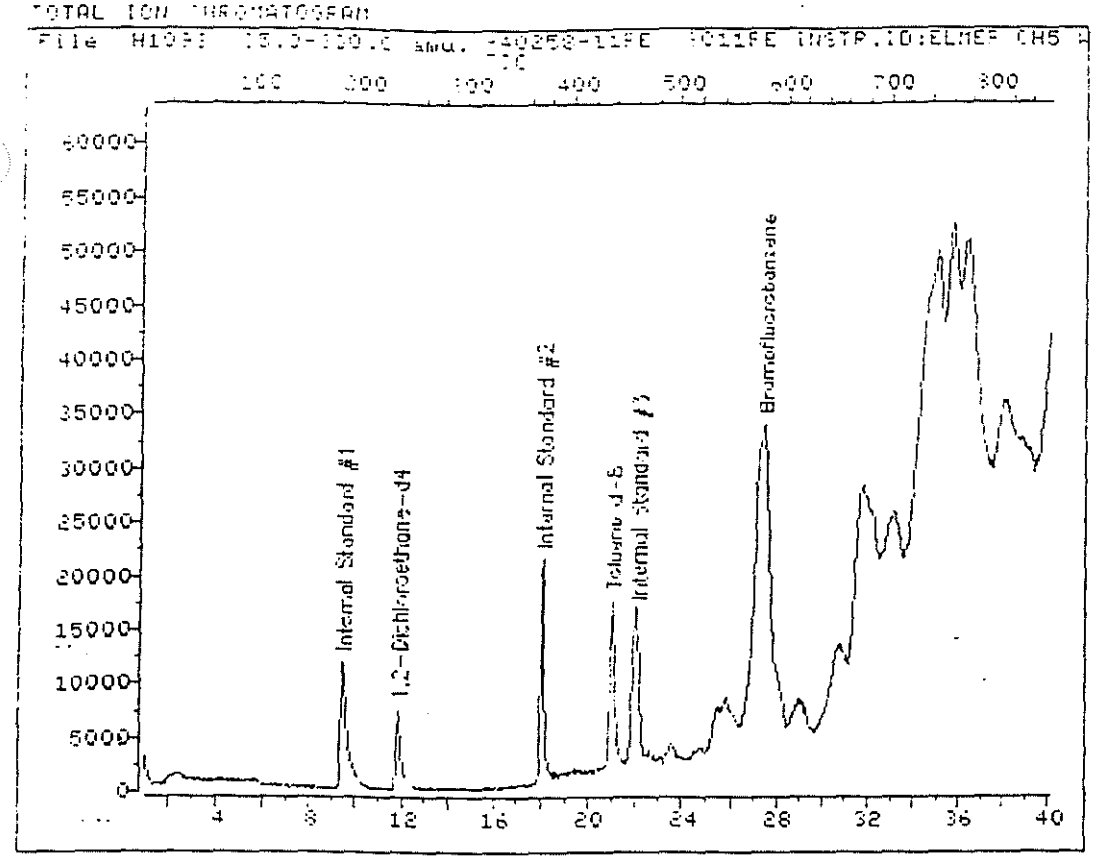
Date Received: / /
Date Extracted: / /
Date Analyzed: 11/22/93

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	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	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
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
78-93-3	2-Butanone	10	U
107-06-2	1,2-Dichloroethane	5	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
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
1330-20-7	Xylene (total)	5	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



11-23-93

Data File: >H1098::D4 Quant Output File: ^H1098::D2
Name: 940258-11RE S011RE Instrument ID: ELMER
Misc: INSTR.ID:ELMER CH5 WEBSTER 5.0 G

Id File: ET-CLP::SC
Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624
Last Calibration: 930522 17:42 Last Qcal Time: 931123 10:21

Operator ID: VOA
Quant Time : 931123 16:03
Injected at: 931123 15:22

EQUIFORM IA
VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SOIL RE

Client Name: WEBSTER
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 5.0 G
% Moisture: 3.0

EQI Sample ID: 940208-11RE
EQI File Name: H1098
Associated Blank: H1095

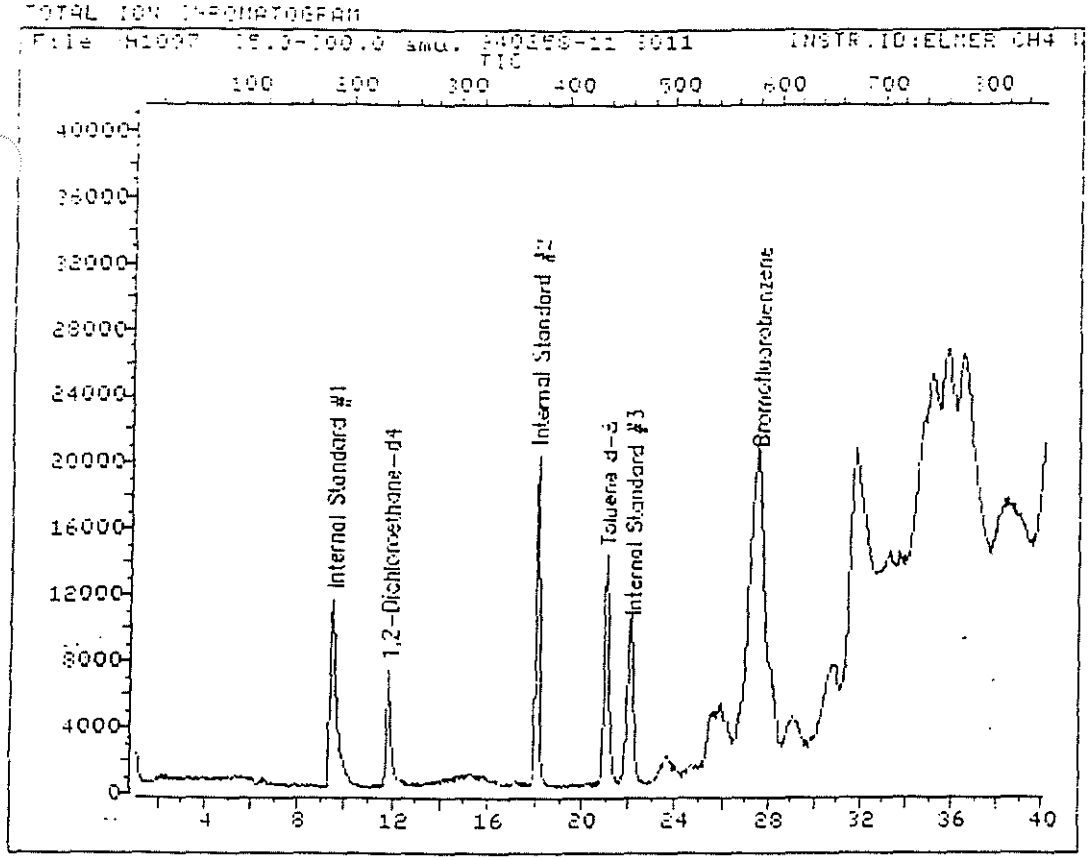
Date Received: 11/17/93
Date Extracted: / /
Date Analyzed: 11/23/93

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	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	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
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
78-93-3	2-Butanone	10	U
107-06-2	1,2-Dichloroethane	5	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
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
1330-20-7	Xylene (total)	5	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above quantitation limit



MM 11-23-93

Data File: >H1097::D4 Quant Output File: ^H1097::D2
Name: 940258-11 S011 Instrument ID: ELMER
Misc: INSTR.ID:ELMER CH4 WEBSTER 5.0 G

Id File: ET-CLP::SC
Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624
Last Calibration: 930522 17:42 Last Qcal Time: 931123 10:21

Operator ID: VOA
Quant Time : 931123 14:34
Injected at: 931123 13:52

ESI FORM 1A

VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SOIL

Site Name: WEBSTER
Client Project: CA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 5.0 G
% Moisture: 3.0

ESI Sample ID: 940253-11
ESI File Name: H1097
Associated Blank: H1095

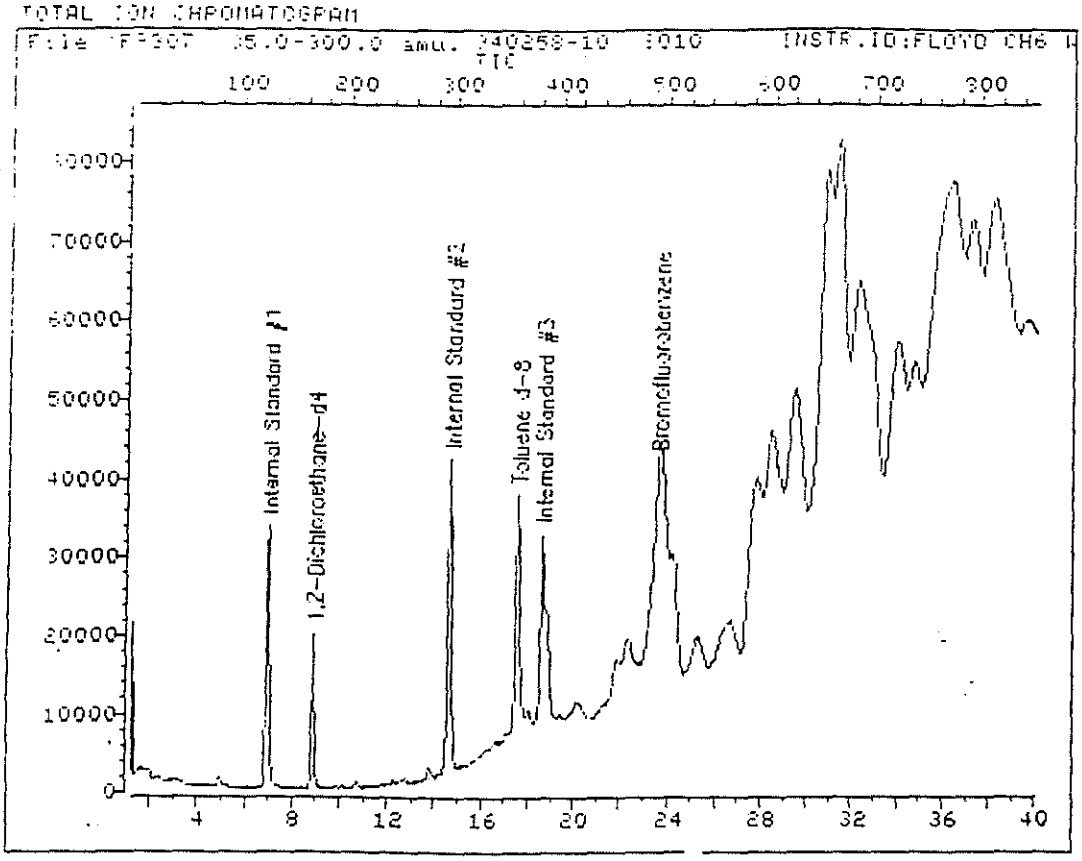
Date Received: 11/17/93
Date Extracted: / /
Date Analyzed: 11/23/93

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	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	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
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
78-93-3	2-Butanone	10	U
107-06-2	1,2-Dichloroethane	5	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
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
1330-20-7	Xylene (total)	5	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



PMM 11-23-93

Data File: >F9307::D5 Quant Output File: ^F9307::I2
Name: 940258-10 S010 Instrument ID: FLOYD
Misc: INSTR.ID:FLOYD CH6 WEBSTER 5.0 G

Id File: FT-CLP::SC
Title: VOLATILE ORGANIC ANALYSIS FOR EPA METHOD 624
Last Calibration: : Last Qcal Time: 931122 10:35

Operator ID: VOA
Quant Time : 931122 18:06
Injected at: 931122 17:25

FORM 1
VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO

5010

Client Name: WEBSTER
Client Project: SAIS

EST Sample ID: 940258-13
EST File Name: F9307
Associated Blank: F9304

Matrix: SOIL
Level: LOW

Date Received: 11/17/93
Date Extracted: / /
Date Analyzed: 11/22/93

Sample wt/vol: 5.0 g
% Moisture: 2.0

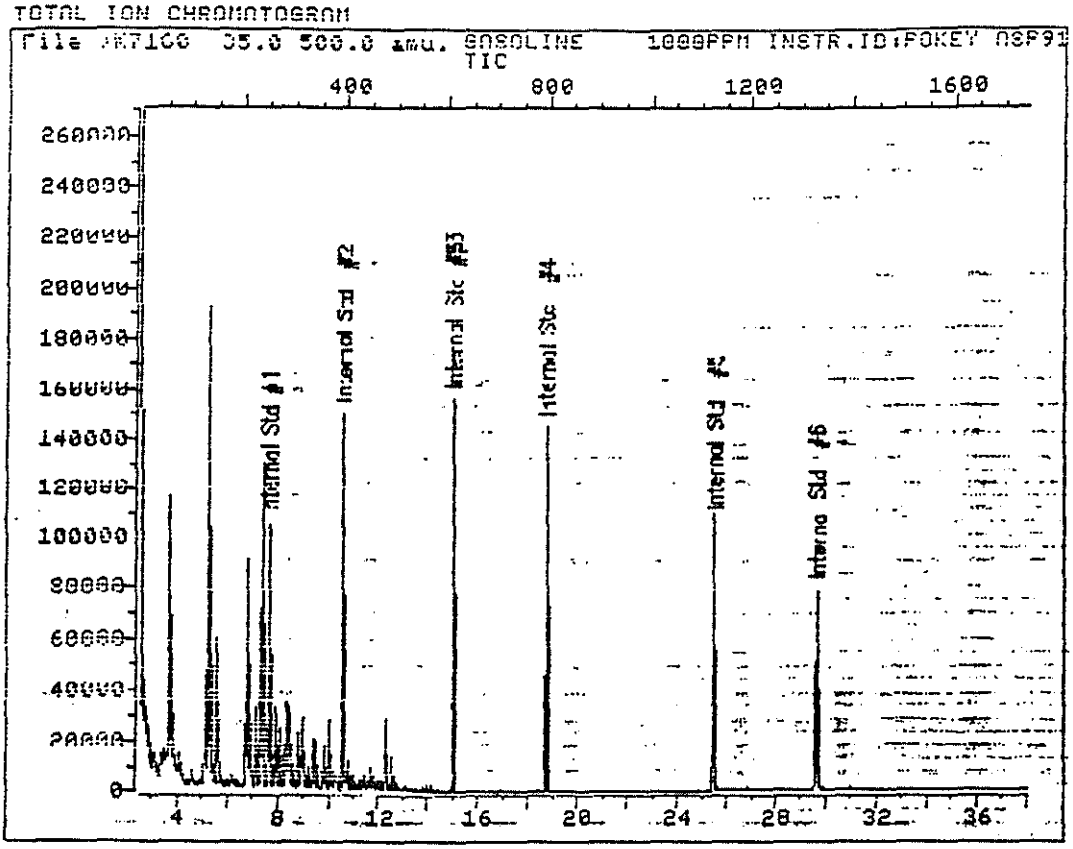
Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	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	5	U
67-64-1	Acetone	10	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
78-93-3	2-Butanone	10	U
107-06-2	1,2-Dichloroethane	5	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
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	1	J
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	3	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

