Technical Report Volume 7 Underground Storage Tank Closure UST Nos. 0032 - 0034 Fort Devens, Massachusetts

ATEC File: 37.07.91.00451 Contract No. DAK31-91-D-00015



Prepared for:

United States Army Directorate of Contracting Building 227 Fort Devens, Massachusetts

Attn:

Ms. Elizabeth Castiotta, Contract Specialist

December 18, 1992

UST 92125 HTEC



December 18, 1992

Solid & Hazardous Waste Site Assessments
Remedial Design & Construction
Underground Tank Management
Asbestos Surveys & Analysis
Hydrogeologic Investigations & Monitoring
Analytical Testing / Chemistry
Industrial Hygiene / Hazard Communication
Environmental Audits & Permitting
Exploratory Drilling & Monitoring Wells
Wastewater Treatment Systems

Ms. Elizabeth Castriotta, Contract Specialist United States Army Directorate of Contracting Building 227 Fort Devens, Massachusetts 01433-5340

RE:

Technical Report, Volume 7

Underground Storage Tank Closure

UST Nos. 0032 - 0034 Fort Devens, Massachusetts ATEC File: 37.07.91.00451

Ms. Castriotta:

Attached is Volume 7 of the Technical Report by ATEC Associates, Inc. (ATEC), detailing the closure of three Underground Storage Tanks (USTs) referenced as UST Nos. 0032 - 0034, located at Fort Devens, Massachusetts (the site). The Technical Report covers work conducted under Contract No. DAKF31-91-D-00015 as part of Removal of Underground Storage Tanks in the New England Area, US Army Project No. EQ-19027-9P.

ATEC appreciates the opportunity to be of service in this matter. If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

ATEC Associates, Inc.

Mark E. Baldi Project Manager Greg A. Mischel
Senior Project Manager

Marta J. Nover Associate and

Division Manager

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	UND	ERGROUND	STORAGE TANK	INDEX (Volume 7)							
UST No.	SIZE (gal)	PRODUCT	LOCATION							
0032	1,000		No. 2 Fuel Oil	Building 2432, Fort Devens, MA							
0033	1,000		No. 2 Fuel Oil	Building 2434, Fort Devens, MA							
0034	1,000		No. 2 Fuel Oil	Building 2447, Fort Devens, MA							

TECHNICAL REPORT Volume 7 UST Nos. 0032 - 0034

United States Army
Fort Devens, Massachusetts
ATEC Project No. 37.07.91.00451

25.0 INTRODUCTION

This volume (Volume 7) of the Technical Report details the removal of three Underground Storage Tank (USTs) referenced as UST Nos. 0032 - 0034 at Building 2432, Building 2434 and Building 2447 located at Fort Devens, Massachusetts (the site). The Technical report covers work conducted under Contract No. DAKF31-91-D-00015 as part of "Removal of Underground Storage Tanks in the New England Area", US Army Project No. EQ-19027-9P.

The basic Project Work Scope of Contract No. DAKF31-91-D-00015 included:

- Excavation and removal of sixty-nine USTs at various buildings located at Fort Devens,
 Massachusetts.
- Remedial excavation, if required, and disposal of contaminated soil.
- Hydrogeological services to include installation of monitoring wells, sampling and analysis
 of soil/ground water, and determination of groundwater flow direction.
- Backfilling and surface restoration of excavations.
- Preparation of a Technical Report, to include assimilation of information gathered, major findings and conclusions.

26.0 UST No. 0032

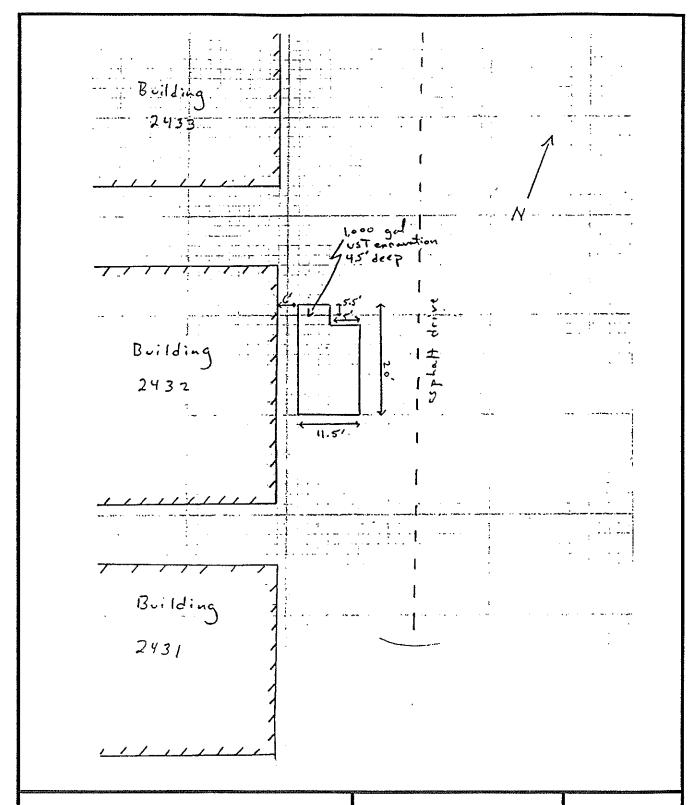
26.1 POST REMOVAL REPORT

26.1.1 Introduction

This Post-Removal Report details the results of the closure of one 1,000-gallon, single wall, steel, Underground Storage Tank (UST) referenced as UST No. 0032, located at property known as Building 2432, Fort Devens, Massachusetts (the site). The purpose of the closure was to excavate the UST and evaluate the potential for the presence of oil and hazardous material at the site. The closure of this UST was conducted on January 14, 1992.

The basic Project Work Scope included:

- Procurement/administration of all federal, state and local permits, manifests, regulations, etc., associated with UST system closure.
- Excavating, venting, cleaning, transporting, and disposing of one 1,000-gallon UST by appropriately licensed contractors/facilities.
- Disposal of residual UST materials at a licensed facility.
- Field screening and analysis of soil in the excavations by Photoionization Detector (PID) and field analyzed with a portable Non-Dispersive Infrared (NDIR) Analyzer, to identify evidence of a release of oil and hazardous materials from the UST, if any.
- Laboratory Analysis of soil and groundwater sampled from the UST excavation by a USEPA certified laboratory for Total Petroleum Hydrocarbons (USEPA Method 418.1)
- Preparation of a Post-Removal Report, to include assimilation of information gathered, major findings, and conclusions.



UST LOCATION PLAN

1,000 gallon UST relative to: Building 2432 Fort Devens, Massachusetts PROJECT: 37.07.91.07451

NOT TO SCALE

FIGURE: 26.1



26.1.2 Subsurface Storage Tank Excavation and Removal

On January 14, 1992, one 1,000-gallon, subsurface, No. 2 fuel oil, storage tank was excavated and removed from the site. The UST was located adjacent to the east side of the Building 2432. Site topography slopes gently downgradient to the southeast.

Soils in the excavation consisted primarily of medium brown, fine sand and silt with some cobbles, and boulders. The tank was covered by approximately six inches of soil. The bottom of the excavation was approximately four feet, six inches below grade. Groundwater was not encountered. All excavated soils required to free the tank were visibly contaminated. Some staining of soils within the excavation was also observed.

The associated piping was drained and tank connections were removed. UST No. 0032 was estimated to contain fifteen gallons of No. 2 fuel oil and residual materials. The fuel oil and residual materials were removed and drummed on January 14, 1992 for transportation. Drummed material was transported to a licensed Transportation Storage Disposal Facility (T.S.D.F.), Beede Waste Oil Corporation, on February 27, 1992. See Section 26.10 for copies of the appropriate Hazardous Waste Manifests.

Tank openings were capped and the tank was removed from the excavation. Upon excavation and removal, the tank was observed to be in fair condition with no holes or perforations. The tank was observed to be moderately rusted, and some cracking and chipping of the asphalt coating was noted. Following venting of the tank, an access way was cut in the end of the tank to allow entry for cleaning. The tank was then entered and vacuumed/wiped clean of any residual materials.

The scrap tank was removed from the site on January 14, 1992 and transported to the Contractor's yard, located on Lake George Street, Fort Devens for temporary storage. The tank was disposed of at Tombarello & Sons, a licensed Massachusetts tank yard, on January 28, 1992. A copy of the disposal receipt is included in Section 26.12, Permits and Certifications.

26.1.3 Sampling and Analysis Plan

Ten soil samples were obtained from the excavation for field screening with a Photoionization Detector (PID) and field analyzed with a Non-Dispersive Infrared (NDIR) Analyzer. The PID field screening for Total Organic Vapors (TOVs) was conducted with an HNu photoionizer utilizing the jar headspace screening protocol outlined in the Hazardous Materials Containment Plan. The NDIR field screening for Total Petroleum Hydrocarbons (TPH) was conducted with a Horiba OCMA 220, utilizing the procedures outlined in the Hazardous Materials Containment Plan.

Eight of the samples (SS-1 to SS-8) were obtained from the excavation walls at a depth of approximately two to three feet below grade. Two of the samples (SS-9 and SS-10) were obtained from the bottom of the excavation at a depth of approximately four feet, six inches below grade. Two composite soil samples (Stock-1 and Stock-2) were obtained from stockpiled soils for PID and NDIR field screening.

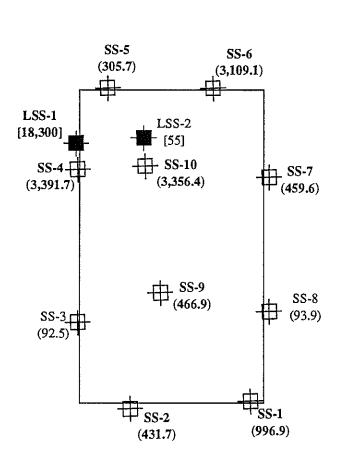
Two soil samples (LSS-1 and LSS-2) were obtained from the excavation for laboratory analysis. Soil Sample LSS-1 was obtained from the northwest wall of the excavation. Soil sample LSS-2 was obtained from the bottom of the excavation. One composite, soil sample (LSS-3) was obtained from stockpiled soils required to free the tank. These samples were analyzed for TPH utilizing USEPA Method 418.1.

Sampling locations are depicted on the Sampling Schematic attached as Figure 26.2. The appropriate chain of custody forms are included in Section 26.9, Chain of Custody Forms.

26.1.4 Analytical Results

The results from analysis with the Photoionization Detector (PID) and the Non-Dispersive Infrared (NDIR) Analyzer of the ten soil samples obtained from the excavation, and the two composite samples obtained from stockpiled soil are as follows:





LEGEND:

- Field Screened Soil Sample
- Lab Analyzed Soil Sample
- () NDIR Results in ppm
- [] Lab Analysis Results in ppm

Results in bold denote levels in excess of MA DEP Remedial Goal Level (100 ppm)

SAMPLING SCHEMATIC

1,000 gallon UST excavation at: Building 2432 Fort Devens, Massachusetts PROJECT: 37.07.91.07451

NOT TO SCALE

FIGURE: 26.2 UST-32



TABLE 26.1 - PID AND NDIR RESULTS

Sample No.	PID (ppm TOVs)	NDIR (ppm TPH)
SS-1	12.4	996.9
SS-2	18.2	431.7
SS-3	0.8	92.5
SS-4	102	3,391.7
SS-5	11.0	305.7
SS-6	40.0	3,109.1
SS-7	15.4	459.6
SS-8	15.2	93.9
SS-9	7.0	466.9
SS-10	42	3,356.4
Stock-1	24.0	526.3
Stock-2	25.0	836.8

Laboratory analytical results of the two soil samples obtained from the excavation revealed TPH concentrations of 18,300 ppm for LSS-1, and 55 ppm for LSS-2. Laboratory analysis of the one soil sample obtained from the stockpiled soils revealed a TPH concentration of 5,180 ppm for LSS-3. (See Section 26.8, Laboratory Analytical Results).

26.1.5 Conclusions and Recommendations

ATEC's conclusions are as follows:

Upon excavation and removal, the tank was observed to be moderately corroded with no holes or perforations. Some cracking and chipping of the asphalt coating was noted.

Groundwater was not encountered within the excavation.

Excavated soils required to free the tank were visibly contaminated. Some staining of soils within the excavation was also observed.

Ten soil samples were obtained from the excavation for field screening and field analysis utilizing a PID and NDIR Analysis, respectively. PID readings revealed TOV concentrations ranging from 0.8 ppm to 102 ppm. NDIR results revealed TPH concentrations ranging from 92.5 ppm to 3,391.7 ppm.

Two soil samples were obtained from the excavation for laboratory analysis for TPH. Analytical results for LSS-1 obtained from the northwest wall of the excavation revealed a TPH concentration of 18,300 ppm. Analytical results for LSS-2 obtained from the bottom of the excavation revealed a TPH concentration of 55 ppm.

One composite, soil sample (LSS-3) was obtained from stockpiled soils for laboratory analysis. Analytical results for LSS-3 revealed a TPH concentration of 5,180 ppm.

The following were recommended and implemented by ATEC subsequent to the submittal of the Post Removal Report:

Remedial excavation was conducted until laboratory analysis of soil samples showed a TPH concentration of <100 ppm. Field screening of soil was conducted during excavation utilizing a Photoionization Detector until TOV levels of <1 ppm were attained prior to obtaining samples for laboratory analysis.

Soil borings were advanced and groundwater monitoring wells were installed to determine the vertical and horizontal extent of contamination. Split spoon sampling and analysis was conducted utilizing field analysis techniques, i.e. Photoionization Detector and Non-Dispersive Infrared Analysis, and laboratory analysis to document soil contamination levels.

Additional excavated soils and stockpiled soils were laboratory analyzed for Total Petroleum Hydrocarbons, Volatile Organic Compounds, PCBs, Semivolatile Organic Compounds, 13 TCLP Metals, flashpoint, sulfide reactivity, cyanide reactivity, and corrosivity for disposal classification.

Soils excavated during the tank removals and remediation were disposed at a licensed T.S.D.F.

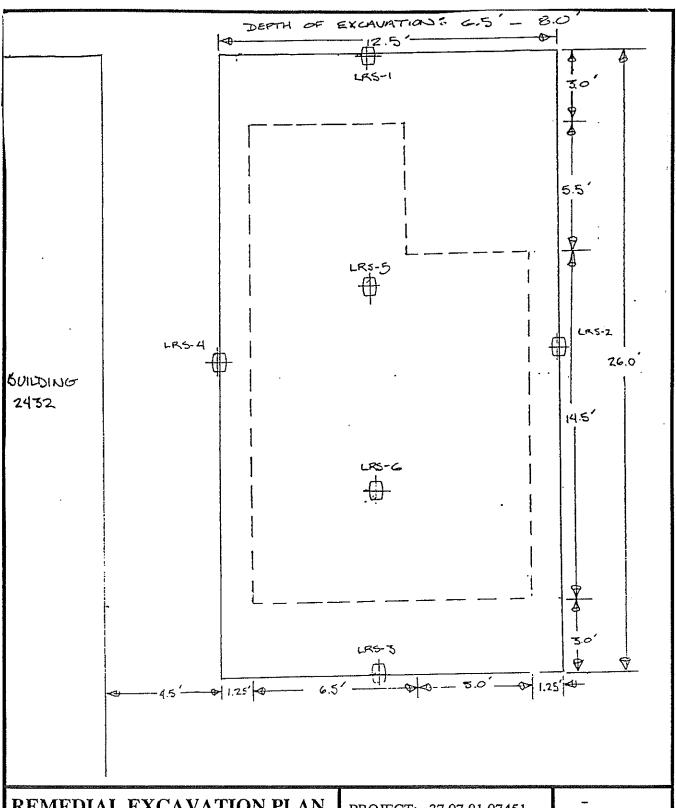
26.2 SITE REMEDIATION AND CONTAMINED SOIL DISPOSAL

26.2.1 Site Remediation

Following initial PID screening, additional excavation to remove contaminated soil and reach background levels by (<1 ppm TOVs) by PID was conducted per order of the Contracting Officer's Representative and David Salvadore of the Massachusetts Department of Environmental Protection (DEP). Approximately 103 tons of contaminated soil were removed from the excavation floor and all sidewalls during remedial excavation on July 23, 1992 (see Remedial Excavation Plan, Figure 26.3).

Six soil samples (RSS-1A through RSS-6A) were obtained following the removal of one foot of soil from the excavation sidewalls and at the bottom of the excavation. Four soil samples (RSS-1A to RSS-4A) were obtained from the sidewalls at a depth of approximately five feet below grade. Two soil samples (RSS-5A and RSS-6A) were obtained from the bottom of the excavation at a depth of six feet, six inches. PID results ranged from 20.0 to 130.0 ppm (see Table 26.2).

Following the removal of an additional one foot of soil, four soil samples (RSS-1B, RSS-2B, RSS-5B and RSS-6B) were obtained from the excavation side walls and at the bottom of the excavation. There were no soil samples taken on the south and east walls due to obstructions. RSS-1 and RSS-2 were obtained from the side walls at a depth of approximately six feet, six inches below grade. RSS-5B and RSS-6B were obtained from the bottom of the excavation at a depth of eight feet. Final PID results ranged from 1.0 ppm to 7.0 ppm (see Table 26.2).



REMEDIAL EXCAVATION PLAN

1,000 gallon UST relative to: Building 2432 Fort Devens, Massachusetts

PROJECT: 37.07.91.07451

UST 32

FIGURE: 26.3



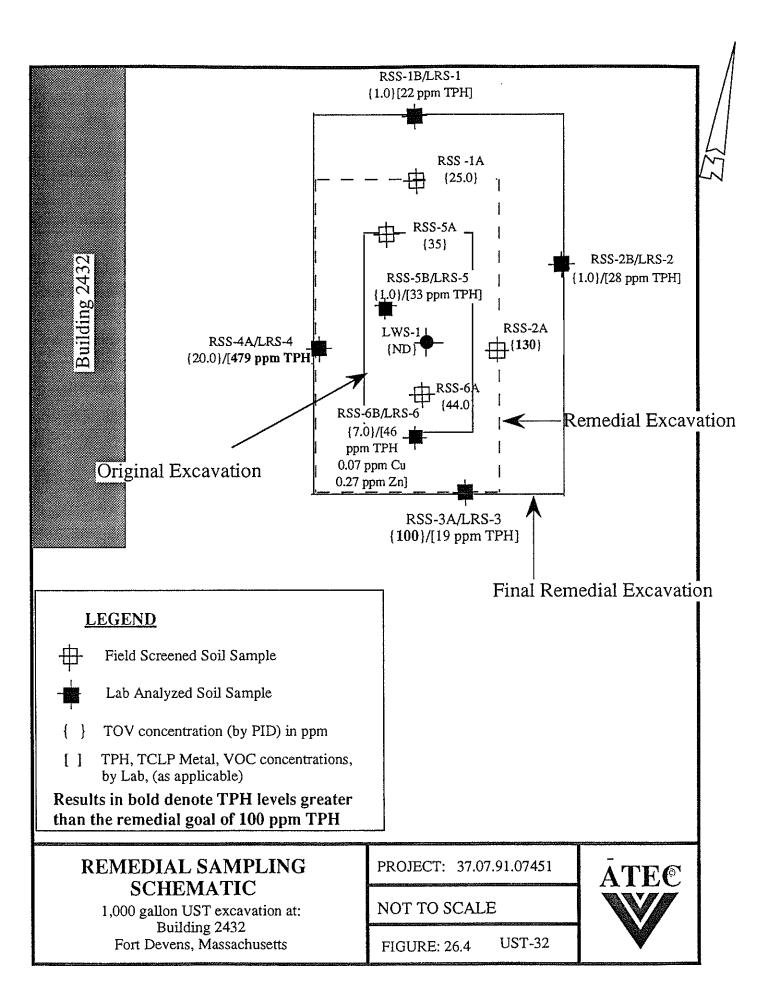
TABLE 26.2 - PID SCREENING RESULTS

Sample No.	PID (TOVs in ppm)	Location
RSS-1A	25.0	N. side wall (5' B.G.)
RSS-2A	130.0	E. side wall (5' B.G.)
RSS-3A	100.0	S. side wall (5' B.G.)
RSS-4A	20.0	W. side wall (5' B.G.)
RSS-5A	35.0	Bottom (6.5' B.G.)
RSS-6A	44.0	Bottom (6.5' B.G.)
RSS-1B	1.0	N. side wall (6.5' B.G.)
RSS-2B	1.0	E. side wall (6.5' B.G.)
RSS-3B	(obstruction)	S. side wall (6.5' B.G.)
RSS-4B	(obstruction)	W. side wall (6.5' B.G.)
RSS-5B	1.0	Bottom (8' B.G.)
RSS-6B	7.0	Bottom (8' B.G.)

RSS = Remediation Soil Sample

B.G. = Below Grade

Six soil samples (LRS-1 through LRS-6) and one water sample (LWS-1) were obtained for laboratory analysis for Total Petroleum Hydrocarbons. LRS-1 to LRS-4 obtained from sidewalls at a depth of approximately 6' below grade. LRS-5 and LRS-6 were obtained from the bottom of the excavation. Two soil samples (LRS-2 and LRS-6) were obtained for Volatile Organic Compounds, Total Petroleum Hydrocarbons, 13 Metals by Toxicity Characteristic Leachate Procedure (TCLP).



The following table contained levels revealed by laboratory analysis: (See Figure 26.4 - Remedial Excavation Sampling Schematic.)

TABLE 26.3 - LABORATORY ANALYSIS

Sample No.	TPH	VOA	13 TCLP	Location
With the state of	(ppm)	(ppb)	Metals(ppm)	
LRS-1	22	NA	NA	N. side wall (6' B.G.)
LRS-2	28	ND	ND	E. side wall (6' B.G.)
LRS-3	19	NA	NA	S. side wall (6' B.G.)
LRS-4	479	NA	NA	W. side wall (6' B.G.)
LRS-5	33	NA	NA	Bottom (8' B.G.)
LRS-6	46	ND	0.07 (Cu)	Bottom (8' B.G.)
			0.27 (Zn)	
LWS-1	ND	NA	NA	Bottom (8' B.G.)

LRS = Laboratory Remediation Sample

LWS = Laboratory Water Sample

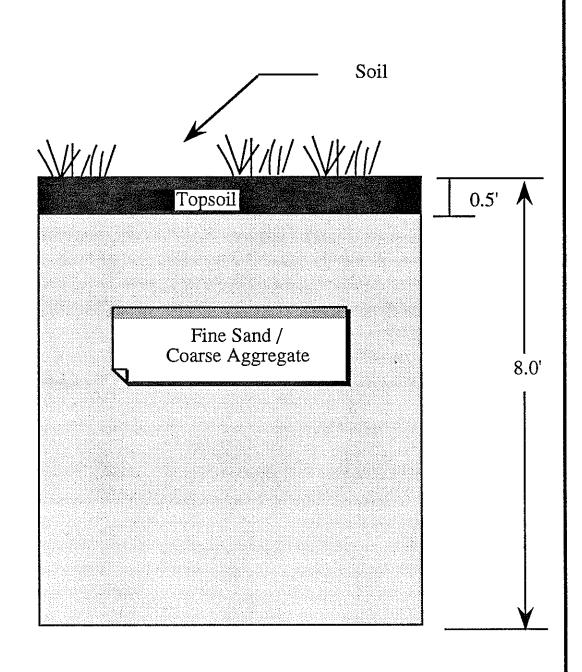
ND = Not Detected above the Method Reporting Limit

NA = Not Applicable

B.G. = Below Grade

26.2.2 Soil Stratigraphy

The soil stratigraphy of the excavation consisted entirely of fine sand mixed with coarse aggregate to a depth of approximately 8' below grade (see Figure 26.5, Soil Stratigraphy).



SOIL STRATIGRAPHY

1,000 gallon UST excavation at: Building 2432 Fort Devens, Massachusetts PROJECT: 37.07.91.07451

UST -32

FIGURE 26.5



26.2.3 Contaminated Soil Disposal

Prior to disposal, contaminated soil was laboratory analyzed for disposal classification purposes. One soil sample (LSP-32) was obtained from stockpiled soil. Laboratory analyses were performed for Volatile Organic Compounds, Semivolatile Organic Compounds, Polychlorinated Biphenyls, Reactive Sulfide, Reactive Cyanide, Flashpoint, Corrosivity, TPH, and 13 Metals by TCLP. Laboratory analytical results revealed 8.2 S.U. Corrosivity; 8,330 ppb Benzo (a) antracene; 3,670 ppb Benzo (a) pyrene; 5,500 ppb Benzo (k) fluoranthene; 47,000 ppb Pyrene; 0.05 ppm Copper; 0.18 ppm Zinc. All other analytical results were below the Method Reporting Limits (see Section 26.8 Laboratory Analytical Results).

Approximately 68.51 cubic yards (≈ 102.8 tons) of No. 2 fuel oil contaminated soil was removed and stockpiled during remediation of the excavation (see Figure 26.3 - Remedial Excavation Plan). Contaminated soil was disposed for recycle at Trimount Bituminous Products Company, Shrewsbury, Massachusetts. Copies of Weight Receipts and Bills of Lading are included in Section 26.10.

26.3 HYDROGEOLOGICAL SERVICES

26.3.1 General Explanation of Procedures

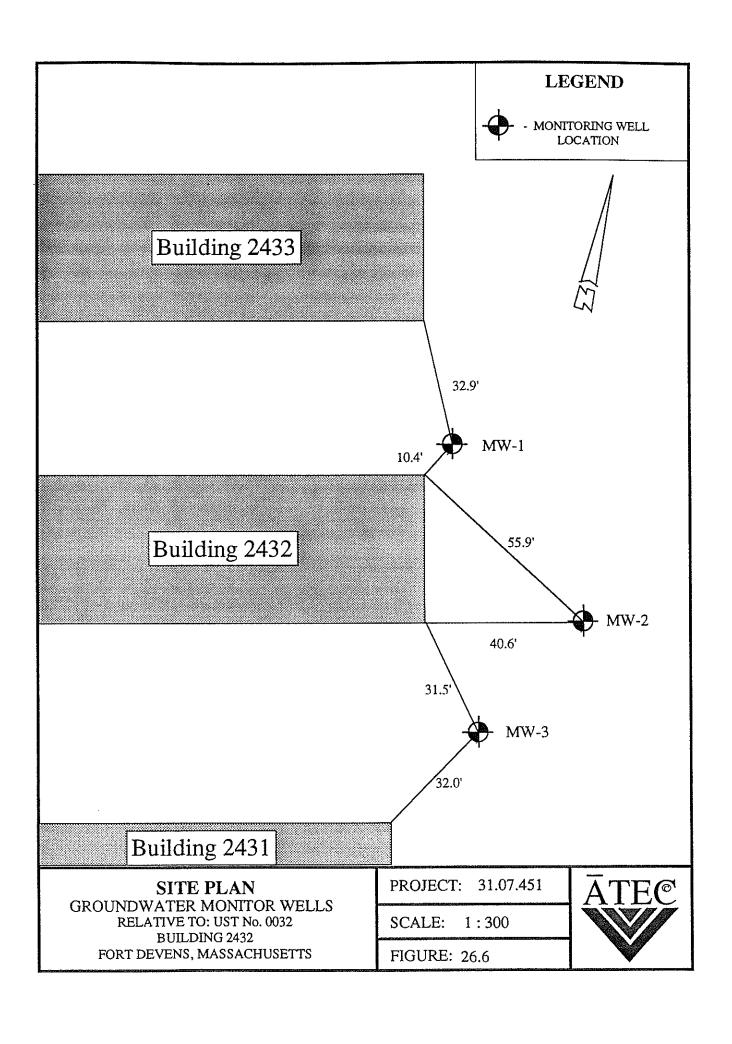
At the time of removal of UST No. 0032, laboratory analysis of one soil sample obtained from the northwest wall of the excavation revealed a TPH concentration of 18,300 ppm. Laboratory analysis of a second soil sample obtained from the bottom of the excavation revealed a TPH concentration of 55 ppm. Based on the analytical results, three groundwater monitoring wells were installed in the vicinity of UST No. 0032 to assess soil and groundwater conditions.

Prior to advancing soil borings at the site, "Dig-Safe" was contacted. Dig-Safe contacts various utilities to mark their service connections on public ground surfaces. Site plans depicting underground utilities (i.e. water, gas, and sewer) were obtained and reviewed. Geosearch, Inc. of Leominister, Massachusetts, was subcontracted by ATEC to install the monitoring wells at the site. Monitoring well borings were advanced on August 31, 1992, utilizing hollow-stem auger drilling and diamond-bit coring techniques, when neccessary. Split-spoon samplers were utilized to collect subsurface soil samples and determine soil types at five foot intervals.

26.3.2 Soil Borings for Monitoring Wells

Monitoring well MW-1 was installed approximately ten feet north of Building 2432 and approximately twenty feet northwest of the backfilled tank excavation (see Figure 26.6 - Site Plan). MW-1 is located hydrogeologically upgradient from the former UST No. 0032. MW-1 was advanced to a depth of sixteen feet, six inches to assess the potential release of No.2 fuel oil from the removed UST. Soil types encountered from grade level to a depth of approximately eleven feet below grade consisted primarily of medium-dense, gray-brown, clayey silt containing trace fine sand and fine gravel. Soil types encountered from a depth of eleven feet to approximately sixteen feet, six inches consisted primarily of dense, gray silt containing minor gravel. Concentrations of Total Organic Vapors (TOVs) were not detected by field screening with a PID. Furthermore, no petroleum odors were noted. Groundwater was encountered at a depth of approximately ten feet below grade. Auger refusal was encountered at a depth of approximately sixteen feet, six inches below grade. Bedrock consisted primarily of gray schist. See Section 26.3.9 - Boring Logs for further information.

Monitoring well MW-2 was installed approximately forty feet east of Building 2432 and approximately twenty feet east of the backfilled tank excavation (Figure 26.6 - Site Plan). MW-2 is located hydrogeolgically crossgradient from the former UST No. 0032. MW-2 was advanced to a depth of thirteen below grade to assess the potential release of No.2 fuel oil from the removed UST. Soil types encountered from grade level to a depth of approximately nine feet, three inches below grade consisted primarily of medium-dense, gray-brown silt containing trace coarse gravel. Concentrations of Total Organic Vapors (TOVs) were not detected by field screening with a PID. Furthermore, no petroleum odors were noted. Groundwater was encountered at a depth of approximately nine feet below grade. Auger refusal was encountered at a depth of approximately nine feet below grade. Coring was conducted from a depth of nine feet to thirteen feet below grade. Bedrock consisted primarily of gray schist. See Section 26.3.9 - Boring Logs for further information.



Monitoring well MW-3 was installed approximately thirty-one feet southeast of Building 2432 and approximately twenty feet south of the backfilled tank excavation (see Figure 26.6 - Site Plan). MW-3 is located hydrogeolgically downgradient from the former UST No. 0032. MW-3 was advanced to a depth of fifteen feet, six inches below grade to assess the potential release of No.2 fuel oil from the removed UST. Soil types encountered from grade level to a depth of approximately six feet below grade consisted primarily of medium-dense, brown silt with minor gravel and cobbles. Concentrations of Total Organic Vapors (TOVs) were not detected by field screening with a PID. Furthermore, no petroleum odors were noted. Groundwater was encountered at a depth of approximately seven feet below grade. Auger refusal was encountered at a depth of approximately six feet below grade. Coring was conducted from a depth of six feet to fourteen feet, six inches below grade. Bedrock consisted primarily of gray schist. See Section 26.3.9 - Boring Logs for further information.

