

EXHIBIT C-12

RTN 3-0015121, Fernald School

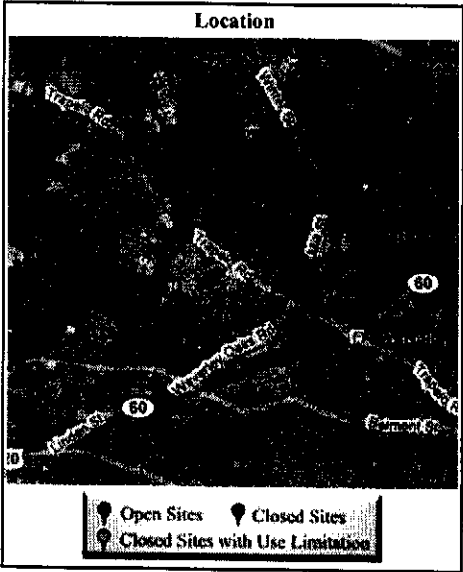
Site Information			
Site Number:	3-0015121	Category:	TWO HR
Site Name:	FERNALD SCHOOL	Release Type:	RAO
Address:	200 TRAPELO RD	Current date:	7/11/1997
Town:	WALTHAM	Phase:	
Zipcode:		RAO class:	
Official notification date:	5/20/1997	Location type:	SCHOOL, STATE
Initial status date:	5/20/1998	Source:	VEHICLE

Response Action Information	
Response Action Type:	RAO - Response Action Outcome - RAO
Status:	RAORCD - RAO Statement Received
Submittal Date:	7/11/1997
RAO class:	A2
Activity & Use Limitation:	NONE
Response Action Information	
Response Action Type:	REL - Potential Release or Threat of Release
Status:	REPORT - Reportable Release or Threat of Release
Submittal Date:	5/20/1997
RAO class:	
Activity & Use Limitation:	
Response Action Information	
Response Action Type:	IRA - Immediate Response Action
Status:	APORAL - Oral Approval of Plan or Action
Submittal Date:	5/20/1997
RAO class:	
Activity & Use Limitation:	

Chemicals		
Chemical	Amount	Units
GASOLINE	40	GAL

LSPs	
LSP#	Name
9092	OBRIEN, JAMES B

RAO Detail			
Class	Method	GW Category	Soil Category
A2	1	2	1
A2	1	2	1





Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-104

RESPONSE ACTION OUTCOME (RAO) STATEMENT &
DOWNGRADIANT PROPERTY STATUS TRANSMITTAL FORM

Pursuant to 310 CMR 40.0180 (Subpart B), 40.0580 (Subpart E) & 40.1056 (Subpart J)

Release Tracking Number

3 - 15121

A. SITE OR DOWNGRADIANT PROPERTY LOCATION:

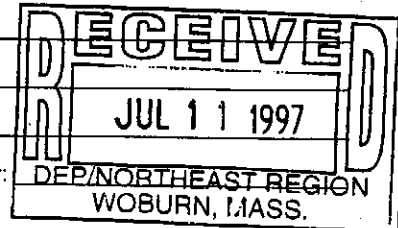
Site Name: (optional) Fernald State School

Street: 200 Trapelo Road

Location Aid: _____

City/Town: Waltham

ZIP Code: 02154



☐ Check here if this Site location is Tier Classified. If a Tier I Permit has been issued, state the Permit Number: _____

Related Release Tracking Numbers that this Form Addresses: _____

If submitting an RAO Statement, you must document the location of the Site or the location and boundaries of the Disposal Site subject to this Statement. If submitting an RAO Statement for a PORTION of a Disposal Site, you must document the location and boundaries for both the portion subject to this submittal and, to the extent defined, the entire Disposal Site. If submitting a Downgradient Property Status Submittal, you must provide a site plan of the property subject to the submittal and, to the extent defined, the Disposal Site.

B. THIS FORM IS BEING USED TO: (check all that apply)

☒ Submit a Response Action Outcome (RAO) Statement (complete Sections A, B, C, D, E, F, H, I, J and L).

☐ Check here if this is a revised RAO Statement. Date of Prior Submittal: _____

☐ Check here if any Response Actions remain to be taken to address conditions associated with any of the Releases whose Release Tracking Numbers are listed above. This RAO Statement will record only an RAO-Partial Statement for those Release Tracking Numbers.

Specify Affected Release Tracking Numbers: _____

☐ Submit an optional Phase I Completion Statement supporting an RAO Statement or Downgradient Property Status Submittal (complete Sections A, B, H, I, J, and L).

☐ Submit a Downgradient Property Status Submittal (complete Sections A, B, G, H, I, J and K).

☐ Check here if this is a revised Downgradient Property Status Submittal. Date of Prior Submittal: _____

☐ Submit a Termination of a Downgradient Property Status Submittal (complete Sections A, B, I, J and L).

☐ Submit a Periodic Review Opinion evaluating the status of a Temporary Solution (complete Sections A, B, H, I, J and L).

Specify one: ☐ For a Class C RAO ☐ For a Waiver Completion Statement indicating a Temporary Solution

Provide Submittal Date of RAO Statement or Waiver Completion Statement: _____

You must attach all supporting documentation required for each use of form indicated, including copies of any Legal Notices and Notices to Public Officials required by 310 CMR 40.1400.

C. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☐ Assessment and/or Monitoring Only

☐ Removal of Contaminated Soils

☐ Re-use, Recycling or Treatment

☐ On Site ☐ Off Site Est. Vol.: _____ cubic yards

Describe: _____

☐ Landfill ☐ Cover ☐ Disposal Est. Vol.: _____ cubic yards

☒ Removal of Drums, Tanks or Containers

Describe: (2) 55-gallon drums containing absorb. material

☒ Removal of Other Contaminated Media

Specify Type and Volume: (15) gallons of gas + water from impacted puddle (contained in Vac-Truck)

☐ Other Response Actions

Describe: _____

☒ Deployment of Absorbant or Contaminant Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

☐ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

SECTION C IS CONTINUED ON THE NEXT PAGE.



RESPONSE ACTION OUTCOME (RAO) STATEMENT &
DOWNGRADE PROPERTY STATUS TRANSMITTAL FORM

Pursuant to 310 CMR 40.0180 (Subpart B), 40.0580 (Subpart E) & 40.1056 (Subpart J)

Release Tracking Number

3 - 15121

C. DESCRIPTION OF RESPONSE ACTIONS: (continued)

- ☐ Check here if any Response Action(s) that serve as the basis for this RAO Statement involve the use of Innovative Technologies. (DEP is interested in using this information to create an Innovative Technologies Clearinghouse.)

Describe Technologies: _____

D. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste was sent to an off-site facility, answer the following questions)

Name of Facility: Northland Environmental, Inc. / ZECCO, Inc.

Town and State: Providence, RI / Northboro, MA

Quantity of Remediation Waste Transported to Date: (2) 55-gal drums / (15) gallons water + gas

E. RESPONSE ACTION OUTCOME CLASS:

Specify the Class of Response Action Outcome that applies to the Site or Disposal Site. Select ONLY one Class:

- ☐ Class A-1 RAO: Specify one of the following:

☐ Contamination has been reduced to background levels. ☐ A Threat of Release has been eliminated.

- ☒ Class A-2 RAO: You MUST provide justification that reducing contamination to background levels is infeasible.

- ☐ Class A-3 RAO: You MUST provide both an implemented Activity and Use Limitation (AUL) and justification that reducing contamination to background levels is infeasible.

If applicable, provide the earlier of the AUL expiration date or date the design life of the remedy will end: _____

- ☐ Class B-1 RAO: Specify one of the following:

☐ Contamination is consistent with background levels ☐ Contamination is NOT consistent with background levels.

- ☐ Class B-2 RAO: You MUST provide an implemented AUL.

If applicable, provide the AUL expiration date: _____

- ☐ Class C RAO: ☐ Check here if you will conduct post-RAO Operation, Maintenance and Monitoring at the Site.

Specify One: ☐ Passive Operation and Maintenance ☐ Monitoring Only

☐ Active Operation and Maintenance (defined at 310 CMR 40.0006)

F. RESPONSE ACTION OUTCOME INFORMATION:

- ☐ If an RAO Compliance Fee is required, check here to certify that the fee has been submitted. You MUST attach a photocopy of the payment.

- ☐ Check here if submitting one or more AULs. You must attach an AUL Transmittal Form (BWSC-113) and a copy of each implemented AUL related to this RAO Statement. Specify the type of AUL(s) below: (required for all Class A-3 RAOs and Class B-2 RAOs)

☐ Notice of Activity and Use Limitation ☐ Grant of Environmental Restriction Number of AULs attached: _____

Specify the Risk Characterization Method(s) used to achieve the RAO described above and all Soil and Groundwater Categories applicable to the Site.

More than one Soil Category and more than one Groundwater Category may apply at a Site.

Be sure to check off all APPLICABLE categories, even if more stringent soil and groundwater standards were met.

Risk Characterization Method(s) Used: ☒ Method 1 ☐ Method 2 ☐ Method 3

Soil Category(ies) Applicable: ☒ S-1 ☐ S-2 ☐ S-3

Groundwater Category(ies) Applicable: ☐ GW-1 ☒ GW-2 ☐ GW-3

> When submitting any Class A-1 RAO or a Class B-1 RAO where contamination is consistent with background levels, do NOT specify a Risk Characterization Method.