TOTAL ION CHROMATOGRAM

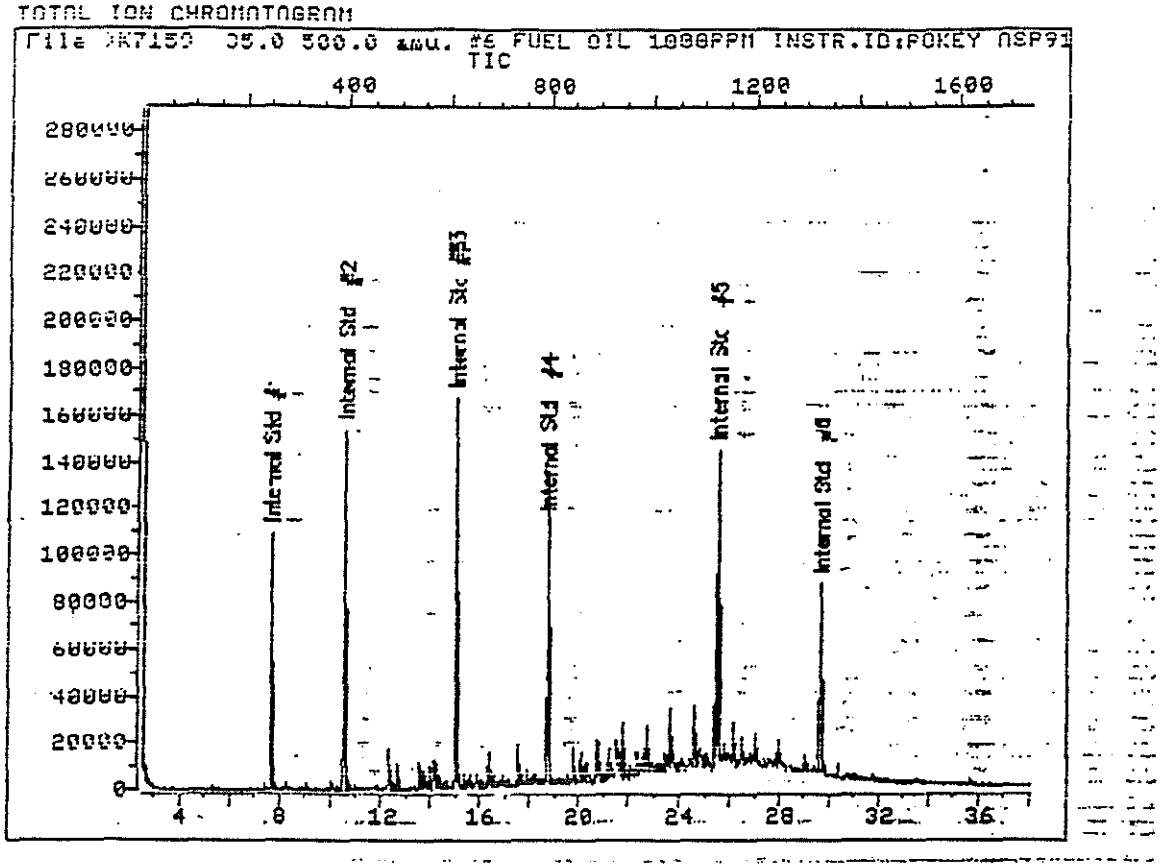


Data File: >K7160::P4 Quant Output File: ^K7160::QT
Name: GASOLINE 1000PPM
Misc: INSTR.ID:POKEY ASP91 PHC-GC BTL#-3

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931122 18:59
Injected at: 931122 18:18

TOTAL ION CHROMATOGRAM

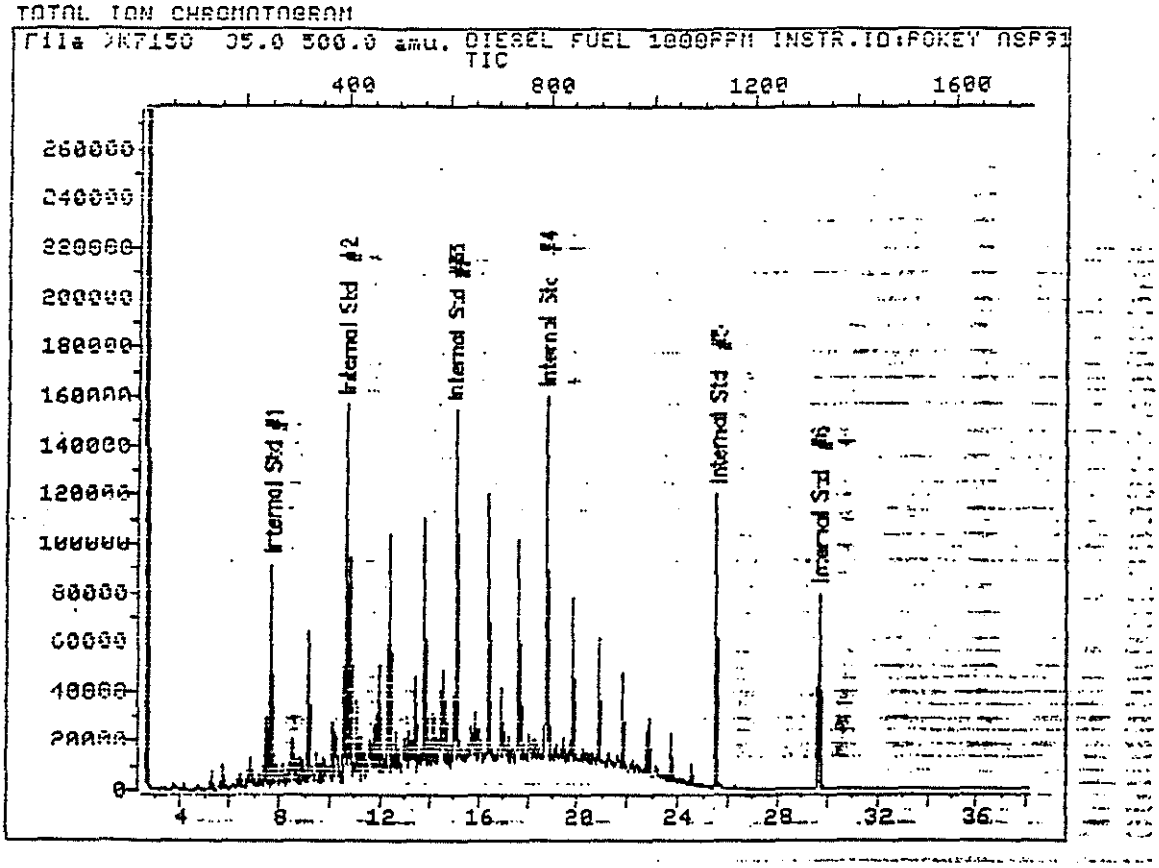


Data File: >K7159::P4 Quant Output File: ^K7159::QT
Name: #6 FUEL OIL 1000PPM
Misc: INSTR.ID:POKEY ASP91 PHC-GC BTL# 2

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931122 18:11
Injected at: 931122 17:30

TOTAL ION CHROMATOGRAM

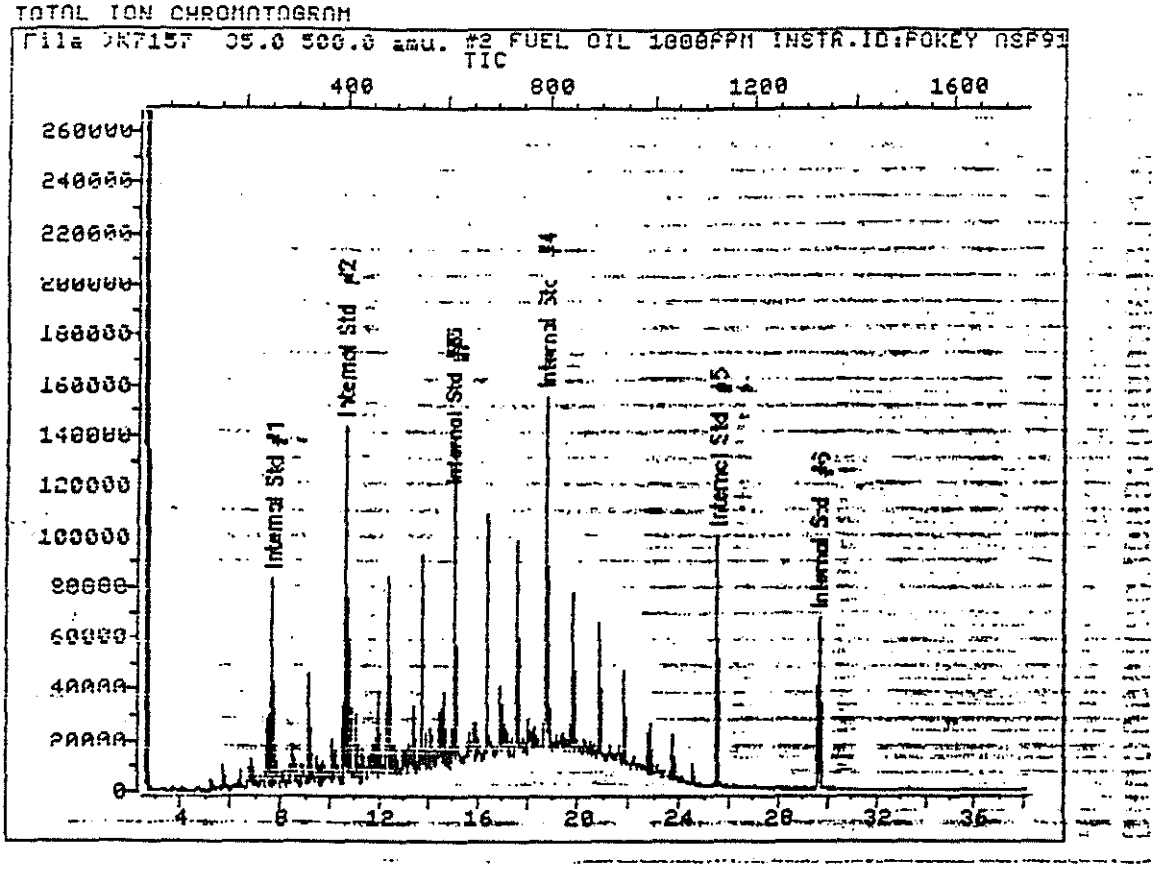


Data File: >K7158::P4 Quant Output File: ^K7158::QT
Name: DIESEL FUEL 1000PPM
Misc: INSTR.ID:POKEY ASP91 PHC-GC BTL#=1

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931122 17:22
Injected at: 931122 16:41

TOTAL ION CHROMATOGRAM

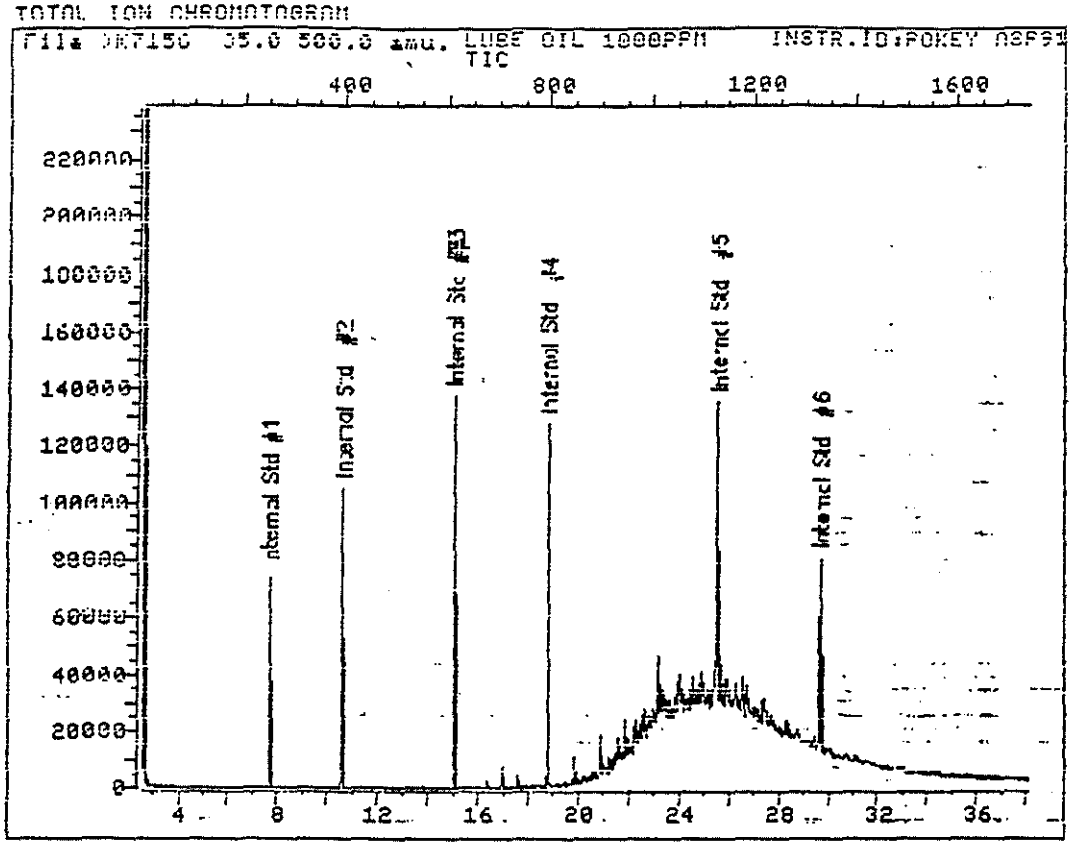


Data File: >K7157::P4 Quant Output File: ^K7157::QT
Name: #2 FUEL OIL 1000PPM
Misc: INSTR.ID:POKEY ASP91 PHC-GC BTL#-1

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931122 16:14
Injected at: 931122 15:34

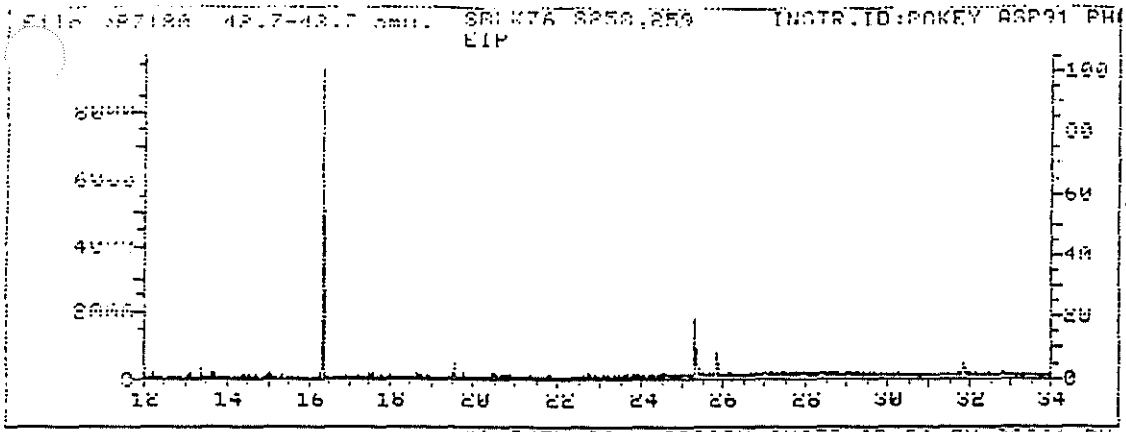
TOTAL ION CHROMATOGRAM

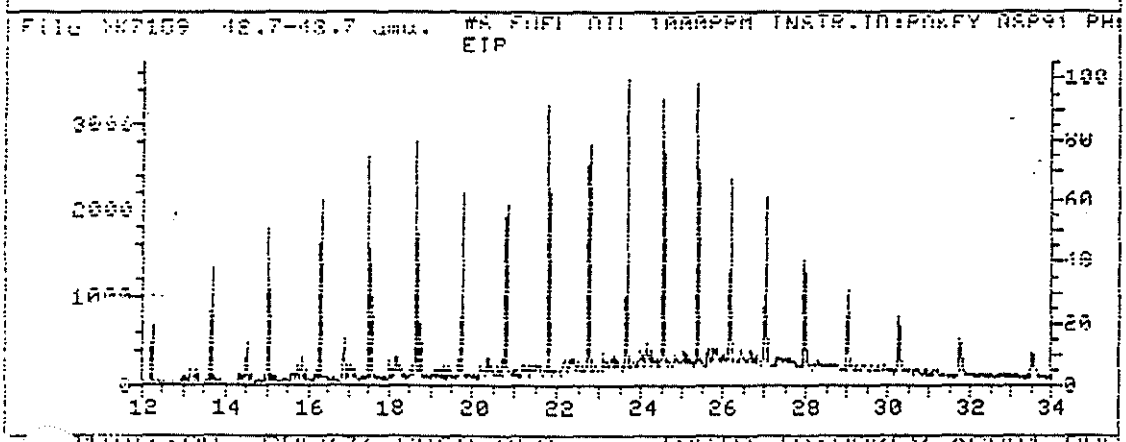


Data File: >K7156::P4 Quant Output File: ^K7156::QT
Name: LUBE OIL 1000PPM
Misc: INSTR.ID:POKEY ASP91 BTL# 1