26.3.3 Results of Soil Screenings and Chemical Analyses

Split-spoon soil samples were obtained at a minimum of five foot intervals during the installation of monitoring wells at the site. Split-spoon soil samples were screened for TPH utilizing a Non-Dispersive Infrared Analyzer (NDIR) (modified EPA Standard Test Method 418.1). Subsurface soil samples were placed directly into pre-labeled, pre-cleaned containers and immediately placed on ice for shipment to the laboratory. TPH samples were placed in 500-ml amber glass jars.

Four subsurface soil samples were collected during the installation of monitor well one (MW-1) and labelled MW-1.1, MW-1.2, MW-1.3 and MW-1.4. Results of NDIR screening revealed TPH concentrations of 72.4 ppm, 21.7, 74.3 ppm, and 27.2 ppm in soil samples MW-1.1. MW-1.2, MW-1.3 and MW-1.4, respectively.

Four subsurface soil samples were collected during the installation of monitoring well two (MW-2) and labelled MW-2.1, MW-2.2, and MW-2.3. Results of NDIR screening revealed TPH concentrations of 67.2 ppm, 34.2 ppm, and 32.1 ppm in soil samples MW-2.1, MW-2.2, MW-2.3 ppm, respectively.

Two subsurface soil samples were collected during the installation of monitoring well three (MW-3) and labelled MW-3.1 and MW-3.2. Results of NDIR screening revealed TPH concentrations of 58.1 ppm and 48.6 ppm in soil samples MW-3.1 and MW-3.2, respectively.

Analytical results of subsurface soil samples collected during the site investigation are given in Table 26.4 - Summary of Subsurface Soil Analyses.

TABLE 26.4 - SUMMARY OF SUBSURFACE SOIL ANALYSES

Sample I.D.	Sample Depth	TPH (by NDIR)
MW-1.1	0' - 2'	72.4 ppm
MW-1.2	4' - 6'	21.7 ppm
MW-1.3	9' - 11'	74.3 ppm
MW-1.4	15'-16'6"	27.2 ppm
MW-2.1	0' - 2'	67.2 ppm
MW-2.2	4' - 6'	34.2 ppm
MW-2.3	8' - 9'3"	32.1 ppm
MW-3.1	0' - 2'	58.1 ppm
MW-3.2	4' - 6'	48.6 ppm

32.3.4 Details of Monitoring Well Construction

Monitoring wells were typically constructed of a length of bottom-plugged, two inch diameter Polyvinyl Chloride (PVC) well screen (0.010 inch slot) followed by a length of two inch diameter PVC solid riser to grade level. No. 2 washed, silica sand was packed to approximately one foot above the screen followed by a one to two foot thick bentonite grout packing. The remainder of the boring was backfilled with washed silica sand and concrete surface seal to grade. Monitoring wells were fitted with a water tight 4 four inch diameter, flush mount, cast iron road box.

26.3.5 Standard Type Survey and Determination of Groundwater Gradient

An instrument survey was conducted by Glen Harrington, Environmental Scientist, and Rob Segnatelli, Environmental Scientist, to determine the relative locations and elevations of the groundwater monitoring wells and significant surficial features. An arbitrary datum was established by assigning a fire hydrant located between Building 2432 and Building 2433 an elevation of 100.0 feet. All reported groundwater elevations are referenced to the fire hydrant. The monitoring wells were gauged utilizing an electronic water level meter prior to sampling to determine the groundwater elevations at each well.

Groundwater elevations were then calculated utilizing the survey and gauging data from MW-1, located north of former UST No. 0032, MW-2 located east of former UST No. 0032 and MW-3 located south of former UST No. 0032 (refer to Figure 26.7 - Groundwater Contours). Based on the gauging data, groundwater in the area flows generally to the southeast across the site at a lateral hydraulic gradient of 8.88 percent. Groundwater at the site occurs at depths of 8.99 feet, 9.15 feet, 9.50 feet below grade for MW-1, MW-2 and MW-3, respectively.

A summary of groundwater elevations measured at the three monitoring wells installed at the site are included in Table 26.5.

TABLE 26.5 - SUMMARY OF GROUNDWATER ELEVATIONS

Monitoring Well	Date	Rim Elevation (ft)	Depth to Groundwater	Groundwater Elevation (ft)
MW-1	11-03-92	96.62 .	8.99	86.63
MW-2	11-03-92	91.66	9.15	82.51
MW-3	11-03-92	89.58	9.50	80.08

LEGEND - MONITORING WELL LOCATION) - GROUNDWATER SURFACE **ELEVATION** - GROUNDWATER SURFACE **ELEVATION CONTOURS** Building 2433 **GROUNDWATER FLOW** DIRECTION 87.0' MW-1 86.0' (86.63')85.0 84.0 Building 2432 UST Location ZZZZ83<u>.0'</u> MW-2 82.0' (8<u>2.</u>51<u>')</u> 81.0 80.0 MW-3 (80.08) Building 2431 31.07.451 PROJECT: **GROUNDWATER CONTOURS** RELATIVE TO: UST No. 0032 SCALE: 1:300 **BUILDING 2432** FORT DEVENS, MASSACHUSETTS FIGURE: 26.7

26.3.6 Results of Groundwater Chemical Analyses

Groundwater monitoring wells MW-1, MW-2 and MW-3 were sampled on November 2, 1992. The groundwater samples were analyzed for TPH. Prior to sampling, approximately three well volumes of groundwater were purged from the well. Groundwater samples were placed directly into pre-labelled, pre-cleaned 500-ml amber glass jars and placed on ice for immediate shipment to the laboratory. The samples were analyzed by Environmental Science Services (ESS) of Providence, Rhode Island. Chain of custody forms were completed and included in the shipment.

Laboratory analytical results revealed no detectable concentrations of TPH in the groundwater samples collected from MW-1, MW-2 or MW-3 (see Section 26.8, Laboratory Analytical Results).

A summary of the groundwater analytical results are included in Table 26.6.

TABLE 26.6 - SUMMARY OF GROUNDWATER ANALYSES

Sample I.D	TPH
MW-1	ND
MW-2	ND
MW-3	ND

ND - Not detected above Method Reporting Limit

26.3.7 Summary of Findings

On August 31, 1992 three groundwater monitoring wells were installed to assess soil and groundwater conditions in the vicinity of UST No. 0032. Soil samples collected during drilling were screened in the field for TOVs utilizing a PID. PID field screening results did not indicate the presence of petroleum hydrocarbon contamination. Subsequent NDIR screening of the same soil samples revealed TPH concentrations ranging from 21.7 ppm to 72.4 ppm in MW-1, 32.1 ppm to 67.2 ppm in MW-2 and 48.6 ppm to 58.1 ppm in MW-3.

Results of laboratory analyses did not reveal detectable TPH concentrations in the groundwater samples collected from MW-1, MW-2 or MW-3.

26.3.8 Recommendations

Based on the analytical results, i.e. low soil TPH concentrations and the absence of detectable TPH concentrations in the groundwater, ATEC does not recommend any immediate investigative or remedial action at this time. However, to ensure that the environmental integrity of the site is maintained, ATEC recommends periodic sampling of the groundwater for TPH.

26.3.9 Boring Logs

The attached boring logs were recorded during drilling and monitoring well installation activities of MW-1, MW-2, and MW-3 located at Building 2432, Fort Devens, Massachusetts on August 31, 1992. The purpose of the borings and monitoring well installations was to assess for potential petroleum hydrocarbon contamination associated with one 1,000-gallon No.2 fuel oil UST removed from the site.



-PROJECT NAME: US Army Multisite PROJECT NUMBER: 37.64.451

PROJECT LOCATION: UST 32, Bldg 2432, Ft Devers

BORING LOCATION: see shedily in buck

GROUND WATER MONITORING WELL BORING/INSTALLATION LOG

LOG OF BORING/WELL: MW = 1

POREMAN: matt Bovenzi, George arch INSPECTOR: Much Balli, ATEC

DATE: 9/31/92

SOLUROCK DESCRIPTION	DEPTH FEET	SAMP.	S.P.T.		Langth of Casing Above Surface Elevation 6
loose to very base, brown,			6.85,5		Length of Riser Above Surface Elevation 0
6it w/little fine sand, trace for grand					Surface Elevation Type/Thickness of Surface Seal 2' concrete
ued. dense 600 m 5: H w/1.44 Line soud, trace fru gravel	4-6'	55-12	13	田田	ID/Type of flushment of Protect. Casing buffels box
itiff, and dense, moist	6/				Depth Bottom of Casing 2
brown grey chyly gilt w/some Fine	9-11' ▼10'	58-1.3	16.15.15		Type Riser_ 2" P VC
Soud, little Form gravel PIDY OF Oppon	,				Diameter of Borehole 65/9"
very solifit to hund, danse,					Type of Backfill @ Riser comman/bestwite/concr
Trey, silt w/1:41/2 from gravel. PID= 0, 1 pp.		55-1.4	23.41.50		Depthotype Bottom Soai 2-3 Bendoni Le
					Depth Top of Screen 5'
					ID/OD/Type 2* 7rc Screen .ol s/ot
		\			Type Backfill @ Screen wasked silica
					Depth Bottom of Screen 15'
Dall outines & PIDE A					Type of Backfill Below Screen u tive



GROUND WATER MONITORING WELL BORING/INSTALLATION LOG

LOG OF BORINGWELL: MWZX

PROJECT LOCATION: UST 32, BIdy 2432 Ft Durans

BORING LOCATION: see stetch

PROJECT NAME: US Army Multisite FOREMAN: Matt Borenzi, Geoseanch PROJECT NUMBER: 37.07.451 INSPECTOR: Male Bald: ATEL

DATE: 8/31/92

SOIL/ROCK DESCRIPTION	DEPTH FEET	SAMP.	S.P.T.		T		Length of Casing Above Surface Elevation
middense to loose, brown, sith willitie	6-2'	55-2.1	11. 11. 9.9				Length of Riser Above Surface Elevation 6
fine soud, some f-c gravel PID= 0.0 ppm				Y			Surface Elevation
med duese, brown, sitt	3 - 5'			1	Ŧ,		Type/Thickness of Surface Seal 1 concrete
m/1.44 le fine soud, come f-c growel, cobb les, bould	•	557.2	21. 73.22		£		1D/Type of flushmount Protect. Casing CI 6-ff_16 b-x
P10-0,0 ppm.			-	7	1	~≪ ~~	Depth Bottom of Casing 2'
med dense, gray brown, moist, sitt w/little for growal. tiD= 0.0, pp.		552.3	77.70.50	33.53		€	ID/OD/ Type Riser7" PVC
Bedrock: gray andrew. A.		Core	Core	33.43			Diameter of 65/8/3"
dip <200, very factored	78	·		22.23			Type of Backfill, @ Riser Bentante Concrete
E indervals 2"-4"> suajor functure @ epprex 10. Fractures dip 20'-30"			•	SOCIETY OF STREET	200 Marie 1971		Depth/Type Bottom Seal 1-3 Bentonite
			ı		1000		Depth Top , of Screen 3
						~ ~≪ ~-	1D/OD/Type 2" PVC Screen of stat
							Type Backfill @ Screen wrshed Silrea
							Depth Bottorn of Screen /3
							Type of Backfilli Below Screen Bedrock



GROUND WATER MONITORING WELL BORING/INSTALLATION LOG

LOG OF BORING/WELL: Aung 1

-PROJECT NAME: US Hony Multisite-

PROJECT NUMBER: 37.07.451

PROJECT LOCATION: UST 32, Bldy 2432, Ft Davens

BORING LOCATION: see Shedel

POREMAN: hut Borenti, Geoseana INSPECTOR: Much Balli, HTEC DATE: 8/31/12

SOIL/ROCK DESCRIPTION	DEPTH	SAMP.	S.P.T.			Length of Casing Above Surface Elevation 6
loose to med dense bown sit w/little fine sand. some for growel. PIP=0,00	0-0	55 3.1	8.12			Length of Riser Above Surface Elevation Surface Elevation
med dance to dance, brown, sit w/some fic grand, cobbies, bould'is Split sym		553.7	19-31 45-50/4"		-	Type/Thickness of Surlace Seal 1' concrete ID/Type of flushmont of Protect Casing buffulo box
refusal @ 5's". PID-0.0ppm Redrock: grey mulasedineday Phyllide-schist) badding dip <20°, vary freetured	54"-14.5" V7'	Core	core	***************************************		Depth Bottom of Casing Z' ID/OD/ Type Riser Z* PVC
fracture e = 7 + 81	V 7			14.64	-	Diameter of Borohole <u>C⁵/8"/3"</u>
freedures dip 20-30°		·		144544 144644 144644 144644 144644 14464 14664 16664 16664 16664 16664 16664 16664 16664 16664 16664 16664 16664 16664 1	_	Type of Backfill @ Riser
				(新版版)	-	Depth/Type Bottom Soal 1-2 Bentomte
						Depth Top of Screen 4.0
					-4-	ID/OD/Type 7" Pvc Screen .olsic+
					-	Type Backfill @ Screen washed s.lim
						Depth Bottom of Screen/
DII Lingi = DIN						Type of Backfill Below Screon te frock

26.4 BACKFILL

The excavation was lined with polyethylene plastic sheeting and backfilled with sixty six tons of uncontaminated fill material on July 28, 1992. Backfilling was conducted with the approval of the Contracting Officer's Representative.

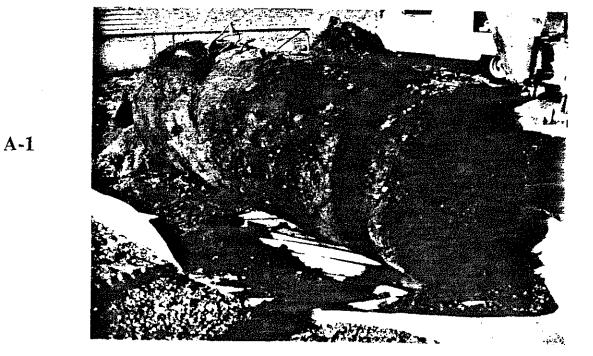
26.5 SURFACE RESTORATION

Following backfill of the excavation, three hundred twenty five square feet of loam was spread. Seeding was conducted to complete surface restoration on October 21, 1992.

26.6 PHOTOGRAPHIC DOCUMENTATION

The following photographs are of the removed UST, the excavation and a post remedial view of the excavation:

- A-1: One side of removed tank.
- A-2: Opposite side of removed tank.
- A-3: Excavation as viewed from north, facing south.
- A-4: Excavation as viewed from south, facing north.
- A-5: Post-Remedial excavation as viewed from north, facing south.
- A-6: Post-Remedial excavation as viewed from south, facing north.



A-2

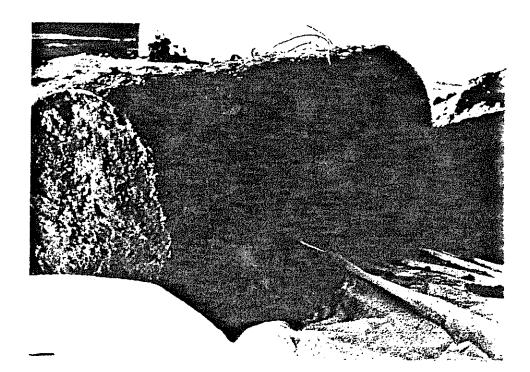
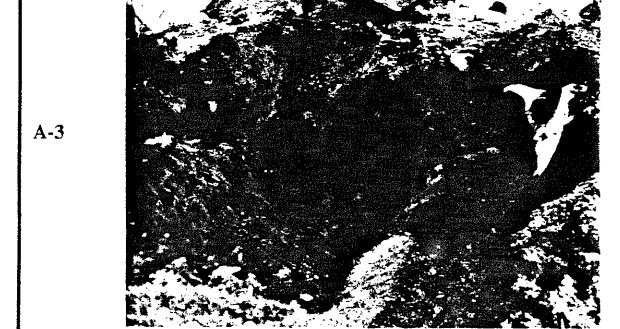


PHOTO DOCUMENTATION

1,000 gallon UST excavation at:
Building 2432
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451





A-4

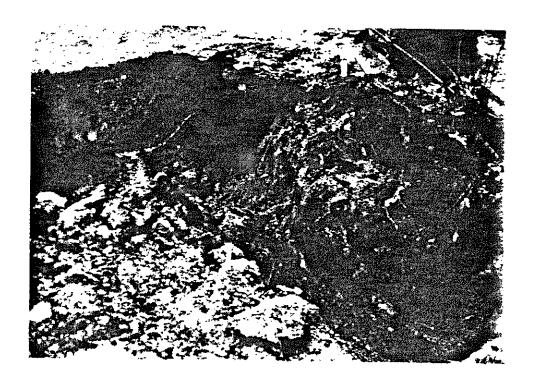
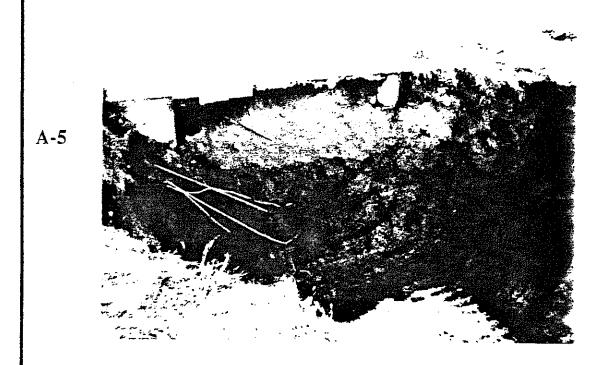


PHOTO DOCUMENTATION

1,000 gallon UST excavation at: Building 2432 Fort Devens, Massachusetts PROJECT: 37.07.91.07451





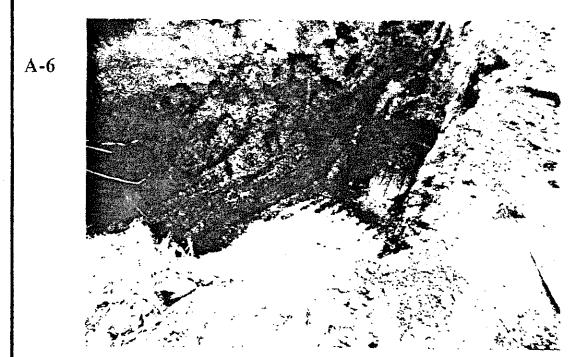


PHOTO DOCUMENTATION

1,000 gallon UST excavation at:
Building 2432
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451



26.7 OCMA 220 DATA SHEETS

The following information was organized from the data collected from the Non-Dispersive Infrared Analyzer.

- SS-1 to SS-10, STOCK-1 and STOCK-2: Soil samples obtained from original excavation.
- MW1.1-1.4, MW 2.1-2.3, and MW 3.1-3.2 : Soil samples obtained from split spoon samples during installation of monitoring wells.

OCMA Data Sheet
Operator Name: Ruccemul

Date: 16 Jan 7

EBI Project Number: 37.07.45

Calibration

一个生 32

Calibration							-	
•	Fi	est Reading	Sec	ond Reading	T	Third Reading		
	Initial	Final	Initial	Final	Initial	Final		
Zero Calibration ·	[3.]	10.0	1-1.9	10.0	1-0.2	100		
Span Calibration				. [1			
Zero Calibration	1	1	1	1	1	1		
		•				Span Check: ZE	<u>3.2</u>	

<u>Testing</u>

					•				
	Wei	ight	First A	pproach	Second.	Approach		Readings	
Sample ID#	Gross	Tare	F-113	Sample	F-113	Sample	First	Second	Third
STOCKI	179.4	173.6	i .			1 Iml	15.1	15.4	15.5 516
S SUSSIE	177.8	173.3	1				19.5	14.7	19.8 931
1	179.3	173.9	<u> </u>	1	1	1	19.9	19.7	17 1951.
<u></u>	179.6	170.2	<u> </u>		ſ	1	, 13-9	14-2	14.2 1431.
3	180.5	174.5]	<u> </u>		1	11.2	10.9	11-0 92.5
1 4	183.6	132.2	<u> </u>	<u> </u>		<u> </u>	149.3	149,5	335
5	ලිල. 7	173.8	<u> </u>	1	<u> </u>	<u> </u>	13.8	13.8	305
<u>l. Ca.</u>	182.4	175.8		<u> </u>		1 5	119.2	118.9	1/9.01310
1 7	180.6	179.2		<u> </u>		1 Ime	13-1	15.2	15-3 1451
1.8	84.7	175.2		<u> </u>		<u> </u>	111		13.
1 9	182.1	175-8					15.4	15.3	466.
<u> </u>	178.3	174.1					125.5	1254	3337
		<u> </u>		<u> </u>			<u> </u>		
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TPH SOIL ANALYSES BY NON-DISPERSIVE INFRARED ANALYZER - MODIFIED EPA STANDARD TEST METHOD 418.1

PROJECT NAME, NUMBER, TANK: U.S. ARMY - FORT DEVENS 37.07.91.451 UST 0032

DATE: Aug 31, 199

OPERATOR: Derek Witt

CALIBRATION DATA

TYPE	FIRST REA	ADING	SECOND RE	EADING	THIRD REA	ADING	SPAN
CALIBRATION	<u>INITIAL</u>	FINAL	_INITIAL_	FINAL	_INITIAL_	FINAL	CHECK
ZERO:	2.2	0.0	-0.2	0.0	-0.1	0.0	26.0
SPAN:	32.2	40,0	39,3	40.0	40.2	40.0	,
ZERO:	7.6	0.0	-59	0.0	-0.6	0.0	

ANALYTICAL DATA

SAMPLE	WEIGH	T (g)	1st DILUTIO	N RATIO (ml)	2nd DILUTIO	ON RATIO (ml)	INSTRUME	NT RESULTS	(ppm)	_ CONCENTRATION
NUMBER	GROSS	TARE	F-113	SAMPLE	F-113	SAMPLE	1st	2nd	3rd	mg/l
										•
MW-1.1	82.7	75.9	17.5	3.0		_ <u></u>	2.9	2.4		72,4
MW-1.2	83.1	76.5	17.5	3.0			0,5	0.7		21.7
MW-1.3	85,3	76,2	17.5	3.0			2,8	3.3		74,3
MW-1.4	84.1	75.8	17,5	3.0			1,2	1,1		27.2
MW-2.1	82.8	76.7	17.5	3.0			1,9	2.0	**	67,2
MW-2,2	83.4	76.2	17.5	3.0			1.1	1.2		34,2
MW-2.3	90.7	76.0	17.5	3.0			2.0	2.3		32.1
MW-3.1	82.1	76.1	17.5	3.0			1.4	1.7	**	58.1
MW-3.2	81.4	75.5	17.5	3.0	**		1,2	1.4		48.6

26.8 LABORATORY ANALYTICAL RESULTS

The following laboratory analytical reports are associated with the removal, remedial excavation and stockpile soil. These reports were organized and provided by Environmental Science Services Inc.

- LSS-1, LSS-2, and LSS-3: Soil samples obtained from original excavation. Laboratory analyzed for TPH (Method 418.1).
- LRS-1, LRS-2, LRS-3, LRS-4, LRS-5, and LRS-6: Soil samples obtained from Post-remedial excavation. Laboratory analyzed for TPH (Method 418.1). LRS-2 and LRS-6 were also analyzed for VOCs (Method 8240), and 13 Metals by TCLP (Method 6010).
- LWS-1 (dated August 1992): Groundwater sample obtained from Post-remedial excavation. Laboratory analyzed for TPH (Method 418.1).
- LSP-32: Soil sample obtained from stockpiled soil for disposal classification. Laboratory analyzed for VOCs (Method 8240), Polychlorinated Biphenyls (Method 8080), Reactive Cyanide (Method 7.3.3.2), Reactive Sulfide (Method 7.3.4.1), Semivolatile Organics (Method 8270), Flashpoint (Method 1010), TPH (Method 418.1), 13 Metals by TCLP (Method 6010).
- MW-1, MW-2, MW-3: Soil samples obtained from monitoring wells. Laboratory analyzed for TPH (Method 418.1).



RTIFICATE OF ANALYSIS

Date: 1/24/92 Job: 138

Account: 95659 Received: 1/16/92

ATEC ENVIRONMENTAL CO. 62 Accord Park Drive Norwell, MA 02061

Project: DEVENS-TANK 32

: Mr. Mark Baldi

ple ber	Method Number	Parameter	Result	Unit	Sample Description
3801	EPA-160.3 EPA-418.1	Total Solids TPH/IR (Dry Wt.)	84 18300	% mg/kg	LSS-1
3802	EPA-160.3 EPA-418.1	Total Solids TPH/IR (Dry Wt.)	85 55	% mg/kg	LSS-2
3803	EPA-160.3 EPA-418.1	Total Solids TPH/IR (Dry Wt.)	85 5180	% mg/kg	LSS-3

David Dickipson Laboratory Manager



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32 ESS Project ID: 922023

Client Sample ID: LRS-1, UST 32 ESS Sample ID: 922023-06

Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	91	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	22	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

Laboratory Director

Date:

1911457-



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32 ESS Project ID: 922023

Client Sample ID: LRS-2, UST 32 ESS Sample ID: 922023-07

Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	90	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	28	mg/Kg	11	418.1
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching Metals	Procedure ND	mg/L	Attached	1311 6010

TPHIR reported on dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:

Laboratory Director

Date:



RTIFICATE OF ANALYSIS

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants

Date Sampled: 8/4/92

Client Project ID: UST# 31, 32

Date TCLP Performed: 8/6/92

Client Sample ID: LRS-2, UST 32

Date Leachate Extracted: 8/7/92

ESS Sample ID: 922023-07

Date Extract Analyzed: 8/10/92

	Act	ual	Adjusted*		
Target Analyte	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit	
Antimony	ND	0.2	ND	0.3	
Arsenic	ND	0.2	ND	0.2	
Cadmium	ND .	0.02	ND	0.03	
Chromium	ND	0.05	ND	0.05	
Lead	ND	0.1	ND	0.1	
Mercury	ND	0.005	ND	0.005	
Selenium	ND	0.3	ND	0.3	
Silver	ND	0.05	ND	0.07	
Copper	ND	0.02	ND	0.02	
Nickel	ND	0.04	ND	0.04	
Zinc	ND	0.02	ND	0.02	
Beryllium	ND	0.02	ND	0.03	
Thallium	ND	0.3	ND	0.4	

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Laboratory Director

Date: /4/4155L

010

Q.



RTIFICATE OF ANALYSIS

TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32 ESS Project ID: 922023 Client Sample ID: LRS-2, UST 32 ESS Sample ID:

922023-07 Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloropropane	ND	5
Dibromochloromethane	ND	. 5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Bromodichloromethane	ND	5
Frans-1,3-Dichloropropene	ND	5
Bromoform	ND	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	ND	5
Foluene	ND	5
Ethyl Benzene	ND	5
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Frichloroethene	ND	5
Acetone	ND	10
Carbon Disulfide	ND	5
2-Butanone	\mathbf{n} D	10
Cis-1,3-Dichloropropene	$\mathbf{N}\mathbf{D}$	5
4-Methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Styrene	ND	5
Xylenes (Total)	ND	10

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: David Dickinson Laboratory Director

Date: 14 Aug 62



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32

Client Sample ID: LRS-3, UST 32

Date Sample Received: 8/5/92

ESS Project ID: 922023

ESS Sample ID: 922023-08

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	. 87	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	19	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

Laboratory Director



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32

Client Sample ID: LRS-4, UST 32

Date Sample Received: 8/5/92

ESS Project ID: 922023

ESS Sample ID: 922023-09

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	87	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	479	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

David Dickinson Laboratory Director Date:



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32

Client Sample ID: LRS-5, UST 32

Date Sample Received: 8/5/92

ESS Project ID: 922023

ESS Sample ID: 922023-10

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	88	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	33	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

Laboratory Director

Date:

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ERTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32 ESS Project ID: 922023

Client Sample ID: LRS-6, UST 32 ESS Sample ID: 922023-11

Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	89	% w/w	. 1	160.3
Total Petroleum Hydrocarbon-IR	46	mg/Kg	11	418.1
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching	Procedure			1311
Metals Copper Zinc	0.07 0.27	mg/L mg/L	Attached Attached	6010 6010

TPHIR reported on dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:

Laboratory Director

Date: 14/19452



RTIFICATE OF ANALYSIS

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants

Client Project ID: UST# 31, 32

Client Sample ID: LRS-6, UST 32

ESS Sample ID: 922023-11

Date Sampled: 8/4/92

Date TCLP Performed: 8/6/92

Date Leachate Extracted: 8/7/92

Date Extract Analyzed: 8/10/92

Target Analyte	Act	ual	Adjusted*	
	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit
Antimony	ND	0.2	ND	0.3
Arsenic	ND	0.2	ND	0.2
Cadmium	ND	0.02	ND	0.03
Chromium	ND	0.05	ND	0.05
Lead	ND	0.1	ND	0.1
Mercury	ND	0.005	ND	0.005
Selenium	ND	0.3	ND	0.3
Silver	ND	0.05	ND	0.07
Copper	0.07	0.02	0.07	0.02
Nickel	ND	0.04	ND	0.04
Zinc	0.27	0.02	0.27	0.02
Beryllium	ND	0.02	ND	0.03
Thallium	ND	0.3	ND	0.4

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Laboratory Director

Date:





Date Reported:

8/14/92

RTIFICATE OF ANALYSIS

Date Sample Received: 8/5/92

TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32 ESS Project ID: 922023

Client Sample ID: LRS-6, UST 32 ESS Sample ID: 922023-11

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
Carbon Tetrachloride	ND	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
1,2-Dichloropropane	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Bromodichloromethane	ND	5
Frans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	ND	
Foluene	ND	5
Ethyl Benzene	ND	5
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Prichloroethene	ND	5 5
Acetone	ND	10
Carbon Disulfide	ND	5
2-Butanone	ND	10
Cis-1,3-Dichloropropene	ND	5
4-Methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Styrene	ND	5
Xylenes (Total)	ND	10

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: Jakinson

Laboratory Director

Date: /



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32

Client Sample ID: LWS-1, UST 32

Date Sample Received: 8/5/92

ESS Project ID: 922023

ESS Sample ID: 922023-12

Date Reported: 8/14/92

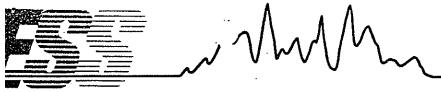
Parameter	Results	Units	MRL	Method
Total Petroleum Hydrocarbon-IR	ND .	mg/L	1	418.1

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:

Laboratory Director

Date: 14/fag92



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-32 ESS Sample ID: 921528-05

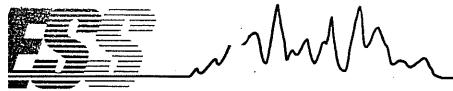
Date Sample Received: 6/11/92 Date Reported: 7/1/92

Parameter	Results	Units	MRL	Method
pH (Corrosivity)	8.2	s.u.	N/A	9045
Flashpoint	No Flash	°F	200	1010
Polychlorinated Biphenyls	ND	mg/Kg	Attached	8080
Reactive Cyanide	ND	mg/Kg	2	7.3.3.2
Reactive Sulfide	ND	mg/Kg	2	7.3.4.1
Semivolatile Organics Benzo(a)anthracene Benzo(a)pyrene Benzo(k)fluoranthene Pyrene	8,330 3,670 5,500 47,000	ug/Kg ug/Kg ug/Kg ug/Kg	Attached	8270 8270 8270 8270
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching	g Procedure			1311
Copper Zinc	0.05 0.18	mg/L	Attached Attached	6010 6010

N/A = Not Applicable

ND = Not Detected above Method Reporting Limit (MRL)

Laboratory Director



RTIFICATE OF ANALYSIS

POLYCHLORINATED BIPHENYLS Method 8080

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-32 ESS Sample ID: 921528-05