> When submitting any Class A-2 RAO or a Class B-1 RAO where contamination is NOT consistent with background levels, you cannot use an AUL to maintain a level of no significant risk. Therefore, you must meet S-1 Soil Standards, if using Risk Characterization Method 1.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-104

RESPONSE ACTION OUTCOME (RAO) STATEMENT &
DOWNGRADIANT PROPERTY STATUS TRANSMITTAL FORM

Pursuant to 310 CMR 40.0180 (Subpart B), 40.0580 (Subpart E) & 40.1056 (Subpart J)

Release Tracking Number

3 - 15121

G. DOWNGRADIANT PROPERTY STATUS SUBMITTAL:

☐ If a Downgradient Property Status Submittal Compliance Fee is required, check here to certify that the fee has been submitted. You **MUST** attach a photocopy of the payment.

☒ Check here if a Release(s) of Oil or Hazardous Material(s), other than that which is the subject of this submittal, has occurred at this property.

Release Tracking Number(s): (3-15149), (3-10725), (3-13467)

☒ Check here if the Releases identified above require further Response Actions pursuant to 310 CMR 40.0000.

Required documentation for a Downgradient Property Status Submittal includes, but is not limited to, copies of notices provided to owners and operators of both upgradient and downgradient abutting properties and of any known or suspected source properties.

H. LSP OPINION:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and (iii) the provisions of 309 CMR 4.03(5), to the best of my knowledge, information and belief.

> if Section B indicates that a Downgradient Property Status Submittal is being provided, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in 310 CMR 40.0183(2)(b), and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that either an RAO Statement, Phase I Completion Statement and/or Periodic Review Opinion is being provided, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

☐ Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you **MUST** attach a statement identifying the applicable provisions thereof.

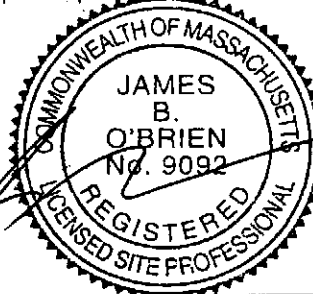
LSP Name: James B. O'Brien LSP #: 9092 Stamp:

Telephone: (617) 335-6361 Ext.: _____

FAX: (optional) (617) 335-3543

Signature: _____

Date: 7-1-97



I. PERSON MAKING SUBMITTAL:

Name of Organization: Massachusetts Department of Mental Retardation

Name of Contact: Mr. George Atamian Title: _____

Street: 160 North Washington Street

City/Town: Boston State: MA ZIP Code: 02114

Telephone: (617) 727-5608 Ext.: 388 FAX: (optional) _____

J. RELATIONSHIP TO SITE OF PERSON MAKING SUBMITTAL: (check one)

☒ RP or PRP Specify: ☐ Owner ☒ Operator ☐ Generator ☐ Transporter Other RP or PRP: _____

☐ Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ Any Other Person Submitting This Form Specify Relationship: _____



RESPONSE ACTION OUTCOME (RAO) STATEMENT &
DOWNGRADIANT PROPERTY STATUS TRANSMITTAL FORM
Pursuant to 310 CMR 40.0180 (Subpart B), 40.0580 (Subpart E) & 40.1056 (Subpart J)

Release Tracking Number

3 - 15121

K. CERTIFICATION OF PERSON SUBMITTING DOWNGRADIANT PROPERTY STATUS SUBMITTAL:

I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form; (ii) that, based on my inquiry of the/those individual(s) immediately responsible for obtaining the information, the material information contained herein is, to the best of my knowledge, information and belief, true, accurate and complete; (iii) that, to the best of my knowledge, information and belief, I/the person(s) or entity(ies) on whose behalf this submittal is made satisfy(ies) the criteria in 310 CMR 40.0183(2); (iv) that I/the person(s) or entity(ies) on whose behalf this submittal is made have provided notice in accordance with 310 CMR 40.0183(5); and (v) that I am fully authorized to make this attestation on behalf of the person(s) or entity(ies) legally responsible for this submittal. I/the person(s) or entity(ies) on whose behalf this submittal is made is/are aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: _____ Title: _____
(signature)

For: _____ Date: _____
(print name of person or entity recorded in Section I)

Enter address of the person providing certification, if different from address recorded in Section I:

Street: _____

City/Town: _____ State: _____ ZIP Code: _____

Telephone: _____ Ext.: _____ FAX (optional): _____

L. CERTIFICATION OF PERSON MAKING SUBMITTAL:

If you are completing only a Downgradient Property Status Submittal, you do not need to complete this section of the form.

I, George Atamian, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: George Atamian Title: DIRECTOR OF ENDF.
(signature)

For: GEORGE ATAMIAN Date: 7-3-97
(print name of person or entity recorded in Section I)

Enter address of the person providing certification, if different from address recorded in Section I:

Street: 160 No. WASHINGTON ST

City/Town: BOSTON State: MA ZIP Code: 02114

Telephone: 617 624 7888 Ext.: _____ FAX (optional): 617 727 9863

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE, AND YOU MAY INCUR ADDITIONAL COMPLIANCE FEES.

DEP
EAST REGIONAL OFFICE

97 JUL 11 PM 2:34

RECEIVED

Response Action Outcome (RAO) Statement

Massachusetts Department of Mental Retardation

Walter E. Fernald School – (Immediate Response Action)

200 Trapelo Road

Waltham, Massachusetts

MADEP RTN: 3-15121

VERTEX Project No. 0442

A-2 NR C

VERTEX

Prepared for:

Massachusetts Department of
Environmental Protection,
Northeast Regional Office
10 Commerce Way
Woburn, MA 01801

June 30, 1997

RESPONSE ACTION OUTCOME (RAO) STATEMENT

**Fernald School
200 Trapelo Road
Waltham, Massachusetts
MADEP RTN: 3-15121
VERTEX Project No. 0442**

1.0 INTRODUCTION

This Class A-2 Response Action Outcome (RAO) Statement has been prepared by Vertex Engineering Services, Inc. (VERTEX) to document a condition of "No Significant Risk" which has been achieved at a release site (DEP RTN#3-15121), at a property referenced as 200 Trapelo Road in Waltham, Massachusetts. This RAO is being submitted to the Massachusetts Department of Environmental Protection (MADEP) as required by the Massachusetts Contingency Plan (MCP) in response to the above referenced release.

This release was the result of a spill of gasoline from a thirty five (35) gallon fuel tank of a passenger van owned by MDMR. The tank was punctured when the driver backed into a broken light stanchion. The driver, not aware of the leak, proceeded to drive over paved roads to three different on-campus stops, releasing gasoline along the way. The total amount of fuel released is estimated at less than 35 gallons, assuming the tank was filled to capacity at the time of the incident.

An Emergency Response was conducted by Keystone Environmental Services, Inc. of 77 Accord Park Drive Norwell, Massachusetts (Keystone), whose personnel were already on campus performing unrelated work. The Emergency Response Actions were directed by Mr. Paul Giddings of the MADEP who issued a Notice of Responsibility (NOR) to MDMR. Response actions included the use of "speedy dry", absorbent booms and pads. Impacted water within puddles was remediated by a Vacuum truck.

Vertex Engineering Services, Inc. (VERTEX) was contracted by MDMR to conduct Licensed Site Professional Services (LSP) at the site. Keystone, Maurice O'Connell and Lt. Galdin of the Waltham Fire Department (all of which were on-site during the Emergency Response Actions) were interviewed by VERTEX as part of an initial investigation. According to them and an inspection of the site by VERTEX, the majority of release areas are paved with asphalt which would have prevented contact with soil and groundwater. Only two unpaved areas were known to have been impacted by the release. These areas were identified as the grassy area around the original point of contact with the light stanchion, and another grassy area at the edge of the parking lot adjacent to the on-campus Shriver Building.

VERTEX obtained surficial soil samples from these areas to assess any remaining gasoline contamination. Samples were analyzed for Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) as well as Methyl Tert Butyl Ether (MTBE).

In accordance with the MCP, a risk characterization has been performed which documents that a condition of "No Significant Risk" has been achieved at the site. This RAO documents site activities, investigations, analytical results and the Method 1 Risk characterization as required by 310 CMR 40.1056. Specifically, this RAO includes the following sections:

- 1.0 Introduction
- 2.0 RAO Category
- 3.0 General Disposal Site Information
- 4.0 Environmental Remediation Activities
- 5.0 Risk Characterization
- 6.0 Feasibility of Restoration To Background
- 7.0 Conclusions
- 8.0 Qualifications

2.0 RESPONSE ACTION OUTCOME (RAO) CATEGORY

The category of this RAO was determined in accordance with 310 CMR 40.1036. Class A-2 is appropriate to this site for the following reasons:

- 1) A Permanent Solution has been achieved.
- 2) Levels of oil/and or hazardous materials (OHM) at the site have not been reduced to background levels.
- 3) One or more Activity and Use Limitations are not required to maintain a level of No Significant Risk.

3.0 GENERAL DISPOSAL SITE INFORMATION

The site is located on the campus of the Walter E. Fernald School, 200 Trapelo Road, Waltham, Massachusetts. It is improved with several buildings used for administration, educational and residential purposes. The campus is also comprised of asphalt roads and parking areas as well as landscaped and grassy locations. Specifically, the areas affected by this release are the paved parking areas associated with the on-site buildings known as "The Fernald Workshops", "Shriver Building" and "The Redemption Center" as well as the asphalt paved roads which connect them. Please reference Figure-2 Site schematic. The location of the site is shown on the Boston North, Massachusetts USGS Topographic Quadrangle, dated 1985. Please refer to Attachment A, Figure 1 - Site Locus Map.

In general, the site slopes to the south toward Waverly Oaks Road. The site and surrounding properties are serviced by municipal water. The site is not located within a Current or Potential Drinking Water Source Area or within a Potentially Productive Aquifer.

This RAO addresses RTN #3-15121, which applies to a release site, comprised of paved and unpaved parking areas located on the campus. The release site is shown on Figure 2.