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931122 15:19
Injected at: 931122 14:39





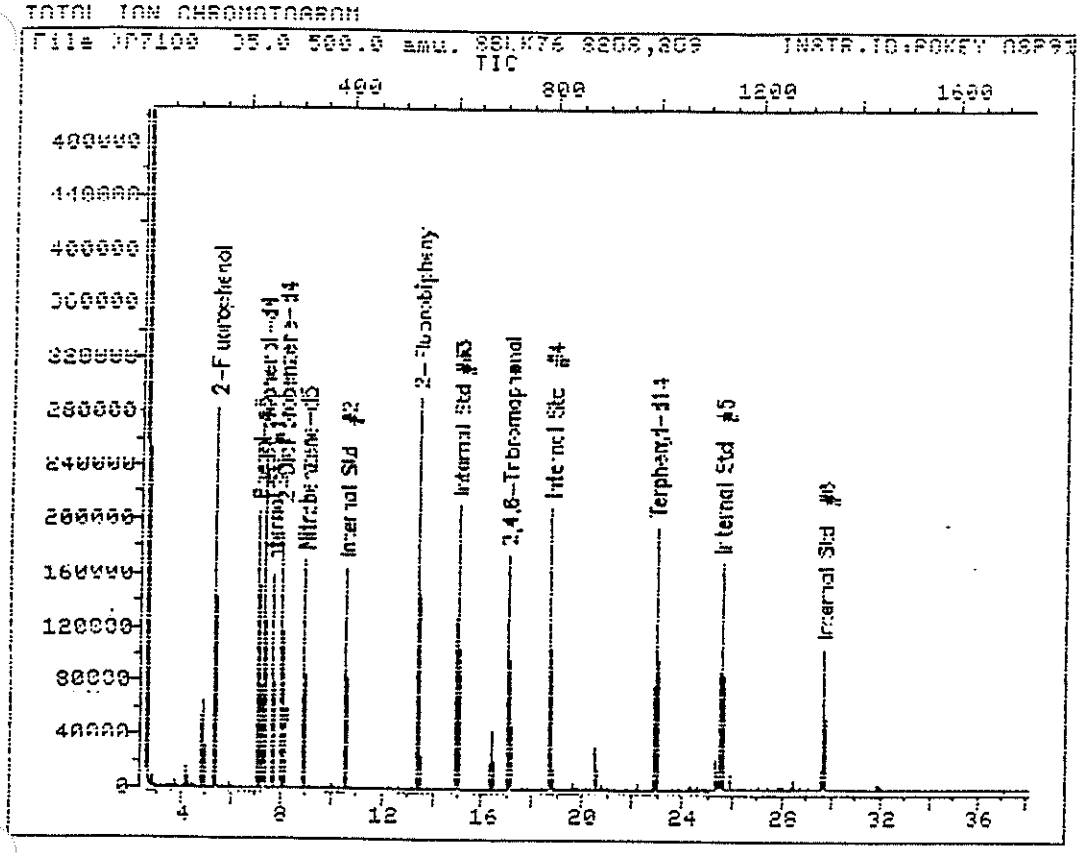
X-low: 0.00 Y-left: 0. Y-right: 0.
X-high: 0.00 Results File VOIR93 Sorted by Time/Area MI

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	16.56	467	681	1547	9278	123775	123775	100.00	100.000

K7199::P4 #4 FUEL OIL 10000PPM INSTR.ID:PDKEY ASP91 PHI-GC
X-low: 0.00 Y-left: 23. Y-right: 23.
X-high: 0.00 Results File VOIR93 Sorted by Time/Area MI

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	23.66	465	1036	1540	3509	295619	265258	100.00	100.000

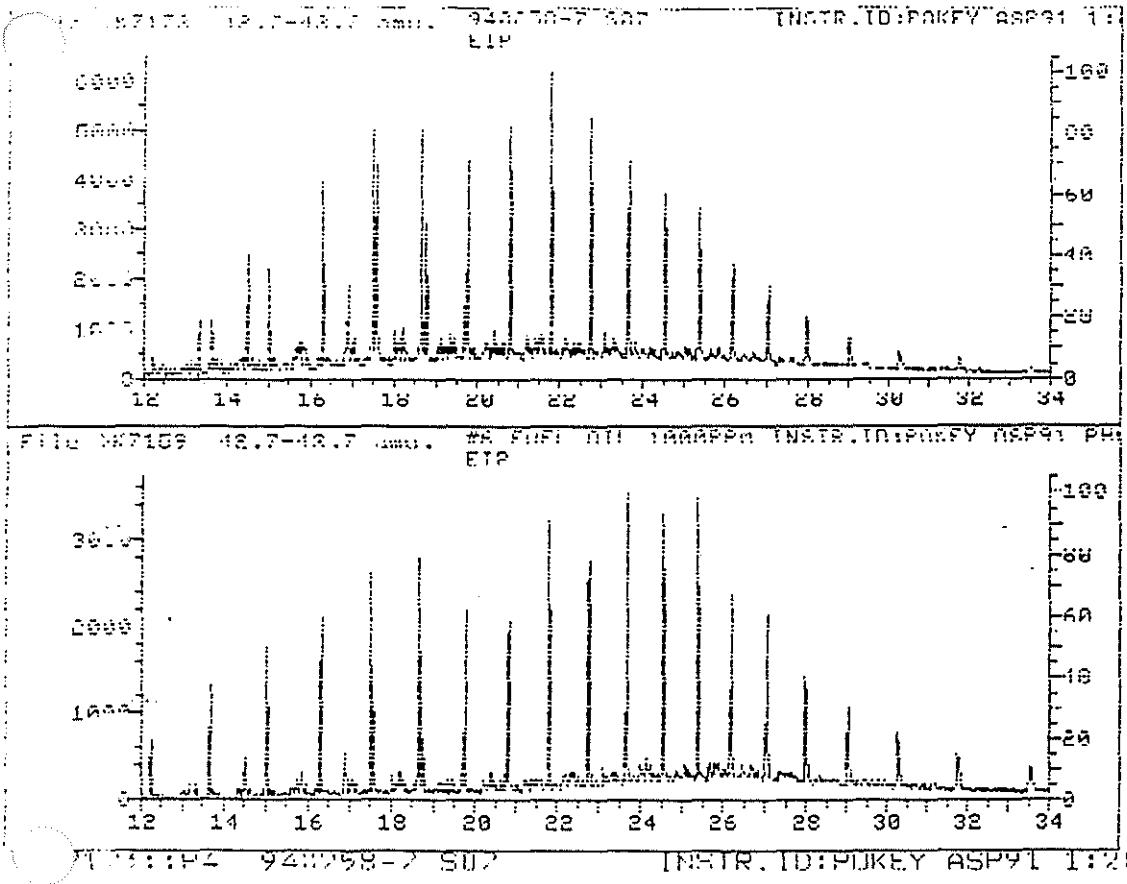
TOTAL ION CHROMATOGRAM



Data File: >P7180::P2 Quant Output File: ^P7180::QT
Name: SBLKZ6 S258,259
Misc: INSTR.ID:POKEY ASP91 PHC-GC BTL# 1

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931123 11:14
Injected at: 931123 10:54

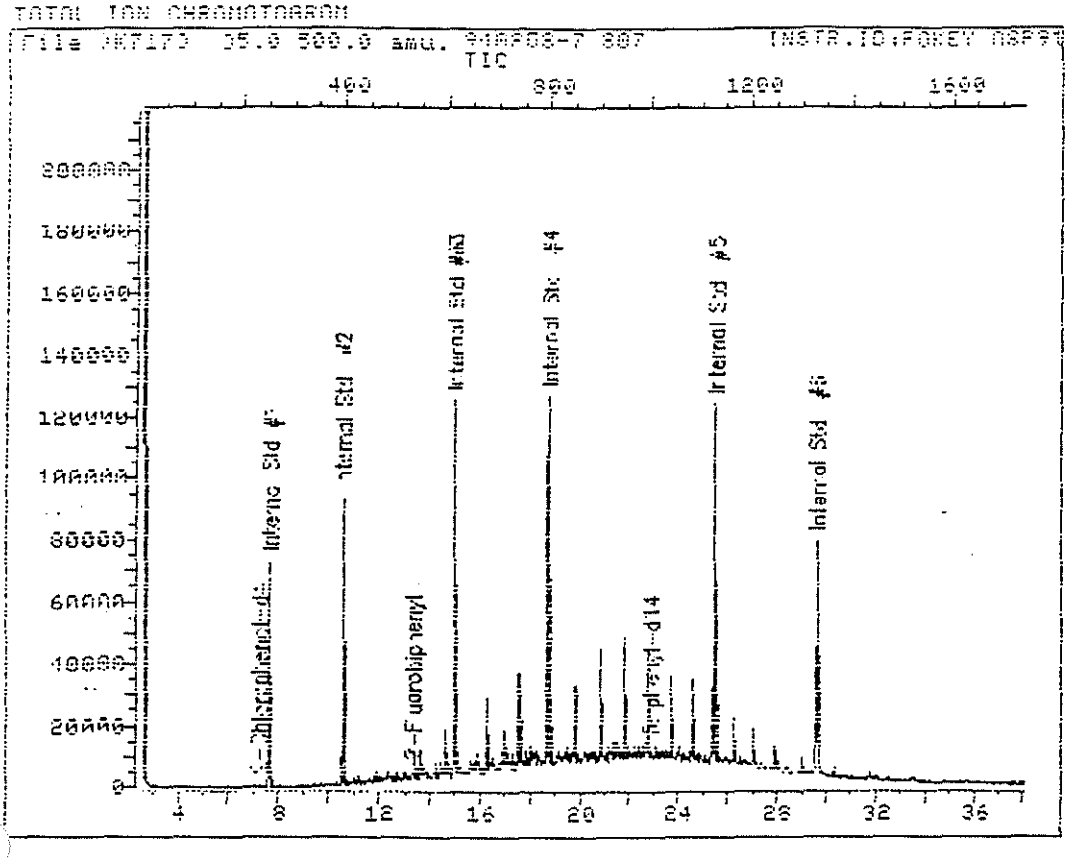


X-low: 0.00 Y-left: 93. Y-right: 93.
X-high: 0.00 Results File VOIR93 Sorted by Time/Area MI

Peak #	R.T. m.n.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	21.79	469	948	1545	6179	599794	469993	100.00	100.000

SK/159::P4 #6 FUEL OIL 1000PPM INSTR.ID:PDKEY ASP91 PHASE-GC
X-low: 0.00 Y-left: 23. Y-right: 23.
X-high: 0.00 Results File VOIR93 Sorted by Time/Area MI

Peak #	R.T. m.n.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	23.66	469	1046	1540	3509	295619	269258	100.00	100.000



Data File: >K2173::P4 Quant Output File: ^K2173::QT
Name: 9411258-7 SD7
Misc: INSTR.ID:POKEY ASP91 1:200 WEBSTER PHCGC BTL#14

Id File: AQU91P::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931122 14:42

Operator ID: MIKE
Quant Time: 931123 05:24
Injected at: 931123 04:43

E3I FORM 2A
SOIL SEMIVOLATILE ORGANIC SURROGATE RECOVERY

Client Name: WEBSTER ENG. Client Project: SA15

Date Received: 11/17/93 E3I Project #: 940258

Level: LOW

	CLIENT SAMPLE ID	S1 (NBZ)	S2 (FBP)	S3 (TPH)	S4 (DCB)	S5 (PHL)	S6 (2FP)	S7 (TBP)	S8 (2CP)	OTHER	TOT OUT
1	SBLKE3	61	58	48	63	67	52	64	58		0
2	S08C	76	86	56	81	91	78	88	83		0
3	S08CRE	78	83	64	81	93	77	82	87		0
4	S09C	77	95	65	80	96	79	111	88		0
5	S09CRE	76	89	69	83	97	77	84	90		0
6											
7											
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30											

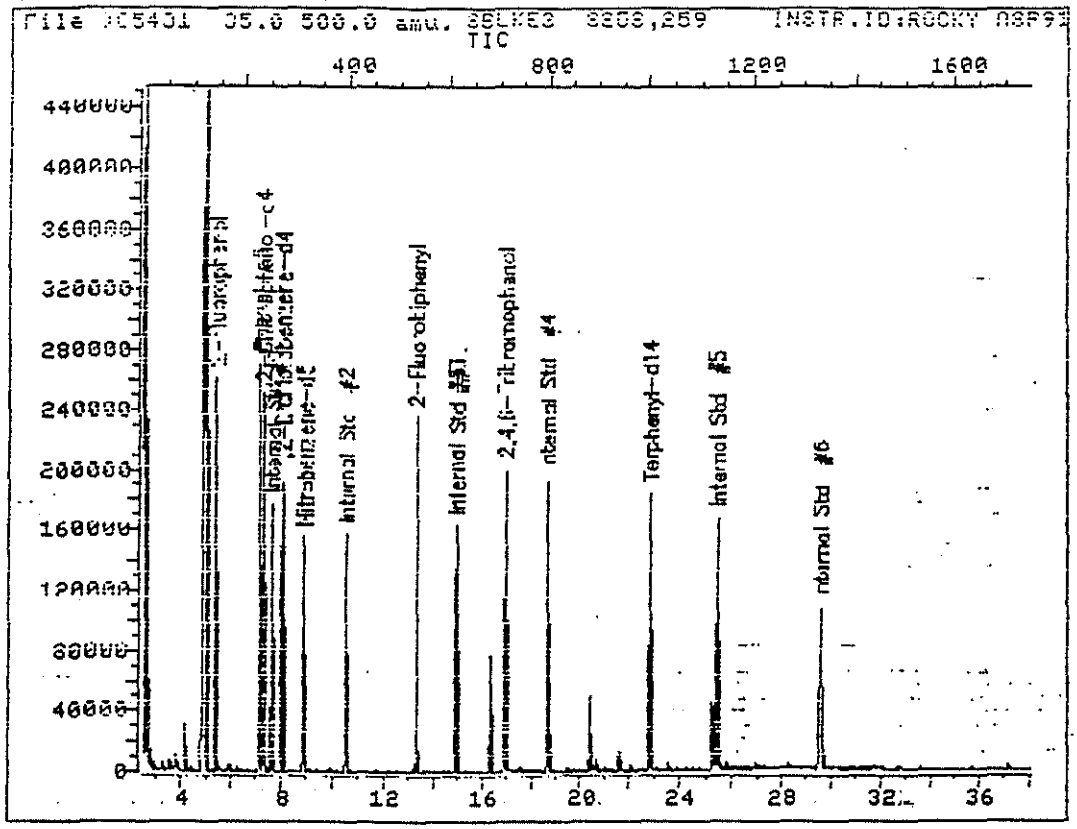
QC LIMITS

S1 (NBZ)	= Nitrobenzene-d5:	23-120	
S2 (FBP)	= 2-fluorobiphenyl:	30-115	
S3 (TPH)	= Terphenyl-d14:	18-137	
S4 (DCB)	= 1,2-Dichlorobenzene-d4:	20-130	(Advisory)
S5 (PHL)	= Phenol-d5:	24-113	
S6 (2FP)	= 2-Fluorophenol:	25-121	
S7 (TBP)	= 2,4,6-Tribromophenol:	19-122	
S8 (2CP)	= 2-Chlorophenol-d4:	20-130	(Advisory)