Date Sample Received: 6/11/92 Date Reported: 6/30/92

Parameter	Result (mg/Kg)	MRL
Arochlor 1016	ND	0.1
Arochlor 1221	ND	0.1
Arochlor 1232	ND	0.1
Arochlor 1242	ND	0.1
Arochlor 1248	ND	0.1
Arochlor 1254	ND	0.2
Arochlor 1260	ND	0.2

ND = Not Detected above Method Reporting Limit (MRL)

Surrogate Recovery Data	% Recovery	QC Limit
Dibutylchlorendate	94%	50 - 150%

Approved by:

Dávid Dickinson

Laboratory Director

Date:

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RTIFICATE OF ANALYSIS

ACID EXTRACTABLES EPA 8270

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-32 ESS Sample ID: 921528-05

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
2-Chlorophenol	ND	1,670
2-Nitrophenol	ND ·	1,670
Phenol	N D	1,670
2,4-Dimethylphenol	ND	1,670
2,4-Dichlorophenol	ND	1,670
2,4-Dinitrophenol	ND	8,350
Pentachlorophenol	ND	8,350
4-Nitrophenol	ND	8,350
2,4,6-Trichlorophenol	ND	1,670
2,4,5-Trichlorophenol	ND	8,350
2-Methylphenol	ND	1,670
4-Methylphenol	ND	1,670
4-Chloro-3-Methylphenol	ND	1,670
4,6-Dinitro-2-Methylphenol	ND	8,350

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Laboratory Director

Date:

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RTIFICATE OF ANALYSIS

BASE NEUTRAL EXTRACTABLES EPA 8270

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-32 ESS Sample ID: 921528-05

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Acenaphthylene	ND	1,670
1,2,4-Trichlorobenzene	ND	1,670
Hexachlorobenzene	ND	1,670
Bis(2-chloroethyl)ether	ND	1,670
2-Chloronaphthalene	ND	1,670
1,2-Dichlorobenzene	ND	1,670
1,3-Dichlorobenzene	ND .	1,670
1,4-Dichlorobenzene	ND	1,670
3,3-Dichlorobenzidine	ND	3,340
2,4-Dinitrotoluene	· ND	1,670
2,6-Dinitrotoluene	ND	1,670
Fluoranthene	ND	1,670
4-Chlorophenyl phenyl ether	ND	1,670
Bis(2-chloroisopropyl) ether	ND	1,670
Bis(2-chloroethoxy) methane	ND	1,670
Hexachlorobutadiene	ND	1,670
Hexachlorocyclopentadiene	ND .	1,670
Isophorone	ND	1,670
Naphthalene	ND	1,670
Nitrobenzene	ND	1,670
N-nitrosodiphenylamine	ND	1,670
N-nitrosodi-n-propylamine	ND	1,670
Bis(2-ethylhexyl)phthalate	ND	1,670
Di-n-butylphthalate	ND	1,670
Di-n-octylphthalate	ND	1,670
Diethyl phthalate	ND	1,670
Dimethyl phthalate	ND	1,670
Benzo(a) anthracene	8,330	1,670

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: David Dickinson

Laboratory Director



RTIFICATE OF ANALYSIS

BASE NEUTRAL EXTRACTABLES cont. EPA 8270

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-32 ESS Sample ID: 921528-05

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Benzo(a)pyrene	3,670	1,670
Benzo(b) fluoranthene	ND	1,670
Benzo(k)fluoranthene	5,500	1,670
Chrysene	ND	1,670
Acenaphthene	ND	1,670
Anthracene	ND	1,670
Benzo(ghi)perylene	ND	1,670
Fluorene	ND	1,670
Phenanthrene	ND	1,670
Dibenzo(a,h)anthracene	ND	1,670
Indeno(1,2,3-cd)pyrene	ND	1,670
Pyrene	47,000	1,670
Hexachloroethane	ND	1,670
4-Bromophenyl-phenylether	ND	1,670
Benzyl Alcohol	ND	1,670
Benzoic Acid	ND	8,350
Bis(2-Chloroethoxy)methane	ND	1,670
4-Chloroaniline	ND	1,670
2-Methylnaphthalene	ND	1,670
2-Nitroaniline	ND	8,350
3-Nitroaniline	ND	1,670
Dibenzofuran	ND	1,670
4-Nitroaniline	ND	8,350
Butylbenzylphthalate	ND	1,670

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dickinson Laboratory Director Date:



RTIFICATE OF ANALYSIS

TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-32 ESS Sample ID: 921528-05

Date Sample Received: 6/29/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL	
Methylene Chloride	ND	1,000	
1,1-Dichloroethane	ND .	1,000	
Chloroform	ND	1,000	
Carbon Tetrachloride	ND	1,000	
1,2-Dichloropropane	ND	1,000	
Dibromochloromethane	ND	1,000	
1,1,2-Trichloroethane	ND	1,000	
Tetrachloroethene	ND	1,000	
Chlorobenzene	ND	1,000	
1,2-Dichloroethane	ND	1,000	
1,1,1-Trichloroethane	ND '	1,000	
Bromodichloromethane	ND	1,000	
Trans-1,3-Dichloropropene	ND	1,000	
Bromoform	ND	1,000	
1,1,2,2-Tetrachloroethane	ND	1,000	
Benzene	ND	1,000	
Toluene	ND	1,000	
Ethyl Benzene	ND	1,000	
Chloromethane	ND	1,000	
Bromomethane	ND	1,000	
Vinyl Chloride	ND	1,000	
Chloroethane Chloroethane	ND	1,000	
1,1-Dichloroethene	ND	1,000	
1,2-Dichloroethene (Total)	ND	1,000	
Trichloroethene	ND	1,000	
Acetone	ND	1,000	
Carbon Disulfide	N D	1,000	
2-Butanone	ND	1,000	
Cis-1,3-Dichloropropene	ND	1,000	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	1,000	
Styrene	ND	1,000	
Xylenes (Total)	ND	1,000	

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Bavid Bickinson Laboratory Director Date:

2/11/92

044

ironmental Science Services



PRTIFICATE OF ANALYSIS

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants

Client Project ID: Stockpiled Soils

Client Sample ID: LSP-32

ESS Sample ID: 921528-05

Date Sampled: 6/9/92

Date TCLP Performed: 6/22/92

Date Leachate Extracted: 6/23/92

Date Extract Analyzed: 6/24/92

Target Analyte	Act	ual	Adjusted*	
	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit
Antimony	ND	0.1	ND	0.2
Arsenic _	ND	0.2	ND	0.2
Cadmium	ND	0.02	ND	0.02
Chromium	ND	0.05	ND	0.05
Lead	ND	0.1	ND	0.1
Mercury	ND	0.005	ND	0.005
Selenium	ND	0.3	ND	0.3
Silver	ND	0.05	ND	0.09
Copper	0.04	0.02	0.05	0.03
Nickel	ND	0.04	ND	0.04
Zinc	0.18	0.02	0.18	0.02
Beryllium	ND	0.02	ND	0.04
Thallium	ND	0.05	ND	0.09

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Dávid Dickinson Laboratory Director Date:

045

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RTIFICATE OF ANALYSIS

VOA SOIL SURROGATE RECOVERY

Client: ATEC Environmental Consultants Client

Project ID: UST 31, 32

Date Sample Analyzed: 8/13/92 ESS

Project ID: 922023

SAMPLE ID	1,2 DICHLOROETHANE-D4 (70-121%)*	TOLUENE-D8 (81-117%)*	BFB (74-121%)*
VS0813B1	102%	96%	105%
922023-01	93	96	102
922023-07	. 106	95	98
922023-11	110	91	92

* Acceptance criteria

Approved by:

David Dickinson Laboratory Director

Date:___



ERTIFICATE OF ANALYSIS TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: UST 31, 32

Client Sample ID: Method Blank

Date Sample Received:

ESS Project ID: 922023

ESS Sample ID: VS0813B1

Date Reported: 8/14/92

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	. 5
1,1-Dichloroethane	ND	
Chloroform	ND	5
Carbon Tetrachloride	ND	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
1,2-Dichloropropane	ND	[′] 5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Bromodichloromethane	ND	· 5
Trans-1,3-Dichloropropene	ND .	5
Bromoform	. ND	5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	· ND	5
Toluene	ND	5 '
Ethyl Benzene	ND	5
Chloromethane	· ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Trichloroethene	ND	5
Acetone	ND	10
Carbon Disulfide	ND	5
2-Butanone	ND	10
Cis-1,3-Dichloropropene	N D	5
4-Methyl-2-Pentanone	N D	10
2-Hexanone	N D	10
Styrene	N D	5
Xylenes (Total)	ND	10

ND = Not Detected above Method Reporting Limit (MRL)

NA = Not Applicable

Approved by:

Laboratory Director



ERTIFICATE OF ANALYSIS

MATRIX SPIKE ANALYSIS SUMMARY

TCLP METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants Matrix: Solid

TCLP Batch ID: 202301 Concentration in: mg/L

Target Analyte	Result	Spike Added	Spiked Result	Percent Recovery
Antimony	ND	*	ND	76%
Arsenic	ND	2.00	2.26	113
Cadmium	ND	0.5	0.39	78
Chromium	ND	1.0	1.22	122
Lead	ND	1.0	1.12	112
Mercury	ND	0.02	0.020	100
Selenium	ND	2.00	2.13	107
Silver	ND	1.0	0.76	76
Copper	ND	1.0	1.14	114
Nickel	ND	1.0	1.07	107
Zinc	ND	1.0	1.09	109
Beryllium	ND	*	ND	76
Thallium	ND	*	ND	76

This matrix spike analysis summary applies to the following samples: 922023-01, -07, -11

ND = Not Detected above Method Reporting Limit (MRL)

* Matrix spike recovery is based on the lowest spike recovery of the spiked analytes.

Laboratory Director



RTIFICATE OF ANALYSIS

TOTAL PETROLEUM HYDROCARBON-IR Method 418.1

Client: ATEC Environmental Consultants

Client Project ID: US Army UST 32 Bldg 2432 ESS Project ID: 923025

Date Samples Received: 11/5/92 Date Reported: 11/9/92

Client ID	Lab ID	Results	Units	MRL
MW-1	923025-01	ND	mg/L	. 1
MW-2	923025-02	ND	mg/L	1
MW-3	923025-03	ND	mg/L	. 1

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: Billis Shill

Date: 11/9/97

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26.9 CHAIN OF CUSTODY FORMS

The following chain of custody forms were produced for the soil samples which were laboratory analyzed.

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26.10 HAZARDOUS WASTE MANIFEST

UST No. 0032 was estimated to contain 15 gallons of No. 2 fuel oil and residual materials. The fuel oil and residual materials were removed and drummed on January 14, 1992 for transportation. Drummed material was transported to a licensed Transportation Storage Disposal Facility (T.S.D.F.), Beede Waste Oil Corporation, on February 27, 1992.

The following Hazardous Waste Manifest was generated from residual tank materials. The manifest dated January 7, 1992 is associated with vaccuuming product from several USTs. Therefore, the total quantity (1,400 gallons) is much greater than the 15 gallons which was removed from UST 32.



d OMB No. 2050-0009 Expires 9-30-91

8700-22 (Rev. 9 88) Previous editions are obsolete

DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

beatt or elberts our gambued for 024 bit Bitte f	(2-pitch) (ypawnter.)						
UNIFORM HAZARDOUS	1. Generator US EPA ID	No. M. DOCCU	milest ભુરતા મૃત	2. Page	<i>i</i> 1	in the shade ed by Federa	.:
WASTE MANIFEST	MA / / 2 1 0 0	[5]2]1]3]4]5[0]	68 H		ManifestDocum		
, Generator's Name and Mailing Address	Dept. of The A		,,	MA	F35377		
. Generator's Phone (508-796-3002	Headquarters F		19.	B. State	Gen.ID	7	
. Generator's Phone (500 70 5002 . Transporter 1 Company Name	Fort Devens, M	A U1433 in Number		C.Stay	Trans. ID	<i>}</i>	
Beede Waste Oil Corp.		D; 0; 1; 8; 9; 5; 8;	1(4:0	1 1	11 W	7111	1 1
. Transporter 2 Company Name	8.	- US EPA ID Number			sporter's Phone (Trans. 10	6033	22-5761
				, ,	/ / /	<u> </u>	
Designated Facility Name and Site Address	10.	US EPA ID Number	j	F Treat	porter's Phone (11.
Beede Waste Oil Corp.					Facility's ID	Not Re	quired : . : =
Kelley Rd., P.O. Box 127 Plaistow, NH 03865	NIH	D 0 1 8 9 5 8	1,4,0			22 287	-3761
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1. US DOT Description (Including Proper Shipp	oing Name, Hazard Class, an	d ID Number) '.	No.	Typa	Totai Quantity	Unit Wt∕Vol	Waste No.
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i. Special Handling Instructions and Additiona	Unformation	- 4-Bldg 631	1-8	da 24	47 1-26	86 -	1-3573
'o Be Recycled #2 Fuel V	ith SI=Sludge		•	\$	• • •		
Fac Kscyllingary hono		गॅं०.	 				
GENERATOR'S CERTIFICATION: I hereby reclare that proper shipping name and are classified, packed, masocording to applicable international and national go	rked, and labeled, and are in all re	nt are fully and accurately descr espects in proper condition for tr	enzbout phi	Bumsh			
If I am a large quantity generator, I certify that I have		wokene and toxicity of waste co	merated to th	e decree i h	ave determined to b	e economically	practicable
and that I have selected the practicable method of the	earment, storage, or disposal cur.	rently available to me which mir	simizes the pr	esent and f.	uture threat to huma	u pesith tud fl	RE GUAROU.
ment; OR, if I am a small quantity generator, I have mean afford.	ace a good takin errort to minimu	ze my waste generation and sei	rei ine besi w		Szuráut usenos tear	TE ROBRECHE (D.	
Printed/Typed Name //		Signatura	11/2/1	/		110-11	Date
Fredus A Lookin	j	Signature	461 <u>/</u>			Month 10.5	Day Year
Transporter 1 Acknowledgement of Rec	eipt of Materials		7/			1/10	Date
Printed/Typed Name		Signature				Month	Day Year
rian Ginivan		Bun	1/1	نسسه		1012	12:7192
Transporter 2 Acknowledgement of Rec	eipt of Materials	·	A-				Date
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Discrepancy Indication Space	L						<u> </u>
acility Owner or Operator: Certification of r	eceipt of hazardous materia	Is covered by this manifest	except as i	ા તે છે કરાઇ	อก 19.		
		· 					Date
Printed/Typed Name		Signature				Mouth	Lay Year
	<u>.</u>	}					1111

26.11 WEIGHT RECEIPTS AND BILL OF LADING

The following Weight Receipts and Bills of Lading document the disposal of contaminated soil associated with UST 0032.

A	TRIMOU	NT BITUMINOUS PRO 5 CHERRY HILL DRIV P.O. BOX 2089 DANVERS, MA 01923-5	E ·	1 1	MN	OUEOVED DV	C.O.D. Charge 🔼
IAIN OFFICE: IVERS 750-4200		SHREWSBURY DIVIS 51 LAKE STREET AT RT SHREWSBURY, MA 01: FICE 881-1430 PLANT 7:	ON E. 20 545	IVE	EFT JOB .	CHECK # TICKET #	CARRIER 72472
tomer # ATROO1 EC ASSOC. ACCORD PARK DRIG RWELL, MA 02061 7-878-6200	Æ	Joh 1 BLDGFD US ARKY BLDG を4ろン FORT DEVENS, MA PO# 37.04.72053	01433	KĭX ≰	* 76	RIX NAME OIL SOIL	TRUCK* 9
Time 2:22:23	Tare 27500	Het 3 <u>8</u> 300	Gross 65800	_	otal 9,15		
Cost/Ton Perce	nt Tax	Load Cost Amount	Tax Dest Cha	orge To	tal Cost		

THIS COMPANY WILL NOT BE RE-

SPONSIBLE FOR DAMAGE CAUSED BY TRUCKS DELIVERING MATERIAL BEYOND STREET PAVEMENT.

RECEIVED BY _

12:22:23 pm Jul 31, 1992 F

166.23

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BILL OF LADING . POLICY # WSC-89-001



DEP CASE I: DATE ADING #: SITE OF GENERATION: ERATOR NAME/ADDRESS: IKHZFO. 2432 <u>'ST 7732</u> TRANSPORTATION ACCIDENT? 508-796-3002 Sept. 1 TERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY): CONTAMINATED DEBRIS: # absorbent pads ... absorbent booms TAMINATED SOIL: 37.5 25 vol (cu yds) speedy dri _____ _ other (specify) _ vol (az yds) w (mai) *KNALYSES ATTACHED?* E OF CONTAMINATION: gazoline X 22 oil _ 14 oil _ 16 oil _ other (specify). Volutier: Y XN TPH: XY N UNSPORTER NAME/ADDRESS: DESTINATION FACILITY NAME/ADDRESS: Landfill TERATOR'S SIGNATURE: OVE ITEMS MUST BE COMPLETE A. TED OT ROING C HORIZATION: 'DEF, SIGNATURE (originating region): (if applicable) . DEP. SIGNATURE (destination region): vol (ca yds) JCK/TRACTOR REGISTRATION _A9 5 **QUANTITY SHIPPED:** ಳು (ಬಬು) TOTAL PROJECTED AILER REGISTRATION SHEPPED TO DATE DATE (basemira) QAOJ ZET HERATOR OR RECEIVING FACILITY REPRESENT. REMAINING TO BE SHIPPED INATURE: #17 72472 7/31/9V ARRTIME 12:22 CEIVING FACILITY REPRESENTATIVE'S SIGNATURE EIVED GENERATOR IS RESPONSIBLE FOR RETURNING COMPLETED FORM WITHIN S DAYS TO: DEPARTMENT OF ENVIRONMENTAL PROTECTION 1 1992 BWSC/EMERGENCY RESPONSE BRANCH €P ONE WINTER STREET, 5th FLOOR ıl - Req. BOSTON, MA 02108 π_{A} THE ORIGINATING REGIONAL OFFICE

IFICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF L. C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY LITIES.

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MAIN OFFICE:		
NYERS 750-420	0	

TRIMOUNT BITUMINOUS PRODUCTS CO.

5 CHERRY HILL DRIVE P.O. BOX 2089 DANVERS, MA 01923-5089

SHREWSBURY DIVISION 651 LAKE STREET AT RTE. 20 SHREWSBURY, MA 01545 OFFICE 881-1430 PLANT 754-4709

T	FMN	Cash	C.O.D. □ d	harge 🖒
м	ARRIVED JOB	CHECKED BY	***	
E	LEFT JOB CHECK #		CARRIER	N .

TICKET #R

HIX NAME OIL SOIL

73210

ustomer # ATEO01 ATEC ASSOC.

62 ACCORD PARK DRIVE

NORVELL, MA 02061 617-878-6200

Job # BLDGFD

US ARMY

BLDG 2432

FORT DEVENS, MA 01433

PO# 37.04.72053

Tine 1:02:09

Tare 39600

Net 53360 Gross 92960 Total 26.68

‡76

Cost/Ton Percent Tax

6

Load Cost Amount Tax Dest Charge

Total Cost

Lcadt

Job Total 162.42 Time & Date

Fob/Del

MIX #

1:02:09 pm Aug 7, 1992 F

THIS COMPANY WILL NOT BE RE-SPONSIBLE FOR DAMAGE CAUSEI BY TRUCKS DELIVERING MATERIA BEYOND STREET PAYEMENT.

TRUCK# 9

RECEIVED BY.



ANVERS 750-4200

TRIMOUNT BITUMINOUS PRODUCTS CO.

5 CHERRY HILL DRIVE P.O. BOX 2089 **DANVERS, MA 01923-5089** SHREWSBURY DIVISION

651 LAKE STREET AT RTE. 20 SHREWSBURY, MA 01545 OFFICE 881-1430 PLANT 754-4709

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THIS COMPANY, WILL NOT BE RE-SPONSIBLE FOR DAMAGE CAUSE BY TRUCKS DELIVERING MATERIA BEYOND STREET PAVEMENT.

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BILL OF LADING . POLICY # WSC-89-001



DEP CASE #: LADING I: DATE: SITE OF GENERATION: ERATOR NAME/ADDRESS: 1K425.0 TRANSPORTATION ACCIDENT? 508-796-3002 ERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY): CONTAMINATED DEERIS: # absorbent pads ... # absorbent booms 25 TAMINATED SOIL: 37.5 vol (cu yds) speedy dri ______ other (specify) _ wt (toas) vol (cz yds) ANALYSES ATTACHED? OF CONTAMINATION: pasoline X 12 oil _ H oil _ 16 oil _ other (specify). Volstiles: Y XN TPH: XY N NSPORTER NAME/ADDRESS: DESTINATION FACILITY NAME/ADDRESS: Landfill . ERATOR'S SIGNATURE: DATE: VE ITEMS MUST BE COMPLETED PRIOR TO DEF .A. HORIZATION: 'DEF, SIGNATURE (originating region): (if applicable) DEP SIGNATURE (destination region): OUANTITY SHIPPED: vol (cs yas) CY/TRACTOR REGISTRATION wt (rour) TOTAL PROJECTED ILER REGISTRATION SHIPPED TO DATE THIS LOAD (cstimated) ERATOR OR RECEIVING FACILITY REPRESENTATIVE'S REMAINING TO BE SHIPPEL YATURE: NSPORTER'S SIGNATURE EIVING FACILITY REPRESENTATIVE'S SIGNATURE IVED GENERATOR IS RESPONSIBLE FOR RETURNING COMPLETED FORM WITHIN 5 DAYS TO: DEPARTMENT OF ENVIRONMENTAL PROTECTION 1 1992 BWSC/EMERGENCY RESPONSE BRANCH ONE WINTER STREET, 5th FLOOR - Req. BOSTON, MA 02108 YVD THE ORIGINATING REGIONAL OFFICE

FICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY LITIES.

. .

	BILL OF LADING POLICY # WSC-89-001	
	. DATE:	

ERATOR NAME/ADDRESS:	SITE OF GENERATION: 1K#2.50
1 C N	STREET BUILDING 2432 UST #32
S. ARMY	
FZD-EM. Box 19	TOWN FORT DEVENS
	STATE MA 01433
ORT DEVENS, MA DIA33	
TACTITEL 1: 508-796:3002 11,	TRANSPORTATION ACCIDENT? Y YK
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E OF CONTAMINATION: 2 stoline X 12 oil 4 oil 5 oil other (specify)	ANALYSES ATTACHED? Volutiles:Y _X N TPH: X_YN
UNSPORTER NAME/ADDRESS:	DESTINATION FACILITY NAME/ADDRESS:
TRIMOUNT BITUMINOUS PROTUCT	TRIMOUT BTUMINOUS PRODUCTS
70 BLANCHARD RD.	651 LAKE ST. :
BURLINGTON MA DISO3	SHREWSBURYMA
MACINEL 1: DAVID PETER /617/22/5400	1
DVE TIEMS MUST BE COMPLETED PRIOR TO DEF . AP THORIZAL	DATE: 7:20:92
HORIZATION: DEF. SIGNATURE (originating region):	DATE: 23 July 92
(if applicable) DEP. SIGNATURE (destination region):	DATE:
ICX/TRACTOR REGISTRATION ULER REGISTRATION T SITE AT DATE	QUANTITY SHIPPED: wt (word) vol (ca yds) TOTAL PROJECTED SHIPPED TO DATE THIS LOAD (estimated) REMAINING TO BE SHIPPED TI CLEAT (72494)
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	TING COMPLETED FORM WITHIN 5 DAYS TO:
1 1992 DEPARTMENT OF ENVIR	ONMENTAL PROTECTION
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MAIN OFFICE:	

....... Dirominous Enubucis CO. 5 CHERRY HILL DRIVE P.O. BOX 2089 DANVERS, MA 01923-5089 SHREWSBURY DIVISION 651 LAKE STREET AT RTE. 20 SHREWSBURY, MA 01545

OFFICE 881-1430 PLANT 754-4709

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TRUCK# 9

PEC ASSOC. 2 ACCORD PARK DRIVE RWELL, MA 02061

BLDG 2432 FORT DEVERS, NA 01433

PO# 37.04.72053

line 8:53:44

17-878-6200

Tare 39600

Net 53880 Gross 93480 Total 26.94

Cost/Ton Percent Tax

Load Cost

Amount Tax Dest Charge

Total Cost

Load#

Job Total

Time & Date

Fob/Del

26.94

8:53:44 am Aug 6, 1992 F

THIS COMPANY WILL NOT BE RE-SPONSIBLE FOR DAMAGE CAUSED BY TRUCKS DELIVERING MATERIAL BEYOND STREET PAYEMENT.

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IAIN OFFICE: NVERS 750-4200

TRIMOUNT BITUMINOUS PRODUCTS CO.

5 CHERRY HILL DRIVE P.O. BOX 2089 **DANVERS, MA 01923-5089** SHREWSBURY DIVISION 651 LAKE STREET AT RTE. 20 SHREWSBURY, MA 01545 OFFICE 881-1430 PLANT 754-4709

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ORWELL, MA 02061 17-878-6200

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BIX 5 \$76 KTY NAME OIL SOIL

TRUCK# 9

2 ACCORD PARK DRIVE

US ARMY BLDS 2432 FORT DEVENS, MA 01433

PO1 37.04.72053

Time 12:21:98

Tare 39600

het. 59980 Gross 99580 Total

Cost/Ton Percent Tax

29,99

Load Cost Amount Tax Dest Charge

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Time & Date

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12:21:08 pm Aug 7, 1992

THIS COMPANY-WILL NOT BE RE-SPONSIBLE FOR DAMAGE CAUSED BYTRUCKS DELIVERING MATERIAL BEYOND STREET PAVEMENT.

RECEIVED BY .



BILL OF LADING POLICY # WSC-89-001



DEP CASE A: DATE: _ SITE OF GENERATION: ERATOR NAME/ADDRESS: 1K4250 2432 STATE TRANSPORTATION ACCIDENT? 508-796-3002 IERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY): CONTAMINATED DEBRIS: # shiorbeat pads ... TAMINATED SOIL: 37.5 _ _ 25 ____ # absorbent booms wt (toas) ··· · vol (as yds) voi (cz yds) speedy dri __ what (specify) E OF CONTAMINATION: **ANALYSES ATTACHED?** gasoline X 12 oil __ 14 oil _ 16 oil _ other (specify) Volatiles: Y XN TPH XY. INSPORTER NAME/ADDRESS: DESTINATION FACILITY NAME/ADDRESS: _ Landfill __ IERATOR'S SIGNATURE: A. PED OT REMS MUST BE COMPLETED PRIOR TO DEF HORIZATION: DEF, SIGNATURE (originating region): (if applicable) . DE? SIGNATURE (demination region): ICX/TRACTOR REGISTRATION OUANTITY SHIPPED: wt (tons) vol (ca yas) TOTAL PROJECTED VILER REGISTRATION T SITE AT_ SHIPPED TO DATE YERATOR OR RECEIVING FACILITY REPRESENTATI TrilS LOAD (estimated) REMAINING TO BE SHIPPED INATURE: 13260 ANSPORTER'S SIGNATURE ARR TIME 17:01 CEIVING FACILITY REPRESENTATIVES SIGNATURE :IVED GENERATOR IS RESPONSIBLE FOR RETURNING COMPLETED FORM WITHIN 5 DAYS TO: 1 1992 DEPARTMENT OF ENVIRONMENTAL PROTECTION BWSC/EMERGENCY RESPONSE BRANCH €P ONE WINTER STREET, 5th FLOOR il - Req. BOSTON, MA 02108 <u>amb</u> THE ORIGINATING REGIONAL OFFICE

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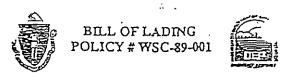
BILL OF LADING . POLICY # WSC-89-001



FLADING # DEP CASE A: DATE: SITE OF GENERATION: TERATOR NAME/ADDRESS: 1K42F.0 TRANSPORTATION ACCIDENT? *50*8-796-3002 TERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY): TAMINATED SOIL: 37.5 CONTAMINATED DEBRIS: # absorbent pads _.. 25 # absorbent booms vol (az yds) vol (cu yds) speedy dri ___ _ other (specify) . E OF CONTAMINATION: **ANALYSES ATTACHED?** sucline X 12 oil __ 14 oil __ #6 oil __ other (specify). Volaules: Y XN TPH: XY N UNSPORTER NAME/ADDRESS: DESTINATION FACILITY NAME/ADDRESS: TYPE OF FACILITY: Y: Recycling Landfill ____ Incinerator ERATOR'S SIGNATURE: OVE ITEMS MUST BE COMPLETE HORIZATION: DEF, SIGNATURE (originating region): (if applicable) . DEP. SIGNATURE (descination region): CX/TRACTOR REGISTRATION QUANTITY SHIPPED: w (rom) vol (ca yas) ILER REGISTRATION TOTAL PROJECTED SEPPED TO DATE ERATOR OR RECEIVING FACILITY REPRESENTATIVE THIS LOAD (cstimated) NATURE: EIVING FACILITY REFRESENTATIVE'S SIGNATURE **IVED** GENERATOR IS RESPONSIBLE FOR RETURNING COMPLETED FORM WITHIN 5 DAYS TO: 1 1992 DEPARTMENT OF ENVIRONMENTAL PROTECTION BWSC/EMERGENCY RESPONSE BRANCH Þ ONE WINTER STREET, SU FLOOR - Rea. BOSTON, MA 02103 **QUAY** THE ORIGINATING REGIONAL OFFICE

TICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY TIES.

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OF LADING #:	. DATE:	DEP CASE I:
ENERATOR NAME/ADDRESS: J.S. ARMY AFZD-FM, BOX 19: FORT DEVENS, MA DIS ONTACT/TEL #: 508-796:-3007	433	SITE OF GENERATION: STREET BUILDING 2432 TOWN FORT DEVENS STATE MA 01433 TRANSPORTATION ACCIDENT? Y YN
(ATERIAL DESCRIPTION (TOTAL PROJECTED DATAMENATED SOIL: 37.5 25	CONTA	AMINATED DEBRIS: # shaorbent pads # shaorbent booms vol (cz yds) speedy dri other (specify)
YPE OF CONTAMINATION:gazoline X #2 oil #4 oil #6 oil	other (specify)	ANALYSES ATTACHED? Volstiles: Y XN TPH: XY N
RANSPORTER NAME/ADDRESS: TRIMOUNT BITUMING TO BLANCHARD RD BURLINGTON MA CONTACT/TEL I: DAVID PETER ENERATOR'S SIGNATURE: ABOVE ITEMS MUST BE COMPLETED PRIOR TO UTHORIZATION: DEF, SIGNATURE (originating (if applicable) DEP. SIGNATURE (destination	DISO3 617) 221 SACO OTTO DEF ATTHORIZATION (102100):	DESTINATION FACILITY NAME/ADDRESS: TRIMOUNT BYUMINOUS PRODUCTS 651 LAKE ST. SHRFMISBURY MA TYPE OF FACILITY: Y Recycling Lundfill Incinerator DATE: 7.20.92 DATE: 23 July 92 DATE: 23 July 92
RUCK/TRACTOR REGISTRATION IRAILER REGISTRATION LEFT SITE AT DATE JENERATOR OR RECEIVING FACILITY REPRES SIGNATURE:	ENTATIVES .	QUANTITY SHIPPED: wt (tons) vol (cn yds) TOTAL PROJECTED SHIPPED TO DATE THIS LOAD (crumsted) REMANTNG TO BE SHIPPED
TRANSPORTER'S SIGNATURE	•	DATE
CEIVED GENERATOR IS RESPO	NSIBLE FOR RETURNING	SPONSE BRANCH

LSIFICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF G.L. C. 21C AND 310 CMR 30,006 AND 30,007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY NALTIES.