4.0 ENVIRONMENTAL REMEDIATION ACTIVITIES

According to Kevin Stetson, Operations Manager of Keystone, on May 20, 1997, at approximately 5:00 p.m., a release of no more than 35 gallons of gasoline occurred at the Walter E. Fernald School campus located at 200 Trapelo Road Waltham, Massachusetts. The release resulted when a school owned passenger vehicle backed into a light stantion and ruptured the on-board 35 gallon gasoline fuel tank (see Appendix A "Photographic Documentation"). Approximately 3-4 gallons leaked onto a paved area and a grassy area where the light stantion occurs. Not aware the tank was leaking, the driver continued along a paved road to the on-campus Shriver Building. The van was then parked and released another 5-10 gallons onto the paved parking area. Still unaware of the leak, the driver continued along a paved road to the on-campus Redemption Building where the van was again parked and released another 10-12 gallons of gasoline onto the paved parking area. The parking area had previously accumulated rainwater into a puddle of dimensions 4 feet by 15 feet. A sheen was reported on the puddle. In addition, a trail of gasoline staining was observed to be on the asphalt roads between the three major release points, with no indication of an impact to soil, groundwater or catch basins.

After the leak was discovered, the hole in the gas tank was plugged by MDMR personel. It is estimated that no more than 35 gallons of gasoline was released as described above.

According to Lt. Galdin of the Waltham Fire Department, some residual gasoline was washed across the parking lot at the Shriver Building and onto the soils near a dumpster. This was believed to be done by facility employees.

Lt. Galdin from the city of Watham Fire Department; Kevin Stetson, Adam Doyle and Lewis Mills of Keystone; Paul Giedding of the MADEP; and Paul Birmingham, Director of Campus Safety for the MDMR, were reportedly on site by 6:00 p.m. and remained for the entire Emergency Response Action. At that time, the MADEP issued a Notice of Responsibility (NOR) to MDMR and assigned Release Tracking Number 3-15121 to the site.

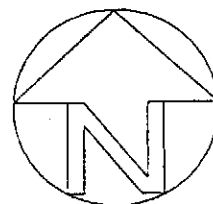
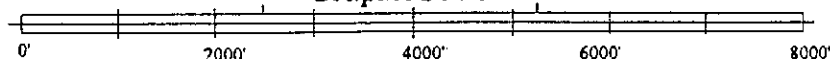


USGS Topographic Map, 1985

Boston North, Quadrangle

Contour Interval: 10 feet

1/2 mi. Graphic Scale 1 mi.



SITE LOCUS MAP

Walter E. Fernald School
200 Trapelo Road
Waltham, MA

SCALE: AS SHOWN

June 27, 1997

VERTEX Proj. No. 0442

VERTEX

FIGURE NO. 1

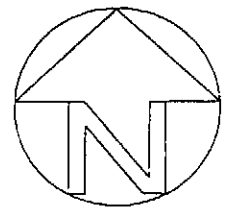
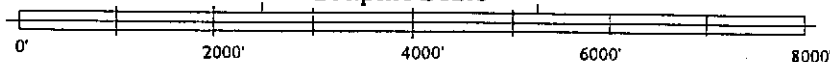


USGS Topographic Map, 1985

Boston North, Quadrangle

Contour Interval: 10 feet

1/2 mi. Graphic Scale 1 mi.



SITE LOCUS MAP

Walter E. Fernald School
200 Trapelo Road
Waltham, MA

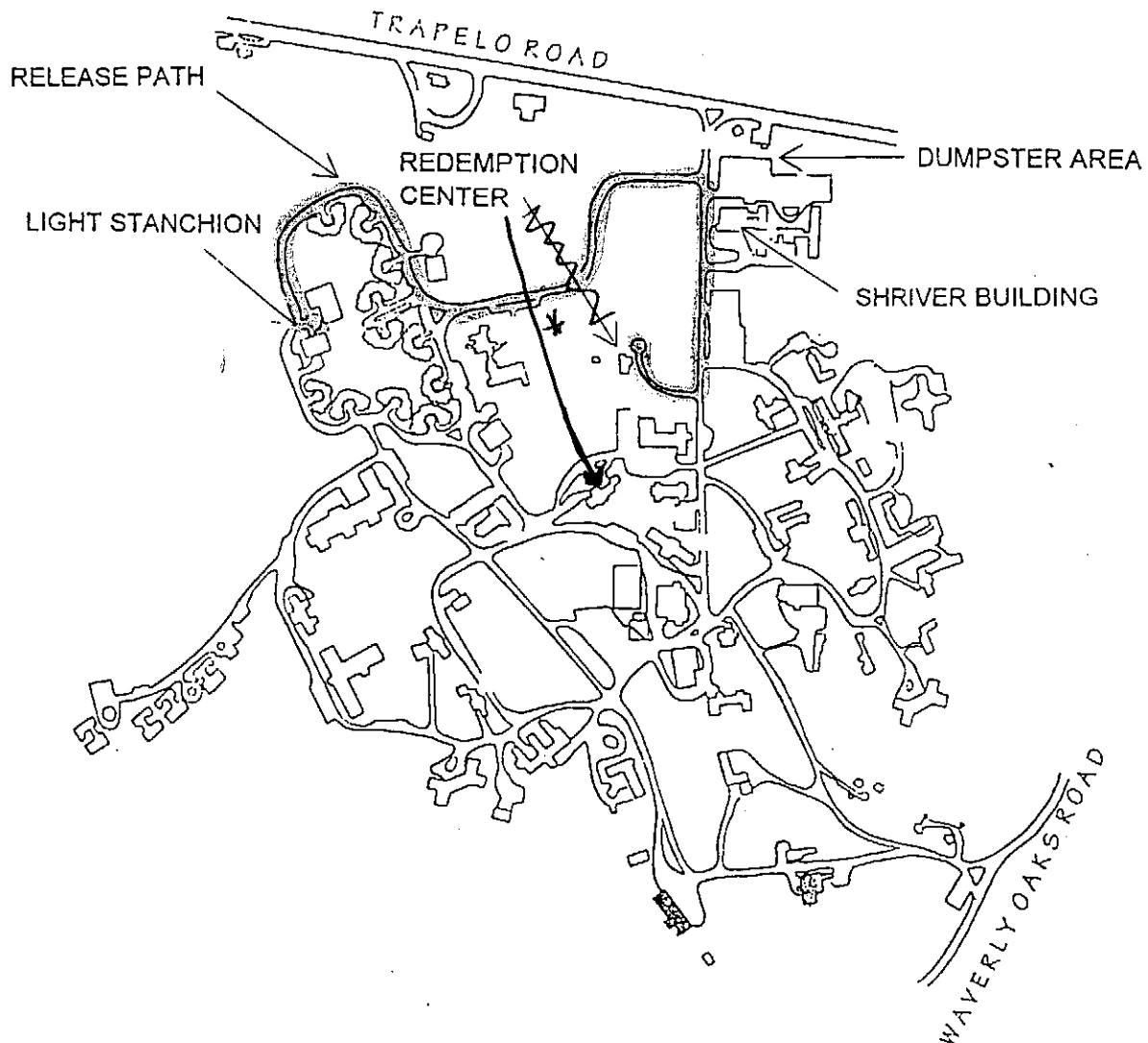
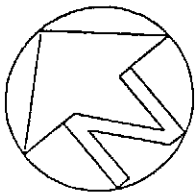
SCALE: AS SHOWN

June 27, 1997

VERTEX Proj. No. 0442

VERTEX

FIGURE NO. 1



* Correction made by Tachlaw
after verifying release areas
with Paul Bermingham (FDC Safety Officer) 1/2009

SITE SCHEMATIC
And Release Locations
Fernald State School
Waltham, Massachusetts

SCALE: NOT TO SCALE

June 30, 1997

VERTEX PROJ. NO.0442

VERTEX
Engineering Services, Inc.
FIGURE NO. 2

An Emergency Response was conducted by Keystone, already on campus performing unrelated work. The Emergency Response Actions were directed by Mr. Paul Giddings of the MADEP. The following is a summary of these actions:

Fernald Workshops Area

1 bag of Speedy Dry and some Kitty-litter (found on sight) were deployed as an absorbent to the area near the light stanchion, where the initial release of 3-4 gallons to the soil and paved areas occurred, and then swept and containerized in a 55 gallon drum.

Shriver Building Area

2 bags of Speedy Dry and some Kitty-litter (found on site) were deployed as an absorbent to the area outside the Shriver building, where 5-10 gallons of gasoline were released to the pavement. The impacted material was swept and then containerized in a 55 gallon drum.

Redemption Center Area

3 bags of Speedy Dry were used to absorb the gasoline on the impacted paved area outside the Redemption Center where 10-12 gallons of gasoline were released to a puddle. The Speedy Dry was also used to dike off and contain the impacted 4 by 15 foot puddle, absorbent pads were also placed into the impacted puddle. The following morning a vacuum truck was on-site to remove the impacted puddle. The Speedy Dry and absorbent pads were then placed in a 55 gallon drum.

The majority of operations were completed at approximately 8:00 p.m. the same night, except for the next day cleanup at the Redemption Center. Total containerized waste consisted of two 55-gallon drums containing impacted speedy dry and adsorbent pads and 15 gallons of impacted water in the vacuum truck. The two 55-gallon drums were transported off-site disposal to Northland Environmental, Inc., of Providence, RI. The 15-gallons of impacted puddle water was

transported for off-site disposal to Zecco, Inc., of Northboro, Massachusetts. Uniform Hazardous Waste Manifests can be referenced in Appendix B.

On May 21, 1997, VERTEX interviewed Lt. Galdin concerning observations he made during the previous night Response Actions. He identified two unpaved areas of the site which were observed to have been impacted at the time of the release. The first area was in the vicinity of the light stanchion adjacent to the Fernald Workshops. The second area was at the edge of the parking lot adjacent to the Shriver building, this is where residual gasoline was observed to be washed several hundred feet across the parking lot and into a grassy area.