* - Values outside of required QC limits

D - Surrogates diluted out

TOTAL ION CHROMATOGRAM



Data File: >C5431::R2 Quant Output File: ^C5431::QT
Name: SBLKE3 S258,259
Misc: INSTR.ID:ROCKY ASP91 WEBSTER ENG. BTL#13

Id File: AQU91R::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931120 15:31

Operator ID: MIKE
Quant Time: 931121 02:32
Injected at: 931121 01:52

11/23/93

E3I FORM 1C
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMP

SBLKE3

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 0.0
Extract vol: 1.0 mL

E3I Sample ID: S258 -
E3I File Name: C5431
Associated Blank: C5431

Date Received: / /
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	830	U
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	U
86-30-6	N-Nitrosodiphenylamine	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	830	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-butylphthalate	160	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	330	U
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U
86-74-8	Carbazole	330	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SBLKE3

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 0.0
Extract vol: 1.0 mL

E3I Sample ID: S258 -
E3I File Name: C5431
Associated Blank: C5431

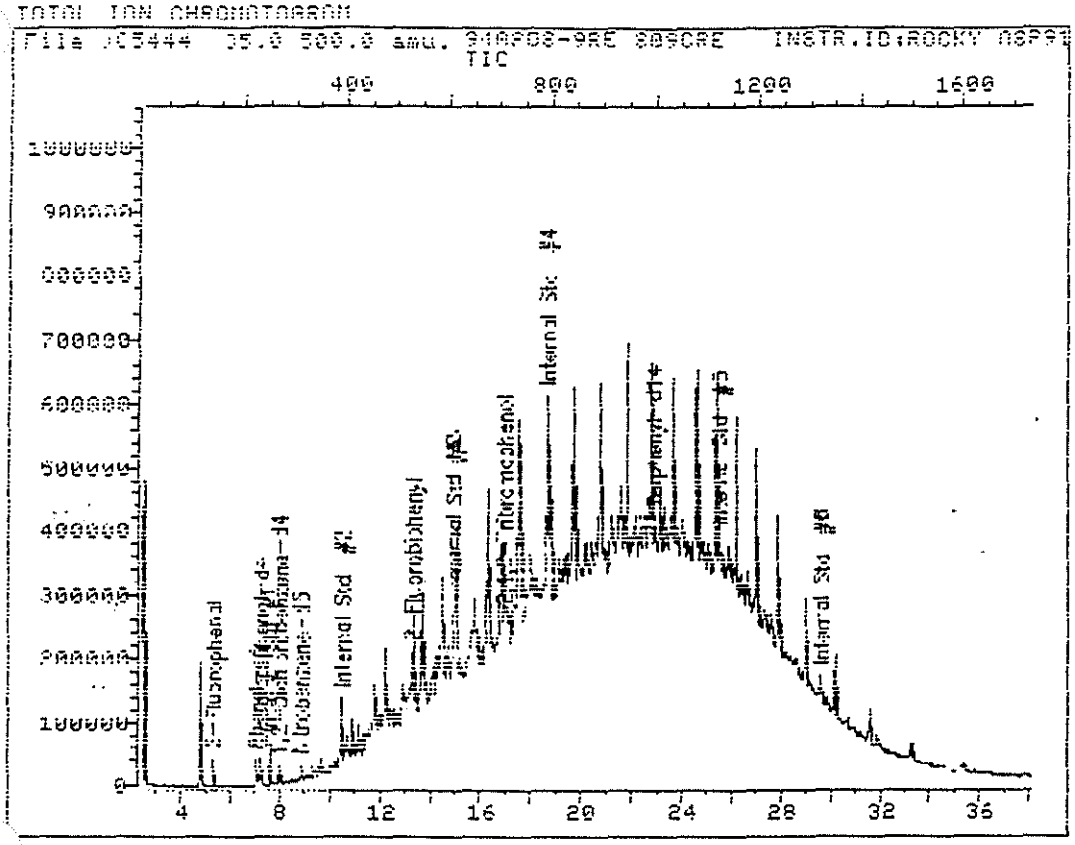
Date Received: / /
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	830	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	330	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



Data File: >C5444::R4 Quant Output File: ^C5444::QT
Name: 940258-9RE S09CRE
Misc: INSTR.ID:ROCKY ASP91 1:5 WEBSTER BTL# 1

Id File: AQU91R::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931120 15:31

Operator ID: MIKE
Quant Time: 931122 16:43
Injected at: 931122 16:03

MA 11/23/93

E3I FORM 1C
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

S09CRE

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 2.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-9RE
E3I File Name: C5444
Associated Blank: C5431

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/22/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	4300	U
100-02-7	4-Nitrophenol	4300	U
132-64-9	Dibenzofuran	1700	U
121-14-2	2,4-Dinitrotoluene	1700	U
84-66-2	Diethylphthalate	1700	U
7005-72-3	4-Chlorophenyl-phenylether	1700	U
86-73-7	Fluorene	1700	U
100-01-6	4-Nitroaniline	4300	U
534-52-1	4,6-Dinitro-2-methylphenol	4300	U
86-30-6	N-Nitrosodiphenylamine	1700	U
101-55-3	4-Bromophenyl-phenylether	1700	U
118-74-1	Hexachlorobenzene	1700	U
87-86-5	Pentachlorophenol	4300	U
85-01-8	Phenanthrene	1700	U
120-12-7	Anthracene	1700	U
84-74-2	Di-n-butylphthalate	210	JB
206-44-0	Fluoranthene	1700	U
129-00-0	Pyrene	420	J
85-68-7	Butylbenzylphthalate	1700	U
91-94-1	3,3'-Dichlorobenzidine	1700	U
56-55-3	Benzo(a)anthracene	180	J
218-01-9	Chrysene	560	J
117-81-7	bis(2-Ethylhexyl)phthalate	1700	U
117-84-0	Di-n-octylphthalate	1700	U
205-99-2	Benzo(b)fluoranthene	1700	U
207-08-9	Benzo(k)fluoranthene	1700	U
50-32-8	Benzo(a)pyrene	1700	U
193-39-5	Indeno(1,2,3-cd)pyrene	1700	U
53-70-3	Dibenzo(a,h)anthracene	1700	U
191-24-2	Benzo(g,h,i)perylene	1700	U
86-74-8	Carbazole	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

S09CRE

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 2.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-9RE
E3I File Name: C5444
Associated Blank: C5431

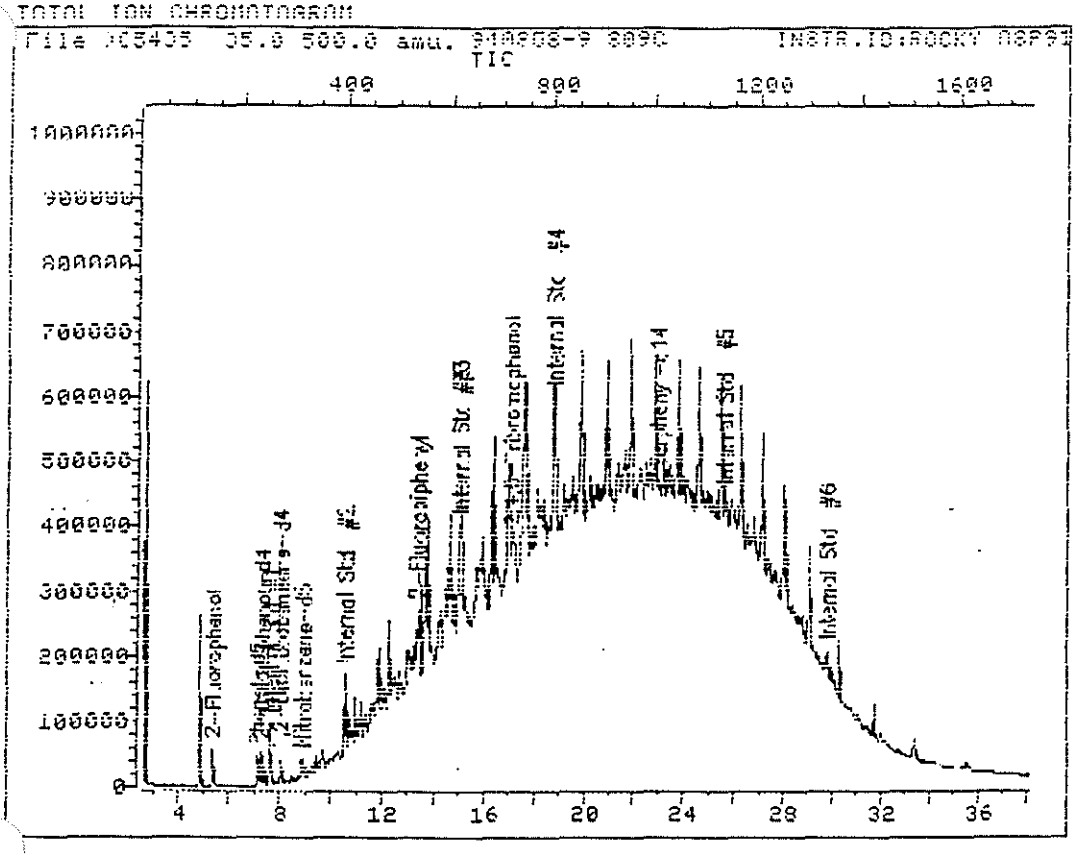
Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/22/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
108-95-2	Phenol	1700	U
111-44-4	bis(2-Chloroethyl)Ether	1700	U
95-57-8	2-Chlorophenol	1700	U
541-73-1	1,3-Dichlorobenzene	1700	U
106-46-7	1,4-Dichlorobenzene	1700	U
95-50-1	1,2-Dichlorobenzene	1700	U
95-48-7	2-Methylphenol	1700	U
108-60-1	bis(2-chloroisopropyl)ether	1700	U
106-44-5	4-Methylphenol	1700	U
621-64-7	N-Nitroso-Di-n-propylamine	1700	U
67-72-1	Hexachloroethane	1700	U
98-95-3	Nitrobenzene	1700	U
78-59-1	Isophorone	1700	U
88-75-5	2-Nitrophenol	1700	U
105-67-9	2,4-Dimethylphenol	1700	U
111-91-1	bis(2-Chloroethoxy)methane	1700	U
120-83-2	2,4-Dichlorophenol	4300	U
120-82-1	1,2,4-Trichlorobenzene	1700	U
91-20-3	Naphthalene	1700	U
106-47-8	4-Chloroaniline	1700	U
87-68-3	Hexachlorobutadiene	1700	U
59-50-7	4-Chloro-3-methylphenol	1700	U
91-57-6	2-Methylnaphthalene	1700	U
77-47-4	Hexachlorocyclopentadiene	1700	U
88-06-2	2,4,6-Trichlorophenol	1700	U
95-95-4	2,4,5-Trichlorophenol	4300	U
91-58-7	2-Chloronaphthalene	1700	U
88-74-4	2-Nitroaniline	4300	U
131-11-3	Dimethylphthalate	1700	U
208-96-8	Acenaphthylene	1700	U
606-20-2	2,6-Dinitrotoluene	1700	U
99-09-2	3-Nitroaniline	4300	U
83-32-9	Acenaphthene	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



Data File: >C5435::R2 Quant Output File: ^C5435::QT
Name: 940258-9 S09C
Misc: INSTR.ID:ROCKY ASP91 1:5 WEBSTER ENG. BTL#17

Id File: AQU91R::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931120 15:31

Operator ID: MIKE
Quant Time: 931121 05:46
Injected at: 931121 05:06

11/23/93

E3I FORM 1C
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMP

S09C

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 2.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-9
E3I File Name: C5435
Associated Blank: C5431

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	4300	U
100-02-7	4-Nitrophenol	4300	U
132-64-9	Dibenzofuran	1700	U
121-14-2	2,4-Dinitrotoluene	1700	U
84-66-2	Diethylphthalate	1700	U
7005-72-3	4-Chlorophenyl-phenylether	1700	U
86-73-7	Fluorene	1700	U
100-01-6	4-Nitroaniline	4300	U
534-52-1	4,6-Dinitro-2-methylphenol	4300	U
86-30-6	N-Nitrosodiphenylamine	1700	U
101-55-3	4-Bromophenyl-phenylether	1700	U
118-74-1	Hexachlorobenzene	1700	U
87-86-5	Pentachlorophenol	4300	U
85-01-8	Phenanthrene	1700	U
120-12-7	Anthracene	1700	U
84-74-2	Di-n-butylphthalate	250	JB
206-44-0	Fluoranthene	1700	U
129-00-0	Pyrene	350	J
85-68-7	Butylbenzylphthalate	1700	U
91-94-1	3,3'-Dichlorobenzidine	1700	U
56-55-3	Benzo(a)anthracene	220	J
218-01-9	Chrysene	540	J
117-81-7	bis(2-Ethylhexyl)phthalate	1700	U
117-84-0	Di-n-octylphthalate	1700	U
205-99-2	Benzo(b)fluoranthene	1700	U
207-08-9	Benzo(k)fluoranthene	1700	U
50-32-8	Benzo(a)pyrene	1700	U
193-39-5	Indeno(1,2,3-cd)pyrene	1700	U
53-70-3	Dibenzo(a,h)anthracene	1700	U
191-24-2	Benzo(g,h,i)perylene	1700	U
86-74-8	Carbazole	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

S09C

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 2.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-9
E3I File Name: C5435
Associated Blank: C5431