BOSTON, MA 02108
AND
THE ORIGINATING REGIONAL OFFICE

26.12 PERMITS AND CERTIFICATIONS

The following permit was obtained from the Fort Devens Fire Department for the proper closure of a UST. Following the permit there is a disposal receipt for the steel UST.



The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC SAFETY DIVISION OF FIRE PREVENTION

FOR REMOVAL AND TRANSPORTATION TO APPROVED TANK YARD In accordance with the provisions of Chapter 148 6.11 as provided in Section 38A this permit is granted to

Name: Arec Environmental Associates Inc.
Full name of person, firm or Corporation
To transport underground steel storage tank(s)

to Approved tank yarah State clearly type of

inert gas used in steel storage tank

Fee paid \$

Name and address of contractor disposing tank ATEC. Acc. Location to which tank will be transported

This permit will expire31Jan

(Head of Fire Dept.)

DIG BAFE HUMBER

220202

fiel Belf . man

RECEIPTFOF DISPOSAU OF UNLES	GROUND STUDIO STUDIO	GB-TPAN (Company)
NAME AND ADDRESS JOHN	(C. TOMBARELLO & CONS	<u>2</u>
OF 207 APPROVED TANK YARD 1AV	MARSTON ST. RENCE, MASS. 01841	
APPROVED TANK YARD NO. 1	4901	
Tank Yard Ledger 502 CMR 3.0	3(4) Number: 9	200114
and acc	rd" by firm, corporation cepted same in conforman	or partnership ATEC ENVIONMENTAL ASSOC.
Regulation 502 CMR 3.00 Provisions of A valid permit was issued by LOCAI this tank to this yard. Name and official title of approved	Head of Fire Departme	d Steel Storage Tank dismantling yards. Int FDID# 1 7 9 19 to transport Ins Authorized representative:
	On 11)	1-28-92
Marianti	TITLE	DATE SIGNED
This signed receipt of disposal must FDIDA 1 7 9 1 9 pursuant to 50	be returned to the loc 2 CMR 3:00. (EACH TANK M	al head of the fire department UST HAVE A RECEIPT OF DISPOSAL)
FORH F.P. 291 (rev. 9/88)	(OVER)	MASSACHUSETTS STATE FIRE MARSHAL'S OFFICE
		٠.
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A Section of the American American		the professional and the state of the professional professional and the state of th
	Tank Remov	ved From
DIMENSIONS	רב אכווו	ENS - BLDG. # 2432 - ton Lt 32
Width Length		
k 1 -48" - X -10'8"	(no. sti	
k 1 -10 X -1		AYER
k 2 X	(city or t	own)
k 3 X	Fire Depar	tment non-listed
k 4 X	Permit #	(if applicable)
k 5 X	•	·
(feet) (feet)		·

26.13 UST CLOSURE CHECKLIST

The following closure checklist was produced by ATEC Associates Inc., to ensure quality control of the proper abandonment of a UST.

UST-CLOSURE O/C CHECK LIST Fort Devens Tank 32 2432 Bldg 1,000 gal No DEFINABLE FEATURE MEASUREMENTS DATE TIME NOTES Calibrate PID & LEL 102 meters gently sloping dange is 8:145 1/14/72 Site Topography: Drain & flush piping & pumps 1/14/92 9:30 Excavate to top of tank Depth to tank: 9:45 1/14/72 Vent tank note LEL/02 levels & times 1/14/92 LEL O2 T1: 17:15 70.9 0 T2:11:30 0 70.7 T3:12:45 20.9 T4: T5: T6: T7: T8: T9: T10: T11: T12: Pump & clean tank: V7192 D gal liquid - 150 Tank Dimensions: U x 10,5 ote quantities liquid (gal) & sludge (lbs) lbs. sludge 1/14/97 tank in good condition. some Remove all tank connections, and cap openings perf. asphalt conting 1/14/92 9:45 Excavate soils to free tank 1/14/12 10:00 Segregate stained soils: Note PID readings 1/14/12 10:00 NDIR (ppm) PID (ppm) (if>10 ppm NDIR also) stock-1 All soils visibly contaminated stock-2

UST-CLOSURE O/C CHECK LIST				
, safethar				
DEFINABLE FEATURE	DATE	TIME	MEASUREMENTS	NOTES
				<u> </u>
Remove tank, piping, pumps, and hardware.	1/14/92	10:15	Photographic Descriptions:	Soil Description: med brown fine
Photograph excavation; note descriptions.			Photo 1: fant	sand & silt w/some
Sketch Schematic			Photo 2: 7-4	cobbles boulders
			Photo 3: ex now	
			Photo 4: expar	-
			Photo 5:	Depth to Groundwater/Conditions: N/A
	٠.		Photo 6:	
Place tank at safe distance from excavation	1/14/92	10:15	·	Depth of Excavation: 4.5 '.
Secure tanks transport off-site	1/14/92	10:45		
			Q41,0	
Obtain 10 soil samples from	1/14/92	10:45	PID (ppm) NDIR (ppm)	Sample locations: 2-3'
excavation walls/bottom: Note PID/NDIR			SS1: /2.4	
readings and sample locations.		, R	SS2: 127	
			SS3: 0.8	
	<u> </u>		SS4: /oZ	
	<u> </u>		SS5: /1.0	
		•	SS6: 40	
			SS7: 15.4	
<u>L'</u>			SS8: 15,2	
			SS9: 7.0	
			SS10: 42	
er -				
·				
			P3	
Obtain 2 soil samples & 1 water samples	1/14/97	10:47		Sample Locations:
for laboratory analysis. Note sample locations.				LSS1: ≈ <3 4
			Ÿ	LSS2: ~ 55/D
			. 81	

UST.CLOSURE O/C CHECK LIST					
DEFINABLE FEATURE	DATE	TIME	MEASUREMENTS	NOTES	
				tons of backfill	
Backfill excavation (if clean):			-	Backfill description:	
Note amount & type of backfill					
Close open excavation (if applicable)					
Restore surface and rope off					
Remove rubbish/debris			·		
Transport hazardous material off-site:				Amount Classification	
Note amount/classification ·				·	
Make copies of manifests, permits,					
and disposal receipts.					
			·		

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26.14 INSTALLATIONS

The installation of a replacement UST No. 32 was not performed.

27.0 UST No. 0033

27.1 POST REMOVAL REPORT

27.1.1 Introduction

This Post-Removal Report details the results of the closure of one 1,000-gallon, single wall, steel, Underground Storage Tank (UST) referenced as UST No. 0033, located at property known as Building 2434, Fort Devens, Massachusetts (the site). The purpose of the closure was to excavate the UST and evaluate the potential for the presence of oil and hazardous material at the site. The closure of this UST was conducted on January 13, 1992.

The basic Project Work Scope included:

- Procurement/administration of all federal, state and local permits, manifests, regulations,
 etc., associated with UST system closure.
- Excavating, venting, cleaning, transporting, and disposing of one 1,000-gallon UST by appropriately licensed contractors/facilities.
- Disposal of residual UST materials at a licensed facility.
- Field screening and analysis of soil in the excavations by Photoionization Detector (PID) and field analyzed with a portable Non-Dispersive Infrared (NDIR) Analyzer, to identify evidence of a release of oil and hazardous materials from the UST, if any.
- Laboratory Analysis of soil and groundwater sampled from the UST excavation by a USEPA certified laboratory for Total Petroleum Hydrocarbons.
- Preparation of a Post-Removal Report, to include assimilation of information gathered, major findings, and conclusions.

27.1.2 Subsurface Storage Tank Excavation and Removal

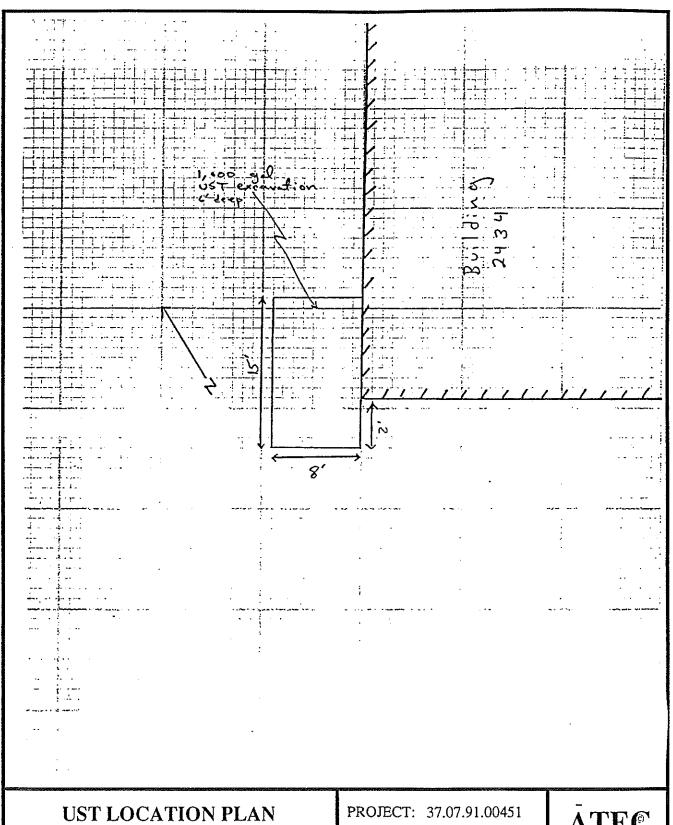
On January 13, 1992, one, 1,000-gallon, subsurface, No. 2 fuel oil, storage tank was excavated and removed from the site. The UST was located adjacent to the southwest corner of Building 2401. Site topography slopes gently downgradient to the southeast.

Soils in the excavation consisted primarily of dense, medium-brown, fine sand and silt with little fine gravel. A layer of gray, silty sand was noted at the southeast corner of the excavation at a depth of approximately three feet below grade to the bottom of the excavation. These soils located at the southeast corner of the excavation were observed to be visibly contaminated and a petroleum odor was evident. The tank was covered by approximately two feet of soil. The bottom of the excavation was approximately six feet below grade. Groundwater was encountered at a depth of approximately six feet below grade. A slight sheen was noted. Excavated soils required to free the tank were visibly contaminated.

The associated piping was drained, and tank connections were removed. UST No. 0033 was estimated to contain 64 gallons of No. 2 fuel oil. Approximately 14 gallons of fuel oil was removed on January 6, 1992, and transported to a licensed T.S.D.F. (Beede Waste Oil Corporation).

Tank openings were capped and the tank was removed from the excavation. The tank was observed to be in good condition with no perforations, punctures or severe corrosion. Following venting of the tank, an access way was cut in the end of the tank to allow entry for cleaning. It was then entered and vacuumed/wiped clean of any residual materials. Approximately 50 gallons of fuel oil and residual materials were removed and drummed on January 13, 1992. Drummed material was transported to Beede Waste Oil on February 25, 1992. See Section 27.10 for copies of the appropriate Hazardous Waste Manifests.

The scrap tank was removed from the site on January 13, 1992 and transported to the Contractor's yard, located on Lake George Street, Fort Devens for temporary storage. The tank was disposed of at Tombarello & Sons, a licensed Massachusetts tank yard on January 24, 1992. A copy of the disposal receipt is included in Section 27.12.



1,000 gallon UST relative to: Building 2434 Fort Devens, Massachusetts

NOT TO SCALE

FIGURE: 27.1



27.1.3 Sampling and Analysis Plan

Ten soil samples were obtained from the excavation for field screening with a Photoionization Detector (PID) and field analyzed with a Non-Dispersive Infrared (NDIR) Analyzer. The PID field screening for Total Organic Vapors (TOVs) was conducted with an HNu photoionizer utilizing the jar headspace screening procedure outlined in the Hazardous Materials Containment Plan. The NDIR field screening for Total Petroleum Hydrocarbons (TPH) was conducted with a Horiba OCMA 220, utilizing the procedures outlined in the Hazardous Materials Containment Plan.

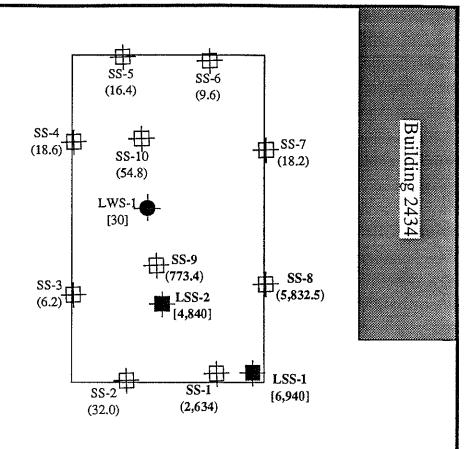
Eight of the samples (SS-1 through SS-8) were obtained from the excavation walls at a depth of approximately two feet, six inches to four feet below grade. Two of the samples (SS-9 and SS-10) were obtained from the bottom of the excavation at a depth of approximately six feet below grade. Two composite soil samples (Stock-1 and Stock-2) were obtained from stockpiled soils for PID and NDIR field screening.

Two soil samples (LSS-1 and LSS-2) were obtained from the excavation for laboratory analysis. Soil Sample LSS-1 was obtained from the south wall of the excavation. Soil sample LSS-2 was obtained from the bottom of the excavation. One composite, soil sample (LSS-3) was obtained from stockpiled soils required to free the tank. These samples were analyzed for TPH utilizing USEPA Method 418.1. One groundwater sample (LWS-1) was obtained from the excavation for laboratory analysis for TPH. One groundwater sample (LWS-1) was obtained from the excavation for laboratory analysis for TPH.

Sampling locations are depicted on the Sampling Schematic as Figure 27.2. The appropriate chain of custody forms are included in Section 27.9, Chain of Custody Forms.

27.1.4 Analytical Results

The results from analysis with the Photoionization Detector (PID) and the Non-Dispersive Infrared (NDIR) Analyzer of the ten samples obtained from the excavation, and the two composite samples obtained from stockpiled soil are as follows:



LEGEND:

- Field Screened Soil Sample
- Lab Analyzed Soil Sample
- () NDIR Results in ppm
- [] Lab Analysis Results in ppm

Results in bold denote levels in excess of MA DEP Remedial Goal Level (100 ppm)

SAMPLING SCHEMATIC

1,000 gallon UST excavation at: Building 2434 Fort Devens, Massachusetts PROJECT: 37.07.91.00451

NOT TO SCALE

FIGURE: 27.2 UST-33



TABLE 27.1 - PID AND NDIR RESULTS

Sample No.	PID (ppm TOVs)	NDIR (ppm TPH)	
SS-1	128	2,634	
SS-2	2.0	32.0	
SS-3	0.3	6.2	
SS-4	0.0	18.6	
SS-5	0.4	16.4	
SS-6	0.8	9.6	
SS-7	1.0	18.2	
SS-8	12.2	5,832.5	
SS-9	10.0	773.4	
SS-10	2.4	54.8	
Stock-1	5.4	526.9	
Stock-2	3.4	195.3	

Laboratory analytical results of the two soil samples obtained from the excavation revealed a TPH concentration of 6,940 ppm for LSS-1, and 4,840 ppm for LSS-2. Laboratory analysis of the one soil sample (LSS-3) obtained from the stockpiled soils revealed a TPH concentration of 876 ppm. Laboratory analysis of the one groundwater sample (LWS-1) obtained from the excavation revealed a TPH concentration of 30 ppm (see Section 27.8, Laboratory Analytical Results).

27.1.5 Conclusions and Recommendations

ATEC's conclusions are as follows:

Upon excavation and removal, the tank was observed to be in good condition with no signs of perforations, punctures, or severe corrosion.

Groundwater was encountered within the excavation. A slight sheen was observed on groundwater within the excavation.

Excavated soils required to free the tank were visibly contaminated. Soils located within the excavation at the southeast corner (approximately three feet below grade) were visibly contaminated and a petroleum odor was evident.

Ten soil samples were obtained from the excavation for field screening and field analysis utilizing a PID and NDIR analysis respectively. PID readings revealed TOV concentrations ranging from 0.0 ppm to 128 ppm. NDIR results revealed TPH concentration ranging from 6.2 ppm to 5,832.5 ppm.

Two soil samples were obtained from the excavation for laboratory analysis for TPH. Analytical results for LSS-1 obtained from the east wall of the excavation revealed a TPH concentration of 6,940 ppm. Analytical results for LSS-2 obtained from the bottom of the excavation revealed a TPH concentration of 4,840 ppm.

One composite, soil sample (LSS-3) was obtained from stockpiled soils for laboratory analysis. Analytical results for LSS-3 revealed a TPH concentration of 876 ppm.

One groundwater sample (LWS-1) was obtained from the excavation for laboratory analysis for TPH. Analytical results for LWS-1 revealed a TPH concentration of 30 ppm.

The following were recommended and implemented by ATEC subsequent to the submittal of the Post Removal Report:

Remedial excavation of the southeast portion of the excavation was conducted until laboratory analysis of soil samples showed a TPH concentration of <100 ppm. Field screening of soil was conducted during excavation utilizing a Photoionization Detector until TOV levels of <1 ppm were attained prior to obtaining samples for laboratory analysis.

Soil borings were advanced and groundwater monitoring wells were installed to determine the vertical and horizontal extent of contamination. Split spoon sampling and analysis was conducted utilizing field analysis techniques, i.e. Photoionization Detector and Non-Dispersive Infrared Analysis, and laboratory analysis to document soil contamination levels.

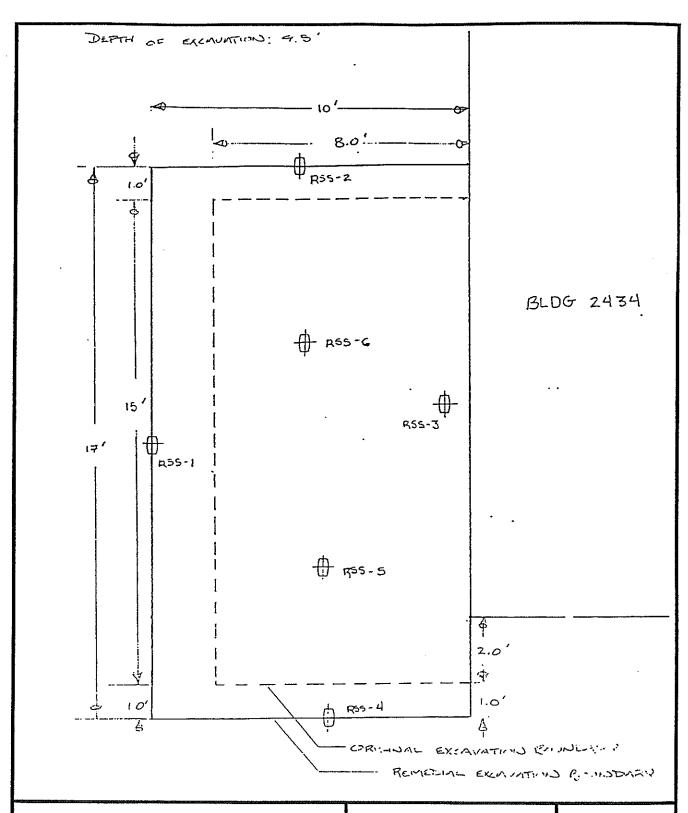
Additionally excavated soils and stockpiled soils were laboratory analyzed for Total Petroleum Hydrocarbons, Volatile Organic Compounds, PCBs, Semivolatile Organic Compounds, 13 TCLP Metals, flashpoint and corrosivity for disposal classification.

27.22 SITE REMEDIATION AND CONTAMINATED SOIL DISPOSAL

27.2.1 Site Remediation

Following initial PID screening, additional excavation to remove contaminated soil and reach background levels (<1 ppm TOVs) by PID was conducted per order of the Contracting Officer's Representative and David Salvadore of the Massachusetts Department of Environmental Protection (DEP). Approximately eighteen tons of contaminated soil were removed from the bottom of the excavation and all sidewalls during remedial excavation on August 5, 1992 (See Remedial Excavation Plan, Figure 27.3). Groundwater was encountered at a depth of approximately 9.5'.

Six soil samples (RSS-1 through RSS-6) were obtained from the post-remedial excavation for PID field screening. RSS-1 through RSS-4 were obtained from the side walls at a depth of approximately five feet below grade. RSS-5 and RSS-6 were obtained from the bottom of the excavation at a depth of approximately nine feet, six inches. Final PID results ranged from 0.0 ppm to 26.0 ppm (see Table 27.2).



REMEDIAL EXCAVATION PLAN

1,000 gallon UST relative to: Building 2434 Fort Devens, Massachusetts PROJECT: 37.07.91.00451

NOT TO SCALE

FIGURE 27.3



TABLE 27.2 - PID SCREENING RESULTS

Sample No.	PID (TOVs in ppm)	Location	
RSS-1	0.0	N. side wall (5' B.G.)	
RSS-2	0.2	E. side wall (5' B.G.)	
RSS-3	26.0	S. side wall (5' B.G.)	
RSS-4	1.0	W. side wall(5' B.G.)	
RSS-5	3.0	Bottom (9.5' B.G.)	
RSS-6	20.0	Bottom (9.5' B.G.)	

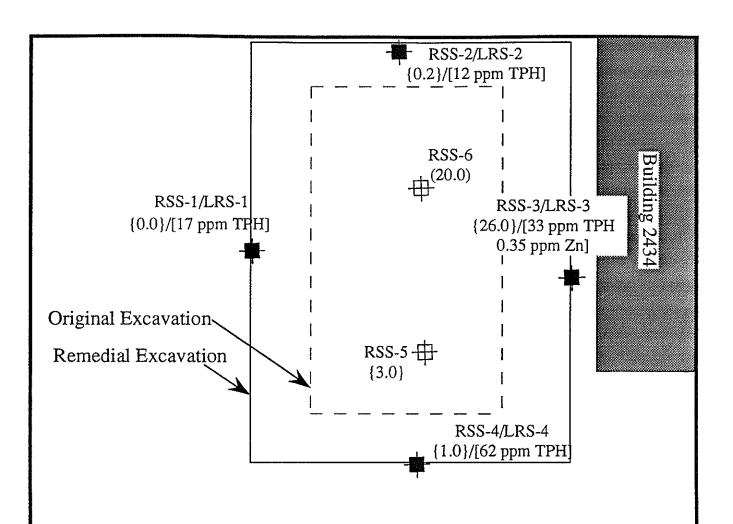
RSS = Remediation Soil Sample

B.G. = Below Grade

Four soil samples (LRS-1 through LRS-4) and one water sample (LWS-1) were obtained for laboratory analysis for Total Petroleum Hydrocarbons. LRS-1 to LRS-4 were obtained from the sidewalls at a depth of five feet below grade. One soil samples (LRS-3) was obtained for laboratory analysis for Volatile Organic Compounds, Total Petroleum Hydrocarbons, and 13 Metals by Toxicity Characteristic Leachate Procedure (TCLP). The following table contains levels revealed by laboratory analysis:

TABLE 27.3 - LABORATORY ANALYSIS

Sample No.	TPH (ppm)	VOA (ppb)	13 TCLP Metals(ppm)	Location
LRS-1	17	ND	ND	N. side wall (5' B.G.)
LRS-2	12	NA	NA	E. side wall (5' B.G.)
LRS-3	33	ND	0.35 (Zn)	S. side wall (5' B.G.)
LRS-4	62	NA	NA	W.side wall (5' B.G.)
LWS-1	1.0	NA	NA	Bottom (9.5' B.G.)



LEGEND Field Screened Soil Sample

Lab Analyzed Soil Sample

{ } TOV concentration (by PID) in ppm

[] TPH, TCLP Metal, VOC concentrations by Lab (as applicable)

Results in bold denote TPH levels greater than the remedial goal of 100 ppm TPH

REMEDIAL SAMPLING SCHEMATIC

1,000 gallon UST excavation at: Building 2434 Fort Devens, Massachusetts PROJECT: 37.07.91.00451

NOT TO SCALE

FIGURE: 27.4 UST-33



LRS = Laboratory Remediation Sample

ND = Not Detected Above the Method Reporting Limit

NA =Not Applicable

B.G.=Below Grade

See Section 27.8 - Laboratory Analytical Results. (See Figure 27.4, Remedial Excavation Sampling Schematic).

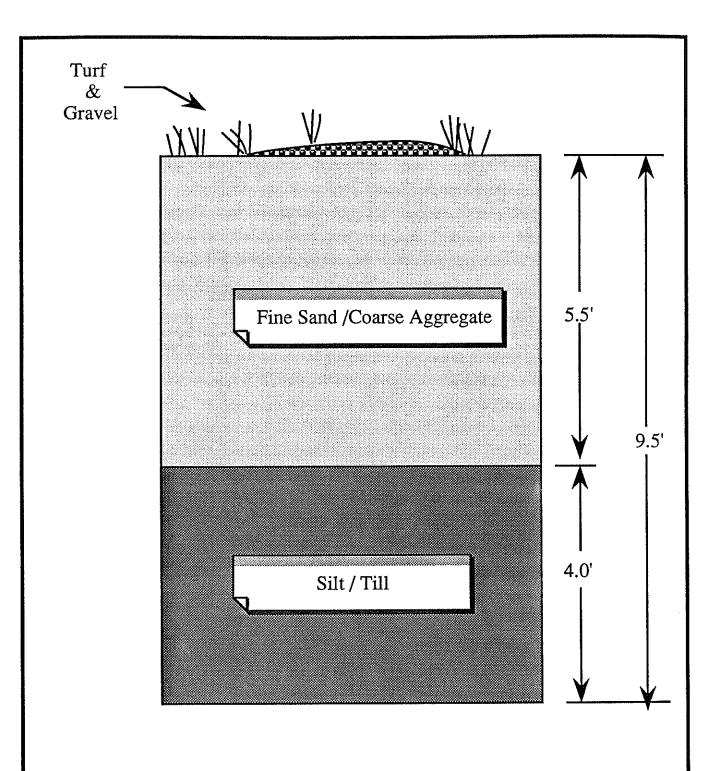
27.2.2 Soil Stratigraphy

The soil stratigraphy of the excavation varied upon the depth of the excavation. The stratigraphy for approximately the first five feet, six inches was a mixture of fine sand and coarse aggregate. The remaining four feet of the excavation was a mixture of silt and till. (See Figure 27.5, Soil Stratigraphy).

27.2.3 Contaminated Soil Disposal

Prior to disposal, contaminated soil was laboratory analyzed for disposal classification purposes. One soil sample (LSP-33) was obtained from stockpiled soil. Laboratory analyses were performed for Volatile Organic Compounds, TPH 13 Metals by TCLP. Laboratory analytical results revealed 7.5 S.U. Corrosivity; 10,300 ppb Pyrene, 0.05 ppm Copper, and 0.13 ppm Zinc. All other analytical results were below the Method Reporting Limits. (See Section 27.8 Laboratory Analytical Results).

Approximately 35.03 cubic yards (≈ 52.54 tons) of No. 2 fuel oil contaminated soil was removed and stockpiled during UST removal and remediation of the excavation (See Figure 27.3 - Remedial Excavation Plan). Contaminated soil was disposed for recycle at Trimount Bituminous Products Company, Shrewsbury, Massachusetts. Copies of Weight Receipts and Bills of Lading are included in Section 27.11.



SOIL STRATIGRAPHY

1,000 gallon UST excavation at:
Building 2434
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451

UST-33

FIGURE 27.5



HYDROGEOLOGICAL SERVICES

3

27.3.1 General Explanation of Procedures

At the time of removal of UST No. 0033, laboratory analysis of one soil sample obtained from the south wall of the excavation revealed a TPH concentration of 6,940 ppm. Laboratory analysis of a second soil sample obtained from the bottom of the excavation revealed a TPH concentration of 4,840 ppm. One groundwater sample was collected from the excavation and laboratory analysis revealed a TPH concentration of 30 ppm. Based on the analytical results, three groundwater monitoring wells were installed in the vicinity of UST No. 0033 to assess soil and groundwater conditions.

Prior to advancing soil borings at the site, "Dig-Safe" was contacted. Dig-Safe contacts various utilities to mark their service connections on public ground surfaces. Site plans depicting underground utilities (i.e. water, gas, and sewer) were obtained and reviewed. Geosearch, Inc. of Leominister, Massachusetts, was subcontracted by ATEC to install the monitoring wells at the site. Monitoring well borings were advanced on August 20, 1992, utilizing hollow-stem auger drilling techniques. Split-spoon samplers were utilized to collect subsurface soil samples and determine soil types at five foot intervals.

27.3.2 Soil Borings for Monitoring Wells

Monitoring well MW-1 was installed approximately forty-five feet north of Building 2434 and approximately sixty-five feet north of the backfilled tank excavation (see Figure 27.6 - Site Plan). MW-1 is located hydrogeologically upgradient from the former UST No. 0033. MW-1 was advanced to a depth of twenty-one feet to assess the potential release of No.2 fuel oil from the removed UST. Soil types encountered from grade level to a depth of approximately twenty-one feet below grade consisted primarily of medium-dense, gray-brown, clayey silt containing trace coarse gravel, cobbles and lithic fragments. Concentrations of Total Organic Vapors (TOVs) were not detected by field screening with a PID. Furthermore, no petroleum odors were noted. Auger refusal was not encountered during drilling. Groundwater was not encountered during drilling. See Section 27.3.8 - Boring Logs for further information.

LEGEND MONITORING WELL LOCATION MW-1 68.5 46.5' 30.0 34.2 MW-2 MW-3 Building 2434 97.9' 102.3'

SITE PLAN

GROUNDWATER MONITOR WELLS RELATIVE TO: UST No. 0033 BUILDING 2434 FORT DEVENS, MASSACHUSETTS PROJECT: 31.07.451

SCALE: 1:374

FIGURE: 27.6



Monitoring well MW-2 was installed approximately eight feet east of Building 2434 and approximately thirty-five feet southeast of the backfilled tank excavation (Figure 27.6 - Site Plan). MW-2 is located hydrogeolgically crossgradient from the former UST No. 0033. MW-2 was advanced to a depth of fifteen below grade to assess the potential release of No.2 fuel oil from the removed UST. Soil types encountered from grade level to a depth of approximately six feet below grade consisted primarily of medium-dense, tan-brown, silt containing trace coarse gravel grading to medium-brown fine sand. Soil types encountered from a depth of approximately six feet below grade to fifteen feet below grade consisted primarily of dense to medium-dense, tan-brown, clayey silt with trace gravel. Concentrations of Total Organic Vapors (TOVs) were not detected by field screening with a PID. Furthermore, no petroleum odors were noted. Groundwater was encountered at a depth of approximately ten feet below grade. Auger refusal was not encountered during drilling. See Section 27.3.8 - Boring Logs for further information.

Monitoring well MW-3 was installed approximately eight feet west of Building 2434 and approximately thirty-five feet southeast of the backfilled tank excavation (see Figure 27.6 - Site Plan). MW-3 is located hydrogeolgically downgradient from the former UST No. 0033. MW-3 was advanced to a depth of sixteen feet, six inches below grade to assess the potential release of No.2 fuel oil from the removed UST. Soil types encountered from grade level to a depth of approximately sixteen feet, six inches below grade consisted primarily of medium-dense, tan-brown, clayey silt with trace gravel. Concentrations of Total Organic Vapors (TOVs) were not detected by field screening with a PID. Furthermore, no petroleum odors were noted. Groundwater was encountered at a depth of approximately ten feet below grade. Auger refusal was not encountered during drilling. See Section 27.3.8 - Boring Logs for further information.