Pursuant to the information obtained by Lt. Galdin, VERTEX collected two soil samples from the grassy area near the light stanchion adjacent to the Fernald Workshops and one from the identified area at the edge of the parking lot near the Shriver building. The soil samples were screened utilizing a photoionization detector (PID) calibrated "as benzene" to an isobutylene standard. Standard headspace screening methodologies were employed. The samples were placed into prelabeled, laboratory supplied containers and immediately placed on ice. The samples were subsequently delivered to Woods Hole Group, Environmental Laboratories of Raynham, Massachusetts for laboratory analysis. Chain-of-Custody forms were completed and included in the sample shipment. Soil samples were analyzed for Total Petroleum Hydrocarbons by EPA Method 8100 Modified, Benzene, Toluene, Ethylbenzene and Xylene (BETEX) and Methyl tert-butyl ether (MTBE) via EPA Method 8260 Modified. Refer to Table 1 for field screening and analytical results. See Appendix C for analytical reports and associated chain of custody documentation.

Field screening and laboratory analytical results of soil samples are as follows:

Table 1- Screening and Analytical Results				
Sample ID.	Sample Location	TOV's (ppm)	TPH (mg/kg)	BTEX + MTBE (ppm)
S-1	5 Feet Away from Light Stanchion Adjacent to Fernald Workshops (8" Below Grade)	ND	<19	Benzene 0.021 U
				Toluene 0.038
				Ethylbenzene 0.070 U
				Xylene (Total) 1.700
				MTBE 0.021 U
S-2	10 Feet Away From Light Stanchion Adjacent to Fernald Workshops (8" Below grade)	ND	<17	Benzene 0.005 U
				Toluene 0.005 U
				Ethylbenzene 0.005 U
				Xylene (Total) 0.005 U
				MTBE 0.005 U
S-3	Near Dumpster at Corner of Parking Lot Adjacent to Shriver Building (8" Below Grade)	ND	52	Benzene 0.006 U
				Toluene 0.006 U
				Ethylbenzene 0.006 U
				Xylene (Total) 0.006 U
				MTBE 0.006 U

Notes:

ND = Not Detected Above Detection Limit

N/A= Not Applicable

PPM = Parts Per Million

U = Analyzed but not found

J = Estimated value, below quantitation limit

Results of the above listed soil analysis do not indicate that there has been a significant impact to soil at the site.

5.0 RISK CHARACTERIZATION

This section discusses the characterization of risk posed by the release of gasoline at the site. This characterization has been conducted in accordance with the procedures outlined in 310 CMR 40.0900 of the Massachusetts Contingency Plan (MCP), to demonstrate that a condition of No Significant Risk has been achieved at the site. This risk characterization involves discussions of the following:

- Hazard Identification;
- Exposure Assessment;

- Identification of Soil and Groundwater Categories;
- Selection of Method to Characterize Risk; and
- Characterization of Risk.

5.1 Hazard Identification

As discussed previously, the site is an institutional campus with an identified shallow soil release of gasoline. The impacted soil and pavement areas were remediated as discussed previously in this report. Confirmatory samples were collected from the potentially affected areas to evaluate the extent of gasoline contamination in the soil. Results of the final confirmatory samples were listed previously in Table-1.

5.2 Exposure Assessment

This section discusses the receptors, site activities and uses, exposure points and exposure point concentrations to assess the exposure that a receptor might receive during contact with impacted media at the site.

Identification of Receptors

As the site is currently and has historically been used as an institutional property, and has a mixture of administration, educational and residential buildings, the use of the property in the foreseeable future is considered to remain the same. Potential human receptors are considered to be adult workers, clients, visitors and trespassers.

Identification of Site Activities and Uses

As the site is currently and has historically been used as an institutional property for the mentally retarded. The site is comprised of a mixture of administration, educational and residential

buildings, the use of the property in the foreseeable future is considered to remain an educational institution.

As potable water is supplied to the site from municipal sources and no public wells have been identified within ½ mile of the site, use of site water for drinking or washing is not considered applicable to this assessment. Additionally, the site is not located in an area designated as a potentially productive aquifer.

Identification of Exposure Points

Exposure points are the points at which identified receptors would contact identified hazards during site activities/use. Groundwater is not used for potable purposes and exposure to groundwater is not considered an exposure point for this assessment. For this assessment, it is considered that the receptors could come into contact with impacted soil during routine activities. These receptors include adult workers, clients, visitors and trespassers.

Identification of Exposure Pathways

Exposure pathways are the routes by which exposure to the receptors at exposure points could occur. For the purposes of this assessment, site receptors could be exposed during routine activities through dermal contact with soil, ingestion of soil, and inhalation of particulate. As indicated previously, groundwater is not used for potable purposes and completion of an exposure pathway to groundwater is not considered to occur at the site.

Identification of Exposure Point Concentrations

Exposure point concentrations are the concentration of chemicals that receptors could be exposed to during site activities. To determine a conservative exposure point concentration as allowed under 310 CMR 40.0926(3) the highest concentration of each chemical was considered. These concentrations were previously displayed in Table-1. Table-2 shows that all concentrations are

below the applicable Method 1 Risk Assessment standards for S-1 Soil & GW-2 category. As indicated previously there is no exposure pathway for groundwater to impact receptors. Therefore, a groundwater exposure point concentration is not applicable.

5.3 Identification of Soil and Groundwater Categories

Soil Category

The site, receptor and exposure information previously discussed has been evaluated to determine the applicable soil category for the site. As on-site workers, clients, visitors and trespassers are included as potential receptors at the site during routine activities, the highest potential for exposure to soil has been selected as applicable to the site, for conservatism, and to demonstrate that an Activity Use Limitation (AUL) is not necessary for the Site. As such, the S-1 category, as defined in 310 CMR 40.0933 (5) has been selected.

5.4 Selection of Method to Characterize Risk

A Method 1 Risk Characterization, as described in 310 CMR 40.0970, has been selected to characterize the risk of harm to health, public welfare and the environment at this site, based on the evaluation presented previously. Specifically, the Method 1 characterization is considered applicable to this disposal site for the following reasons:

- 1) Oil materials (OHM) have only been detected in soil.
- 2) OHM detected at the site are listed in 310 CMR 40.0974 and 40.0975.
- 3) OHM present on-site are not known to bioaccumulate.

5.5 Characterization of Risk

A comparison of the exposure point concentrations to the applicable Method 1 S-1 Soil & GW-2 standards are presented below in Table-3.

Table 3- Screening and Analytical Results				
Sample ID	Sample Location	TOV's (ppm)	TPH (mg/kg)	BTEX + MTBE (ppm)
S-1	5 Feet Away from Light Stanchion Adjacent to Fernald Workshops (8" Below Grade)	ND	<19	Benzene 0.021 U
				Toluene 0.038
				Ethylbenzene 0.070 U
				Xylene (Total) 1.700
				MTBE 0.021 U
S-2	10 Feet Away From Light Stanchion Adjacent to Fernald Workshops (8" Below grade)	ND	<17	Benzene 0.005 U
				Toluene 0.005 U
				Ethylbenzene 0.005 U
				Xylene (Total) 0.005 U
				MTBE 0.005 U
S-3	Near Dumpster at Corner of Parking Lot Adjacent to Shriver Building (8" Below Grade)	ND	52	Benzene 0.006 U
				Toluene 0.006 U
				Ethylbenzene 0.006 U
				Xylene (Total) 0.006 U
				MTBE 0.006 U
Method 1 Risk Assessment S-1 SOIL & GW-2 Standard	N/A	N/A	500	Benzene 40.0 Toluene 500.0 Ethylbenzene 500.0 Xylene (Total) 500.0 MTBE 100.0

Notes:

ND = Not Detected Above Detection Limit

N/A= Not Applicable

PPM = Parts Per Million

U = Analyzed but not found

J = Estimated value, below quantitation limit

The soil data for the site indicate that individual contamination concentrations at the site do not exceed the S-1 Soil & GW-2 standards. Based on this risk characterization, the site does not pose a risk to public health, safety, welfare. A condition of No Significant Risk, pursuant to 310 CMR 40.0900 has been achieved at the site.

6.0 FEASIBILITY OF RESTORATION TO BACKGROUND

As the site is adjacent to and inclusive of a well traveled vehicular way, it is anticipated that background concentrations of petroleum products can occur above detection limits and could vary widely across the site. Concentrations detected in impacted areas were found to be below S-1 Standards, the most stringent risk based standard provided in the MCP.

Based on the concentrations of total petroleum hydrocarbon detected, it is possible that background levels have been achieved; however, this can not be demonstrated in the absence of significant data collection and analysis. The sources of contamination detected in soil at the site have been remediated and are no longer present. The concentrations at the site, which are below the S-1 standards, are considered representative of no significant risk of harm to health, public welfare and the environment.

7.0 CONCLUSIONS

The following conclusions were made based upon the Method 1 Risk Characterization of site conditions at the subject site.

- 1) Current exposure point concentrations of TPH, BTEX and MTBE at the site are below S-1 soil standards.
- 2) Response actions performed at the site resulted in the removal of the source.
- 3) The site does not pose a risk of harm to health, public welfare and the environment.
- 4) A condition of No Significant Risk as defined by 310 CMR 40.0973(7) exists at the site.
- 5) No Activity and Use Limitations are necessary for this site.

8.0 QUALIFICATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. VERTEX is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, and laboratory test data presented in this report.

It must be recognized that environmental investigations are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site investigation. All site subsurface conditions were not field investigated as part of this study and may differ from the conditions implied by the limited investigation. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated.