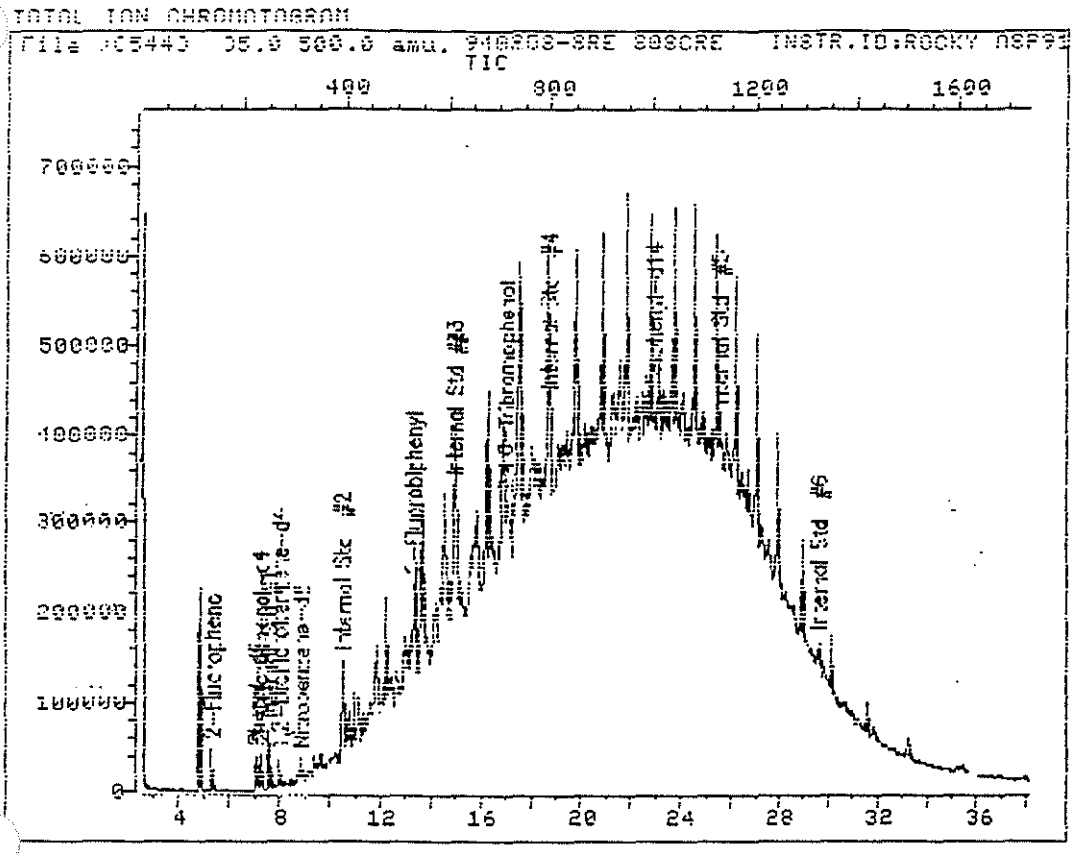
Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
108-95-2	Phenol	1700	U
111-44-4	bis(2-Chloroethyl)Ether	1700	U
95-57-8	2-Chlorophenol	1700	U
541-73-1	1,3-Dichlorobenzene	1700	U
106-46-7	1,4-Dichlorobenzene	1700	U
95-50-1	1,2-Dichlorobenzene	1700	U
95-48-7	2-Methylphenol	1700	U
108-60-1	bis(2-chloroisopropyl)ether	1700	U
106-44-5	4-Methylphenol	1700	U
621-64-7	N-Nitroso-Di-n-propylamine	1700	U
67-72-1	Hexachloroethane	1700	U
98-95-3	Nitrobenzene	1700	U
78-59-1	Isophorone	1700	U
88-75-5	2-Nitrophenol	1700	U
105-67-9	2,4-Dimethylphenol	1700	U
111-91-1	bis(2-Chloroethoxy)methane	1700	U
120-83-2	2,4-Dichlorophenol	4300	U
120-82-1	1,2,4-Trichlorobenzene	1700	U
91-20-3	Naphthalene	1700	U
106-47-8	4-Chloroaniline	1700	U
87-68-3	Hexachlorobutadiene	1700	U
59-50-7	4-Chloro-3-methylphenol	1700	U
91-57-6	2-Methylnaphthalene	1700	U
77-47-4	Hexachlorocyclopentadiene	1700	U
88-06-2	2,4,6-Trichlorophenol	1700	U
95-95-4	2,4,5-Trichlorophenol	4300	U
91-58-7	2-Chloronaphthalene	1700	U
88-74-4	2-Nitroaniline	4300	U
131-11-3	Dimethylphthalate	1700	U
208-96-8	Acenaphthylene	1700	U
606-20-2	2,6-Dinitrotoluene	1700	U
99-09-2	3-Nitroaniline	4300	U
83-32-9	Acenaphthene	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



Data File: >C5443::R4 Quant Output File: ^C5443::QT
Name: 940258-8RE S08CRE
Misc: INSTR.ID:ROCKY ASP91 1:5 WEBSTER BTL# 1

Id File: AQU91R::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931120 15:31

Operator ID: MIKE
Quant Time: 931122 15:55
Injected at: 931122 15:15

11/23/93

E3I FORM 1C
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPL

S08CRE

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 4.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-8RE
E3I File Name: C5443
Associated Blank: C5431

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/22/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	4300	U
100-02-7	4-Nitrophenol	4300	U
132-64-9	Dibenzofuran	1700	U
121-14-2	2,4-Dinitrotoluene	1700	U
84-66-2	Diethylphthalate	1700	U
7005-72-3	4-Chlorophenyl-phenylether	1700	U
86-73-7	Fluorene	1700	U
100-01-6	4-Nitroaniline	4300	U
534-52-1	4,6-Dinitro-2-methylphenol	4300	U
86-30-6	N-Nitrosodiphenylamine	1700	U
101-55-3	4-Bromophenyl-phenylether	1700	U
118-74-1	Hexachlorobenzene	1700	U
87-86-5	Pentachlorophenol	4300	U
85-01-8	Phenanthrene	1700	U
120-12-7	Anthracene	1700	U
84-74-2	Di-n-butylphthalate	1700	U
206-44-0	Fluoranthene	1700	U
129-00-0	Pyrene	400	J
85-68-7	Butylbenzylphthalate	1700	U
91-94-1	3,3'-Dichlorobenzidine	1700	U
56-55-3	Benzo(a)anthracene	220	J
218-01-9	Chrysene	600	J
117-81-7	bis(2-Ethylhexyl)phthalate	1700	U
117-84-0	Di-n-octylphthalate	1700	U
205-99-2	Benzo(b)fluoranthene	1700	U
207-08-9	Benzo(k)fluoranthene	1700	U
50-32-8	Benzo(a)pyrene	1700	U
193-39-5	Indeno(1,2,3-cd)pyrene	1700	U
53-70-3	Dibenzo(a,h)anthracene	1700	U
191-24-2	Benzo(g,h,i)perylene	1700	U
86-74-8	Carbazole	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

S08CRE

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 4.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-8RE
E3I File Name: C5443
Associated Blank: C5431

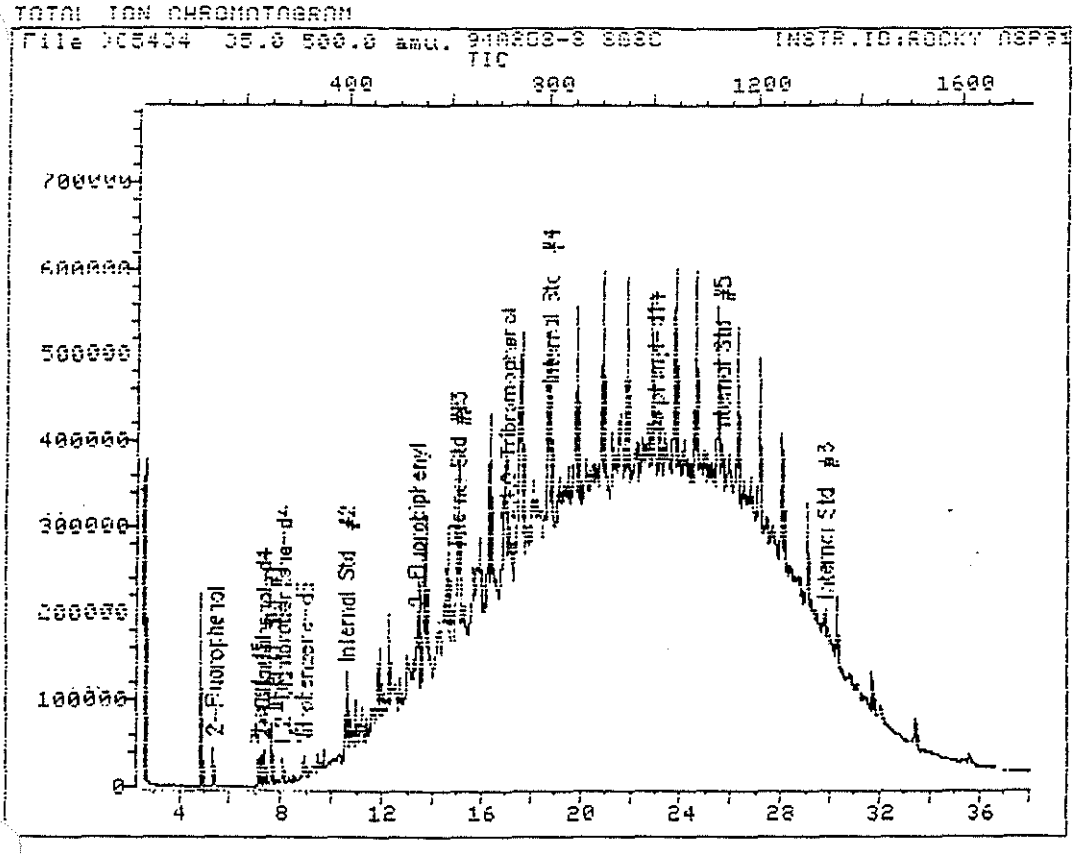
Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/22/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
108-95-2	Phenol	1700	U
111-44-4	bis(2-Chloroethyl)Ether	1700	U
95-57-8	2-Chlorophenol	1700	U
541-73-1	1,3-Dichlorobenzene	1700	U
106-46-7	1,4-Dichlorobenzene	1700	U
95-50-1	1,2-Dichlorobenzene	1700	U
95-48-7	2-Methylphenol	1700	U
108-60-1	bis(2-chloroisopropyl)ether	1700	U
106-44-5	4-Methylphenol	1700	U
621-64-7	N-Nitroso-Di-n-propylamine	1700	U
67-72-1	Hexachloroethane	1700	U
98-95-3	Nitrobenzene	1700	U
78-59-1	Isophorone	1700	U
88-75-5	2-Nitrophenol	1700	U
105-67-9	2,4-Dimethylphenol	1700	U
111-91-1	bis(2-Chloroethoxy)methane	1700	U
120-83-2	2,4-Dichlorophenol	4300	U
120-82-1	1,2,4-Trichlorobenzene	1700	U
91-20-3	Naphthalene	1700	U
106-47-8	4-Chloroaniline	1700	U
87-68-3	Hexachlorobutadiene	1700	U
59-50-7	4-Chloro-3-methylphenol	1700	U
91-57-6	2-Methylnaphthalene	1700	U
77-47-4	Hexachlorocyclopentadiene	1700	U
88-06-2	2,4,6-Trichlorophenol	1700	U
95-95-4	2,4,5-Trichlorophenol	4300	U
91-58-7	2-Chloronaphthalene	1700	U
88-74-4	2-Nitroaniline	4300	U
131-11-3	Dimethylphthalate	1700	U
208-96-8	Acenaphthylene	1700	U
606-20-2	2,6-Dinitrotoluene	1700	U
99-09-2	3-Nitroaniline	4300	U
83-32-9	Acenaphthene	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit



:Data File: >C5434::R2 Quant Output File: ^C5434::QT
Name: 940258-8 SMBC
Misc: INSTR.ID:ROCKY ASP91 1:5 WEBSTER ENG. BTL#16

Id File: AQU91R::EX
Title: SEMI-VOLATILE ORGANIC ANALYSIS FOR NYDEC CLP
Last Calibration: 931120 15:31

Operator ID: MIKE
Quant Time: 931121 04:58
Injected at: 931121 04:17

mal
11/23/93

E3I FORM 1C
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPI

S08C

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 4.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-8
E3I File Name: C5434
Associated Blank: C5431

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
51-28-5	2,4-Dinitrophenol	4300	U
100-02-7	4-Nitrophenol	4300	U
132-64-9	Dibenzofuran	1700	U
121-14-2	2,4-Dinitrotoluene	1700	U
84-66-2	Diethylphthalate	1700	U
7005-72-3	4-Chlorophenyl-phenylether	1700	U
86-73-7	Fluorene	1700	U
100-01-6	4-Nitroaniline	4300	U
534-52-1	4,6-Dinitro-2-methylphenol	4300	U
86-30-6	N-Nitrosodiphenylamine	1700	U
101-55-3	4-Bromophenyl-phenylether	1700	U
118-74-1	Hexachlorobenzene	1700	U
87-86-5	Pentachlorophenol	4300	U
85-01-8	Phenanthrene	1700	U
120-12-7	Anthracene	1700	U
84-74-2	Di-n-butylphthalate	190	JB
206-44-0	Fluoranthene	1700	U
129-00-0	Pyrene	450	J
85-68-7	Butylbenzylphthalate	1700	U
91-94-1	3,3'-Dichlorobenzidine	1700	U
56-55-3	Benzo(a)anthracene	230	J
218-01-9	Chrysene	570	J
117-81-7	bis(2-Ethylhexyl)phthalate	1700	U
117-84-0	Di-n-octylphthalate	1700	U
205-99-2	Benzo(b)fluoranthene	1700	U
207-08-9	Benzo(k)fluoranthene	1700	U
50-32-8	Benzo(a)pyrene	1700	U
193-39-5	Indeno(1,2,3-cd)pyrene	1700	U
53-70-3	Dibenzo(a,h)anthracene	1700	U
191-24-2	Benzo(g,h,i)perylene	1700	U
86-74-8	Carbazole	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

E3I FORM 1B
SEMI-VOLATILE ORGANIC ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

S08C

Client Name: WEBSTER ENG.
Client Project: SA15

Matrix: SOIL
Level: LOW

Sample wt/vol: 30.0 G
% Moisture: 4.0
Extract vol: 1.0 mL

E3I Sample ID: 940258-8
E3I File Name: C5434
Associated Blank: C5431

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/21/93

Dilution Factor: 5

CAS NO.	COMPOUND	CONCENTRATION UNITS: ug/Kg	Q
108-95-2	Phenol	1700	U
111-44-4	bis(2-Chloroethyl)Ether	1700	U
95-57-8	2-Chlorophenol	1700	U
541-73-1	1,3-Dichlorobenzene	1700	U
106-46-7	1,4-Dichlorobenzene	1700	U
95-50-1	1,2-Dichlorobenzene	1700	U
95-48-7	2-Methylphenol	1700	U
108-60-1	bis(2-chloroisopropyl)ether	1700	U
106-44-5	4-Methylphenol	1700	U
621-64-7	N-Nitroso-Di-n-propylamine	1700	U
67-72-1	Hexachloroethane	1700	U
98-95-3	Nitrobenzene	1700	U
78-59-1	Isophorone	1700	U
88-75-5	2-Nitrophenol	1700	U
105-67-9	2,4-Dimethylphenol	1700	U
111-91-1	bis(2-Chloroethoxy)methane	1700	U
120-83-2	2,4-Dichlorophenol	4300	U
120-82-1	1,2,4-Trichlorobenzene	1700	U
91-20-3	Naphthalene	1700	U
106-47-8	4-Chloroaniline	1700	U
87-68-3	Hexachlorobutadiene	1700	U
59-50-7	4-Chloro-3-methylphenol	1700	U
91-57-6	2-Methylnaphthalene	1700	U
77-47-4	Hexachlorocyclopentadiene	1700	U
88-06-2	2,4,6-Trichlorophenol	1700	U
95-95-4	2,4,5-Trichlorophenol	4300	U
91-58-7	2-Chloronaphthalene	1700	U
88-74-4	2-Nitroaniline	4300	U
131-11-3	Dimethylphthalate	1700	U
208-96-8	Acenaphthylene	1700	U
606-20-2	2,6-Dinitrotoluene	1700	U
99-09-2	3-Nitroaniline	4300	U
83-32-9	Acenaphthene	1700	U

QUALIFIERS

U: Analysed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
E: Estimated value, above calibration limit

PETROLEUM HYDROCARBON FINGERPRINT RESULTS

Client ID:	S07	Date Extracted:	11/18/93
E3I ID:	940258-7	Date Analyzed:	11/23/93
		Dilution Factor:	200
Identification:	#6 Fuel Oil	Concentration:	14000 mg/kg

Sample contained a mixture of petroleum compounds eluting over the size range of C14 to C32 hydrocarbons. The extracted 43 ion profile was similar to a #6 Fuel Oil standard. The quantitation range was 12 to 34 minutes. The match between the sample and #6 Fuel Oil standard was good.