27.3.3 Details of Monitoring Well Construction

Monitoring wells were typically constructed of a length of bottom-plugged, two inch diameter Polyvinyl Chloride (PVC) well screen (0.010 inch slot) followed by a length of two inch diameter PVC solid riser to grade level. No. 2 washed, silica sand was packed to approximately one foot above the screen followed by a one to two foot thick bentonite grout packing. The remainder of the boring was backfilled with washed silica sand and concrete surface seal to grade. Monitoring wells were fitted with a water tight 4 four inch diameter, flush mount, cast iron road box.

27.3.4 Standard Type Survey and Determination of Groundwater Gradient

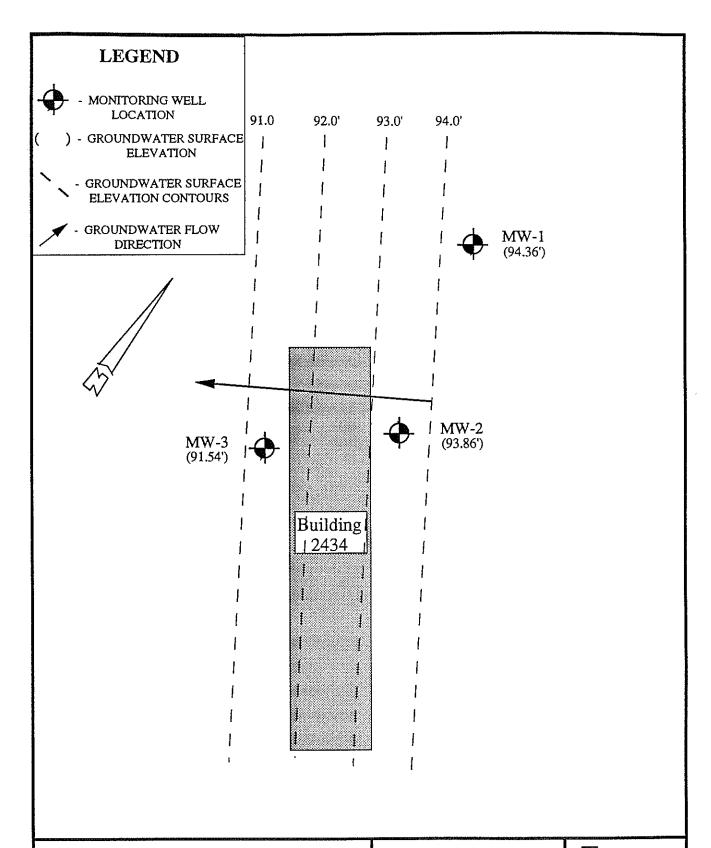
An instrument survey was conducted by Glen Harrington, Environmental Scientist, and Rob Signatelli, Environmental Scientist, to determine the relative locations and elevations of the groundwater monitoring wells and significant surficial features. An arbitrary datum was established by assigning a fire hydrant located between Building 2432 and Building 2433 an elevation of 100.0 feet. All reported groundwater elevations are referenced to the fire hydrant. The monitoring wells were gauged utilizing an electronic water level meter prior to sampling to determine the groundwater elevations at each well.

Groundwater elevations were then calculated utilizing the survey and gauging data from MW-1, located north of former UST No. 0033, MW-2 located east of former UST No. 0033 and MW-3 located south of former UST No. 0033 (refer to Figure 27.7 - Groundwater Contours). Based on the gauging data, groundwater in the area flows generally to the southwest across the site at a lateral hydraulic gradient of 4.97 percent. Groundwater at the site occurs at depths of 8.99 feet, 9.15 feet, 9.50 feet below grade for MW-1, MW-2 and MW-3, respectively.

A summary of groundwater elevations measured at the three monitoring wells installed at the site are included in Table 27.4.

TABLE 27.4 - SUMMARY OF GROUNDWATER ELEVATIONS

Monitoring Well	Date	Rim Elevation (ft)	Depth to Groundwater	Groundwater Elevation (ft)
MW-1	11-02-92	103.35	8.99	94.36
MW-2	11-02-92	103.01	9.15	93.86
MW-3	11-02-92	101.04	9.50	91.54



GROUNDWATER CONTOURS

RELATIVE TO: UST No. 0033 BUILDING 2434 FORT DEVENS, MASSACHUSETTS PROJECT: 31.07.451

SCALE: 1:374

FIGURE: 27.7



27.3.5 Results of Groundwater Chemical Analyses

Groundwater monitoring wells MW-1, MW-2 and MW-3 were sampled on November 2, 1992. The groundwater samples were analyzed for TPH. Prior to sampling, approximately three well volumes of groundwater were purged from the well. Groundwater samples were placed directly into pre-labelled, pre-cleaned 500-ml amber glass jars and placed on ice for immediate shipment to the laboratory. The samples were analyzed by Environmental Science Services (ESS) of Providence, Rhode Island. Chain-of-custody forms were completed and included in the shipment.

Laboratory analytical results revealed no detectable concentrations of TPH in the groundwater samples collected from MW-1, MW-2 or MW-3.

A summary of the groundwater analytical results are included in Table 27.5.

TABLE 27.5 - SUMMARY OF GROUNDWATER ANALYSES

Sampl	le I.D	TPH	
•	MW-1		ND
	MW-2		ND
	MW-3		ND

ND - Not detected

27.3.6 Summary of Findings

On August 20, 1992 three groundwater monitoring wells were installed to assess soil and groundwater conditions in the vicinity of UST No. 0033. Soil samples collected during drilling were screened in the field for TOVs utilizing a PID. PID field screening results did not indicate the presence of petroleum hydrocarbon contamination.

Results of laboratory analyses did not reveal detectable TPH concentrations in the groundwater samples collected from MW-1, MW-2 or MW-3.

27.3.7 Recommendations

Based on the analytical results, i.e. low soil TPH concentrations and the absence of detectable TPH concentrations in the groundwater, ATEC does not recommend any immediate investigative or remedial action at this time. However, to ensure that the environmental integrity of the site is maintained, ATEC recommends periodic sampling of the groundwater for TPH.

27.3.8 Boring Logs

The attached boring logs were recorded during drilling and monitoring well installation activities of MW-1, MW-2, and MW-3 located at Building 2434, Fort Devens, Massachusetts on August 20, 1992. The purpose of the borings and monitoring well installations was to assess for potential petroleum hydrocarbon contamination associated with one 1,000-gallon No.2 fuel oil UST removed from the site.



GROUND WATER MONITORING WELL BORING/INSTALLATION LOG

LOG OF BORING/WELL: MW-/

DJECT NAME: US Army Multis, te DJECT NUMBER: 37.07.457 DJECT LOCATION: B/Ng 2434, Ft. Devens RING LOCATION: See Site Schematic

FOREMAIN: Mott Bovenzi Geosearch Inc. INSPECTOR: Mak Baldi

DATE: 8/20/92

SOIL/ROCK DESCRIPTION	DEPTH FEET	SAMP. NO.	S.P.T.		Length of Protect. Casing Above Surface Elevation
phalt cover over dale	05		_		Length of Riser Pipe O' Above Surface Elevation
rown topsoil				₁₁ ┣╴ ◂	Surface Elevation
· • • • • • • • • • • • • • • • • • • •					Type/Thickness of l'concrute Surface Seal
sse- and dunse gray-brain		55-1.1	6.6		ID/Type of Protect. flushment CT Casing
sse- and dunse, gray-brain mysy sill w/trace to in carel. Very tight soil PID=0.1, pm			9,13		Depth Bottom Z' of Casing
					ID/OD/Type of Riser 2" P VC Pipe
se to very dense, gray-	9-10	55-1,2	29.70		Diameter of Borehole &"
un, clayey silt altime me grand rock fragments,+ lder. Very light so. 1 PID.					Type of Backfill common Around Riser Pipe
Il without is migrately,	14-16	55-1.3	31·36 37·40		Depth/Type of Bottom 4-6' Butonite Seal
	19-21	55-1,4	9.14 17.33		Depth Top of 5' Pervious Pipe
· · · · Very tight soil					ID/OD/Type of 2" PVC Pervious Pipe 10 slet
					Type of Backfill washed silical Around Pervious Pipe
					Depth Bottom of Zo' Pervious Pipe
					Type of Backfill HA:ve Below Pervious Pipe



GROUND WATER MONITORING WELL BORING/INSTALLATION LOG

LOG OF BORING/WELL: MW-Z

OJECTNAME: US Army Multisite

OJECT NUMBER: 37.62.45/

OJECT LOCATION: UST 33 - 8/4, 2434 Et Devens RING LOCATION: See Site Schematic

FOREMAN: Most Bovenzi, Geosearch Inc INSPECTOR: Mark Bobbi; ATEC

DATE: 8/20/92

SOIL/ROCK DESCRIPTION	DEPTH	SAMP.	S.P.T.		Length of Protect. Casing O Above Surface Elevation
my loose to med dense,	0-2	15521	2,3		Length of Riser Pipe Above Surface Elevation
inder/s/ag, 11-21 fan-brown			8.16		Surface Elevation
511t w/little for gravel					Type/Thickness of / concrete Surface Seal
ed dense to loose, tumbrown, 1 H w/little for gravel gradi	4-6'	557.7	12.10		ID/Type of Protect. Flushmound CI Casing Buffal o Box
and silt w/1.444 fine grant	1				Depth Bottom 7
'ID*					ID/OD/Type of Riser 2* PVC Pipe
ed dense to dense, tem brown, you silt w/1. Hetine grant, ace boulders, moist PID=	1	\$5.2.3	15 No 33.41		Diameter of Borehole &
knee to very Jense, gray trown	/0'	55 7.4	32·57		Type of Backfill Common Around Riser Pipe
loyey silt aftened fine ground					Depth/Type of Bottom 4-5' Bendonite Seal
					Depth Top of & / Pervious Pipe
					Pervious Pipe , o1 slot
					Type of Backfill was hed Silicon Around Pervious Pipe
					Depth Bottom of Pervious Pipe 15
					Type of Backfill notice Below Pervious Pipe
Drill cuttings PID=0.0					



GROUND WATER MONITORING WELL BORING/INSTALLATION LOG

LOG OF BORING/WELL: $M \omega - 3$

DJECTNAME: US Army Multisite

DJECT NUMBER: 37.07.457

OJECT LOCATION: UST 33- B 6/42434 Et. Derens

RING LOCATION: See Site Schematic

FOREMAN: Matt Bovenzi Grosearch Inc INSPECTOR: Mark Bald; ATEC

DATE: 8/20/92

SOIL/ROCK DESCRIPTION	DEPTH	SAMP.	S.P.T.	TT	Length of Protect. Casing o' Above Surface Elevation
	FEET	NO.		┨┌╢╼	- Length of Riser Pine
- wy loose to meddense, o-c" The brown togsvil; 6"-2"	0-2'	55-3.1	ŀ		Above Surface Elevation
in brown, tight silt PIDE			15, 20		- Surface Elevation
ed danse tam silt w/1,414		453.2	16.15		Type/Thickness of 1' Concrute Surface Seal
-m gravel. PID=	7 -6	75/11	13.15		- ID/Type of Protect Philamount CT Casing Roffelo Box
lande, tam gray, sitt w/1.44	9-101	55.33	26.31		Depth Bottom 7'
- Ho Table	10"-				- ID/OD/Type of Riser Z*PV C
i light brown, fine sand & if w/little f-m grand D=	10'-11	1553. 5	37. 45		- Diameter of Borehole & "
ense to very dense, gray bean, ight silt w/trace for grand	15-165	K5 3.4	36.58 56		Type of Backfill common Around Riser Pipe
<i>'1</i> D					- Depth/Type of Bottom 9-10' Bendonite Seal
					Depth Top of 161 Pervious Pipe
					- ID/OD/Type of 2" PVC Pervious Pipe of 56T
,					Type of Backfill washed silica Around Pervious Pipe
					Depth Bottom of Pervious Pipe 15
					Type of Backfill

Drilling cuttings = PID =

27.4 BACKFILL

The excavation was lined with polyethylene plastic sheeting and backfilled with forty seven tons of uncontaminated fill material on July 29, 1992. Backfilling was conducted with the approval of the Contracting Officer's Representative.

27.5 SURFACE RESTORATION

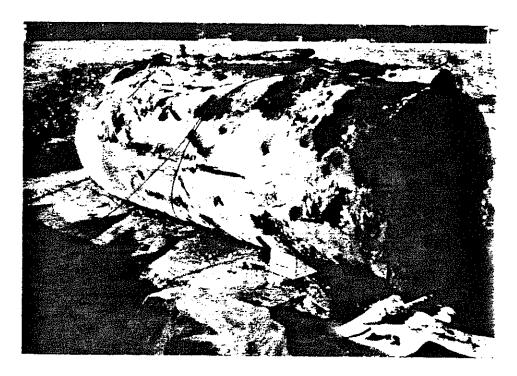
Following backfill of the excavation, one hundred seventy square feet of loam was spread. Seeding was conducted to complete surface restoration on October 21, 1992.

27.6 PHOTOGRAPHIC DOCUMENTATION

The following photographs are of the removed UST excavation:

- A-1: One side of removed tank.
- A-2: Opposite side of removed tank.
- A-3: Excavation as viewed from north, facing south.
- A-4: Excavation as viewed from south, facing north.

A-1



A-2

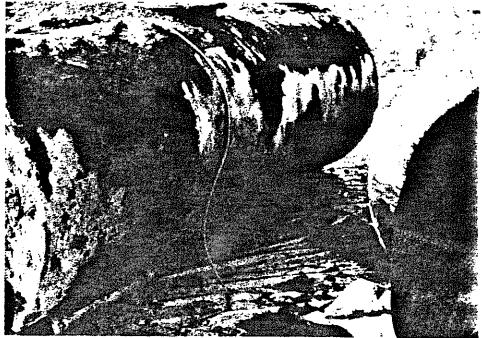


PHOTO DOCUMENTATION

1,000 gallon UST excavation at:
Building 2434
Fort Devens, Massachusetts

PROJECT: 37.07.91.00451



A-3



A-4



PHOTO DOCUMENTATION

1,000 gallon UST excavation at:
Building 2434
Fort Devens, Massachusetts

PROJECT: 37.07.91.00451

ĀTEC

27.7 OCMA 220 DATA SHEETS

OCMA 220 Data Sheets

The following information was organized from the data collected from the Non-Dispersive Infrared Analyzer.

• SS-1 to SS-10, Stock-1 and Stock-2: Soil samples obtained from the original excavation.

OCMA Dat	a Sheet	· S	*	•	•		٠.,
Operator Name	RWork	our	'n	ate:14-LM	EBI Proje	ect Number: <u>37.6</u>	<u>57.45</u>
Calibration				•		TK# 8	3
	First Initial	Reading Final	Seco Initial	ond Reading Final	Th Initial	ird Reading Final	•
Zero Calibration •	\/:@	1 6.0	1-0-6	10.0	1-0-1	.10.0	
Span Calibration		<u> </u>		1			_1
Zero Calibration	<u> </u>	_1	1	1			l
•		•		•		Span Check: 77	5

<u>Testing</u>

	Wei	ight	First Ap	pproach	Second	Approach		Readings		
Sample ID#	-Gross_	Tare	F-113	Sample	F-113	Sample	First	Second	Third	= -
STICKI	181.6	75.3	·	2,-2.		2 m	17.2	16.2	160-2	
STULZ	183.4	174:9	•	1 4	T	132	18.5	18:1	13/1	1195.3
	179.9	173.60		1 IMQ		1 me	130-3			17634.0
2	177.4	172.21	,		<u> </u>	I Ind.	<u>,</u> 3	10-3		137.0
. 3	183.0	174.1		, 4		1120	10-1	10.1		16.7
4	180.1	120.1-	·	1 Bore	I '	1 多~ ′	10.2	10.5	15 S	118.6
[5	180.0	175.0	,			8-	17-4	104		116.7
	181.6	17-11	7			1 3.00	10.7	17.2	<u></u>	196
12	179.1	1799			<u> </u>	3/	0.4	10.4		118.3
B	1814	1 3 - 7 1		1 Ince		1 1-2	158.5			15832.5
1.9	1866	173.91	1	13me	<u> </u>	1 2 m. C.	127.1		26.8	
10 ".	186.3	75-2	·,				12:0	11.9	17.91	154.8
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27.8 LABORATORY ANALYTICAL RESULTS

The following laboratory analytical reports are associated with the removal, remedial excavation and stockpiled soil. These reports were organized and provided by Environmental Science Services Inc. Results are included for:

- LSS-1, LSS-2, and LSS-3: Soil samples obtained from original excavation. Laboratory analyzed for TPH (Method 418.1).
- LWS-1 (dated January 1992): Groundwater sample obtained from excavation. Laboratory analyzed for TPH (Method 418.1).
- LRS-1, LRS-2, LRS-3, LRS-4: Soil samples obtained from Post-remedial excavation.
 Laboratory analyzed for TPH (Method 418.1). LRS-3 also analyzed for VOCs (Method 8240), and 13 Metals by TCLP (Meethod 6010).
- LWS-1 (dated August 1992): Groundwater sample obtained from Post-remedial excavation. Laboratory analyzed for TPH (Method 418.1).
- LSP-33: Soil sample obtained from stockpiled soil for disposal classification. Laboratory analyzed for VOCs (Method 8240), TPH (Method 418.1.), Corrosivity (pH) Method 9045), Flashpoint (Method 1010), Polychlorinated Biphenyls (Method 8080), Reactive Cyanide (Method 7.3.3.2), Reactive Sulfide (Method 7.3.4.1), 13 Metals by TCLP (Method 6010), Semivolatile Organics (Method 8270).
- MW-1, MW-2, MW-3: Soil samples obtained from monitoring wells. Laboratory analyzed for TPH (Method 418.1).

TIFICATE OF ANALYSIS

Date: 1/22/92 Job: 114

Account: 95659 Received: 1/14/92

ATEC ENVIRONMENTAL CC.
62 Accord Park Drive
Norwell, MA 02061

Project: TANK 33

: Mr. Mark Baldi

ple per	Method Number	Parameter	Result	Unit	Sample Description
1401	EPA-160.3 EPA-418.1	Total Solids TPH/:R (Dry Wt.)	89 6940	% mg/kg	LSS-I
1402	EPA-160.3 EPA-418.1	Tota: Solids TPH/:R (Dry Wt.)	87 4840	% mg/kg	LSS-2
1403	EPA-160.3 EPA-418.1	Tota: Solids TPH/:R (Dry Wt.)	90 876	% mg/kg	LSS-3
1404	EPA 418.1	TPH/: R	30	mg/L	T.WS-1

Dayio Digkinson Laboratory Manager



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 33, Bldg. 2434

Client Sample ID: LRS-1

Date Sample Received: 8/5/92

ESS Project ID: 922024

ESS Sample ID: 922024-01

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids - And pay	89	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	. 17	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

Laboratory Director

Date: /4//acs



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 33, Bldg. 2434

Client Sample ID: LRS-2

Date Sample Received: 8/5/92

ESS Project ID: 922024

ESS Sample ID: 922024-02

Date Reported: 8/14/92

Parameter			Res	ults	. Units	MRL	Method
Percent Solids				88	% w/w	. 1	160.3
Total Petroleum	Hydrocarbon-	-IR		12	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

David Bickinson

Laboratory Director



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 33, Bldg. 2434

Client Sample ID: LRS-3

Date Sample Received: 8/5/92

ESS Project ID: 922024

ESS Sample ID: 922024-03

Date Reported: 8/14/92

Parameter '	Results	Units	MRL	Method
Percent Solids	88	% w/w	· 1	160.3
Total Petroleum Hydrocarbon-IR	33	mg/Kg	11	418.1.
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching	Procedure			1311
Metals Zinc	0.35	mg/L	Attached	6010

TPHIR reported on dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:

David Dickinson Laboratory Director Date: /4/1455



RTIFICATE OF ANALYSIS

TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: UST 33 ESS Project ID: 922024

Client Sample ID: LRS-3 ESS Sample ID: 922024-03

Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Result (ug/Kg)	MRL
	,	
Methylene Chloride	ND .	5
1,1-Dichloroethane	ND	· <u>5</u>
Chloroform	ND	5
Carbon Tetrachloride	ND	. <u>5</u>
1,2-Dichloropropane	. ND	, 5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	N D	· 5
Chlorobenzene	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5 5
Bromodichloromethane	ND	5
Trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5 5 5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	, ND	
Toluene	ND	5
Ethyl Benzene	ND	5
Chloromethane	ND .	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Trichloroethene	ND	5
Acetone	ND .	10
Carbon Disulfide	ND `	5
2-Butanone	ND	10
Cis-1,3-Dichloropropene	ND	5
4-Methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Styrene	ND	5
Xylenes (Total)	ND ·	10

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: Devid Dickinson

Date: 14/Ang 5 L

Laboratory Director



RTIFICATE OF ANALYSIS

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants

Client Project ID: UST# 33, Bldg. 2434

Client Sample ID: LRS-3

ESS Sample ID: 922024-03

Date Sampled: 8/5/92

Date TCLP Performed: 8/6/92

Date Leachate Extracted: 8/7/92

Date Extract Analyzed: 8/10/92

	Act	ual	Adjusted*			
Target Analyte	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit		
Antimony	ND	0.2	ND	0.3		
Arsenic	ND	0.2	ND.	0.2		
Cadmium	ND	0.02	ND	0.03		
Chromium	ND	0.05	ND	0.05		
Lead	ND	0.1	ND .	0.1		
Mercury	ND	0.005	ND	0.005		
Selenium	ND	0.3	ND	0.3		
Silver	ND	0.05	ND	0.07		
Copper	ND	0.02	ND	0.02		
Nickel`	ND	0.04	ND	0.04		
Zinc	0.35	0.02	0.35	0.02		
Beryllium	ND	0.02	ND	0.03		
Thallium	ND	0.3	ND	0.4		

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Dickinson Laboratory Director Date: 14/2005 4



ERTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 33, Bldg. 2434

Client Sample ID: LRS-4

- Date Sample Received: 8/5/92

ESS Project ID: 922024

ESS Sample ID: 922024-04

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	89 -	% w/w	. 1	160.3
Total Petroleum Hydrocarbon-IR	[^] 62	mg/Kg	11	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

Laboratory Director



CERTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils

ESS Sample ID: 921528-06

ESS Project ID: 921528

Client Sample ID: LSP-33

355 Campic ID: 321320-00

Date Sample Received: 6/11/92

Date Reported: 7/1/92

Parameter	Results	Units	MRL	Method
pH (Corrosivity)	7.5	s.u.	N/A	9045
Flashpoint	No Flash	°F	200	1010
Polychlorinated Biphenyls	ND	mg/Kg	Attached	8080 -
Reactive Cyanide	ND	mg/Kg	2	7.3.3.2
Reactive Sulfide	ND	mg/Kg	2	7.3.4.1
Semivolatile Organics Pyrene	10,300	ug/Kg	Attached	8270
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching Metals	Procedure			1311
Copper Zinc	0.05 0.13	mg/L mg/L	Attached Attached	6010 6010

N/A = Not Applicable

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Laboratory Director

Date:



ERTIFICATE OF ANALYSIS

POLYCHLORINATED BIPHENYLS Method 8080

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-33 ESS Sample ID: 921528-06

Date Sample Received: 6/11/92 Date Reported: 6/30/92

Parameter	Result (mg/Kg)	MRL
Arochlor 1016	ND	0.1
Arochlor 1221	ND	0.1
Arochlor 1232	ND	0.1
Arochlor 1242	ND	0.1
Arochlor 1248	ND	0.1
Arochlor 1254	ND '	0.2
Arochlor 1260	ND	0.2

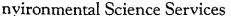
ND = Not Detected above Method Reporting Limit (MRL)

Surrogate Recovery Data	% Recovery	QC Limit
Dibutylchlorendate	98%	50 - 150%

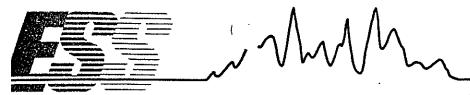
Approved by:

Laboratory Director

Date:







ERTIFICATE OF ANALYSIS

ACID EXTRACTABLES EPA 8270

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-33 ESS Sample ID: 921528-06

Date Sample Received: 6/9/92 Date Reported: 7/1/92

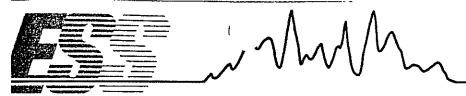
Parameter	Result (ug/Kg)	MRL
2-Chlorophenol	ND	1,670
2-Nitrophenol	N D	1,670
Phenol	N D	1,670
2,4-Dimethylphenol	N D	1,670
2,4-Dichlorophenol	ND .	1,670
2,4-Dinitrophenol	ND	8,350
Pentachlorophenol	ND	8,350
4-Nitrophenol	ND	8,350
2,4,6-Trichlorophenol	ND	1,670
2,4,5-Trichlorophenol	ND	8,350
2-Methylphenol	ND	1,670
4-Methylphenol	ND	1,670
4-Chloro-3-Methylphenol	ND ·	1,670
4,6-Dinitro-2-Methylphenol	ND	8,350

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dickinson Laboratory Director Date:

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ERTIFICATE OF ANALYSIS

BASE NEUTRAL EXTRACTABLES EPA 8270 .

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

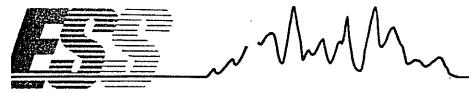
Client Sample ID: LSP-33 ESS Sample ID: 921528-06

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Acenaphthylene	ND	1,670
1,2,4-Trichlorobenzene	ND	1,670
Hexachlorobenzene	ND	1,670
Bis(2-chloroethyl)ether	ND	1,670
2-Chloronaphthalene	ND	1,670
1,2-Dichlorobenzene	ND	1,670
1,3-Dichlorobenzene	ND	1,670
1,4-Dichlorobenzene	ND	1,670
3,3-Dichlorobenzidine	ND ·	3,340
2,4-Dinitrotoluene	ND	1,670
2,6-Dinitrotoluene	ND	1,670
Fluoranthene	ND	1,670
4-Chlorophenyl phenyl ether	ND	1,670
Bis(2-chloroisopropyl) ether	ND	1,670
Bis(2-chloroethoxy) methane	ND	1,670
Hexachlorobutadiene	ND	1,670
Hexachlorocyclopentadiene	ND	1,670
Isophorone	ND	1,670
Naphthalene	ND	1,670
Nitrobenzene	ND	1,670
N-nitrosodiphenylamine	ND	1,670
N-nitrosodi-n-propylamine	ND	1,670
Bis(2-ethylhexyl)phthalate	ND	1,670
Di-n-butylphthalate	ND	1,670
Di-n-octylphthalate	ND	1,670
Diethyl phthalate	ND	1,670
Dimethyl phthalate	ND .	1,670
Benzo(a)anthracene	ND	1,670

nvironmental Science Services

Laboratory Director



ERTIFICATE OF ANALYSIS

BASE NEUTRAL EXTRACTABLES cont. EPA 8270

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-33 ESS Sample ID: 921528-06

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Benzo(a)pyrene	ND	1,670
Benzo(b) fluoranthene	ND	1,670
Benzo(k)fluoranthene	ND	1,670
Chrysene	ND	1,670
Acenaphthene	ND	1,670
Anthracene	ND	1,670
Benzo(ghi)perylene	ND	1,670
Fluorene	ND	1,670
Phenanthrene	ND	1,670
Dibenzo(a,h)anthracene	ND	1,670
Indeno(1,2,3-cd)pyrene	ND	1,670
Pyrene	10,300	1,670
Hexachloroethane	ND	1,670
4-Bromophenyl-phenylether	ND	1,670
Benzyl Alcohol	ND	1,670
Benzoic Acid	ND	8,350
Bis(2-Chloroethoxy)methane	ND	1,670
4-Chloroaniline	ND	1,670
2-Methylnaphthalene	ND	1,670
2-Nitroaniline	ND	8,350
3-Nitroaniline	ND	1,670
Dibenzofuran	ND	1,670
4-Nitroaniline	ND	8,350
Butylbenzylphthalate	ND	1,670

ND = Not Detected above Method Reporting Limit (MRL)

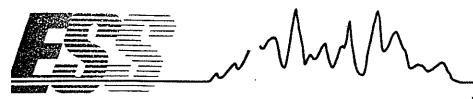
Approved by:

Laboratory Director

Date:







CERTIFICATE OF ANALYSIS

TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-33 ESS Sample ID: 921528-06

Date Sample Received: 6/29/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	1,000
1,1-Dichloroethane	ND	1,000
Chloroform	ND	1,000
Carbon Tetrachloride	ND	1,000
1,2-Dichloropropane	ND	1,000
Dibromochloromethane	ND	1,000
1,1,2-Trichloroethane	ND	1,000
Tetrachloroethene	ND	1,000
Chlorobenzene	ND	1,000
1,2-Dichloroethane	ND .	1,000
1,1,1-Trichloroethane	ND	1,000
Bromodichloromethane	ND	1,000
Trans-1,3-Dichloropropene	ND	1,000
Bromoform	ND	1,000
1,1,2,2-Tetrachloroethane	ND	1,000
Benzene	ND	1,000
Toluene	ND	1,000
Ethyl Benzene	ND	1,000
Chloromethane	ND	1,000
Bromomethane	ND	1,000
Vinyl Chloride	ND	1,000
Chloroethane	ND .	1,000
1,1-Dichloroethene	ND	1,000
1,2-Dichloroethene (Total)	ND	1,000
Trichloroethene	ND	1,000
Acetone	ND	1,000
Carbon Disulfide	ND	1,000
2-Butanone	ND	1,000
Cis-1,3-Dichloropropene	n ND	1,000
4-Methyl-2-Pentanone	ND	1,000
2-Hexanone	ND	1,000
Styrene	ND	1,000
Xylenes (Total)	ND	1,000

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: David Dickinson

Date

2Jul 992

Laboratory Director

Environmental Science Services

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ERTIFICATE OF ANALYSIS

TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants

Client Project ID: Stockpiled Soils

Client Sample ID: LSP-33

ESS Sample ID: 921528-06

Date Sampled: 6/9/92

Date TCLP Performed: 6/22/92

Date Leachate Extracted: 6/23/92

Date Extract Analyzed: 6/24/92

	Act	ual	Adjı	usted*
Target Analyte	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit
Antimony	ND	0.1	ND	0.2
Arsenic	ND	0.2	ND	0.2
Cadmium	ND	0.02	$\mathbf{N}\mathbf{D}$	0.02
Chromium	ND	0.05	ND	0.05
Lead	ND	0.1	ND	0.1
Mercury	ND-	0.005	ND	0.005
Selenium	ND	0.3	ND	0.3
Silver	ND	0.05	ND	0.09
Copper	0.04	0.02	0.05	0.03
Nickel	ND	0.04	ND	0.04
Zinc	0.13	0.02	0.13	0.02
Beryllium	ND	0.02	ND	0.04
Thallium	ND	0.05	ND	0.09

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dickinson

Laboratory Director

Date:

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nvironmental Science Services

532 Atwells Avenue, Providence, Rhode Island 02909 (401) 421-0398 Fax. (401) 421-5731



RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 33, Bldg. 2434

Client Sample ID: LWS-1

Date Sample Received: 8/5/92

ESS Project ID: 922024

ESS Sample ID: 922024-05

Date Reported: 8/14/92

Parameter	1	Results	Units	MRL	Method
Total Petroleum Hydro	ocarbon-IR	1	mg/L	1	418.1

MRL = Method Reporting Limit

Approved by:

Wavid DickInson Laboratory Director





RTIFICATE OF ANALYSIS

VOA SOIL SURROGATE RECOVERY

Client: ATEC Environmental Consultants

Client

Project ID: UST 33

Date Sample Analyzed: 8/13/92

ESS

Project ID: 922024

SAMPLE ID	1,2 DICHLOROETHANE-D4 (70-121%)*	TOLUENE-D8 (81-117%)*	BFB (74-121%)*
VS0813B1	102%	96%	105%
922024-03	110	92	92

* Acceptance	criteria
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Approved by:

Laboratory Director



Date Reported:

8/14/92

RTIFICATE OF ANALYSIS TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Date Sample Received:

Client Project ID: UST 33 ESS Project ID: 922024

Client Sample ID: Method Blank ESS Sample ID: VS0813B1

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND .	. 5
1,1-Dichloroethane	ND .	· <u>5</u>
Chloroform	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloropropane	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND .	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5 '
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5 5 5
Bromodichloromethane	ND	5 .
Trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	ND	5 5
Toluene	ND	5
Ethyl Benzene	. ND	5
Chloromethane	ND	10
Bromomethane	. ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	. 10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	. <u>5</u>
Trichloroethene	ND	. 5
Acetone	- ND	10
Carbon Disulfide	ND .	5
2-Butanone	ND	. 10
Cis-1,3-Dichloropropene	ND	5
4-Methyl-2-Pentanone	ИD	10
2-Hexanone	ND	10
Styrene	ND	. 5
Xylenes (Total)	ND	<u> </u>

ND = Not Detected above Method Reporting Limit (MRL)

NA = Not Applicable

Approved by: / ////

Laboratory Director

Date: 14/Ans 52



RTIFICATE OF ANALYSIS

MATRIX SPIKE ANALYSIS SUMMARY

TCLP METALS

EPA METHOD 1311

Client: ATEC Environmental Consultants Matrix: Solid

TCLP Batch ID: 202301 Concentration in: mg/L

Target Analyte	Result	Spike Added	Spiked Result	Percent Recovery
Antimony	ND .	*	ND	76%
Arsenic	ND	2.00	2.26	113
Cadmium	ND	0.5	0.39	78
Chromium	ND	1.0	1.22	122
Lead	ND	1.0	1.12	112
Mercury	ND .	0.02	0.020	100
Selenium	ND	2.00	2.13	107
Silver ·	ND	1.0	0.76	76
Copper	ND	1.0	1.14	114
Nickel	ND	1.0	1.07	107
Zinc	ND	1.0	1.09	109
Beryllium	ND	*	ND	76
Thallium	ND	*	ND ·	. 76

This matrix spike analysis summary applies to the following samples: 922024-03

ND = Not Detected above Method Reporting Limit (MRL)

* Matrix spike recovery is based on the lowest spike recovery of the spiked analytes.