The conclusions presented in this report are professional opinions based solely upon visual observations and supplemental testing of soil and/or groundwater at the site. Our interpretation of the available historical information and documents reviewed, as described in this report, were also considered in the conclusions. VERTEX relied upon but did not attempt to independently verify the validity or accuracy of the findings and conclusions noted in the documentation reviewed.

This report is intended for the sole use of the Massachusetts Department of Mental Retardation. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

It should be noted that twenty percent (20%) of Response Action Outcome Statements and supporting documentation are audited by the Massachusetts Department of Environmental Protection ("the

Department"). The Department may conduct Random Audits or Targeted Audits for up to five (5) years following the submission of an RAO Statement. Under certain circumstances, as provided in 310 CMR 40.1110(3), there are no time constraints for Targeted Audits.

Due to the inherent flexibility in interpreting the applicable regulations, the Audits are often subjective and dependent on the opinion of the auditor. As a result, the auditor could require additional assessment of the site and/or remedial action. Based on these considerations, VERTEX is not and will not be responsible for costs or other possible ramifications of additional work required by the Department. The Massachusetts Department of Mental Retardation and any other parties with financial or other interests in the subject property are urged to consider these facts.

Description of Photographs

1. Photograph 1 depicts the hole in the gas tank.
2. Photograph 2 depicts the area of release adjacent to the light stanchion.
3. Photograph 3 depicts the area of release in front of the Shriver building.
4. Photograph 4 depicts the area near the dumpster adjacent to the Shriver building parking lot.

Photo
1

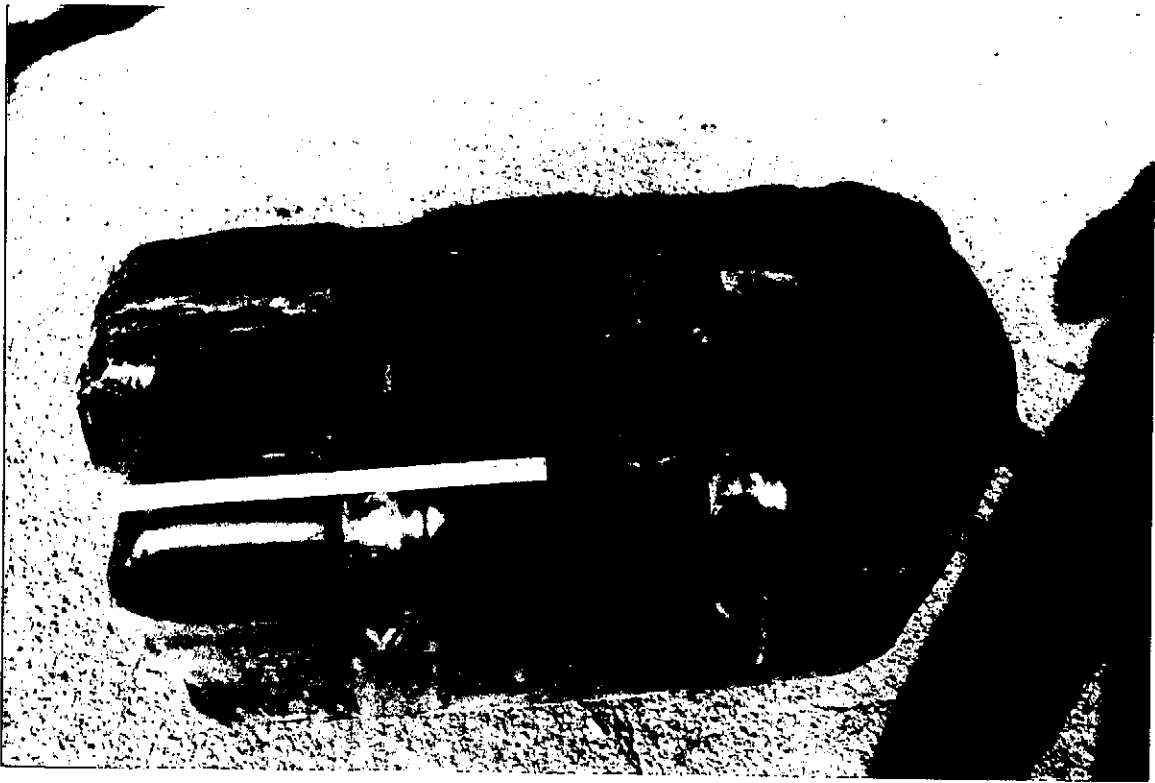


Photo
2



**PHOTOGRAPHIC
DOCUMENTATION**

Fernald School-Passenger Van Gasoline Release
200 Trapelo Road, Waltham MA

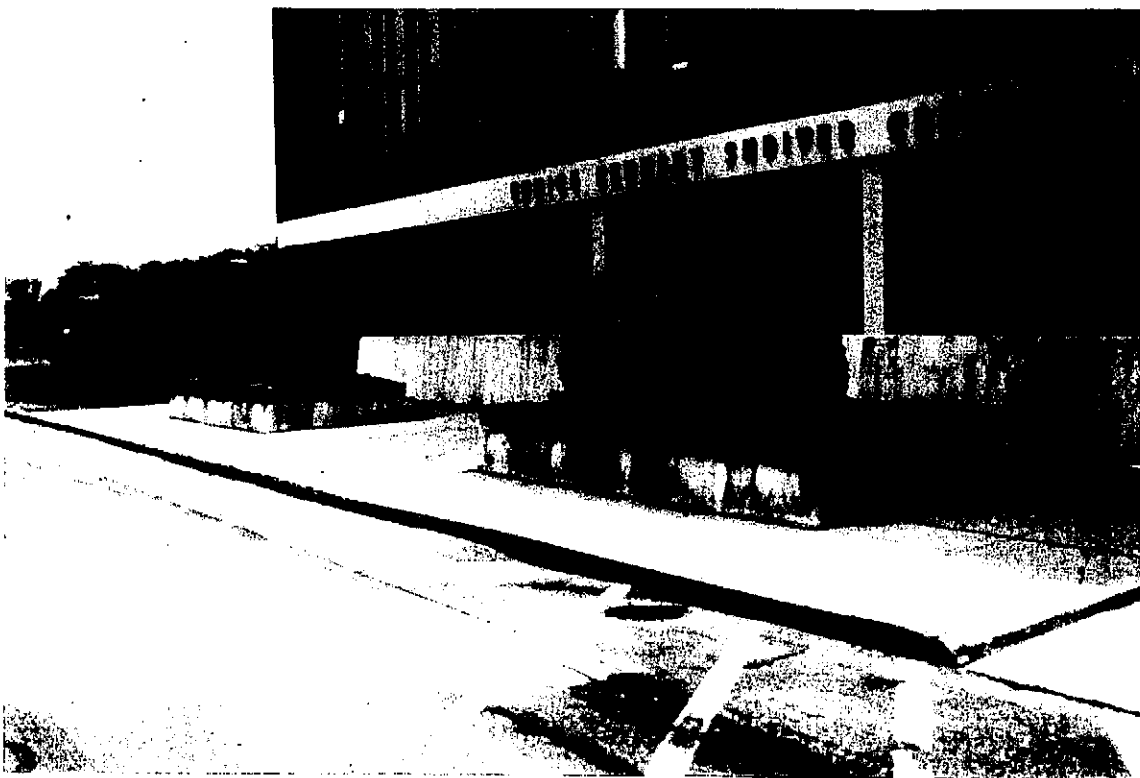
VERTEX PROJ. NO. 0442

June 26, 1997

VERTEX
Engineering Services, Inc.

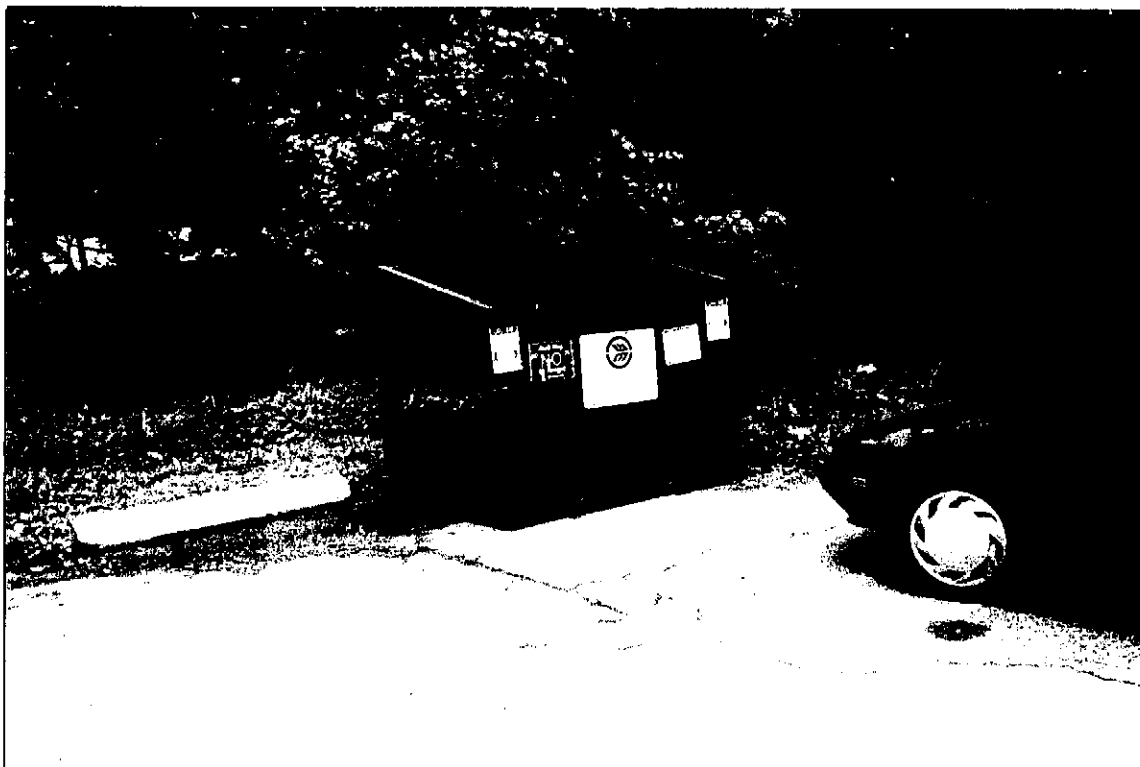
Photo

3



Photo

4



**PHOTOGRAPHIC
DOCUMENTATION**

Fernald School-Passenger Van Gasoline Release
200 Trapelo Road, Waltham MA

VERTEX PROJ. NO. 0442

June 26, 1997

VERTEX
Engineering Services, Inc.