Client ID:	SBLKZ6	Date Extracted:	11/18/93
E3I ID:	S258,259	Date Analyzed:	11/23/93
		Dilution Factor:	1
Identification:	None	Concentration:	< 10.0 mg/kg

Sample contained no petroleum compounds above the reporting limit.

Sample concentrations have been blank corrected for method related interferences.

TOTAL PETROLEUM HYDROCARBONS

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/23/93

E3I ID:	Client ID:	Total Petroleum Hydrocarbons Dry Weight	
940258-1	S01	940	mg/kg
940258-2	S02	4,800	mg/kg
940258-3	S03	5,900	mg/kg
940258-4	S04	4,500	mg/kg
940258-5	S05	27,000	mg/kg
940258-6	S06	39	mg/kg
S257,258,259	Soil Blank	< 25	mg/kg

"<" means that the parameter was not detected and that its concentration is less than the indicated value.

1 D
PCB ANALYSIS DATA SHEET

S08C

Lab Name: E3I Case No.: SA15
Lab Code: E3I SDG No.:

Matrix: Soil
Extraction: Sonc

%Moisture: 4 %
Decanted: N

Sample Size: 30.0 G
Extract Volume: 10.0 mL
Injection Vol.: 1.0 uL

Lab Sample ID: 940258-8
Lab File ID: N18A147

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/24/93

Dil. Factor: 1
pH: 5.0

GPC Cleanup: N

Sulfur Cleanup: Y

CAS No.	COMPOUND	Concentration Units: ug/Kg	Q
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	70	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

(Q) - Qualifiers:
U: Analyzed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
C: Confirmed by GC/MS

1 D
PCB ANALYSIS DATA SHEET

S09C

Lab Name: E3I Case No.: SA15
Lab Code: E3I SDG No.:

Matrix: Soil
Extraction: Sonc

Lab Sample ID: 940258-9
Lab File ID: N18A148

%Moisture: 2 %
Decanted: N

Date Received: 11/17/93
Date Extracted: 11/18/93
Date Analyzed: 11/24/93

Sample Size: 30.0 G
Extract Volume: 10.0 mL
Injection Vol.: 1.0 uL

Dil. Factor: 1
pH: 5.2

GPC Cleanup: N

Sulfur Cleanup: Y

CAS No.	COMPOUND	Concentration Units: ug/Kg	Q
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

(Q) - Qualifiers:
U: Analyzed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
C: Confirmed by GC/MS

1 D

PCB ANALYSIS DATA SHEET

PBLK58

Lab Name: E3I Case No.: SA15
Lab Code: E3I SDG No.:

Matrix: Soil
Extraction: Sonc

Lab Sample ID: S258,259,265
Lab File ID: N18A145

%Moisture: 0 %
Decanted: N

Date Received:
Date Extracted: 11/18/93
Date Analyzed: 11/24/93

Sample Size: 30.0 G
Extract Volume: 10.0 mL
Injection Vol.: 1.0 uL

Dil. Factor: 1
pH:

GPC Cleanup: N

Sulfur Cleanup: Y

CAS No.	COMPOUND	Concentration Units: ug/Kg	Q
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	67	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U

(Q) - Qualifiers:
U: Analyzed for but not detected
B: Found in associated blank as well as sample
J: Estimated value, below quantitation limit
C: Confirmed by GC/MS

APPENDIX D

Bill of Lading - Weight Slips - Recycling Documentation
Final Closure Report
Study Area 15

WE Co., Inc. | Webster Engineering Co., Inc.

(617) 265-5500 P.O. BOX 275 DORCHESTER, MASSACHUSETTS 02121
FAX (617) 265-3054

November 30,1993

Thomas W. Best, Resident Engineer
U.S. Corps Of Engineers
Natick RD & E Center
Kansas Street
Natick,MA 01760-5050

Re: Bill Of Lading
Additional Laboratory Analysis
Facility Information
SA15 and SA48 Sites
Regulatory Compliance
Contract No. DA CA 33-93-C-0061

Dear Mr. Best :

Please find enclosed information that I will forward to ***James Chandler*** - Environmental Manager, ***Mark Boser*** - Environmental Protection Specialist at Fort Devens, Facilities and the appropriate governmental agencies involved.

1. ***RELEASE TRACKING NUMBER***

For the Mass. DEP Bill Of Lading BWSC - 012A I have been advised by David Salvadore of the **MDEP**, Worchester office to use 2-0662 for both sites.

2. ***NOTIFICATION***

David Salvadore has advised me to send Molly Elder of the MDEP, Acting Section Chief, Federal Facilities Group a schedule of the removal. On your approval I will send her a condensed specific schedule.

3. ***FACILITIES FOR DISPOSAL***

SA15 Site : American Reclamation Corporation
130 Route 20
Charlton,MA 01508
Contact Person : William McCambridge
Facility Supervisor
508-248-3777 Plant
508-624-7006 Office

Mass. DEP **CLASS A PERMIT** #0144-91 **EPA ID** #MAD982201055

SA48 Site : Waste Management Inc.
Tree Division
90 Rochester Neck Road
Rochester, N.H.
New Hampshire **DES** #7W 88 019

4. ***BILL OF LADING***

The Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup, Bill Of Lading Form BWSC - 012A/B/C pursuant to 310 CMR 40.0000 will be utilized for the SA15 and SA48 sites. Enclosed please find my letter of November 24,1993 to John Carrigan (Mass. DEP) confirming the use of the Bill of Lading and letter of November 26,1993 to Carl Woodbury of the New Hampshire DES regarding receipt of the SA48 waste oil contaminated soil.

The completed Bill of Lading will be submitted to James Chandler and Mark Boser for review and signature, signed and sealed by Joseph V. Polsinello authorized LSP No. 7450. Waste profiles with analysis have been submitted to the facilities and the state of New Hampshire. The Bill of Ladings are further audited by the Massachusetts DEP upon completion and submittal of BOL reports.

Please feel free to contact me if I can be of further assistance.

Very truly yours,

Joseph Polsinello

Joseph V. Polsinello
Project Manager / SA15 and SA48

AMERICAN RECLAMATION CORPORATION
AMREC

CONTRACT FOR RECYCLING OF REGULATED RECYCLABLE MATERIALS

DATE: December 3, 1993 REFERENCE NO: P-93-12-09

CLIENT: Hal Kane
Webster Engineering Co.
P.O. Box 275
Dorchester, MA 02121
(617) 265-5500

This it a contract for the recycling of approximately 335 yards (500 tons) of soil containing #2, #4, #6 oil from U.S. Army Fort Devens, Jackson Dixie Rd., Ayer, MA. into asphalt products at the AmRec facility in Charlton, MA. The client will be billed for exact tonnage delivered to AmRec based on certified weigh scale receipts. These activities are authorized pursuant to Massachusetts General Laws Chapter 21C. 310 CMR 30.200 and by AmRec's Class A Recycling Permit 0144.

Prior to acceptance, the Generator (or its agent) must provide a written statement describing the origin of the petroleum product in the soil. An information form is available from AmRec for this purpose. The soil must be adequately characterized, and the analytical data must be provided to AmRec. Refer to the information sheet on the AmRec requirements for acceptance of soils with petroleum. Out-of-State generators must also provide a certification statement that the transport and recycling of the soil do not violate any laws or regulations of the state of origin.

BASIC SERVICES

This contract is for the transportation and recycling of soil into asphalt products. The client shall arrange for loading of the soil.

DOCUMENTATION

AmRec shall provide the client with a report detailing the amount of soil delivered to AmRec by weight. Copies of weight slips will be included.

A Certificate of Recycling will be provided to the client certifying that the petroleum-containing soil has been recycled into asphalt products.

LIMITATIONS

To the extent that the regulated recyclable material does not conform to the data and information submitted to AmRec, the client shall indemnify and hold AmRec harmless from all liability and damages arising therefrom, and AmRec shall be released from all it's obligations under this agreement.

Signed: Bill McCambridge Date: 12-3-93
AmRec Representative

Signed: _____ Date: _____
Client Representative

CHARLTON WELDING & REPAIR, INC.
P.O. BOX 69
11 GRIFFIN ROAD
CHARLTON CITY, MA. 01508
(508-248-7037)

DECEMBER 6, 1993

WEBSTER ENGINEERING CO., INC.
P.O. BOX 275
DORCHESTER, MA. 02121

CHARLTON WELDING & REPAIR, INC IS QUALIFIED TO TRANSPORT VIRGIN OIL CONTAMINATED SOILS TO THE AMERICAN RECLAMATION CORPORATION AS AUTHORIZED PER THE MASSACHUSETTS DEP REGULATIONS FOR NON-HAZARDOUS OIL CONTAMINATED SOILS.

Linda McKissick
LINDA MCKISSICK
CLERK

STUDY AREA 15

Massachusetts Department of Environmental Protection **BWSC-012A**
Bureau of Waste Site Cleanup

Release Tracking Number*: 2 - 0662

BILL OF LADING (pursuant to 310 CMR 40.0030)

I. LOCATION OF SITE OR DISPOSAL SITE WHERE REMEDIATION WASTE WAS GENERATED:

Release Name (optional): U.S. ARMY FORT DEVENS
Street: JACKSON AND DIXIE ROAD Location Aid: SA15 SOUTH POST
City/Town: AYER Zip Code: ____ - ____
Date/Period of Generation: __/__/__ to __/__/__
Additional Release Tracking Numbers Associated with this Bill of Lading: ____

Note: If this Bill of Lading is the result of a Limited Removal Action (LRA) taken prior to Notification, a Release Tracking Number is not needed.

PERSON CONDUCTING RESPONSE ACTION ASSOCIATED WITH BILL OF LADING:

Name of Organization: U.S. ARMY - FORT DEVENS
Name of Contact: JAMES CHAMBERS Title: ENVIRONMENTAL MANAGER
Street: BUILDING 689 ENV.MGT.OFF. McARTHUR AND PINE STREET
City/Town: FORT DEVENS,AYER State: MA Zip Code: 01433 - ____
Telephone: 508 - 796 - 3114 Ext. ____

RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON CONDUCTING RESPONSE ACTION ASSOCIATED WITH BILL OF LADING:

(Check one/specify)

RP Specify (circle one): (Owner) Operator Generator Transporter Other RP: ____
PRP Specify (circle one): Owner Operator Generator Transporter Other PRP: ____
Fiduciary/Secured Lender
Agency/Public Utility on a Right of Way
Other Person: ____

If owner and/or operator is not conducting the response action associated with the Bill of Lading, provide on an attachment the name, contact person, address and telephone number, including any area code and extension, for each, if known.

TRANSPORTER/COMMON CARRIER INFORMATION:

Transporter/Common Carrier Name: CHARLTON WELDING & REPAIR CO.
Contact Person: LARRY McKISSICH Title: OWNER
Street: 11-19 GRIFFITH ROAD
City/Town: CHARLTON State: MA Zip Code: 01508 - ____
Telephone: 508 - 248 - 7037 Ext. ____

RECEIVING FACILITY/TEMPORARY STORAGE LOCATION:

Operator/Facility Name: AMERICAN RECLAMATION CORPORATION
Contact Person: WILLIAM McCAMBRIDGE Title: FACILITY SUPERVISOR
Street: 130 ROUTE 20
City/Town: CHARLTON State: MA Zip Code: 01508 - ____
Telephone: 508 - 248 - 3777 Ext. ____

Facility: (Check one)
- [X] Asphalt Batch/Cold Mix
- [ ] Asphalt Batch/Hot Mix
- [ ] Thermal Processing
- [ ] Landfill/Disposal
- [ ] Landfill/Daily Cover
- [ ] Landfill/Structural Fill
- [ ] Incinerator
- [ ] Temporary Storage
- [ ] Other: ____

If Hazardous Class A Permit #: 0144-91 Division of Solid Waste Management Permit #: NA EPA Identification #: MAD 982201055

Anticipated Period of Temporary Storage (specify dates if applicable): __/__/__ to __/__/__ N/A

If Temporary Storage (if applicable): ____

Massachusetts Department of Environmental Protection **BWSC-012A**
Bureau of Waste Site Cleanup

Release Tracking Number: 2 - 0662

BILL OF LADING (pursuant to 310 CMR 40.0030)

E. RECEIVING FACILITY/TEMPORARY STORAGE LOCATION (continued):

Temporary Storage Address:
Street: N/A
City/Town: _____ State: _____ Zip Code: _____ - _____

F. DESCRIPTION OF REMEDIATION WASTE:

(check all that apply)

[X] Contaminated Media (circle all that apply): (Soil) Groundwater Surface Water Other: _____

[ ] Contaminated Debris (circle all that apply): Demolition/Construction Waste Vegetation/Organic Materials
Inorganic Absorbant Materials Other: _____

[ ] Non-hazardous Uncontainerized Waste (circle all that apply): Non-aqueous Phase Liquid Other: _____

[ ] Non-hazardous Containerized Waste (circle all that apply) Tank Bottoms/Sludges Containers Drums
Engineered Impoundments Other: _____

Type of Contamination (circle all that apply): Gasoline Diesel Fuel (#2 Oil) (#4 Oil) (#6 Oil) Waste Oil
Kerosene Jet Fuel Other: _____

Estimated Volume of Materials: Cubic Yards: _____ Tons: 500 Other: _____

Contaminant Source (check one/specify): [ ] Transportation Accident [ ] Underground Storage Tank [X] Other: BURN PIT REMEDIATION

Response Action Associated with Bill of Lading (circle one): Immediate Response Action Release Abatement Measure
Utility-Related Abatement Measure Limited Removal Action (LRA) Comprehensive Response Action
Other (specify): U.S. ARMY FORT DEVENS, AYER MA CONTRACT NO. DACA 33-93-C-0061

Remediation Waste Characterization Support Documentation attached:

[X] Site History Information [X] Sampling and Analytical Methods and Procedures [X] Laboratory Data [X] Field Screening Data

If supporting documentation is not appended, provide an attachment stating the date and in connection with what document such information was previously submitted to DEP.

G. LICENSED SITE PROFESSIONAL (LSP) OPINION:

Name of Organization: Department of Environmental Protection
LSP Name: _____ Title: _____
Telephone: 508 - 792-7653 Ext. _____

I have personally examined and am familiar with the information contained on and submitted with this form. Based on this information, it is my opinion that the testing and assessment actions undertaken were adequate to characterize the Remediation Waste, in accordance with 310 CMR 40.0030, and that the facility or location can accept remediation wastes with the characteristics described in this submittal. I am aware that significant penalties including, but not limited to, possible fines and imprisonment may result if I wilfully submit information which I know to be false, inaccurate, or materially incomplete.