Approved by:

David Dickinson Laboratory Director Date: /4/ star ?



ESS Project ID: 922989

ERTIFICATE OF ANALYSIS

TOTAL PETROLEUM HYDROCARBON-IR Method 418.1

Client: ATEC Environmental Consultants

Client Project ID: UST #33, Bldg 2434

Date Samples Received: 11/3/92 Date Reported: 11/4/92

Client ID	Lab ID	Results	Units	MRL
MW-1	922989-01	ND	mg/L	1
MW-2	922989-02	ND	mg/L	1
MW-3	922989-03	ND	mg/L	1

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Date: 4/1/0/52

27.9 CHAIN OF CUSTODY FORMS

The following chain of custody forms were produced for the soil samples which were laboratory analyzed.

J. NO.	PROJE	CT NAM	E ÷	Ten	.4	33								LAB	PRO	J. NO	Σ.	7						 -	/	/
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27.10 HAZARDOUS WASTE MANIFEST

UST No. 0033 was estimated to contain 64 gallons of No. 2 fuel oil. Approximately 14 gallons of fuel oil was removed on January 6, 1992, and transported to a licensed T.S.D.F. (Beede Waste Oil Corporation). Approximately 50 gallons of fuel oil and residual materials were removed and drummed on January 13, 1992. Drummed material was transported to Beede Waste Oil on February 25, 1992.

The following Hazardous Waste Manifests were generated from residual tank materials. The manifest dated January 13, 1992 is associated with vaccuuming product from several USTs. Therefore, the total quantity (1,400 gallons) is much greater than the 50 gallons which was removed from UST No.0033. The manifest dated February 27, 1992 is associated with the drummed material from several USTs. Therefore, the total quantity (395 gallons) is much greater than the 14 gallons which was removed from UST No.0033.

UNIFORM HAZARDOUS

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION **DIVISION OF HAZARDOUS WASTE**

One Winter Street Boston, Massachusetts 02108

Manifest

2. Page 1

Information in the shaded areas

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COPY>1:

FACILITY MAILS TO DESTINATION STATE

1. Generator US EPA ID No.

WASTE MANIFEST MAT 72/104	02515154186	ment No.	of /	is not requir	ed by Feder	silaw.
Generator's Name and Mailling Address HQ5 ForT De		400	A SINGR	anifest Docum	ent Numbe	Brown with
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AFZD DEQ OF	MA 12433	•	r) State G	en application		10000000
Generator's Phone (508) 796-3002 24H	R - 78 - 79 - 1 US EPA ID Number	27//		KANAL		的。
Transporter 1 Company Name - 6.	US EPA ID Number	•	SO DE	on Dec		
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Transporter 2 Company Name 8.	US EPA ID Number		GD N rensp	orters Phone		25.5761
Designated Facility Name and Site Address 10.	US EPA ID Number.	للنابا				
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Beede Waste Oil Corp.	• • • • • • • • • • • • • • • • • • • •	:			ENDER	guired 🔀
Kelley Road PO Box 127	ململ طعام ماد طعام			10,0		
Plaistow, NH 03865 N		12. Conta	iners	13. 6 U .: Total	1, 1382 Unit	
. US DOT Description (Including Proper Shipping Name, Hezard Class,	and ILJ Number)	No.	Туре	Quantity	Mt/A	
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i. Special Handling Instructions and Additional Information		: .				
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To be Recycled			•	Recyc	le	
GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignr proper shipping name and are classified, 'packed, marked, and labeled, and are in all	ment are fully and accurately desc	ribed above by	ohway			
according to applicable international and national government regulations.	e respects at proper condition for		g			
If I am a large quantity generator, I certify that I have a program in place to reduce t	he volume and toxicity of waste (penerated to th	e degree I hav	e determined to b	e economical	y practicable
and that I have selected the practicable mathod of treatment, storage, or disposal oment; OR, if I am a small quantity generator, I have made a good faith effort to mini	currently available to me which m imize my waste generation and se	numizes the pr lect the best v	esent and tuti /aste manage	ment method tha	n nealth and i Lis available to	me and that !
can afford.		/	/			Date :
Printed/TypedName /	Signature 27	12			Month	
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I. Transporter 2 Acknowledgement of Receipt of Materials	Canal.	- //	frage	7.7.	1011	Date
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. Discrepancy Indication Space						
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. Facility Owner or Operator: Certification of receipt of hazardous mate	erials covered by this manifes	t except as	noted in Iter	n 19.		
						Date

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UNIFORM HAZARDOUS 1. Generator US EPA WASTE MANIFEST MAI 7 2 1 0	1D No. Ma 0 2 5 1 5 4 F D	nifest ment No	2. Pag	·		
Generator's Name and Mailing Address Dept. of The ARM		<u> </u>		te Manifest Docum		r
Headquarters Ft. Generator's Phone 508-796-3002AFZD-REQEM Att		:		te Gen. V		
Transporter 1 Company Name Ft. Devens Ha 0163	3 US EPA ID Number	**	C.Sta	te Trans.ID \ \ I i	10/10	211
eede Waste Oil Corp. NI	<u> </u>	1146		MINI	MHO!	\mathcal{H}_{1}
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Designated Facility Plane and Site Address 10.	US EPA ID Number			1111	<u> </u>	<u>. i </u>
ely RD. PO Box 127				nsporter's Phone (ite Facility's ID	Not Re	quired .
astow NH 03865 NI	HID		-	cility's Phone 60	3 1383	-5761
. US DOT Description (Including Proper Shipping Name, Hazard Class,	and ID Numberi	12. Conta	Type	13. Total Quantity	14. Unit Wt∕Vol	l. Waste No.
Waste Petroleum Oils N.O.S.						
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Additional Descriptions for Materials Listed Above (include physical sta	ate and hazard code.)	<u> </u>	K. Ha	ndlir.g Codes for W	astes Listed	Above "
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Special Handling Instructions and Additional Information						
To Be Recycled #2 Fuel With SI GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consigner proper shipping name and are classified, packed, marked, and labeled, and are in all according to applicable international and national government regulations.						
If I am a large quantity generator, I certify that I have a program in place to reduce t and that I have selected the practicable method of treatment, storage, or disposal ment: OR, if I am a small quantity generator, I have made a good faith effort to mini can afford.	currently available to me which mir	umizes the pr	esent and	fluture threat to huma	n health and t	he environ- me and that I
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Printed/Typed Name	(Signature	سيد			Month	
Brian Cinivan Transporter 2 Acknowledgement of Receipt of Materials	Brian 9	m			<u>pa</u>	125712 Date
Printed/Typed Name	Signature				Month	
Discrepancy Indication Space						
on one of the control						•
Facility Owner or Operator: Certification of receipt of hazardous mate	erials covered by this manifest	except as i	noted in	Item 19.	<u></u>	Date
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m 8700-22 (Rev. 9-88) Previous editions are obsolete. COPY>3: FA	CILITY MAILS	TO GEN	IERA	TOR		

27.11 WEIGHT RECEIPTS AND BILLS OF LADING

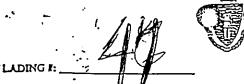
The following weight receipts and Bills of Lading document the disposal of contaminated soil associated with UST 0033.

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ELL, MA 02061		FORT DEVENS, MA	01433			
378-6200	* / •	PO# 37.04.72053	*			
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PELL, NA 02061 -878-6200		PO# 37.04.7205				
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135.74

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THIS COMPANY WILL NOT BE RE-SPONSIBLE FOR DAMAGE CAUSED BY TRUCKS DELIVERING MATERIAL BEYOND STREET PAVEMENT.





	1 <u>1211</u>
FLADING #: DAT	E. DEP CASE I:
ERATOR NAMEJADDRESS:	SITE OF GENERATION: IK #2 F.O.
S. Army	STREET BUILDING 2434 UST #33
FZD-FM. Rox 19	TOWN FORT DEVENS
ORT DEVENS, MA 01433	STATE MA 01433
	TRANSPORTATION ACCIDENT? Y YN
TACT/TEL 8: <u>508-796 ÷ 3002</u>	- ", TRANSPORTATION ACCIDENT! I Y K
ERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY): TAMINATED SOIL: 37.5 25 w. (tons) vol (cu yds)	CONTAMINATED DEBRIS: # absorbent pads # absorbent booms vol (cu yds) speedy dri other (specify)
OF CONTAMINATION:	. ANALYSES ATTACHED?  Voludes: Y XN TPH: XY N
NSPORTER NAME/ADDRESS:	DESTINATION FACILITY NAME/ADDRESS:
RIMOUNT BITUMINOUS PROT	245 TRIMOUT BTUMINOUS PRODUCTS
10 BLANCHARD RD.	_ 651 LAKE ST. :
BURLINGTON MA DISOS	
TACTMEL 1: DAVID PETER (617) 2219	
EXATOR'S SIGNATURE: A STANDARD PRIOR TO DEF, AUTHO	DATE: 7.20.92
IORIZATION: 'DEF, SIGNATURE (originating region):	Jahl Ma DATE: 23 July 92
(if applicable) DEP SIGNATURE (destination region):	DATE:
EXTRACTOR REGISTRATION 739-331  LER REGISTRATION 9312-5  SITE AT DATE 81  EXATOR OR RECEIVING FACILITY REPRESENTATIVES  LATURE:	QUANTITY SHIPPED: v1 (uns) v01 (c1 y01)  TOTAL PROJECTED  SETPED TO DATE  THIS LOAD (estimated)  REMAINING TO BE SHIPPED  TLCG 1 R 73.229
SPORTER'S SIGNATURE	Re 1. 11 1 DATE : 8/7/92
EVING FACILITY REPRESENTATIVE'S SIGNATURE	DATE 8/1/92 ARR TIME 3:05
Vrp.	
	ETURNING COMPLETED FORM WITHIN 5 DAYS TO:
BWSCÆMERG ONE WINT	ENVIRONMENTAL PROTECTION ENCY RESPONSE BRANCH TER STREET, 5th FLOOR
Req. BO	AND .
THE ORIGIN.	ATING REGIONAL OFFICE

ICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY TIES.



### BILL OF LADING POLICY # WSC-89-001



45	Property A
LADING I: DATE:	DEP CASE I:
RATOR NAMĘJĄDDRESS:	SITE OF GENERATION: 1K#2 F.O.
S. Army	STREET SUILDING 2434 UST #33
FZD-FM. Rox 19.	TOWN FORT DEVENS
ORT DEVENS, MADIA33	STATE MA 01433
TACTITEL 1: 508-796 ÷ 3002 11,	TRANSPORTATION ACCIDENT? Y YK.
ERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY):  TAMINATED SOIL: 37.5 25 CON  w. (10011) vol (01 yds)	IAMINATED DEBRIS: # absorbest pads # absorbest booms  vol (cs yds) speedy dri other (specify)
OF CONTAMINATION:	ANALYSES ATTACHED?  Volstiles: Y XN TPH: XY N
NSPORTER NAME/ADDRESS:	DESTINATION FACILITY NAME/ADDRESS:
RIMOUNT KITUMINOUS TROOMS	TRIMOUT BTUMINOUS PRODUCTS
10 BLANCHARD RD.	651 LAKE ST. :
BURLINGTON MA 01803	SHREWISBURY. MA
TACTITE II DAVID PETER (617) 221 \$400	TYPE OF FACILITY: Y Recycling Landfill Incinerator
PLATOR'S SIGNATURE: AND STULL OF AUTHORIZATION OF PRIOR TO DEPLATION OF AUTHORIZATION OF AU	DATE: 7.20.90
ORIZATION: DEF. SIGNATURE (originating region):	DATE: 23 July 92
(if applicable) DER SIGNATURE (destination region):	DATE:
EXTRACTOR REGISTRATION 737 554  LER REGISTRATION DATE	QUANTITY SHIPPED: wt (tord) vol (co yés) TOTAL PROJECTED
PRATOR OR RECEIVING FACILITY REPRESENTATIVES	THIS LOAD (catimated) 24.67.
lature-	1 1 Ticher (7.3,201
SPORTER'S SIGNATURE CONTINUE	MIN / DATE -8/7/92
EVING FACILITY REPRESENTATIVES SIGNATURE	DATE 8/1/92 ARR TIME 12:24
VED GENERATOR IS RESPONSIBLE FOR RETURNI	NG COMPLETED FORM WITHIN 5 DAYS TO:
1992 DEPARTMENT OF ENVIRO	NMENTAL PROTECTION
BWSC/EMERGENCY I	
Req. BOSTON, I	1A 02108
THE ORIGINATING	

FICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF . C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY LITIES.

## 17.12 PERMITS AND CERTIFICATIONS

The following permit was obtained from the Fort Devens Fire Department for the proper closure of a UST. Following the permit there is a disposal receipt for the steel UST.

# The Commonwealth of Massachusetts

# DEPARTMENT OF PUBLIC SAFETY DIVISION OF FIRE PREVENTION

FOR REMOVAL AND TRANSPORTATION TO APPROVED TANK YARD

In accordance with the provisions of Chapter 148, 6,1; as provided in Section 38A this permit is granted to Name:

22020 filel Belt Name: Atec Environmental Associates Inc.
Full name of person, firm or Corporation
To transport underground steel storage tank(s)

to Approved tank yarda. 3 State clearly type of inert gas used in steel storage tank steel tank: Du

Fee paid \$

Name and address of contractor disposing tank ATEC Location to which tank will be transported

This permit will expire 31 Jan 1992

(Head of Fire Dept.)

A RECEIPT OF DISPOSA	of thinderground sweets swored	PATRANCA SALAMANA SA
NAME AND ADDRESS OF	JOHN C. TOMBARELLO & SONS 207 MARSTON ST.	
APPROVED TANK YARD	LAWRENCE, MASS. 01841	
APPROVED TANK YARD Tank Yard Ledger 50	2 CMR 3.03(4) Number: 9	-001(5
I certify under penalty of delivered to this "appro-	of law I have personally examined the red tank yard" by firm, corporation and accepted same in conformance	e underground steel storage tank or partnership ATEC Environmental e with Massachusetts Fire Prevention
this tank to this yard.	Trovisions for Approving Underground by LOCAL Head of Fire Department of approved tank yard owner or owner	Steel Storage Tank dismantling yards.  t FDID: 17919 to transport  s authorized representative:
James Mayonto	Cow	1-28-92
SIGNATURE	TITLE	DATE SIGNED
This signed receipt of different from 17919 pure	sposal must be returned to the local quant to 502 CMR 3:00. (EACH TANK M.	l head of the fire department ST HAVE A RECEIPT OF DISPOSAL)
FORH F.P. 291 (rev. 9/8	B) (OVER)	MASSACHUSETTS STATE FIRE MARSHAL'S OFFICE
Jan Stranger San Stranger	and the second s	of the same of the control of the co
DIMENSIONS	Tank Removed	From
Width Length	FT. Deven	is Blog.# 2434 tank# 33
	(no. stree	έ)
ank 1 48" x 10'8."	(	
ank 2 X	(city or town	) AYW
ank 3 X	Fire Denartme	3t
ank 4 X	1 01 11.1 0 1	nt None-Listed (if applicable)
ank 5 X	,	
(feet) (feet)		

# 17.13 UST CLOSURE CHECKLIST

The following closure checklist was produced by ATEC Associates Inc., to ensure quality control of the proper abandonment of a UST.

DATE   TIME   MEASUREMENTS   NOTES	UST-CLOSURE O/C CHECK LIST	Touch	33	Bldg 2434	Fort Dever	
10 0 0 0 0 1	DEFINABLE FEATURE	DATE	TIME	MEASUREMENTS		NOTES
Calibrate PID & LEL (O2 maters		PALL	140412	THE TOUR DESCRIPTION OF THE PERSON OF THE PE		
Dain & flush piping & pumps		1/13/97	81.0		******************************	Site Topography: 0.4 7/4 5/9 No C CALLOC CO
Dain & flush piping & pumps		1713716	• • • • • • • • • • • • • • • • • • • •			1 4 SE
Vent tank note LELAC2 levels & times	Drain & flush piping & pumps	1/13/92	11:30			
T1: /2. //5   O 70. //5     T2: //00   O 70. //5     T3: //15   O 70. //5     T4: //30   O 70. //5     T5: //17   O 70. //5     T6:	Excavate to top of tank	1/13/72	11:30	·		Depth to tank: Z
Ti: /2. //5   O 70. /	Vent tank note LEL/O2 levels & times	1/.7/67		LEL	O2	
T2: 1/00   T3: 1/15   T4: 1/30   T5: 1/3   T		17.137.75	T1: /2:45			
T3: 11.5   Q   70.7     T4: 1.30   Q   70.7     T5: 1.47   Q   70.7     T6:     Q   70.7     T7:   Q   Q   Q     T7:   Q   Q   Q     T8:   Q   Q			· · · · · · · · · · · · · · · · · · ·	<del>}</del>		
T4: f : 30			<del></del>	<del></del>	***************************************	
TS: 1.47   O 70.7			<del></del>			
T6:			·}	<del>}</del>		
T8:   T9:					······································	
T9:   T10:   T11:     T12:       T12:			T7:			
T10:   T11:     T12:	:		T8:			
T11:   T12:	,		Т9:			
T12:			T10:			
Pump & clean tank:  1/-2/52  Solution (gal) & sludge (lbs)  1/-3/52  17:30  Ibs. sludge  3/-35  40:40  Excavate soils to free tank  1/-3/52  1/-3/52  PID (ppm)  NDIR (ppm)  Segregate stained soils: Note PID readings  (if>10 ppm NDIR also)  5/-66/-7  5/-66/-7  1/-3/52  1/-3/52  1/-3/52  PID (ppm)  NDIR (ppm)  Segregate stained soils: Note PID readings  (if>10 ppm NDIR also)  5/-66/-7  5/-66/-7			T11:			
Note quantities liquid (gal) & sludge (lbs)    1/13/52   17:30   lbs. sludge   sl.; 13   lottown			T12:	,		
Note quantities liquid (gal) & sludge (lbs)						
Note quantities liquid (gal) & sludge (lbs)    1/13/52	Pump & clean tank:	11.7/92		gal. liquid _/ 57	5 gal.	Tank Dimensions: 9 x 10.52
Remove all tank connections, and cap openings  1/13/52 ///45  Excavate soils to free tank  1/13/52 ///45  Excavate soils to free tank  1/13/52 ///45  Segregate stained soils: Note PID readings (if>10 ppm NDIR also)  5/6c/4-//5/6c/6-7  Contact of the contact of	Note quantities liquid (gal) & sludge (lbs)		17:30			5/1, Lt . Lotton
Segregate stained soils: Note PID readings	Remove all tank connections, and cap openings	1/13/92	11:45			
Segregate stained soils: Note PID readings	Excavate soils to free tank	1/13/52	11:115			
(if>10 ppm NDIR also)  5 to closele soils visibly  1 stock-7  1 stock-7	Segregate stained soils: Note PID readings	V13/92			NDIR (ppm)	
stockpile soils visibly  Centarinated						stock-1
	stockade soils visibly			·	······································	
	Centarinated					
				`		

DATE	TIME	MEASIDEMENTS	NOTES
		IMENONE ITE ITE	NOTES .
1/13/9)	17:00	Photographic Descriptions:	Soil Description: June 1. Sown fine
7.7.7.0			sendesit W/1.74k fine
			gravel. Gray silty sand at
			Sw corner 3' How andes
		Photo 4:	odor
		Photo 5:	Depth to Groundwater/Conditions: 6'
·		Photo 6:	slight sheen
			1113 20 36 3 - 1
1/13/92	12: 15		Depth of Excavation: (, '
1/13/92	2:00		
1/13/92	12:45	PID (ppm) NDIR (ppm) .	Sample locations:
		SS1: /28 ·	Sw n. M
		SS2: 7,0	Sw wall
		SS3: 0.3	NW wall
		SS4: 0.6	NW wall
		SS5: 0.4/	NE wall
		SS6: O.8	NE wall
		SS7: 1.0	SE wall
		\$\$8: /2. Z	SE und
		SS9: /o,o	1. How
		SS10: 7.4	hottom
	ļ		
	<del> </del>		
	<del> </del>		
1/13/97	12:45		Sample Locations:
			LSS1: ~ 55/
	<u> </u>		LSS2: ~ 559
			LWS1: obtained for TPH (563: composite stock pilo
	1/13/92	1/13/92 17:00 1/13/92 11:69 1/13/92 2:00 1/13/92 12:45	

# 27.14 INSTALLATIONS

The installation of a replacement UST 0033 was not performed.

#### 28.0 UST No. 0034

### 28.1 POST REMOVAL REPORT

#### 28.1.1 Introduction

This Post-Removal Report details the results of the closure of one 1,000-gallon, single wall, steel, Underground Storage Tank (UST) referenced as UST No. 0034, located at property known as Building 2447, Fort Devens, Massachusetts (the site). The purpose of the closure was to excavate the UST and evaluate the potential for the presence of oil and hazardous material at the site. The closure of this UST was conducted on January 16, 1992.

The basic Project Work Scope included:

- Procurement/administration of all federal, state and local permits, manifests, regulations, etc., associated with UST system closure.
- Excavating, venting, cleaning, transporting, and disposing of one 1,000-gallon UST by appropriately licensed contractors/facilities.
- Disposal of residual UST materials at a licensed facility.
- Field screening and analysis of soil in the excavations by Photoionization Detector (PID) and field analyzed with a portable Non-Dispersive Infrared (NDIR) Analyzer, to identify evidence of a release of oil and hazardous materials from the UST, if any.
- Laboratory Analysis of soil sampled from the UST excavation by a USEPA certified laboratory for Total Petroleum Hydrocarbons.
- Preparation of a Post-Removal Report, to include assimilation of information gathered, major findings, and conclusions.

#### 28.1.2 Subsurface Storage Tank Excavation and Removal

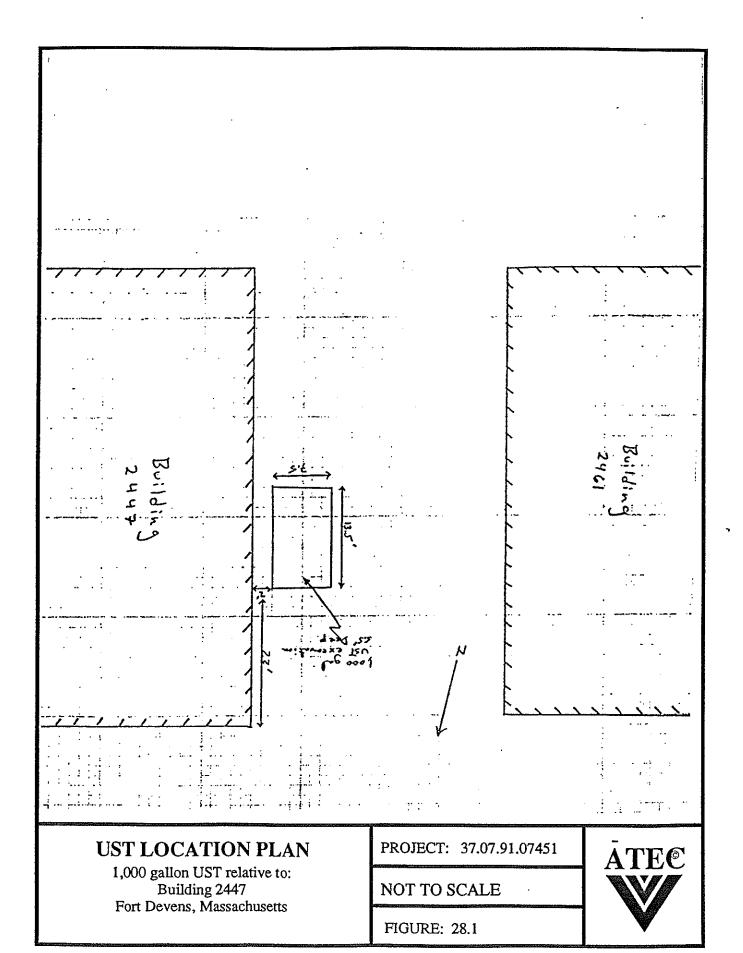
On January 16, 1992, one 1,000-gallon; subsurface, No. 2 fuel oil, storage tank was excavated and removed from the site. The UST was located adjacent to the west side of Building 2447. Site topography is level.

Soils in the excavation consisted primarily of medium brown, fine sand with fine to coarse gravel, cobbles, and boulders. The tank was covered by approximately one foot of soil. The bottom of the excavation was approximately five feet below grade. Groundwater was not encountered. Excavated soils required to free the tank were visibly contaminated. Soils excavated from above the tank were observed to be grossly contaminated and were segregated. Some staining of soils within the excavation was also observed.

The associated piping was drained and tank connections were removed. UST No. 0034 was estimated to contain 35 gallons of No. 2 fuel oil and residual materials. Approximately 20 gallons of fuel oil was removed on January 7, 1992, and transported to a licensed T.S.D.F. (Beede Waste Oil Corporation).

Tank openings were capped and the tank was removed from the excavation. Upon excavation and removal, the tank was observed to be in good condition with no holes, perforations, or severe corrosion. However, the fill pipe connection at the tank was noted to be very loose. Following venting of the tank, an access way was cut in the end of the tank to allow entry for cleaning. The tank was then entered and vacuumed/wiped clean of any residual materials. Approximately 15 gallons of No. 2 fuel oil and residual materials were removed and drummed on January 15, 1992. Drummed material was transported to Beede Waste Oil Corporation on February 27, 1992. See Section 28.10 for copies of the appropriate Hazardous Waste Manifests.

The scrap tank was removed from the site on January 16, 1992 and transported to the Contractor's yard, located on Lake George Street, Fort Devens for temporary storage. The tank was disposed of at Tombarello & Sons, a licensed Massachusetts tank yard, on January 28, 1992. A copy of the disposal receipt is included in Section 28.12, Permits and Certifications.



#### 28.1.3 Sampling and Analysis Plan

Ten soil samples were obtained from the excavation for field screening with a Photoionization Detector (PID) and field analyzed with a Non-Dispersive Infrared (NDIR) Analyzer. The PID field screening for Volatile Organic Compound (VOC) vapors was conducted with an HNu photoionizer utilizing the jar headspace screening procedure outlined in the Hazardous Materials Containment Plan. The NDIR field screening for Total Petroleum Hydrocarbons (TPH) was conducted with a Horiba OCMA 220, utilizing the procedures outlined in the Hazardous Materials Containment Plan.

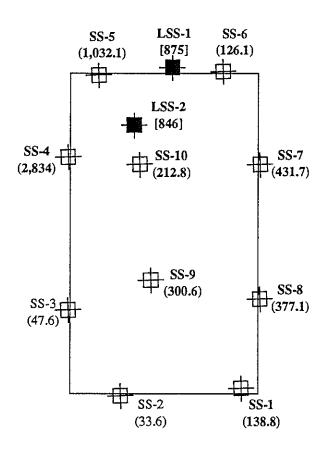
Eight of the samples (SS-1 through SS-8) were obtained from the excavation walls at a depth of approximately two feet, six inches to three feet, six inches below grade. Two of the samples (SS-9 and SS-10) were obtained from the bottom of the excavation at a depth of approximately five feet below grade. Two composite soil samples (Stock-1 and Stock-2) were obtained from stockpiled soils for PID and NDIR field screening. Soil sample Stock-2 was obtained from the segregated soils which were observed to be grossly contaminated.

Two soil samples (LSS-1 and LSS-2) were obtained from the excavation for laboratory analysis. Soil Sample LSS-1 was obtained from the north wall of the excavation. Soil sample LSS-2 was obtained from the bottom of the excavation. One composite, soil sample (LSS-3) was obtained from stockpiled soils required to free the tank. These samples were analyzed for TPH.

Sampling locations are depicted on the Sampling Schematic as Figure 28.2. The appropriate chain of custody forms are included in Section 28.9, Chain of Custody Forms.

#### 28.1.4 Analytical Results

The results from analysis with the Photoionization Detector (PID) and the Non-Dispersive Infrared (NDIR) Analyzer of the ten soil samples obtained from the excavation, and the two composite samples obtained from stockpiled soil are as follows:



# **LEGEND:**

- + Field Screened Soil Sample
- Lab Analyzed Soil Sample
- ( ) NDIR Results in ppm
- [ ] Lab Analysis Results in ppm

Results in bold denote levels in excess of MA DEP Remedial Goal Level (100 ppm)

## **SAMPLING SCHEMATIC**

1,000 gallon UST excavation at: Building 2447 Fort Devens, Massachusetts PROJECT: 37.07.91.07451

NOT TO SCALE

FIGURE: 28.2

UST-34



TABLE 28.1 - PID AND NDIR RESULTS

Sample No.	PID (ppm TOVs)	NDIR (ppm TPH)
	4.0	100.0
SS-1	4.0	138.8
SS-2	36.0	33.6
SS-3	19.4	47.6
SS-4	0.4	2,834.0
SS-5	15.4	1,032.1
SS-6	56.0	126.1
SS-7	26.0	431.7
SS-8	44.0	377.1
SS-9	25.0	300.6
SS-10	34.0	212.8
Stock-1	56.0	1,110.0
Stock-2	31.0	2,249.2

Laboratory analytical results of the two soil samples obtained from the excavation revealed TPH concentrations of 875 ppm for LSS-1, and 846 ppm for LSS-2. Laboratory analysis of the one soil sample (LSS-3) obtained from the stockpiled soils revealed a TPH concentration of 1,470 ppm (see Section 28.8, Laboratory Analytical Results).