APPENDIX B
PERMITS, MANIFESTS AND RECIEPTS



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street Boston, Massachusetts 02108

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

UNIFORM HAZARDOUS WASTE MANIFEST		Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
Generator's Name and Mailing Address COMM OF MASS EXECUTIVE OFFICE OF HEALTH AND HUMAN SERVICES, DEPT OF MENTAL RETARDATION		Generator's US EPA ID No. MP6178943600		A. State Manifest Document Number MA G298045		
4. Generator's Phone 617 727-5608		6. US EPA ID Number RE 099905985		B. State Gen. ID 200 TRAPEL RD WATMAN		
5. Transporter 1 Company Name 21ST CENTURY ENVIRONMENTAL INC		7. Transporter 2 Company Name		C. State Trans. ID		
8. US EPA ID Number		9. US EPA ID Number		D. Transporter's Phone 401 781 6346		
10. US EPA ID Number		11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) HAZARDOUS WASTE, SOLID, NOS (BENZENE) 9, NA3077, P6 III		E. State Trans. ID 12359		
12. Containers No. Type 002 DM XX 110 G		13. Total Quantity 110 G		F. Transporter's Phone 401 781 6346		
14. Unit Wt/Vol 110 G		15. Waste No. 0018		G. State Facility's ID NOT REQUIRED		
16. Additional Descriptions for Materials Listed Above (Include physical state and hazard code.) GASOLINE SOLID # 28051 (2XSS)		17. Handling Codes for Wastes Listed Above		H. Facility's Phone 401 781 6346		
18. Special Handling Instructions and Additional Information IN CASE OF EMERGENCY CALL Keystone Environmental Services @ 617 792 3990		19. Generator's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.		
Printed/Typed Name Sean Mayo		Signature <i>[Signature]</i>		Date 12/21/97		
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Sean Mayo		Signature <i>[Signature]</i>		Date 12/30/97		
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name		Signature		Date		
19. Discrepancy Indication Space		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.		Date		
Printed/Typed Name		Signature		Date		



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS MATERIALS

One Winter Street
Boston, Massachusetts 02108

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

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MDK01789436001019155	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address COMMONWEALTH OF MASSACHUSETTS DEPT OF MENTAL RETARDATION 160 WEST 11th STREET BOSTON MA 02114		6. US EPA ID Number		A. State Manifest Document Number MA-K004452	
4. Generator's Phone 617-727-5608		7. Transporter 1 Company Name AVALON ENVIRONMENTAL CORP		B. State Gen ID MA-K004452	
5. Transporter 1 Company Name		8. US EPA ID Number		C. State Trans ID MA-K004452	
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone 617-727-5608	
9. Designated Facility Name and Site Address ZEEBO, INC 345 WEST MAIN STREET NORTH BOSTON, MA 01530		10. US EPA ID Number MAD050934495		E. State Trans ID MA-K004452	
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number) a. RQ WASTE FLAMMABLE LIQUIDS N.O.S. (GASOLINE, WATER) FLAMMABLE LIQUIDS, 3, UN1993 PGII		12. Containers No. Type		13. Total Quantity	14. Unit Wt/Vol
b.					
c.					
d.					
15. Special Handling Instructions and Additional Information 24 HOUR EMERGENCY PHONE NUMBER 617-727-5608		16. Handling Codes for Wastes Listed Above			
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.		17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Signature Date		18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name Signature Date	
19. Discrepancy Indication Space		20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Printed/Typed Name Signature Date			

APPENDIX C
LABORATORY ANALYTICAL REPORT



Woods Hole Group

Environmental Laboratories

375 Paramount Drive • Suite B
Raynham, MA 02767-5154 • USA
Phone: 508-822-9300
Fax: 508-822-3288

Certification of Results

The enclosed results of analyses are representative of the sample(s) as received by the laboratory. Woods Hole Group Environmental Laboratories (WHG) makes no representations or certifications as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by WHG. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by:

Michael McHann

Woods Hole Group Environmental Laboratories

Date: *6/6/97*

Certificates

Massachusetts MA030
Connecticut PH0141
New Hampshire 220696
Rhode Island 64
California I-2209 (Interim)
New York 11627 (Interim)



Woods Hole Group

Environmental Laboratories

375 Paramount Drive • Suite 8
Raynham, MA 02767-5154 • USA
Phone: 508-822-9300
Fax: 508-822-3288

EPA Method - 8260

Vertex Engineering

ETR Number: 38055

Project: Fernald IRA 0442

Lab ID Number: 38055-1

Sample ID: S-1 05/29/97 @1300(SOIL							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
5/30/97	N/A	3 Jun 97 6:31 p	EMH	1.38 g	SOIL	B2060302	88%

CONCENTRATION UNITS: $\mu\text{g/Kg}$

Compound

Benzene	21 U
Toluene	38
Ethylbenzene	70
Xylene (total)	1700
Methyl tert-butyl ether (MTBE)	21 U

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	99%	82%-121%
Toluene-d8	99%	81%-111%
4-Bromofluorobenzene	96%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



Woods Hole Group

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EPA Method - 8260

Vertex Engineering

ETR Number: 38055

Project: Fernald IRA 0442

Lab ID Number: 38055-2

Sample ID: S-2 05/29/97 @1300(SOIL							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
5/30/97	N/A	3 Jun 97 5:27 p	EMH	5 g	SOIL	B2060302	95%

CONCENTRATION UNITS: $\mu\text{g/Kg}$

Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	100%	82%-121%
Toluene-d8	100%	81%-111%
4-Bromofluorobenzene	99%	69%-117%

Key: U - Analyzed but not found,
J - Estimated value, below quantitation limit.
B - Found in associated blank as well as sample.
N/A - Not Applicable.



Woods Hole Group

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Fax: 508-822-3288

EPA Method - 8260

Vertex Engineering

ETR Number: 38055

Project: Fernald IRA 0442

Lab ID Number: 38055-3

Sample ID: S-3 05/29/97 @1300 (SOIL)

Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
5/30/97	N/A	3 Jun 97 5:19 a	EMH	5.16 g	SOIL	B2060202	82%

CONCENTRATION UNITS: $\mu\text{g/Kg}$

Compound

Benzene	6 U
Toluene	6 U
Ethylbenzene	6 U
Xylene (total)	6 U
Methyl tert-butyl ether (MTBE)	6 U

Surrogate

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

% Recovery

100%
97%
86%

Acceptable

Range

82%-121%
81%-111%
69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



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Phone: 508-822-9300
Fax: 508-822-3288

EPA Method - 8260

Quality Control Report

Lab ID Number: B2060302

Sample ID: Method Blank		Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
		N/A	N/A	3 Jun 97 3:50 p	EMH	5 g	SOIL	N/A	100%

CONCENTRATION UNITS: $\mu\text{g/Kg}$

Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	98%	82%-121%
Toluene-d8	101%	81%-111%
4-Bromofluorobenzene	101%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

N/A - Not Applicable.



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Phone: 508-822-9300
Fax: 508-822-3288

EPA Method - 8260

Quality Control Results

Volatile Blank Spike/Blank Spike Duplicate

Date Received	Date Extracted	Date Analyzed	Analyzed By	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	N/A	3 Jun 97	EMH	1	SOIL	B2060302	100%

Concentration units ug/Kg

Blank Spike Q2060301				Blank Spike Dup Q2060302			
SAMPLE ID:							
Compound	Sample Conc.	BS Conc.	BS % Recovery	BSD Conc.	BSD % Recovery	% RPD	% Recovery
1,1 Dichloroethene	U	43	87%	45	90%	3.2%	59-172%
Benzene	U	45	90%	46	93%	2.7%	66-142%
Trichloroethene	U	46	93%	48	97%	4.4%	62-137%
Toluene	U	46	92%	47	94%	2.9%	59-139%
Chlorobenzene	U	46	92%	47	94%	2.2%	60-133%

* = Recovery outside limits.



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Fax: 508-822-3288

EPA Method - 8260

Quality Control Report

Lab ID Number: B2060202

Sample ID: Method Blank							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
N/A	N/A	3 Jun 97 2:09 a	EMH	5 g	SOIL	N/A	100%

CONCENTRATION UNITS: $\mu\text{g/Kg}$

Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

Surrogate	% Recovery	Acceptable
		Range
Dibromofluoromethane	99%	82%-121%
Toluene-d8	100%	81%-111%
4-Bromofluorobenzene	100%	69%-117%

Key: U - Analyzed but not found.
J - Estimated value, below quantitation limit.
N/A - Not Applicable.