Signature: David M. Silverstone Seal:
Date: 12/9/93
License Number: _____

CERTIFICATION OF PERSON CONDUCTING RESPONSE ACTION ASSOCIATED WITH THIS BILL OF LADING:

I certify under penalties of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained herein is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for wilfully submitting false, inaccurate, or incomplete information.

Signature: _____ Date: 12/2/93

Massachusetts Department of Environmental Protection BWSC-012B
Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)
LOG SHEET 1 **OF** 2

Release Tracking Number: 2-0662

I. LOAD INFORMATION:

LOAD 1: Signature of Transporter Representative:
Date of Shipment: 12/10/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: 47194 Trailer Registration (if any): 39128
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 10 : 39 (circle one) am/pm
Load Size (cu. yds./tons): 40.28

LOAD 2: Signature of Transporter Representative:
Date of Shipment: 12/10/93 Time of Shipment: 10 : 10 (circle one) am/pm
Truck/Tractor Registration: 698991 Trailer Registration (if any): 24740
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 11 : 10 (circle one) am/pm
Load Size (cu. yds./tons): 33.60

LOAD 3: Signature of Transporter Representative: X Richard Benoit
Date of Shipment: 12/10/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: X D25440 Trailer Registration (if any): X 14237
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 11 : 29 (circle one) am/pm
Load Size (cu. yds./tons): 30.31

LOAD 4: Signature of Transporter Representative: James I Elliot
Date of Shipment: 12/10/93 Time of Shipment: 10 : 30 (circle one) am/pm
Truck/Tractor Registration: 361929 MA Trailer Registration (if any): 84257 MA
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 11 : 53 (circle one) am/pm
Load Size (cu. yds./tons): 26.07

LOAD 5: Signature of Transporter Representative:
Date of Shipment: 12/10/93 Time of Shipment: 11 : 55 (circle one) am/pm
Truck/Tractor Registration: A54188 Trailer Registration (if any): 61634
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 11 : 55 (circle one) am/pm
Load Size (cu. yds./tons): 33.32

LOAD 6: Signature of Transporter Representative:
Date of Shipment: 12/10/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: 47194 MA Trailer Registration (if any): 39128 MA
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 13 : 39 (circle one) am/pm
Load Size (cu. yds./tons): 34.81

LOAD 7: Signature of Transporter Representative:
Date of Shipment: 12/10/93 Time of Shipment: 12:45 : ___ (circle one) am/pm
Truck/Tractor Registration: D69736 Trailer Registration (if any): 38991 MA
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/10/93 Time of Receipt: 13 : 41 (circle one) am/pm
Load Size (cu. yds./tons): 35.91

J. LOG SHEET VOLUME INFORMATION:

Total Volume This Page (cu.yds./tons): 234.30
Total Carried Forward (cu.yds./tons): ___
Total Carried Forward and This Page(cu.yds./tons): ___

Massachusetts Department of Environmental Protection **BWSC-0123**
Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)
LOG SHEET 2 **OF** 2

Release Tracking Number: 2 - 0662

I. LOAD INFORMATION:

LOAD 1: Signature of Transporter Representative: [signature]
Date of Shipment: 12/11/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: 698 991 Trailer Registration (if any): 247 40
Receiving Facility/Temporary Storage Representative: [signature]
Date of Receipt: 12/10/93 Time of Receipt: 13 : 55 (circle one) am/pm
Load Size (cu. yds./tons): 37.31

LOAD 2: Signature of Transporter Representative: Richard Benoit
Date of Shipment: 12/10/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: D25440 Trailer Registration (if any): 14237
Receiving Facility/Temporary Storage Representative: [signature]
Date of Receipt: 12/10/93 Time of Receipt: 14 : 29 (circle one) am/pm
Load Size (cu. yds./tons): 31.51

LOAD 3: Signature of Transporter Representative: [signature]
Date of Shipment: 12/10/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: DT6 603 Trailer Registration (if any): 25646
Receiving Facility/Temporary Storage Representative: [signature]
Date of Receipt: 12/10/93 Time of Receipt: 15 : 08 (circle one) am/pm
Load Size (cu. yds./tons): 33.92

LOAD 4: Signature of Transporter Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Load Size (cu. yds./tons):

LOAD 5: Signature of Transporter Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Load Size (cu. yds./tons):

LOAD 6: Signature of Transporter Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Load Size (cu. yds./tons):

LOAD 7: Signature of Transporter Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Receiving Facility/Temporary Storage Representative:
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Load Size (cu. yds./tons):

J. LOG SHEET VOLUME INFORMATION:

Total Volume This Page (cu.yds./tons): 102.74
Total Carried Forward (cu.yds./tons): 234.30
Total Carried Forward and This Page(cu.yds./tons): 337.04

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14870

DATE ____________

CUSTOMER Webster Engineering

GENERATOR Fort Devens

CITY Ayer STATE MA

TRUCK NO. CWR#2

NET WEIGHT — TONS 40.28

REMARKS 1 load of oily Soil

P93-12-09

DRIVER ☐ ON ☑ OFF

WEIGHER

10:39 12/10/93 113460 LB G

10:51 12/10/93 113460 LB (K) G

32900 LB T

80560 LB N

---

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14871

DATE ____________

CUSTOMER Webster Engineering

GENERATOR U.S. Army / Fort Devens

CITY Ayer STATE MA

TRUCK NO. CWR#1

NET WEIGHT — TONS 33.60

REMARKS 1 load of oily Soil

P93-12-09

DRIVER ☐ ON ☑ OFF

WEIGHER

11:10 12/10/93 99660 LB G

11:22 12/10/93 99660 LB (K) G

32460 LB T

67200 LB N

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14872

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army Fort Devens

CITY Ayer STATE Ma 11:3? 12/10/93 93740 LB G

TRUCK NO. La Rowe #4

NET WEIGHT — TONS 30.31 11:? 12/10/93 93740 LB (K) G

REMARKS 1 load of city Soil 33120 LB T

60620 LB N

F93-12-09

DRIVER ☐ ON ☒ OFF

WEIGHER

---

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14873

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army Fort D...

CITY Ayer STATE Ma 11:? 12/10/93 91240 LB G

TRUCK NO. La Rowe #1

NET WEIGHT — TONS 26.07 12:? 12/10/93 91240 LB (K) G

REMARKS 1 load City Soil 72100 LB T

52140 LB N

F93-12-07

DRIVER ☐ ON ☒ OFF

WEIGHER

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14874

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S Army, Fort Devens

CITY Ayer STATE MA 11:55 12/10/93 100400 LB G

TRUCK NO. Le Tour #2

NET WEIGHT — TONS 77.32 12:04 12/10/93 100400 LB (T) G

REMARKS 1 load of city Soil 33840 LB T

66640 LB N

P93-12-09

DRIVER ☐ ON ☑ OFF

WEIGHER

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14875

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S Army, Fort Devens

CITY Ayer STATE MA 13:39 12/10/93 101740 LB G

TRUCK NO. Le Tour #2

NET WEIGHT — TONS 34.81 13:47 12/10/93 101940 LB (T) G

REMARKS 1 load of city Soil 32320 LB T

69620 LB N

P93-12-09

DRIVER ☐ ON ☑ OFF

WEIGHER

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14876

DATE ____________

CUSTOMER Webster Engineering

GENERATOR U S Navy, Fort Devens

CITY Ayer STATE MA

TRUCK NO. Dilullo #3

NET WEIGHT — TONS 35.91

REMARKS 1 load of oily soil

102290 LB

102290 LB

30470 LB

71820 LB

T97 12-09

DRIVER ☐ ON ☑ OFF [signature]

WEIGHER [signature]

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14878

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA 14:39 12/10/93 10 96120 LB G

TRUCK NO. Volvo #4 40.28

NET WEIGHT — TONS 31.51 14:38 12/10/93 96120 LB (B) G

REMARKS 1 load of city Soil 33100 LB T

63020 LB N 30.6.0

P93-12-09

DRIVER ☐ ON ☒ OFF [illegible]

30.31

WEIGHER [illegible]

---

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DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA [illegible] 12/10/93 106080 LB G

TRUCK NO. Truck 1

NET WEIGHT — TONS 37.31 14:06 12/10/93 106880 LB (B) G

REMARKS 1 load of city Soil 73260 LB T

34620 LB N

P93-12-09

DRIVER ☐ ON ☒ OFF [illegible]

WEIGHER [illegible]

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14379

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE Mass

TRUCK NO. F.M.T. #210

NET WEIGHT — TONS 33.92

REMARKS 1 load of clay soil

DRIVER ☐ ON ☒ OFF F-97-12-09

WEIGHER

Massachusetts Department of Environmental Protection **BWSC-012B**

Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)
LOG SHEET 1 **OF** 2

Release Tracking Number: 2 - C C G 2

I. LOAD INFORMATION:

LOAD 1: Signature of Transporter Representative:
Date of Shipment: 10/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: D64-324 Trailer Registration (if any): ___
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 10 : 34 (circle one) am/pm
Load Size (cu. yds./tons): 21.15

LOAD 2: Signature of Transporter Representative:
Date of Shipment: 12/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: D52-803 Trailer Registration (if any): ___
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 10 : 36 (circle one) am/pm
Load Size (cu. yds./tons): 23.28

LOAD 3: Signature of Transporter Representative:
Date of Shipment: 12/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: 54450 Trailer Registration (if any): 19983
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 11 : 02 (circle one) am/pm
Load Size (cu. yds./tons): 35.23

LOAD 4: Signature of Transporter Representative:
Date of Shipment: 12/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: 389.967 Trailer Registration (if any): C1624
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 11 : 05 (circle one) am/pm
Load Size (cu. yds./tons): 37.45

LOAD 5: Signature of Transporter Representative:
Date of Shipment: 10/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: D64-324 Trailer Registration (if any): ___
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 14 : 03 (circle one) am/pm
Load Size (cu. yds./tons): 28.19

LOAD 6: Signature of Transporter Representative:
Date of Shipment: 12/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: 54450 Trailer Registration (if any): 19983
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 14 : 07 (circle one) am/pm
Load Size (cu. yds./tons): 40.15

LOAD 7: Signature of Transporter Representative:
Date of Shipment: 12/14/93 Time of Shipment: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: D52-803 Trailer Registration (if any): ___
Receiving Facility/Temporary Storage Representative:
Date of Receipt: 12/14/93 Time of Receipt: 14 : 10 (circle one) am/pm
Load Size (cu. yds./tons): 29.97

J. LOG SHEET VOLUME INFORMATION:

Total Volume This Page (cu.yds./tons): 215.42
Total Carried Forward (cu.yds./tons): ___
Total Carried Forward and This Page (cu.yds./tons): ___

Massachusetts Department of Environmental Protection **BWSC-012B**

Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)
LOG SHEET 2 **OF** 2

Release Tracking Number: 2-0662

I. LOAD INFORMATION:

LOAD 1: Signature of Transporter Representative:

Date of Shipment: 12/14/92 Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: 389-963 Trailer Registration (if any): 61624

Receiving Facility/Temporary Storage Representative:

Date of Receipt: 12/14/92 Time of Receipt: 14 : 30 (circle one) am/pm

Load Size (cu. yds./tons): 42.05

LOAD 2: Signature of Transporter Representative:

Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative:

Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm

Load Size (cu. yds./tons):

LOAD 3: Signature of Transporter Representative:

Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative:

Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm

Load Size (cu. yds./tons):

LOAD 4: Signature of Transporter Representative:

Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative:

Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm

Load Size (cu. yds./tons):

LOAD 5: Signature of Transporter Representative:

Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative:

Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm

Load Size (cu. yds./tons):

LOAD 6: Signature of Transporter Representative:

Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative:

Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm

Load Size (cu. yds./tons):

LOAD 7: Signature of Transporter Representative:

Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm

Truck/Tractor Registration: Trailer Registration (if any):

Receiving Facility/Temporary Storage Representative:

Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm

Load Size (cu. yds./tons):

J. LOG SHEET VOLUME INFORMATION:

Total Volume This Page (cu.yds./tons): 42.05

Total Carried Forward (cu.yds./tons): 215.42

Total Carried Forward and This Page(cu.yds./tons): 257.47

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14880

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. L.M #5

NET WEIGHT — TONS 21.15

REMARKS 1 load of oily Soil

P93-12-09

DRIVER ☐ ON ☒ OFF Lou

WEIGHER _____

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14881

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army Fort Devens

CITY Ayer STATE MA

TRUCK NO. L.M #1

NET WEIGHT — TONS 23.28

REMARKS 1 load of oily Soil

P93-12-09

DRIVER ☐ ON ☒ OFF Stan

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14882

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. McManus #20

NET WEIGHT — TONS 35.23

REMARKS 1 load of oily Soil

14

70460 N

P93-12-09

DRIVER ☐ ON ☒ OFF

HER

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14883

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. McManus #19

NET WEIGHT — TONS 37.45

REMARKS 1 load of oily Soil

14

74900 N

P93-12-09

DRIVER ☐ ON ☒ OFF

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DATE _____

CUSTOMER Wiebster Engineering

GENERATOR U.S Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. L.M.#5

NET WEIGHT — TONS 28.19

REMARKS 1 load of oily Soil

P93-12-09

DRIVER ☐ ON ☒ OFF Leo

WEIGHER

14

56380 N

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14885

DATE _____

CUSTOMER Wiebster Engineering

GENERATOR U.S Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. McNeilus #20

NET WEIGHT — TONS 40.15

REMARKS 1 load of oily Soil

P93-12-09

DRIVER ☐ ON ☒ OFF Larry Tudor

WEIGHER

80300 LB N

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14886

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. Load #1

NET WEIGHT — TONS 29.97

REMARKS 1 load of city Soil

P93-72-09

DRIVER ☐ ON ☑ OFF Sean

WEIGHER

14:10	12/14/93	90360 LB G
14:19	12/14/93	90360 LB (K) G
		30420 LB T
		59940 LB N

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14887

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army, Fort Devens

CITY Ayer STATE MA

TRUCK NO. McManus #79

NET WEIGHT — TONS 42.05

REMARKS 1 load of oily Soil

14

84100 N

P93-12-09

DRIVER ☐ ON ☒ OFF

WEIGHER

Massachusetts Department of Environmental Protection BWSC-012B
Bureau of Waste Site Cleanup

BILL OF LADING (pursuant to 310 CMR 40.0030)
LOG SHEET 1 **OF** 1

Release Tracking Number: 2-0662

I. LOAD INFORMATION:

LOAD 1: Signature of Transporter Representative: [signature]
Receiving Facility/Temporary Storage Representative: [signature]
Date of Shipment: 12/16/93 Time of Shipment: 9 : 45 (circle one) am/pm
Date of Receipt: 12/16/93 Time of Receipt: 11 : 31 (circle one) am/pm
Truck/Tractor Registration: J84-963 Trailer Registration (if any): 61624
Load Size (cu. yds./tons): 42.65

LOAD 2: Signature of Transporter Representative:
Receiving Facility/Temporary Storage Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Load Size (cu. yds./tons):

LOAD 3: Signature of Transporter Representative:
Receiving Facility/Temporary Storage Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Load Size (cu. yds./tons):

LOAD 4: Signature of Transporter Representative:
Receiving Facility/Temporary Storage Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Load Size (cu. yds./tons):

LOAD 5: Signature of Transporter Representative:
Receiving Facility/Temporary Storage Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Load Size (cu. yds./tons):

LOAD 6: Signature of Transporter Representative:
Receiving Facility/Temporary Storage Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Load Size (cu. yds./tons):

LOAD 7: Signature of Transporter Representative:
Receiving Facility/Temporary Storage Representative:
Date of Shipment: ___/___/___ Time of Shipment: ___ : ___ (circle one) am/pm
Date of Receipt: ___/___/___ Time of Receipt: ___ : ___ (circle one) am/pm
Truck/Tractor Registration: Trailer Registration (if any):
Load Size (cu. yds./tons):

J. LOG SHEET VOLUME INFORMATION:

Total Volume This Page (cu.yds./tons): 42.65
Total Carried Forward (cu.yds./tons):
Total Carried Forward and This Page(cu.yds./tons):

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14983

DATE _____

CUSTOMER Webster Engineering

GENERATOR U.S. Army / Fort Devens

CITY Ayer STATE MA

TRUCK NO. McManus #19

NET WEIGHT – TONS 42.65

REMARKS 1 load of c.y. Soil

16

85300 N

P93-12-09

DRIVER ☐ ON ☒ OFF

WEIGHER

APPENDIX E

Laboratory Analysis Report
Final Closure Report
Study Area 15

COMPUCHEM
ENVIRONMENTAL
CORPORATION

3306 Chapel Hill/Nelson Highway P.O. Box 14998
Research Triangle Park, NC 27709-4998
(919) 406-1600

January 12, 1994

Mr. Doug Pierce
A.B.B. ENVIRONMENTAL SERVICES
107 Audubon Road
Wakefield, MA. 01880

Dear Mr. Pierce:

We at CompuChem are pleased to provide our report for the analysis you requested. Data for the following samples are enclosed:

Client ID Number	CompuChem ID Number	Analysis Code	Order Number	Description of Work Requested
EX150408	593327	4005	28215	Petroleum Hydrocarbons
EX150712	593341			
EX150212	593343			
EX150510	593344			
EX150309	593350			
EX150608	593352			
EX150109	593354			
EX150808	593356			
EX150908	593357			

Thank you for selecting CompuChem Laboratories for your sample analysis. If you have any questions concerning this report or the analytical methods employed please contact your Sales Representative at 919-406-1600.