#### 28.1.5 Conclusions and Recommendations

ATEC's conclusions are as follows:

Upon excavation and removal, the tank was observed to be in good condition with no holes, perforations, or severe corrosion. However, the fill pipe connection at the tank was noted to be very loose.

Groundwater was not encountered within the excavation.

Excavated soils required to free the tank were visibly contaminated. Soils excavated from above the tank were observed to be grossly contaminated and were segregated. Some staining of soils within the excavation was also observed.

Ten soil samples were obtained from the excavation for field screening and field analysis utilizing a PID and NDIR Analysis respectively. PID readings revealed TOV concentrations ranging from 0.4 ppm to 56 ppm. NDIR results revealed TPH concentrations ranging from 33.6 ppm to 2,834.0 ppm.

Two soil samples were obtained from the excavation for laboratory analysis for TPH. Analytical results for LSS-1 obtained from the north wall of the excavation revealed a TPH concentration of 875 ppm. Analytical results for LSS-2 obtained from the bottom of the excavation revealed a TPH concentration of 846 ppm.

One composite, soil sample (LSS-3) was obtained from stockpiled soils for laboratory analysis. Analytical results for LSS-3 revealed a TPH concentration of 1,470 ppm.

The following were recommended and implemented by ATEC subsequent to the submittal of the Post Removal Report:

Remedial excavation of the excavation was conducted until laboratory analysis of soil samples showed a TPH concentration of <100 ppm. Field screening of soil was conducted during excavation utilizing a Photoionization Detector until TOV levels of <1 ppm were attained prior to obtaining samples for laboratory analysis.

Additional excavated soils and stockpiled soils were laboratory analyzed for Total Petroleum Hydrocarbons, Volatile Organic Compounds, Semivolatile Organic Compounds, PCBs, 13 TCLP Metals, flashpoint, sulfide reactivity, cyanide reactivity, and corrosivity for disposal classification.

Soils excavated during the tank removal and remediation were disposed at a licensed T.S.D.F.

Based on the data collected during the UST removal, the following was recommended by ATEC but was not performed at the request of the US Army:

Advance soil borings and install groundwater monitoring wells to determine the vertical and horizontal extent of contamination. Continuous split spoon sampling and analysis should be conducted utilizing field analysis techniques, i.e. Photoionization Detector and Non-Dispersive Infrared Analysis, and laboratory analysis to document soil contamination levels as specified in the Hazardous Waste Containment Plan.

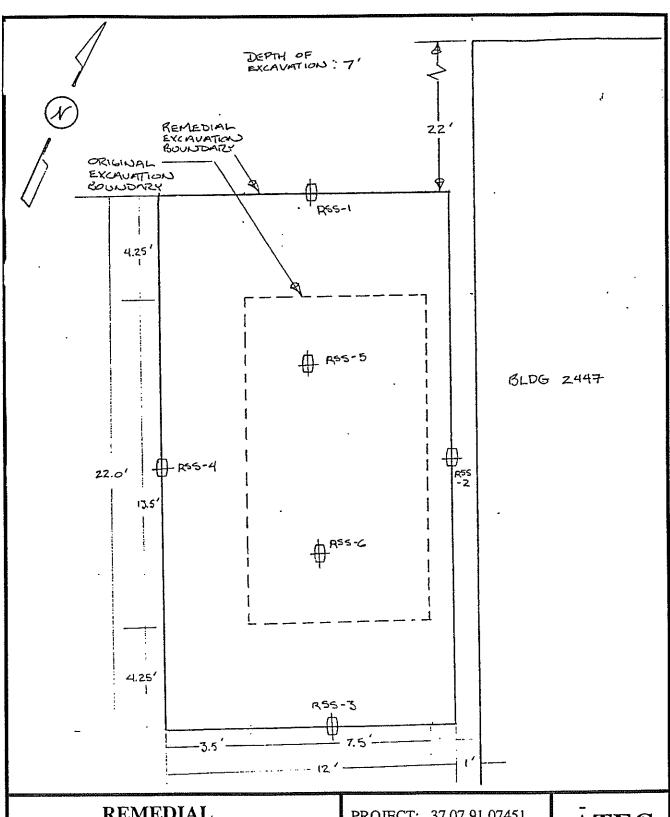
#### 28.2 SITE REMEDIATION AND CONTAMINATED SOIL DISPOSAL

#### 28.2.1 Site Remediation

Following initial PID screening, additional excavation to remove contaminated soil and reach background levels (<1 ppm TOVs) by PID was conducted per order of the Contracting Officer's Representative and David Salvadore of the Massachusetts Department of Environmental Protection (DEP). Approximately 63 tons of contaminated soil were removed from the bottom of the excavation and all sidewalls during remedial excavation on July 31, 1992 (see Remedial Excavation Plan, Figure 28.3). Groundwater was not encountered during remedial excavation.

Six soil samples (RSS-1A through RSS-6A) were obtained from the post-remedial excavation for PID field screening. RSS-1A through RSS-4A were obtained from the sidewalls at a depth of approximately five feet below grade. RSS-5A and RSS-6A were obtained from the bottom of the excavation at a depth of 7' below grade. PID results revealed TOV concentrations ranging from 0.6 to 8.5 (see Table 28.2).

Following the removal of an additional one foot of soil from the excavation sidewalls, four soil samples (RSS-1B through RSS-4B) were obtained from the post-remedial excavation for PID field screening. RSS-1B through RSS-4B were obtained from the sidewalls at a depth of approximately five feet below grade. All PID results revealed TOV concentrations <1 ppm with the exception of RSS-1B which was obtained from the north sidewall. Further excavation of the north sidewall was not conducted per order of the Contracting Officer's Representative. Final PID results revealed TOV concentrations ranging from 0.0 to 5.5 (see Table 28. 2).



# REMEDIAL **EXCAVATION PLAN**

1,000 gallon UST relative to: Building 2447 Fort Devens, Massachusetts

PROJECT: 37.07.91.07451

NOT TO SCALE

FIGURE 28.3 **UST 34** 



TABLE 28.2 - PID SCREENING RESULTS

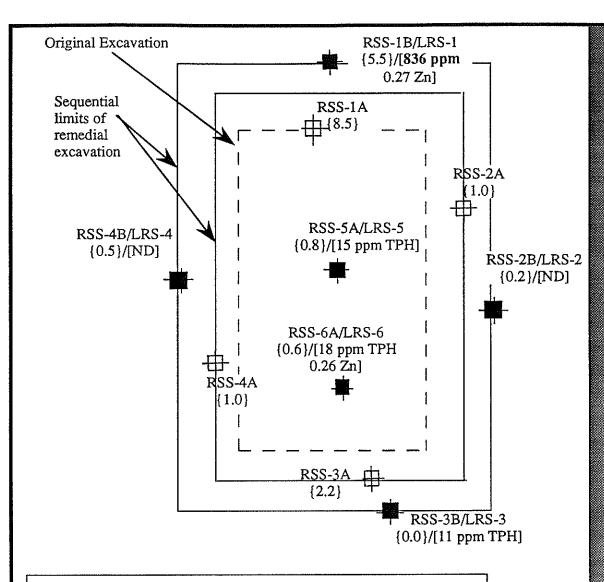
Sample No.	PID (ppm)	Location
RSS-1A	8.5	N.side wall (5' B.G.)
RSS-2A	1.0	E. side wall (5' B.G.)
RSS-3A	2.2	S.side wall (5' B.G.)
RSS-4A	1.0	W. side wall (5' B.G.)
RSS-5A	0.8	Bottom (7' B.G.)
RSS-6A	0.6	Bottom (7' B.G.)
RSS-1B	5.5	N. side wall (5' B.G.)
RSS-2B	0.2	E. side wall (5' B.G.)
RSS-3B	0.0	S. side wall (5' B.G.)
RSS-4B	0.5	W. side wall (5' B.G.)

RSS = Remediation Soil Sample

B.G.= Below Grade

Six soil samples (LRS-1 through LRS-6) were obtained for laboratory analysis for Total Petroleum Hydrocarbons. Two soil samples (LRS-1 and LRS-6) were obtained for laboratory analysis for Volatile Organic Compounds, 13 Metals by Toxicity Characteristic Leachate Procedure (TCLP). The following table contains levels revealed by laboratory analysis:





# **LEGEND**

Field Screened Soil Sample

Lab Analyzed Soil Sample

TOV concentration (by PID) in ppm

[ ] TPH, TCLP Metal, VOC concentrations by Lab (as applicable)

Results in bold denote TPH levels greater than the remedial goal of 100 ppm TPH

# REMEDIAL SAMPLING SCHEMATIC

1,000 gallon UST excavation at:
Building 2447
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451

NOT TO SCALE

FIGURE: 28. 4 UST-34



TABLE 28.3 - LABORATORY ANALYSIS

Sample No.	TPH	VOA	13 TCLP	Location		
	(ppm)	(ppb)	Metals(ppm			
LRS-1	836	ND	0.27 (Zn)	N. side wall (5' B.G.)		
LRS-2	ND	NA	NA	E. side wall (5' B.G.)		
LRS-3	11	NA	NA	S. side wall (5' B.G.)		
LRS-4	ND	NA	NA	W.side wall (5' B.G.)		
LRS-5	15	NA	NA	Bottom (7' B.G.)		
LRS-6	18	ND	0.26 (Zn)	Bottom (7' B.G.)		

LRS = Laboratory Remediation Sample

ND = Not Detected above the Method Reporting Limit

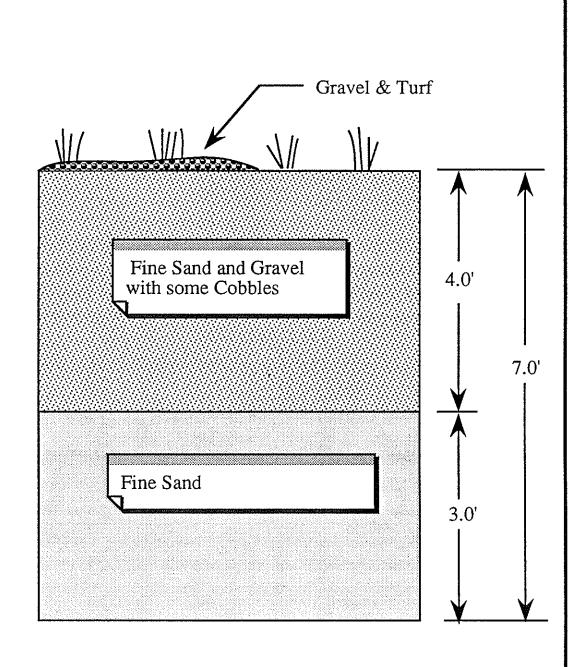
NA = Not Applicable

B.G.=Below Grade

See Figure 28.3 Remedial Excavation Sampling Schematic. See Section 28.8 - Laboratory Analytical Results.

### 28.2.2 Soil Stratigraphy

The soil stratigraphy of the excavation was dependent upon the depth of the excavation. The soil for the initial four feet consisted primarily of fine sand and fine gravel, mixed with cobbles. The remaining three feet of the excavation primarily consisted of fine sand. (See Figure 28.5, Soil Stratigraphy).



# SOIL STRATIGRAPHY

1,000 gallon UST excavation at:
Building 2447
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451

UST-34

FIGURE 28.5



### 28.2.3 Contaminated Soil Disposal

One composite soil sample (LSP-34) was obtained from stockpiled soil associated with the removal of the UST No. 0034 and the additional excavation conducted at the site. LSP-34 was laboratory analyzed for Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds, 13 Metals by Toxicity Characteristic Leachate Procedure (TCLP), Polychlorinated Biphenyls (PCBs), Reactive sulfide, Reactive cyanide, flashpoint, and corrosivity for characterization and disposal purposes. Laboratory analytical results revealed 7.5 S.U. Corrosivity; 1.1 ppm Lead, 0.06 ppm Copper, 0.05 ppm Nickel, and 2.79 ppm Zinc. All other analytical results were below the Method Reporting Limits. (See Section 28.8 Laboratory Analytical Results).

Approximately 43.01 cubic yards (≈ 64.52 tons) of No. 2 fuel oil contaminated soil was removed and stockpiled during UST removal and remediation of the excavation (see Figure 28.4 - Remedial Excavation Plan). Contaminated soil was disposed for recycle at Trimount Bituminous Products Company, Shrewsbury, Massachusetts. Copies of Weight Receipts and Bills of Lading are included in Section 28.11.

#### 28.3 HYDROGEOLOGICAL SERVICES

Hydrogeological services, to include to installation of monitoring wells, was not performed relative to UST 0034.

#### 28.4 BACKFILL

The excavation was lined with polyethylene plastic sheeting and backfilled with 162 tons of uncontaminated fill material on July 29, 1992. Backfilling was conducted with the approval of the Contracting Officer's Representative.

#### 28.5 SURFACE RESTORATION

Following backfill of the excavation, 264 square feet of loam was spread. Seeding was conducted to complete sruface restoration on October 21, 1992.

## 28.6 PHOTOGRAPHIC DOCUMENTATION

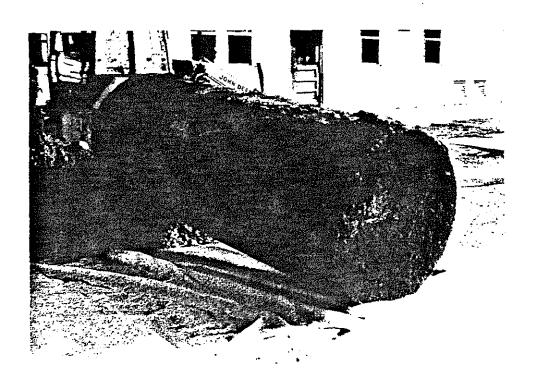
The following photographs are of the removed UST excavation:

- A-1: One side of removed tank.
- A-2: Opposite side of removed tank.
- A-3: Excavation as viewed from north, facing south.
- A-4: Excavation as viewed from south, facing north.



A-2

A-1

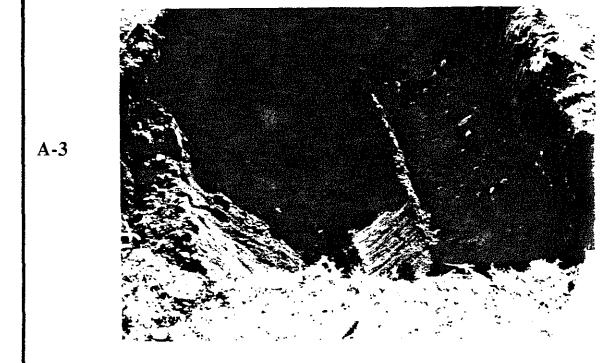


# PHOTO DOCUMENTATION

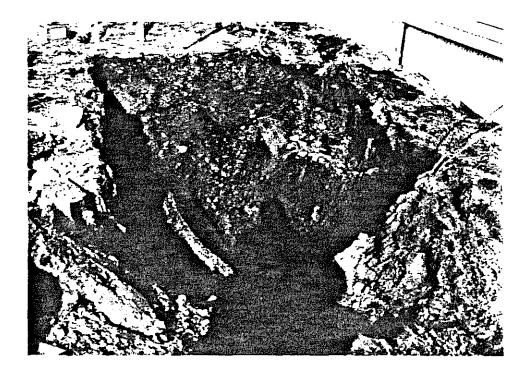
1,000 gallon UST excavation at:
Building 2447
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451





A-4



# PHOTO DOCUMENTATION

1,000 gallon UST excavation at:
Building 2447
Fort Devens, Massachusetts

PROJECT: 37.07.91.07451



## 28.7 OCMA 220 DATA SHEETS

The following information was organized from the data collected from the Non-Dispersive Infrared Analyzer.



#### TPH SOIL ANALYSES BY NON-DISPERSIVE INFRARED ANALYZER - MODIFIED EPA STANDARD TEST METHOD 418.1

PROJECT NAME, HUMBER, TANK: <u>U.S. ARMY - FORT DEVENS 37,07.91,451</u> TANK #34	DATE	01/17/92
	OPERATOR.	RICHARD GERMAN

#### CALIBRATION DATA

TYPE	first rea	ADING	SECOND RE	EMICAS	THIRD REA	ADING		SPAH
CALIBRATION	DITIAL	<u>FINAL</u>	DITTIAL.	<u>FINAL</u>	DITTIAL	FINAL		CHECK
•							•	
ZERO;	4.2	0.0	<u>-3.5</u>	0.0	-0.3	0.0		27.9
SPAM:							•	
ZERO:							•	

### ANALYTICAL DATA

	Sample	WEIGHT (A)		1st DILUTION RATIO [m] 2M DILUTION RATIO [m]			DISTRUIVELIT RESULTS [Prod]			_ Concentration =		
	NUMBER	GROSS	TARE	F-113	SAMPLE	F-113	SAMPLE	1st	2nd	3rd	mg/l	
	Alm A July 4	86.8	ne A	42 F					A.17		4.14.6	
<b></b> .	STOCK-1	79.7	75.3	17.5	1.0	· · · · · · · · · · · · · · · · · · ·	-	9,0	3.7	9.8	1110.0	
	STOCK-2	79,0	73.3	17.5	1.0			23.2	23.1	10-4	2849,2	
<del></del>	88-1	81.0	74.6	17.5	1.0		• •	1.3	1.6	1.6	130.8	•
	88-2	79.4	72.8	17.5	1.0			0.4	0.4		33.6	_
	883	81.0	74.0	17.5	1.0	<del></del>		0.5	0,6	,		
	<u>. 884                                  </u>	80.8	76.1	17.5	<u> </u>	-	المتنبية والمتابة متينية متينية ويتاب فيتاب والمتابة	24.1	24 0		2834.0	
_	<u>88-5</u>	82.0	76.3	17.5	1.0			10,5	10.6		1932.1	
	<u>88-6</u>	81,5	74.9	17.5	1.0			1.3	1.5	1.5	126.1	
•		82.7	75 5	17.5	1.0			5.2	5.6	5.6	42).7	_
_	88-8	83,1	75 3	17.5	1.0			5.2	5.3		377.3.	_
_	88.0	77.6	72 8	17.5	<u>[.]</u>			2.5	2.6	***	300.6	_
_	88-10	82.4	76.4	17.5	1.0	<del></del>		2.0	2.2	2.3	212.8	

#### 28.8 LABORATORY ANALYTICAL RESULTS

The following laboratory analytical reports are associated with the removal, remedial excavation and stockpiled soil. These reports were organized and provided by Environmental Science Services, Inc. Results are included for:

- LSS-1, LSS-2, and LSS-3: Soil samples obtained from original excavation. Laboratory analyzed for TPH (Method 418.1).
- LRS-1, LRS-2, LRS-3, LRS-4, LRS-5, and LRS-6: Soil samples obtained from Post-remedial excavation. Laboratory analyzed for TPH (Method 418.1). LRS-1 and LRS-6 were also analyzed for VOCs (Method 8240), and 13 Metals by TCLP (Method 6010).
- LSP-34: Soil sample obtained from stockpiled soil for disposal classification. Laboratory analyzed for VOCs (Method 8240), TPH (Method 418.1), 13 Metals by TCLP (Method 6010), Reactive Cyanide (Method 7.3.3.2), Reactive Sulfide (Method 7.3.4.1), Semi-volatile Organics (Mehtod 8270), Corrosivity (pH) (Method 9045), flashpoint (Method 1010), and Polychlorinated Biphenyls (Method 8080).

7.7

JAN-24-1992 14:49 FROM E

FROM ENVIRONMENTAL SCIENCE SUC

15087722980 P.02



w/hh

In Response To The Future

### ERTIFICATE OF ANALYS:S

Date: 1/24/92 Job: 148

Account: 95659 Received: 1/17/92

ATEC ENVIRONMENTAL CC. 62 Accord Park Drive Norwell, MA 02061

Project: DEVENS-TANK 34

tn: Mr. Mark Baldi

umber	Method Number	Parameter	Result	Unit	Sample Description
0148.01	EPA-160.3 EPA-418.1	Total Solids TPH/IR (Dry Wt.)	92 875	% mg/kg	LSS-1
014802	EPA-160.3 EPA-418.1	Total Solids TPH/1R (Dry Wt.)	88 846	% mg∕kg	LSS-2
014803	EPA-160.3 EPA-418.1	Total Solids TPH/1R (Dry Wt.)	87 1470	% mg/kg	LSS-3

David Dickinson Laboratory Manager



### RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 34 ESS Project ID: 922025

Client Sample ID: LRS-1 ESS Sample ID: 922025-01

Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	92	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	836	mg/Kg	11	418.1
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching	Procedure			1311
Metals Zinc	0.27	mg/L	Attached	6010

TPHIR reported on dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:

David Dickinson Laboratory Director Date:____

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### RTIFICATE OF ANALYSIS

### TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: UST 34 ESS Project ID: 922025

Client Sample ID: LRS-1 ESS Sample ID: 922025-01 Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloropropane	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Bromodichloromethane	ND	5
Trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	ND	55555555555555555
Toluene	ND	5
Ethyl Benzene	ND	5
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Trichloroethene	ND	5
Acetone	ND	10
Carbon Disulfide	ND	5
2-Butanone	ND	10
Cis-1,3-Dichloropropene	ND	5
4-Methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Styrene	ND	5
Xylenes (Total)	ND	10

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:



### **ERTIFICATE OF ANALYSIS**

### TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

### **METALS**

### EPA METHOD 1311

Client: ATEC Environmental Consultants

Client Project ID: UST# 34

Client Sample ID: LRS-1

ESS Sample ID: 922025-01

Date Sampled: 8/4/92

Date TCLP Performed: 8/6/92

Date Leachate Extracted: 8/7/92

Date Extract Analyzed: 8/10/92

	Act	ual	Adjusted*	
Target Analyte	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit
Antimony	ND	0.2	ND	0.3
Arsenic	ND	0.2	ND	0.2
Cadmium	ND	0.02	ND	0.03
Chromium	ND	0.05	ND	0.05
Lead	ND	0.1	ND	0.1
Mercury	ND	0.005	ND	0.005
Selenium	ND	0.3	ND	0.3
Silver	ND	0.05	ND	0.07
Copper	ND	0.02	ND	0.02
Nickel	ND	0.04	ND	0.04
Zinc	0.27	0.02	0.27	0.02
Beryllium	ND	0.02	ND	0.03
Thallium	ND	0.3	ND	0.4
	21.0	J	2.2	017

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:



### RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 34 ESS Project ID: 922025

ESS Sample ID: Client Sample ID: LRS-2 922025-02

Date Reported: Date Sample Received: 8/5/92 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	96	* w/w	1	160.3
Total Petroleum Hydrocarbon-IR	ND	mg/Kg	10	418.1

TPHIR reported on a dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:



### RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 34

Client Sample ID: LRS-3

Date Sample Received: 8/5/92

ESS Project ID: 922025

ESS Sample ID: 922025-03

Date Reported: 8/14/92

Parameter	Results	·Units	MRL	Method
Percent Solids	96	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	11	mg/Kg	10	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:

David Dickinson Laboratory Director Date: 14/14.5

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### **ERTIFICATE OF ANALYSIS**

Client: ATEC Environmental Consultants

Client Project ID: UST 34

ESS Sample ID: 922025-04

ESS Project ID: 922025

Client Sample ID: LRS-4

Date Sample Received: 8/5/92

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	97	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	ND	mg/Kg	10	418.1

TPHIR reported on a dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)





### RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 34

Client Sample ID: LRS-5

Date Sample Received: 8/5/92

ESS Project ID: 922025

ESS Sample ID: 922025-05

Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	91	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	15	mg/Kg	10	418.1

TPHIR reported on a dry weight basis

MRL = Method Reporting Limit

Approved by:



### RTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: UST 34 ESS Project ID: 922025

Client Sample ID: LRS-6 ESS Sample ID: 922025-06

Date Sample Received: 8/5/92 Date Reported: 8/14/92

Parameter	Results	Units	MRL	Method
Percent Solids	90	% w/w	1	160.3
Total Petroleum Hydrocarbon-IR	18	mg/Kg	11	418.1
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching	Procedure			1311
Metals Zinc	0.26	mg/L	Attached	6010

TPHIR reported on dry weight basis

ND = Not Detected above the Method Reporting Limit(MRL)

Approved by:

Laboratory Director

Date: 14 fac 12

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### ERTIFICATE OF ANALYSIS

### TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: UST 34 ESS Proj

Date Sample Received: 8/5/92

Client Sample ID: LRS-6

ESS Project ID: 922025

ESS Sample ID: 922025-06
Date Reported: 8/14/92

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	. ND	5
1,1-Dichloroethane	ND	
Chloroform	ND	5555555555555555555
Carbon Tetrachloride	ND	5
1,2-Dichloropropane	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND .	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Bromodichloromethane	ND	5
Trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	ND	5
Toluene	ND .	5
Ethyl Benzene	ND	5
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Trichloroethene	ND	5
Acetone	ND	10
Carbon Disulfide	ND	5
2-Butanone	ND	10
Cis-1,3-Dichloropropene	ND	5
4-Methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Styrene	ND	5
Xylenes (Total)	ND	10

ND = Not Detected above Method Reporting Limit (MRL)

Approved by: Bavid Dickinson

Laboratory Director

Date: /4//4

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### RTIFICATE OF ANALYSIS

### TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

### **METALS**

### EPA METHOD 1311

Client: ATEC Environmental Consultants

Date Sampled: 8/4/92

Client Project ID: UST# 34

Date TCLP Performed: 8/6/92

Client Sample ID: LRS-6

Date Leachate Extracted: 8/7/92

ESS Sample ID: 922025-06

Date Extract Analyzed: 8/10/92

	Act	ual	Adjusted*	
Target Analyte	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit
Antimony	ND	0.2	ND	0.3
Arsenic	ND	0.2	ND	0.2
Cadmium	ND	0.02	ND	0.03
Chromium	ND	0.05	ND	0.05
Lead	ND	0.1	ND	0.1
Mercury	ND	0.005	ND	0.005
Selenium	ND	0.3	ND	0.3
Silver	ND	0.05	ND	0.07
Copper	ND	0.02	ND	0.02
Nickel	ND	0.04	ND	0.04
Zinc	0.26	0.02	0.26	0.02
Beryllium	ND	0.02	ND	0.03
Thallium	ND	0.3	ND	0.4

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Laboratory Director

Date: /4/Au-9L



### **ERTIFICATE OF ANALYSIS**

### VOA SOIL SURROGATE RECOVERY

Client: ATEC Environmental Consultants

Client

Project ID:

**UST 34** 

Date Sample Analyzed: 8/13/92

ESS

Project ID: 922025

SAMPLE ID	1,2 DICHLOROETHANE-D4	TOLUENE-D8	BFB
	(70-121%)*	(81-117%)*	(74-121%)*
VS0813B1	102%	96%	105%
922025-01	109	99	97
922025-06	109	97	103

* Acceptance criteria

Approved by:

Vávíd Vickinson Laboratory Director

Date: 14/Aug 51





## RTIFICATE OF ANALYSIS

### TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: **UST 34** ESS Project ID: 922025

ESS Sample ID: **VS0813B1** Client Sample ID: Method Blank

Date Reported: 8/14/92 Date Sample Received:

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	5
1,1-Dichloroethane	ND	5 5 5 5 5 5 5
Chloroform	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloropropane	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
Chlorobenzene	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5 5 5
Bromodichloromethane	ND	5
Trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Benzene	ND	5
Toluene	ND	5 5
Ethyl Benzene	. ND	
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl Chloride	ND	10
Chloroethane	ND	10
1,1-Dichloroethene	ND	5
1,2-Dichloroethene (Total)	ND	5
Trichloroethene	ND	5
Acetone	ND	10
Carbon Disulfide	ND	5
2-Butanone	ND	10
Cis-1,3-Dichloropropene	ND	5
4-Methyl-2-Pentanone	ND	10
2-Hexanone	ND	10
Styrene	ND	5
Xylenes (Total)	ND	10

ND = Not Detected above Method Reporting Limit (MRL)

NA = Not Applicable

Approved by:



### ERTIFICATE OF ANALYSIS

### MATRIX SPIKE ANALYSIS SUMMARY

### TCLP METALS

### EPA METHOD 1311

Client: ATEC Environmental Consultants Matrix: Solid

TCLP Batch ID: 202301 Concentration in: mg/L

Target Analyte	Result	Spike Added	Spiked Result	Percent Recovery
Antimony	ND	*	ND	76%
Arsenic	ND	2.00	2.26	113
Cadmium	ND	0.5	0.39	78
Chromium	ND	1.0	1.22	122
Lead	ND	1.0	1.12	112
Mercury	ND	0.02	0.020	100
Selenium	ND	2.00	2.13	107
Silver	ND	1.0	0.76	76
Copper	ND	1.0	1.14	114
Nickel	ND	1.0	1.07	107
Zinc	ND	1.0	1.09	109
Beryllium	ND	*	ND	76
Thallium	ND	* *	ND	76

This matrix spike analysis summary applies to the following samples: 922025-01, -06

ND = Not Detected above Method Reporting Limit (MRL)

* Matrix spike recovery is based on the lowest spike recovery of the spiked analytes.