Woods Hole Group

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Phone: 508-822-9300
Fax: 508-822-3288

EPA Method - 8260

Quality Control Results

Volatile Blank Spike/Blank Spike Duplicate							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	N/A	3 Jun 97	EMH	1	SOIL	B2060202	100%

Concentration units ug/Kg

Blank Spike SAMPLE ID: Q2060203				Blank Spike Dup Q2060204			
Compound	Sample Conc.	BS Conc.	BS % Recovery	BSD Conc.	BSD % Recovery	% RPD	% Recovery
1,1 Dichloroethene	U	45	89%	44	88%	1.4%	59-172%
Benzene	U	45	90%	44	88%	2.1%	66-142%
Trichloroethene	U	47	94%	47	94%	0.6%	62-137%
Toluene	U	45	91%	45	90%	1.0%	59-139%
Chlorobenzene	U	43	86%	43	86%	0.3%	60-133%

* = Recovery outside limits.



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Phone: 508-822-9300
Fax: 508-822-3288

TOTAL PETROLEUM HYDROCARBONS by GC/FID

Vertex Engineering

ETR Number: 38055

Project: Fernald IRA 0442

Lab ID Number: 38055-1

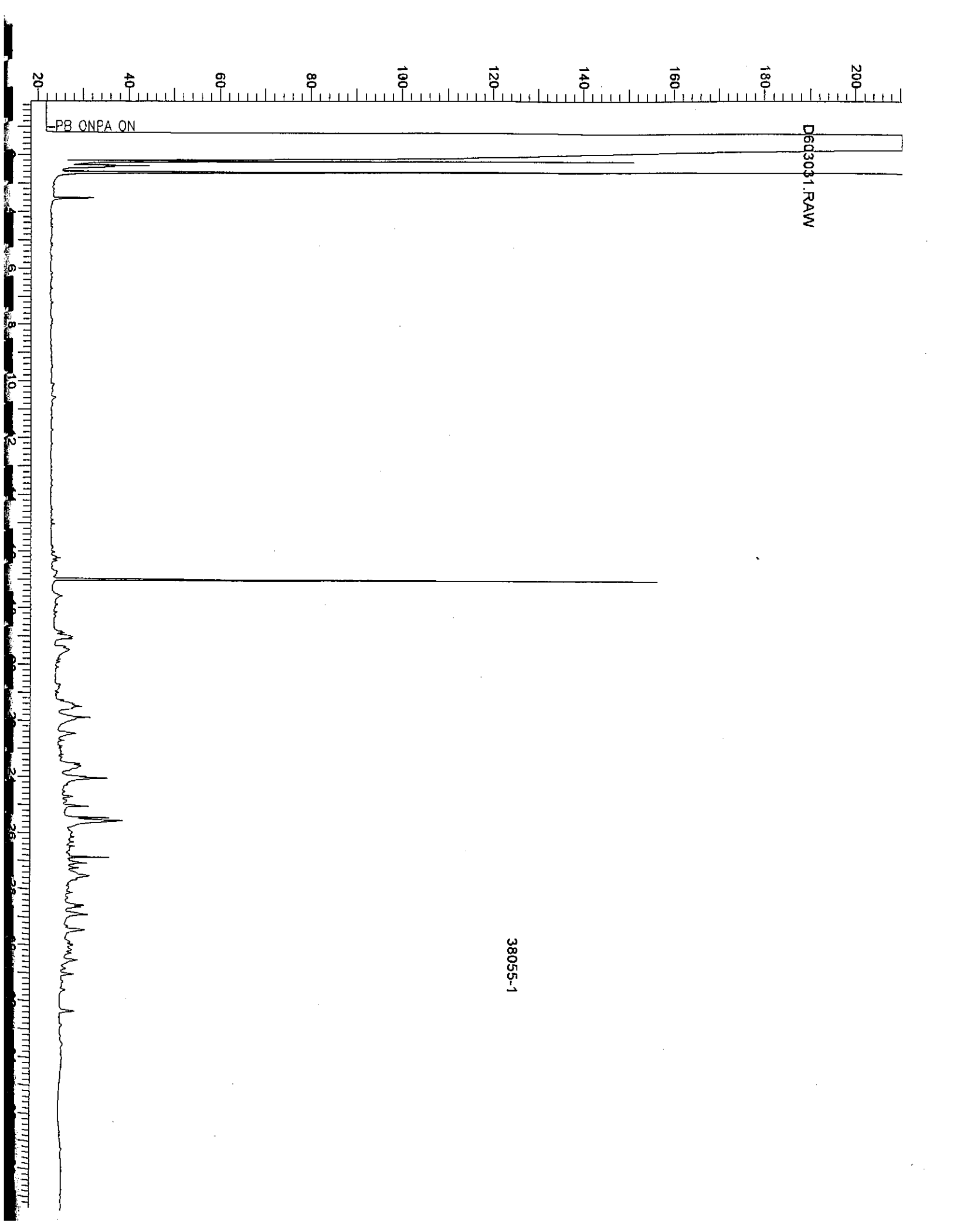
Sample ID: S-1 05/29/97 @1300(SOIL							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
5/30/97	6/2/97	6/4/97	NLJr	1	soil	TS0602B1	88%

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<19
C19-C36 Hydrocarbons	<19
Total Petroleum Hydrocarbons	<19

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	40%	25%-120%

Qualitative Identification Results:

The sample chromatogram did not contain enough material for a qualitative identification.





Woods Hole Group

Environmental Laboratories

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TOTAL PETROLEUM HYDROCARBONS by GC/FID

Vertex Engineering

ETR Number: 38055

Project: Fernald IRA 0442

Lab ID Number: 38055-2

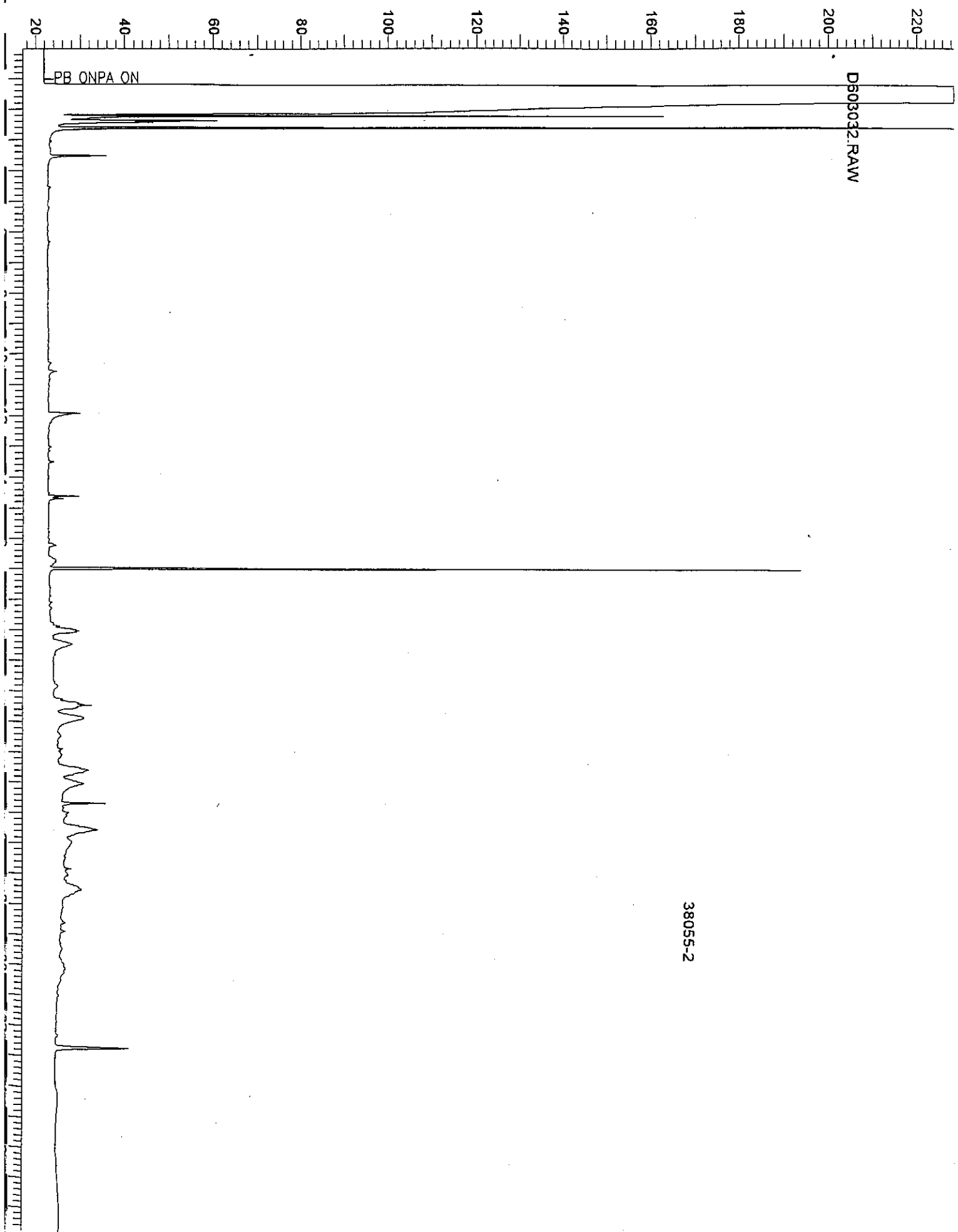
Sample ID: S-2 05/29/97 @1300(SOIL							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
5/30/97	6/2/97	6/4/97	NLJr	1	soil	TS0602B1	95 %

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<17
C19-C36 Hydrocarbons	<17
Total Petroleum Hydrocarbons	<17

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	53%	25%-120%

Qualitative Identification Results:

The sample chromatogram did not contain enough material for a qualitative identification.