Sincerely,

Report Preparation

cc: Accounting
(Cover letter only)

COMPUCHEM
ENVIRONMENTAL
CORPORATION

NOTICE

Unless noted by Quality Assurance Notices included in this report of data, all Quality Control Requirements associated with the preparation and analyses of these samples have been met.

Release of the analytical data contained in this data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

1/13/94
Date

Edward Morris for
Mark Ross, Manager
Inorganics Laboratory

COMPUCHEM
ENVIRONMENTAL
CORPORATION

ANALYTICAL REPORT OF DATA
SUBMITTED TO:

Mr. Doug Pierce
A.B.B. ENVIRONMENTAL SERVICES
107 Audubon Road
Wakefield, MA. 01880

CHRONICLE

ITEM NO.	SAMPLE IDENTIFIER	COMPUCHEM NUMBER	DATE SAMPLE RECEIVED	DATE SAMPLE EXTRACTED	DATE ANALYSIS COMPLETED
1.	EX150408	593327	12/17/93	1/12/94	1/12/94
2.	EX150712	593341	12/17/93	1/12/94	1/12/94
3.	EX150212	593343	12/17/93	1/12/94	1/12/94
4.	EX150510	593344	12/17/93	1/12/94	1/12/94
5.	EX150309	593350	12/17/93	1/12/94	1/12/94
6.	EX150608	593352	12/17/93	1/12/94	1/12/94
7.	EX150109	593354	12/17/93	1/12/94	1/12/94
8.	EX150808	593356	12/17/93	1/12/94	1/12/94
9.	EX150908	593357	12/17/93	1/12/94	1/12/94

COMPUCHEM
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CORPORATION

TOTAL PETROLEUM HYDROCARBONS

To determine the concentration of total petroleum hydrocarbons (TPH) in a wide range of matrices, CompuChem employs procedures based on Method 418.1, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Revised March 1983. By definition, TPH is any material recovered as a substance soluble in trichlorotrifluoroethane.

Method Summary

Samples are prepared for analysis by liquid/liquid extraction for water samples and soxhlet extraction for soil/sediment/sludge samples. Trichlorotrifluoroethane is the extraction solvent. The TPH extract is subjected to treatment with silica gel before infrared analysis. Results for these determinations are reported in concentration units of mg/L for water samples and mg/kg for solid samples.

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TOTAL PETROLEUM HYDROCARBONS
SUMMARY REPORT

ITEM NO.	SAMPLE IDENTIFIER	COMPUCHEM NUMBER	CONCENTRATION (mg/kg)	DETECTION LIMIT (mg/kg)
1.	EX150408	593327	12.9	6.3
2.	EX150712	593341	26.5	6.3
3.	EX150212	593343	BRL	6.3
4.	EX150510	593344	8.20	6.3
5.	EX150309	593350	15.0	6.3
6.	EX150608	593352	25.2	6.3
7.	EX150109	593354	56.2	6.3
8.	EX150808	593356	34.6	6.3
9.	EX150908	593357	29.5	6.3

BRL = BELOW REPORTABLE LIMIT

Reviewed by/ID#: R.L. Gardner / 2131 Date: 1/12/94

Reviewed by/ID#: Bruce Morris / 2037 Date: 1/13/94

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TPH BY FT-IR

QUALITY CONTROL REPORT

DATE EXTRACTED: 01/12/94
DATE ANALYSIS COMPLETED: 01/12/94

CASE: 28215
MATRIX: SOIL

COMPUCHEM NUMBER	QC TYPE	AMOUNT DETECTED (mg/kg)
594530	METHOD BLANK	BRL

BRL = BELOW REPORTABLE LIMIT

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TPH BY FT-IR
QUALITY CONTROL REPORT

DATE EXTRACTED: 01/12/94 CASE: 28215
DATE ANALYSIS COMPLETED: 01/12/94 MATRIX: SOIL

MATRIX SPIKE COMPUCHEM#: 593328
ORIG. SAMPLE COMPUCHEM#: 593327

COMPOUND	SPIKE ADDED (mg/kg)	SAMPLE CONC. (mg/kg)	MS CONC. (mg/kg)	MS % RECOVERY
TPH	129	12.9	136	95

MATRIX SPIKE DUPLICATE COMPUCHEM#: 593329

COMPOUND	SPIKE ADDED (mg/kg)	MS CONC. (mg/kg)	MSD CONC. (mg/kg)	% RPD
TPH	129	136	131	4

BLANK SPIKE COMPUCHEM#: 593330

COMPOUND	SPIKE ADDED (mg/kg)	BS CONC. (mg/kg)	BS % RECOVERY
TPH	125	124	99

The detection limit for TPH is 6.3 mg/kg.

BRL = BELOW REPORTABLE LIMIT

Reviewed by/ID#: E.H.Gardner / 2131 Date: 1/12/94

Reviewed by/ID#: Ewart Morris / 2037 Date: 1/13/94

COMPUCHEM LABORATORIES, INC.
TOTAL PETROLEUM HYDROCARBONS/OIL & GREASE
INFRARED WORKSHEET

DATE: 1/12/94
RUN#: T544

Regression Output:

Constant	-1.52497
Std Err of Y Est	0.881156
R Squared	0.998303
No. of Observations	6
Degrees of Freedom	4
X Coefficient(s)	298.7856
Std Err of Coef.	6.159298

STD. CONC.	ABSORBANCE READING	CALCULATED CONC.
0	0.00087	-1.27
2.5	0.01394	2.64
5	0.02385	5.60
10	0.03959	10.30
25	0.09152	25.82
50	0.17044	49.40

COMPUCHEM NUMBER	ABS READ	CALC'D CONC.	SAMPLE AMOUNT	FINAL VOL.(ml)	DILUTION FACTOR	CONC. IN SAMPLE (PPM)
25 C.C. *	0.09174	25.89	100	100	1	25.9
0 C.C. *	0.00146	-1.09	1000	100	1	-0.1
594530 BL	0.00255	-0.76	20	100	1	-3.8
593328 SS	0.09347	26.40	19.4	100	1	136.1
593329 SS	0.08990	25.34	19.4	100	1	130.6
593330 BS	0.08802	24.77	20	100	1	123.9
593327 OR	0.01345	2.49	19.4	100	1	12.9
593341	0.02213	5.09	19.2	100	1	26.5
593343	0.00669	0.47	19.2	100	1	2.5
593344	0.01032	1.56	19	100	1	8.2
593350	0.01465	2.85	19	100	1	15.0
593352	0.02095	4.73	18.8	100	1	25.2
25 C.C.*	0.09357	26.43	100	100	1	26.4
0 C.C.*	0.00219	-0.87	1000	100	1	-0.1
593354	0.04161	10.91	19.4	100	1	56.2
593356	0.02781	6.78	19.6	100	1	34.6
593357	0.02443	5.77	19.6	100	1	29.5
25 C.C.*	0.09076	25.59	100	100	1	25.6
0 C.C.*	0.00202	-0.92	1000	100	1	-0.1

* Continuing Calibration

Reviewed by / ID: D. Barker / 2131 Date: 1/12/94

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:51

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593327 Receive Date 12/17/93 Verified Y
Sample ID EX150408

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.02		12
08	Total Dry Weight	5.89		13
	Factor	1.03		
	% Moist	3		
	% Solid	97		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:51

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593341 Receive Date 12/17/93 Verified Y
Sample ID EX150712

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.03		12
08	Total Dry Weight	5.81		13
	Factor	1.05		
	% Moist	4		
	% Solid	96		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:52

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593343 Receive Date 12/17/93 Verified Y
Sample ID EX150212

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.03		12
08	Total Dry Weight	5.81		13
	Factor	1.05		
	% Moist	4		
	% Solid	96		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:52

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593344 Receive Date 12/17/93 Verified Y
Sample ID EX150510

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.01		12
08	Total Dry Weight	5.74		13
	Factor	1.06		
	% Moist	5		
	% Solid	95		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:52

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593350 Receive Date 12/17/93 Verified Y
Sample ID EX150309

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.01		12
08	Total Dry Weight	5.74		13
	Factor	1.06		
	% Moist	5		
	% Solid	95		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:52

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593352 Receive Date 12/17/93 Verified Y
Sample ID EX150608

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.02		12
08	Total Dry Weight	5.74		13
	Factor	1.06		
	% Moist	6		
	% Solid	94		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:52

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593354 Receive Date 12/17/93 Verified Y
Sample ID EX150109

PH WORKSCREEN

02	Date Started	
03	pH Amount	

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.02		12
08	Total Dry Weight	5.88		13
	Factor	1.03		
	% Moist	3		
	% Solid	97		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:53

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593356 Receive Date 12/17/93 Verified Y
Sample ID EX150808

PH WORKSCREEN

02	Date Started	
03	pH Amount	

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.00		12
08	Total Dry Weight	5.88		13
	Factor	1.02		
	% Moist	2		
	% Solid	98		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

MODE:F ACTION: CompuChem Laboratory Management System 01/11/1994
EXT001S PH AND DRY WEIGHT WORKSCREEN 22:53

Which Workscreen? (P)-pH, (D)-Dry Weight, or (B)-Both
01 CompuChem Number 593357 Receive Date 12/17/93 Verified Y
Sample ID EX150908

PH WORKSCREEN

02 Date Started
03 pH Amount

DRY WEIGHT WORKSCREEN

Decanted Flag (U)-Undecanted, (D)-Decanted, (B)-Both

		Undecanted		Decanted
04	Date Started	01/03/94	STANLEY	09
05	Date Completed	01/04/94		10
06	Weight of Container	1.00		11
07	Total Wet Weight	6.00		12
08	Total Dry Weight	5.89		13
	Factor	1.02		
	% Moist	2		
	% Solid	98		

UPDATE & UPDATE & PRINT REFRESH CN B SIMPLE EXTENDED EXIT

CHAIN-OF-CUSTODY RECORD

№ 35760

CompuChem Laboratories, Inc.
3308 Chapel Hill/Nelson Highway
Research Triangle Park, NC 27709

1-800-833-5097

Ship to:

Project Name: Fort Devens SA15 (9) 07136.01

Sampler Name: Jennifer Cooper

Carrier: Fedex Airbill No.: 8991287361

Sampler Signature: Jennifer M Cooper

Field Point-of-Contact: Ben Rice

Telephone No: 508-772-2666 / 617-245-6606

Sampling for project complete? (Y) or N (See Note 1.)

Project-specific (PS) or Batch (B) QC: PS

Box #1: 1. Surface Water, 2. Ground Water, 3. Leachate, 4. Rinsate, 5. Soil/Sediment/Sludge, 6. Trip Blank, 7. Oil, 8. Waste, 9. Other:

Box #2: A. HCl, B. HNO_3, C. $NaHSO_4$, D. $Na_2S_2O_3$, E. Ice Only, O. Other:, N. Not Preserved

Box #3: F. Filtered, U. Unfiltered

Box #4: C. CLP 3/90, S. SW-846, W. CWA 600-series, L. Low Conc. CLP, R. Radiological, T. TCLP, O. Other

Box #5: H - High, M - Medium, L - Low

Sample ID (Organics: 9 characters max, Inorganics: 6 characters; see Note 2)	Date: Year: 1993	Time	Box #1 Matrix	Box #2 Preservative	Box #3 Filtered/Unfiltered	Box #4 Method	Box #5 Expect. Conc.	No. of Bottles	Use for Lab QC (MS or DUP)	Organics Analysis: VOA-GC/MS	SV-GC/MS	Pest/PCB-GC	Herb-GC	VOA-GC	Inorganics: Metals	Mercury	Cyanides	Other: Radiologicals	TOC/TOX	Gas/TPH	Phenols	Other
EX150109	12/16	8:40	5	N			L	1												X		
EX150212	12/16	11:00	5	N			L	1												X		
EX150309	12/16	8:42	5	N			L	1												X		
EX150408	12/16	8:47	5	N			L	3	MS/MSD											X		
EX150510	12/16	8:53	5	N			L	1												X		
EX150608	12/16	8:58	5	N			L	1												X		
EX150712	12/16	8:45	5	N			L	1												X		
EX150808	12/16	8:50	5	N			L	1												X		
EX150908	12/16	8:52	5	N			L	1												X		
	/	:																				

SAMPLES REC'D IN GOOD CONDITION
MS 12/17/93

Remarks/Comments

TPH By EPA 418.1
593341
343
344
350
352
354
356
357
327

Client's Special Instructions: Split between two SAMPLE BOXES

Lab: Received in Good Condition? Y or N Describe Problems, If Any:

#1 Relinquished By: (Sig.) Jennifer M Cooper	Date: 12/16/93	#2 Relinquished By: (Sig.)	Date:	#3 Relinquished By: (Sig.)	Date:	Sample storage time requested? _____ (in days, see Note 3)
Company Name: ABB-ES	Time: 1700	Company Name:	Time:	Company Name:	Time:	
#1 Received By: (Sig.) Melissa Stevens	Date: 12/17/93	#2 Received By (Sig.)	Date:	#3 Received By: (Sig.)	Date:	DESTROY or RETURN data after five years of archival? (Circle choice; see Note 4)
Company Name: CompuChem	Time: 0830	Company Name:	Time:	Company Name:	Time:	

Note (1): If "N" lab will hold samples to await remainder of project-maximizing batch size and minimizing QC ratio; if "Y" lab will begin processing batches now. Note (2): If CLP inorganics diskette required, ID limited to maximum of six characters.
Note (3): Samples stored 60 days after date report mailed at no extra charge. Note (4): All lab copies of data destroyed after five years unless client requests and pays for return of copies; annual storage fee billed in January of year six.