Approved by:

Laboratory Director

Date: 14/Aasq -



ESS Project ID: 921528

### ERTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils

Client Sample ID: LSP-34 ESS Sample ID: 921528-07

Date Sample Received: 6/11/92 Date Reported: 7/1/92

Parameter	Results	Únits	MRL	Method
pH (Corrosivity)	7.5	s.u.	N/A	9045
Flashpoint	No Flash	°F	200	1010
Polychlorinated Biphenyls	<b>N</b> D	mg/Kg	Attached	8080
Reactive Cyanide	ND	mg/Kg	2	7.3.3.2
Reactive Sulfide	ND	mg/Kg	2	7.3.4.1
Semivolatile Organics	ND	ug/Kg	Attached	8270
Volatile Organics	ND	ug/Kg	Attached	8240
Toxicity Characteristic Leaching Metals	Procedure		•	1311
Lead Copper Nickel Zinc	1.1 0.06 0.05 2.79	mg/L mg/L	Attached Attached Attached Attached	6010 6010 6010 6010

N/A = Not Applicable

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dickinson Laboratory Director



### ERTIFICATE OF ANALYSIS

# POLYCHLORINATED BIPHENYLS Method 8080

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-34 ESS Sample ID: 921528-07

Date Sample Received: 6/11/92 Date Reported: 6/30/92

Parameter	Result (mg/Kg)	MRL
Arochlor 1016	ND	0.1
Arochlor 1221	ND	0.1
Arochlor 1232	ND	0.1
Arochlor 1242	ND	0.1
Arochlor 1248	ND	0.1
Arochlor 1254	ND '	0.2
Arochlor 1260	ND	0.2

ND = Not Detected above Method Reporting Limit (MRL)

Surrogate Recovery Data	% Recovery	QC Limit
Dibutylchlorendate	100%	50 - 150%

Approved by:

David Dickinson

Laboratory Director

Date:

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### ERTIFICATE OF ANALYSIS

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

'Client Sample ID: LSP-34 ESS Sample ID: 921528-07

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
2-Chlorophenol	ND	1,670
2-Nitrophenol	ND	1,670
Phenol	ND	1,670
2,4-Dimethylphenol	ND	1,670
2,4-Dichlorophenol	ND`	1,670
2,4-Dinitrophenol	ND '	8,350
Pentachlorophenol	ND	8,350
4-Nitrophenol	ND	8,350
2,4,6-Trichlorophenol	ND	1,670
2,4,5-Trichlorophenol	ND	8,350
2-Methylphenol	ND ·	1,670
4-Methylphenol	ND	1,670
4-Chloro-3-Methylphenol	ND	1,670
4,6-Dinitro-2-Methylphenol	ND .	8,350

ND = Not Detected above Method Reporting Limit (MRL)



### **ERTIFICATE OF ANALYSIS**

### BASE NEUTRAL EXTRACTABLES EPA 8270

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-34 ESS Sample ID: 921528-07

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Acenaphthylene	ND	1,670
1,2,4-Trichlorobenzene	ND	1,670
Hexachlorobenzene	ND	1,670
Bis(2-chloroethyl)ether	ND	1,670
2-Chloronaphthalene	ND	1,670
1,2-Dichlorobenzene	ND	1,670
1,3-Dichlorobenzene	ND	1,670
1,4-Dichlorobenzene	ND	1,670
3,3-Dichlorobenzidine	ND .	3,340
2,4-Dinitrotoluene	ND	1,670
2,6-Dinitrotoluene	ND	1,670
Fluoranthene	ND	1,670
4-Chlorophenyl phenyl ether	ND	1,670
Bis(2-chloroisopropyl) ether	ND	1,670
Bis(2-chloroethoxy) methane	ND	1,670
Hexachlorobutadiene	ND	1,670
Hexachlorocyclopentadiene	NĐ .	1,670
Isophorone	ND	1,670
Naphthalene	ND	1,670
Nitrobenzene	ND	1,670
N-nitrosodiphenylamine	ND	1,670
N-nitrosodi-n-propylamine	ND	1,670
Bis(2-ethylhexyl)phthalate	ND	1,670
Di-n-butylphthalate	ND ,	1,670
Di-n-octylphthalate	ND	1,670
Diethyl phthalate	<b>N</b> D	1,670
Dimethyl phthalate	ND	1,670
Benzo(a) anthracene	ND	1,670

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dickinson Laboratory Director

Date:



### **ERTIFICATE OF ANALYSIS**

# BASE NEUTRAL EXTRACTABLES cont.

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-34 ESS Sample ID: 921528-07

Date Sample Received: 6/9/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Benzo(a)pyrene	ND	1,670
Benzo(b) fluoranthene	ND	<b>1,67</b> 0.
Benzo(k) fluoranthene	ND	1,670
Chrysene	<b>N</b> D	1,670
Acenaphthene	<b>N</b> D	1,670
Anthracene	<b>N</b> D	1,670
Benzo(ghi)perylene	ND ,	1,670
Fluorene	ND	1,670
Phenanthrene	<b>N</b> D	1,670
Dibenzo(a,h)anthracene	<b>N</b> D	1,670
Indeno(1,2,3-cd)pyrene	ND	1,670
Pyrene	ND	1,670
Hexachloroethane	ND	1,670
4-Bromophenyl-phenylether	, <b>N</b> D	1,670
Benzyl Alcohol	ND	1,670
Benzoic Acid	ND	8,350
Bis(2-Chloroethoxy)methane	ND	1,670
4-Chloroaniline	ND	1,670
2-Methylnaphthalene	<b>N</b> D	1,670
2-Nitroaniline	ND	8,350
3-Nitroaniline	ND	1,670
Dibenzofuran	ND	1,670
4-Nitroaniline	ND	8,350
Butylbenzylphthalate	ND	1,670

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dickinson Laboratory Director Date:

057





### **ERTIFICATE OF ANALYSIS**

### TCL VOLATILE ORGANICS Method 8240

Client: ATEC Environmental Consultants

Client Project ID: Ft. Devens-Stockpiled Soils ESS Project ID: 921528

Client Sample ID: LSP-34 ESS Sample ID: 921528-07

Date Sample Received: 6/29/92 Date Reported: 7/1/92

Parameter	Result (ug/Kg)	MRL
Methylene Chloride	ND	1,000
1,1-Dichloroethane	ND	1,000
Chloroform	ND	1,000
Carbon Tetrachloride	ND	1,000
1,2-Dichloropropane	ND	1,000
Dibromochloromethane	ND	1,000
1,1,2-Trichloroethane	ND	1,000
Tetrachloroethene	ND	1,000
Chlorobenzene	ND	1,000
1,2-Dichloroethane	ND	1,000
1,1,1-Trichloroethane	ND '	1,000
Bromodichloromethane	ND	1,000
Trans-1,3-Dichloropropene	ND	1,000
Bromoform	ND	1,000
1,1,2,2-Tetrachloroethane	ND	1,000
Benzene	. ND	1,000
Toluene	ND	1,000
Ethyl Benzene	$\mathbf{N}D$	1,000
Chloromethane	ND	1,000
Bromomethane	ND	1,000
Vinyl Chloride	ND	1,000
Chloroethane	ND	1,000
1,1-Dichloroethene	<b>N</b> D	1,000
1,2-Dichloroethene (Total)	ND	1,000
Trichloroethene	ND	1,000
Acetone	<b>N</b> D	1,000
Carbon Disulfide	ND	1,000
2-Butanone	<b>N</b> D	1,000
Cis-1,3-Dichloropropene	ND	1,000
4-Methyl-2-Pentanone	ND	1,000
2-Hexanone	ND	1,000
Styrene	ND ·	1,000
Xylenes (Total)	<b>N</b> D	1,000

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

Laboratory Director

ate:

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053

vironmental Science Services



### ERTIFICATE OF ANALYSIS

### TOXICITY CHARACTERISTICS LEACHING PROCEDURE (TCLP)

### **METALS**

### EPA METHOD 1311

Client: ATEC Environmental Consultants

Client Project ID: Stockpiled Soils

Client Sample ID: LSP-34

ESS Sample ID: 921528-07

Date Sampled: 6/9/92

Date TCLP Performed: 6/22/92

Date Leachate Extracted: 6/23/92

Date Extract Analyzed: 6/24/92

<del></del>	Act	ual	Adjusted*					
Target Analyte	Sample Result (mg/L)	Method Reporting Limit	Sample Result (mg/L)	Method Reporting Limit				
Antimony	. ND	0.1	ND	0.2				
Arsenic	ND	0.2	ND	0.2				
Cadmium	ND	0.02	ND	0.02				
Chromium	ND	0.05	ND	0.05				
Lead	1.1	0.1	1.1	0.1				
Mercury	ND	0.005	ND	0.005				
Selenium	ND	0.3	ND	0.3				
Silver	ND	0.05	ND	0.09				
Copper	0.05	0.02	0.06	0.03				
Nickel	0.05	0.04	0.05	0.04				
Zinc	2.79	0.02	2.79	0.02				
Beryllium	ND	0.02	ND	0.04				
Thallium	ND	0.05	ND	0.09				

^{*} Actual sample result adjusted for matrix bias. Refer to matrix spike analysis summary form.

ND = Not Detected above Method Reporting Limit (MRL)

Approved by:

David Dicki/nsøn

Laboratory Director

Date:

059

### 28.9 CHAIN OF CUSTODY FORMS

The following chain of custody forms were produced for the soil samples which were laboratory analyzed.

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### 28.10 HAZARDOUS WASTE MANIFEST

UST No. 0034 was estimated to contain 35 gallons of No. 2 fuel oil and residual materials. Approximately 20 gallons of fuel oil was removed on January 7, 1992, and transported to a licensed T.S.D.F. (Beede Waste Oil Corporation). Approximately 15 gallons of fuel oil and residual materials were removed and drummed on January 15, 1992. Drummed material was transported to Beede Waste Oil on February 25, 1992.

The following Hazardous Waste Manifests were generated from residual tank materials during the vacuum process and cleaning process. The manifest dated January 7, 1992 is associated with vaccuuming product from several USTs. Therefore, the total quantity (1400 gallons) is much greater than the 20 gallons which was removed from UST 0034. The manifest dated February 25, 1992 is associated with the drummed material from several USTs. Therefore, the total quantity (395 gallons) is much greater than the 15 gallons which was removed from UST 0034.





# COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF HAZARDOUS WASTE

One Winter Street Boston, Massachusetts 02108

ase print or type. (Form designed for use on elite (12-pitch) typewriter.)			·			
UNIFORM HAZARDOUS 1. Generator US EPA I	D No. M.	anifest	2. Page 1	Informatio	n in the shade	d areas
WASTE MANIFEST MIAITIZI/101	<u>গারা মূ</u> শৈর্ মৃ স্তেত্র	001	01 /	is not requi	red by Federa	ilaw.
3. Generator's Name and Mailing Address HQS For D. AFID. DEQ Fort Dec	evens			ianilest Docu		į
AFID. DEQ	BOXIC	_	MA	F3536	17	
Fort Dec	-1 1433		B. State G		<i>i.</i> -	
4. Generator's Phone 50 81 756 - 3005 - 34 hor	<u> 518-756-27</u>	//		SAY	1/2	
5. Transporter 1 Company Name 6.	US EPA ID Number		C.State T	rans. ID 👙		
Beede Waste Oil Corp. N H	[D]018958140	1 1 1	WIHIA	9161713	6111	
7. Transporter 2 Company Name 8.	US EPA ID Number			orter's Phone	03 382	-5761
1			E. State 1	rans. ID	•	
Designateo Facility Name and Site Address     10.	US EPA ID Number		1 131		13:11	11
Beede Waste Oil Corp.			F. Transp	orter's Phone (	124 1 4	
Kelley Road PO Box 127			G. State F	ectity's ID 💥	::: Not Re	quired
	D1018958140	1_1.1_	H. Facility	4 Phone (n' 3	- 5 g g	5761
•		12. Cont	ainers	_13.	14.	3,03
11. US DOT Description (Including Proper Shipping Name, Hazard Class,	and ID Number)	No.	Туре	Total Quantity	Unit Wt/Vol	Weste No.
				•	<del>                                     </del>	
WASTE PETROLEUM OILS N.O.S.		1 1 2	r _T			200
COMBUSTIBLE LIQUID NA1270		† , 1		1141010	G	MI BIG 7
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Section 1 - Section 1 - Section 2 - Secti	Richard Company	لللل	170	3		إخلنانا
J. Additional Descriptions for Materials Listed Above finclude physical sta	te and hazard code.)		K. Hanolig	o Codes for W	astes Listed	Above
			a. 🖘 🔾		c.	1 - 1: 1
· · · · · · · · · · · · · · · · · · ·	知言:1995 · 夏(从)	÷ . • .	30	T . 3/200	<b>光</b> 次。3	
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6. \		<u> </u>	1.6.	19.3	0.4	
15. Special Handling Instructions and Additional Information						
To be Recycled	,			Recyc	٦.	
				Necyc.	TG	
<ol> <li>GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignor proper shipping name and are classified, packed, marked, and labeled, and are in all</li> </ol>	nent are fully and accurately descr I respects in proper condition for t	ribed above br ransport by hi	Y ighway			
according to applicable international and national government regulations.			•			
If I am a large quantity generator, I certify that I have a program in place to reduce t	he volume and toxicity of waste g	enerated to th	se degree I hav	e determined to I	be economically	practicable
and that I have selected the practicable method of treatment, storage, or disposal or ment; OR, if I am a small quantity generator, I have made a good faith effort to mini	currently available to me which mis	nimizes the pi	esent and luti	mud of treatly an	an nealth and ti	HE GUANOU.
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Distance and	Ι α					Date
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17. Transporter 1 Acknowledgement of Receipt of Materials	( San June	3		.3 -	Month	Date Day Year
Printed/Typed Name	Significand /	1 m	//		Monin	ا العام العام ا
18 Transporter 2 Approvided from the Charles of Marielle	In Juni p	//_	frage	7-45	71/	Date
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Printed/iyped Name	Signature				month	l l l
19 Disgress and Indiana Co	<u></u>					
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of hazardous mate	rials covered by this manifes	t except as	noted in Iter	n 19.		
				<del></del>		Date
Printed/Typed Name	Signature				Month	Day Year

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### many of the second of the second second second second second ULPARTMENT OF ENVIRONMENTAL PROTECTION . DIVISION OF HAZARDOUS WASTE

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e print or type. (Form designed for use on alite	(12-pitch) typewriter.)  1. Generator US EPA ID	NAIL MY	nifest	2. Pag	e 1 Informati	on in the shade	· 25016 be
UNIFORM HAZARDOUS WASTE MANIFEST	MIA 17 12 11 10 10	0 2 5 1 5 4 6		01		uired by Feder.	- :
3. Generator's Name and Mailing Address			10011	A. Stat	te Manifest Doc	ument Numbe	
	Dept. of The A		10	MA	F3537	77	
7		t. Devens Box		B. Stat	e Gen. ID	h	
4. Generator's Phone ( 508-796-3002	AFZD-DEQEM AT	cn: Mark Boser				ZZ	<u></u> -
5. Transporter 1 Company Name		IA ULS EA ID Number	. 1 . 4 . 0	ļ	Trans. 10	/A	
Beede Waste Oil Corp.	8.	. US EPA ID Number	114.0		rsporter's Phone	16025	22-1761
7. Transporter 2 Company Name	<u></u>	1 1 1 1 1 1 1		E. Sta	te Trans. 10	100013	29-2-101
9. Designated Facility Name and Site Address	10.	US EPA ID Number			1 1 7 11,	<u> </u>	
Beede Waste Oil Corp.					nsporter's Phone te Facility's ID		quired =
Kelley Rd., P.O. Box 127	INCE	I, D, O, 1, 8; 9; 5, 8	. 1 . 4 . 0			202 28	7 -7/1
Plaistow, NH 03865		1121012101212	12. Conta		13.	14.	(-3.76)
11. US DOT Description (Including Proper Ship	nping Name, Hazard Class, a	nd ID Number)	No.	Type	Total Quantity	Unit Wt/Vol	Waste No.
- Waste Petroleum Oils N	.o.s.					{	
Combustable liquid NA	. 1270		007	V 23	^ ^ ~ ~	76	MADI
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Additional Descriptions for Materials Listed	PROPERTY AND PROPERTY OF	made establication	51761	- U-	rdiing Codes for	Wasing Links	VP-215-4-65-5-
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Special Handling Instructions and Addition	allofomation	m. 11 pl.1 621	1-8	dgal	יין דעוני		1-25-72
o Be Recycled 12 Fuel Fax Recycling only has	With SI=Sludge		<i>1-u</i>	49 0-	177 [-,2	2686 -	* 20 \@
GENERATOR'S CERTIFICATION I hereby reclare th	at the contents of this consignment	ent are fully and accurately descri	ibed above 5				
proper shipping name and are classified, packed, m according to applicable international and national g	arked, and labeled, and are in all i overnment regulations.	respects in proper condition for t	ransport by its	guway			
If I am a large quantity generator, I certify that I have and that I have selected the practicable method of ment; OR, if I am a small quantity generator, I have	rreatment storaue or disposal cu	rrently available to me which mil	nimizes the pr	¢esul and	Infine (Ixeal to bh	nusu nesiin sua c	THE SUMMORY
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Transporter 1 Acknowledgement of Re	ceipt of Materials		_L/				Date
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Transporter 2 Acknowledgement of Re	caint of Materials	Dun	_/1	مم	<u> </u>		Date
Printed/Typed Name		Signature	-/			Month	
Discrepancy Indication Space							
acility Owner or Operator: Certification of	receipt of hezardous mater	ials covered by this manifes	l except as	oted in l	Item 19.		
Printed/Typed Name		Signature					Date Vee
Franco i ypad Name	:	Signature				Movith	L'ay Year

1 OMO No. 2050-0039, Expires 9-30-91

8700-22 (Rev. 9-88) Previous editions are obstilete. 

### 28.11 WEIGHT RECEIPTS AND BILLS OF LADING

The following Weight Receipts and Bills of Lading document the disposal of contaminated soil associated with UST 0034.

		P.O. BOX ∠J89	IVE	l	FMN		Tash ☐ CHECKED	C.O.D. 🗆	Charge 🖊	
MAIN OFFICE: NVERS 750-4200	65 5	DANVERS, MA 01923- SHREWSBURY DIVI 1 LAKE STREET AT F SHREWSBURY, MA 0 ICE 881-1430 PLANT	SION RTE. 20 1545	M E	LEFT JOB		TICKET	CAR	72861	
stomer # ATE001 TEC ASSOC. 2 ACCORD PARK DRIV DRWELL, MA 02061 17-878-6200	JE	Job # BLDGFD US ARMY BLDG 2447 ¢ FORT DEVENS, HA PO# 37.04.72053	01433	HIX	<b># #</b> 76	HIX NAME	E OIL SOIL		RUCK# 9	
Time 9:20:30	Tare 39600	¥et 60560	Gross 100160		Total 30.28					
Cost/Ton Perce	ent Tax	Load Cost Amount	Tax Dest Cl	harge	iotal Cost					
Load≹ 1	Job Tota 30.2		ime & Date am Aug 5, 19	Fob/ 992 F		RE	ECEIVED BY	SPONSIBLE F BY TRUCKS I BEYOND-STE	NY WILL NOT BE RE- OR DAMAGE CAUSE DELIVERING MATERIA SEET PAVEMENT.	D
MAIN OFFICE: IVERS 750-4200	 S 651 S	T BITUMINOUS PR 5 CHERRY H RI P.O. BOX 2089 DANVERS, MA 01923- HREWSBURY DIVIS LAKE STREET AT R SHREWSBURY, MA 0 CE 881-1430 PLANT	VE 5089 SION TE. 20 1545	I M	FMN ARRIVED J LEFT JOB	JOB	CHECKED I	CAR	Charge Ch	
tomer # ATE001 EC ASSOC. ACCORD PARK DRIVING RMELL, MA 02061 7-878-6200	Ε	Job # BLDGFU US ARMY BLDG 2447 FORT DEVENS, MA PO# 37.04.72053	01433	Blx 4	ŧ <b>ŧ</b> 76	HIV NAME	01L 30;L	TR	UCK¶ 9	
Time 9:24:00	Tare 39600	Net 6:(480)	Gr <i>uss</i> 108966		Total 36.24					
Cost/Ton Percen	nt Tax L	oad Cost Amount	Tex lest Ch	aroe	lotal Cost					
Load <b>t</b> 2	Job Total 64.52		¤e & Date ≈ Aug 5, 199	Fol:/D 92 F	el					

THIS COMPANY WILL NOT BE RESPONSIBLE FOR DAMAGE CAUSED BY TRUCKS DELIVERING MATERIAL BEYOND STREET PAVEMENT.

RECEIVED BY _____



### BILL OF LADING POLICY # WSC-89-001



OF LADING #:	. DATE:	DEP (	CASE I:
ENERATOR NAME/ADDRESS:  J.S. ARMY  AFZD-EM, BOX 19  FORT DEVENS, MA 0143  DISTACTIFELE: 508-796-3002	STRE TOW	OF GENERATION:  ET BUILDING 2  N FORT DEVE  TE MA 014.  NSPORTATION ACCIDENT?	33
ATERIAL DESCRIPTION (TOTAL PROJECTED QUAN DATAMINATED SOIL: 37.5 25 vol (car yda)	CONTAMENA	TED DEBRIS: # absorbedi pads _ ol (ca yds) speedy dri	other (specify)
PE OF CONTAMINATION:gazoline X #2 oil #4 oil #6 oil och	er (specify) .	ANALYSES ATTACH Volatiles:Y . <u>~</u> 1	ŒD7 N ТРН: <u>Х</u> Ү <u></u> N
RANSPORTER NAME/ADDRESS:  TRIMOUNT BITUMINOUS  TO BLANCHARD RD.  BURLINGTON MA OF  ONTACTITE II: DAVID PETER (617)  EMERATOR'S SIGNATURE: DEP  THORIZATION: DEF. SIGNATURE (6crimation region  (If applicable) DEP. SIGNATURE (6crimation region	PRODUCTS IN LOS SOS STAPPHORIZATIONS TO AN INTERPRETATIONS TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AN INTERPRETATION TO AND INTERPRETATION TO AN INTERPRETATION TO AND	TINATION FACILITY NAME/ALL PIMOUNT RITUM DSI LAKE ST. DHR FUISRURY. E OF FACILITY: Y Recycling	MA. PRODUCTS
LUCK/TRACTOR REGISTRATION  CALLER REGISTRATION  FT SITE AT  DATE  ENERATOR OR RECEIVING FACILITY REPRESENTA  GNATURE:  CANSPORTER'S SIGNATURE	74 -3-93 TIVES	QUANTITY SHIPPED: TOTAL PROJECTED SHIPPED TO DATE THIS LOAD (crimated) REMARKING TO BE SHIPPED  TO DATE  DATE  DATE	7
ECEIVING FACILITY REFRESENTATIVE SSIGNATUR	- 1/2	DATE OS MALETED FORM WITHIN S DAY	STO: ARRIME 9.70
1 1992 DEPARTM  EP 1-Reg. =	MENT OF ENVIRONMENT SCHERGENCY RESPON ONE WINTER STREET, SO BOSTON, MA 0210 AND E ORIGINATING REGION	CAL PROTECTION USE BRANCH USE BRANCH USE BRANCH USE BRANCH USE	

SIFICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF L. C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY ALTIES.

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### BILL OF LADING . POLICY # WSC-89-001



L OF LADING #: DEP CASE 1: DATE: SITE OF GENERATION: GENERATOR NAME/ADDRESS: IK#Z F.O. UST #34 TRANSPORTATION ACCIDENT? 508-796-3002 CONTACT/TEL I: MATERIAL DESCRIPTION (TOTAL PROJECTED QUANTITY): CONTAMINATED DEBRIS: # absorbent pads ... # absorbent booms CONTAMINATED SOIL: 37.5 25 wt (tons) voi (cu yds) vol (cz yds) speedy dri _____ other (specify) _ TYPE OF CONTAMINATION: **ANALYSES ATTACHED?** gasoline X 12 oil __ 14 oil __ #6 oil __ other (specify) Volsules: Y XN TPH: XY N TRANSPORTER NAME/ADDRESS: DESTINATION FACILITY NAME/ADDRESS:  $\mathsf{C}\mathsf{U}\mathsf{M}\mathsf{U}\mathsf{M}\mathsf{U}\mathsf{T}$ X 503 TYPE OF FACILITY: Landfill Incinerator GENERATOR'S SIGNATURE: (ABOVE ITEMS MUST BE COMPLETED PRIOR TO DEF AUTHORIZATION: 'DEF. SIGNATURE (originating region): (if applicable) DEP. SIGNATURE (destination region): DATE: TRUCK/TRACTOR REGISTRATION QUANTITY SHIPPED: wt (tons) vol (ca yas) TRAILER REGISTRATION TOTAL PROJECTED SHIPPED TO DATE LEFT SITE AT (Laternia CYOT SELL GENERATOR OR RECEIVING FACILITY REMAINING ITO BE SHIPPED SIGNATURE: 72863 TRANSPORTER'S SIGNATURE RECEIVING FACILITY REFRESENTATIVES SIGNATURE GENERATOR IS RESPONSIBLE FOR RETURNING COMPLETED FORM WITHIN 5 DAYS TO: CEIVED DEPARTMENT OF ENVIRONMENTAL PROTECTION 2 1 1992 BWSC/EMERGENCY RESPONSE BRANCH ONE WINTER STREET, SA FLOOR DEP BOSTON, MA 02108 ral - Reg. 🗧 **TVD** THE ORIGINATING REGIONAL OFFICE

LSIFICATION OR MISREPRESENTATION OF ANY OF THE INFORMATION ON THIS BILL OF LADING IS A VIOLATION OF G.L. C. 21C AND 310 CMR 30.006 AND 30.007 AND IS SUBJECT TO APPROPRIATE STATUTORY OR REGULATORY NALTIES.

### 28.12 PERMITS AND CERTIFICATIONS

The following permit was obtained from the Fort Devens Fire Department for the proper closure of a UST. Following the permit there is a disposal receipt for the steel UST.

# The Commonwea

# DEPARTMENT OF PUBLIC SAFETY DIVISION OF FIRE PREVENTION

FOR REMOVAL AND TRANSPORTATION TO APPROVED TANK YARD In accordance with the provisions of Chapter 148 6 14 as provided in Section 38A this permit is granted to Name:

Arec Environmental Associates Inc.

Full name of person, firm or Corporation

To transport underground steel storage tank(s)

to Approved tank yardh. ]

State clearly type of inert gas used in steel storage tank

steel tank:

Fee paid \$

Name and address of contractor Z. Accord Park Dr. Norwell disposing tank ATEC. Asso. Location to which tank will be transported

This permit will expire 31 Jan 1992

Ignature of official granting permit()
(Head of Fire Dept.)

	· 	
RECEIPTEOFEDISPOSATSOFEU	NDERGROUNDESTEEM STORAGE	
NAME AND ADDRESS	JOHN C. TOMBARELLO & SONS	<u>\$</u>
OF APPROVED TANK YARD	207 ALARSTON ST. LAYFRENCE, MASS. 01841	
APPROVED TANK YARD NO.		
Tank Yard Ledger 502 CMR		00116
delivered to this "approved tan an	o accepted same in conformance v	partnership KTIC FAUI/DIMEIBO ADOC.
A valid permit was issued by L this tank to this yard	OCAL Head of Fire Department I	teel Storage Tank dismantling yards.  DDM _/ 7 9 / 9 to transport
Name and official title of appr	oved tank yard owner or owners a	
Morento	Cpa	DATE SIGNED
{	must be returned to the local l	
FDID# 17919 pursuant t	o 502 CMR 3:00. (EACH TANK MUST	HAVE A RECEIPT OF DISPOSAL)
FORM F.P. 291 (rev. 9/88)	(OVER)	MASSACHUSEITS STATE FIRE MARSHAL'S OFFICE
		••
		·
	a grand a production of the con-	TRACE STORY OF THE STORY
ு ஆடைந்தின் அவள் இதிகை ஆகும் நூறைய கடி இதிக்கு இதி		
DIMENSIONS	Tank Removed	
Width Length	FT. Devlenio	Bldg:# 2447 - tople# 37-
· · · · · · · · · · · · · · · · · · ·	(no. street	
Tank 1 -48" x 10'8"	***	AYEU
••	(city or town)	
Tank 2 X	(010) 01 001111)	
Tank 3 X	Fire Departmer	it non-listed
Tank 4 X	Permit #	
tank 4 X		(if applicable)

Tank 5 ---- X ---- (feet) (feet)

### 28.13 UST CLOSURE CHECKLIST

The following closure checklist was produced by ATEC Associates Inc., to ensure quality control of the proper abandonment of a UST.

Trem or Optible Old Critical Lice		77.7	1 - 4/2	•	
UST-CLOSURE O/C CHECK LIST	- Tunk 3	B/d9	7447	•	
					310,000
DEFINABLE FEATURE	DATE	TIME	MEASUREMENTS		NOTES
				······································	
Calibrate PID & LFL/O2 meters	1/16/92	8100			Site Topography: /eval
•			<u> </u>	_	
Drain & flush piping & pumps	1/16/92	8100			
			· .		
Excavate to top of tank	1/16/92	9:15			Depth to tank; 1,0
		; .	- : ;		
nt tank note LEL/O2 levels & times	1/6/72		· LET	O2	
		T1: // 00	٥	70. T	
		T2: ,;,<	0	eal	
		T3: ,:30	0	70,7	
		T4:		•	
		T5:			
	1	T6:		·	
	-	T7:			
		T8:		<u>,                                     </u>	
		T9:			
		T10:		•	
		T11:			
		T12:			
		A Lim			
imp & clean tank:	1 / / 5	· ·	40 -11:-11		T-kPi-mins II
	1/7/92		10 gal liquid		Tank Dimensions: 4x 10.5
Note quantities liquid (gal) & sludge (lbs)	1/16/97	4:30	15 gld. sludge		tank in good condition no
				•	tent in good condition no hokes, perfor rust. Fill
Remove all tank connections, and cap openings	1/6/92	8:45		•	pipe very loose
				·	
Excavate soils to free tank	1/10/93	9:05			
				·	
Segregate stained soils: Note PID readings	1,/14/97	9:30	PID (ppm)	NDIR (ppm)	
(if>10 ppsn NDIR also)			56		Stock-1
All soils visibly contrue.			31		Stock-7
Soils surround took slight to				···	
mod. contan. Sils on top					
4 13	71				
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DEFINABLE FEATURE	DATE	_TIME_	MEASUREMENTS	NOTES
Remove tank, piping, pumps, and hardware.	1/16/92	9:30	Photographic Descriptions:	Soil Description: med brown fin
Photograph excavation; note descriptions.	1716776	7:30	Photo 1: far le	sand w/fine-course go
Sketch Schematic			Photo 2: taule	cobbles boulders
			Photo 3: excer N. Luce S	( C D D D C C C C C C C C C C C C C C C
······································			Photo 4: excuse & face N	
			Photo 5:	Depth to Groundwater/Conditions: 14/14
			Photo 6:	
:				:
Place tank at safe distance from excavation	1/10/92	9170		Depth of Excavation: 570
Secure tanks transport off-site	1/11/92	17:45		•
	·			
Obtain 10 soil samples from	1/14/92	4:4	PID (ppm) NDIR (ppm) .	Sample locations: 75-35'de 40
excavation walls/bottom: Note PID/NDIR			SS1: 4,0	. 5 well.
readings and sample locations.			SS2: 3 4	الله س ک
9-4-			SS3: /1,4/	to wall.
			SS4: 0.4	W wall
			SS5: 15.4	N wall
			SS6: 50	N wall
			SS7: 7.6	E wall
•			SS8: 44	E wall
			SS9: 25	bottom
			SS10: 34	hofton
			: : :	:
			•	
Obtain 2 soil samples & 1 water samples	1/14/97	10: 70		Sample Locations:
for laboratory analysis. Note sample locations.				LSS1: 소 < 5 ¢
				LSS2: 4 551D
				T Wet.
				1553: composite stockpile

¿CLOSURE O/C CHECK LIST	<del></del>	T		T
				<u> </u>
DEFINABLE FEATURE	DATE	TIME	MEASUREMENTS	NOTES
				tons of backfill
Backfill excavation (if clean):				Backfill description:
Note amount & type of backfill .				
-				
Close open excavation (if applicable)			·	
Restore surface and rope off				:
( <u> </u>				
Remove rubbish/debris			•	
		<u> </u>		
Transport hazardous material off-site:				Amount Classification
Note amount/classification	1	1 1 1 1 1	,	<u>.</u>
Make copies of manifests, permits,		, 5 .		
and disposal receipts.				

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### 28.14 INSTALLATION

The installation of a replacement UST No.0034 was not performed.

### **ATEC Promises**

- ▼ To be totally responsive to our clients' wants and needs with a constant sense of urgency.
- To perform high quality services with technically superior personnel.
- ▼ To perform all assignments for a reasonable fee and within budget.
- ▼ To communicate with our clients frequently so there will be no surprises.
- ▼ To complete our assignments and deliver reports when promised.
- To review reports with our clients to be sure there are no misunderstandings.
- To deliver accurate invoices to our clients within seven (7) days after the completion of the assignment or as required by the clients.
- To follow up with the clients to be sure services completely satisfied their wants and needs.



At ATEC, "Client satisfaction with a constant sense of urgency" is our goal. If you have concerns with an ATEC project or service that your local ATEC Representative has not resolved, please call 1-800-800-ATEC, a "hot line" to my office. We will do everything possible to satisfy your concerns. If you have received quality service, we would appreciate knowing that as well. Thank you for allowing us to work on your team.

Sincerely,

Gerald D. Mann

President

ATEC Associates, Inc.

Corporate Headquarters – Client Satisfaction Hot Line
1-800-800-ATEC
(1-800-800-2832)