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TOTAL PETROLEUM HYDROCARBONS by GC/FID

Vertex Engineering

ETR Number: 38055

Project: Fernald IRA 0442

Lab ID Number: 38055-3

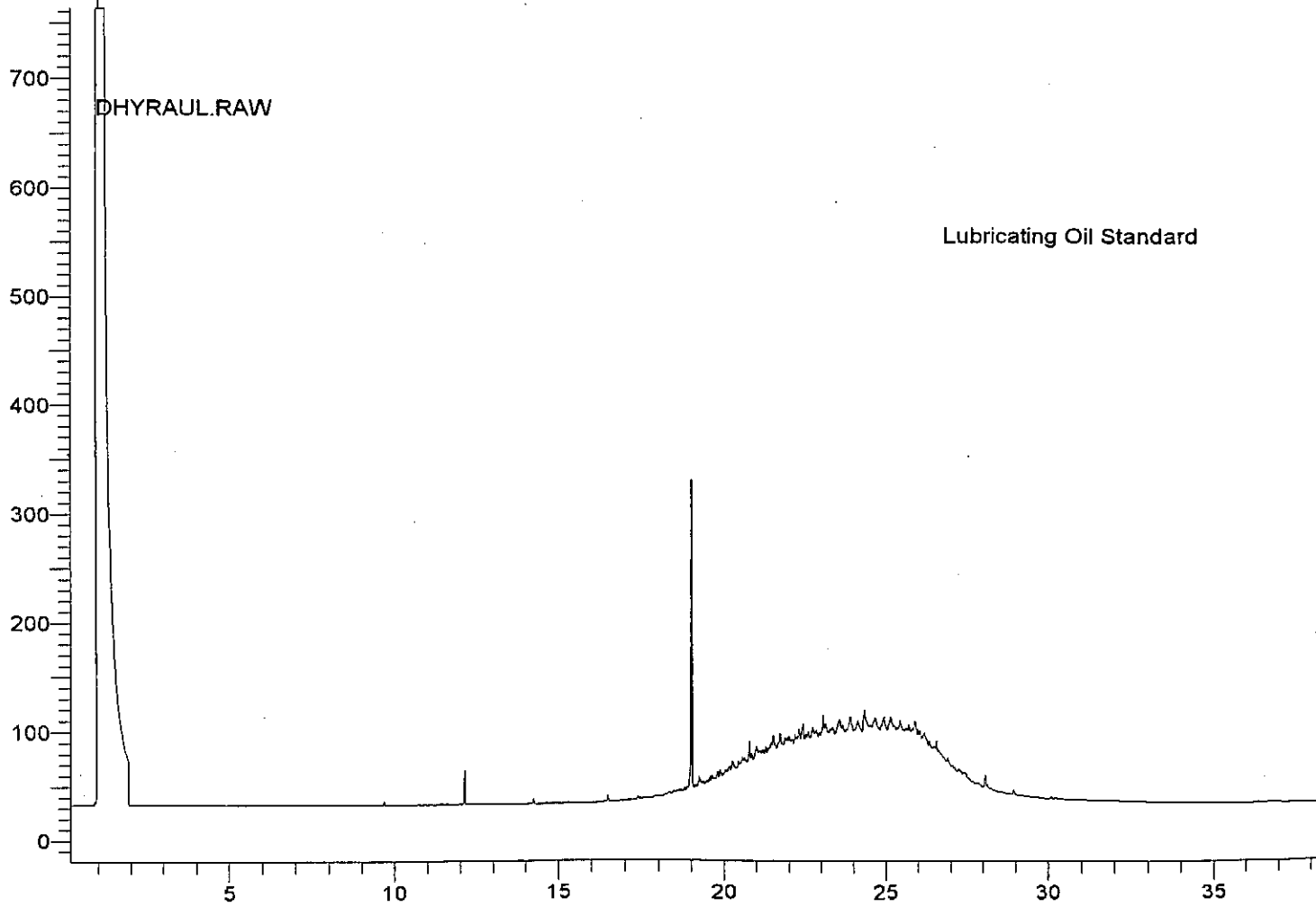
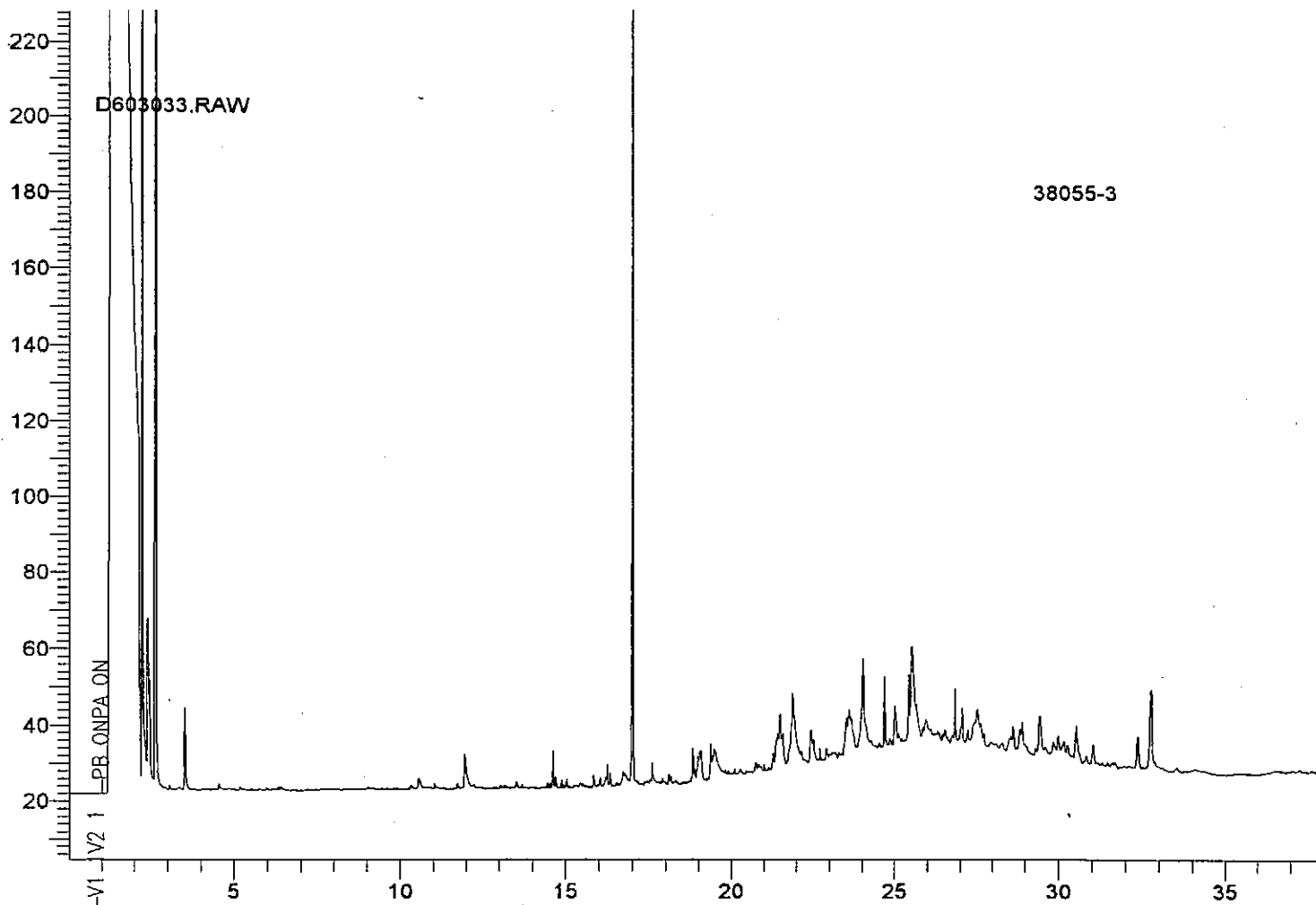
Sample ID: S-3 05/29/97 @1300(SOIL							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
5/30/97	6/2/97	6/4/97	NLJr	1	soil	TS0602B1	82 %

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<20
C19-C36 Hydrocarbons	52
Total Petroleum Hydrocarbons	52

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	69%	25%-120%

Qualitative Identification Results:

This sample has GC/FID characteristics which are similar to high molecular weight components in the lubricating oil range.





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TOTAL PETROLEUM HYDROCARBONS by GC/FID

Quality Control Report

Lab ID Number: TS0602B1

Sample ID: Method Blank							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	6/2/97	6/3/97	NLJr	1	soil	N/A	100%

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<17
C19-C36 Hydrocarbons	<17
Total Petroleum Hydrocarbons	<17

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	84%	25%-120%



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Total Petroleum Hydrocarbons by GC/FID

Sample ID:		Laboratory Control Spike					
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	6/2/97	6/3/97	NLJr	1	soil	TS0602B1	100%

Parameter	Results in mg/Kg (ppm)	% Recovery
DIESEL FUEL	280.5	84%

Amount Spiked: 333 mg/Kg

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	105%	25%-120%



TEL: (508) 822-9300
FAX: (508) 822-3288

38054

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OF

SHIPPING INFORMATION

Carrier: _____
Airbill Number: _____
Date Shipped: _____
Quote #: _____

TAT	10 Day	5 Day	3 Day	48 Hr	24 Hr	Other

NUMBER OF CONTAINERS

ANALYSIS/REMARKS (NOTE 2, 3)

Soil	TPH 800 m, BTEX
Soil	TPH 800 m, BTEX
Soil	TPH 800 m, BTEX

Received for Laboratory by:

NOTES TO SAMPLER (S): (1) Limit Sample Identification to 6 characters, if possible; (2) Indicate designated Lab Q.C. sample and type (e.g.; MS/MSD/REP) and provide sufficient sample; (3) Field duplicates are separate sample; (4) e.g.; 40ml/glass/H₂SO₄.

Notes to Lab: