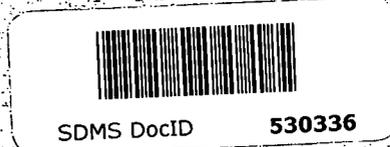


US EPA ARCHIVE DOCUMENT

**Loitherstein**  
ENVIRONMENTAL  
ENGINEERING

Records Center  
Wells Fleet Bank  
12  
530 336



December 5, 1996  
Project Number 96154

Ms. Deborah Costolnick  
Assistant Vice President  
Fleet Bank  
777 Main Street  
Hartford, CT 01602-5078

Subject: Level 2 Environmental Site Assessment  
Lot 12, 228 Salem Street  
Woburn, Massachusetts

Dear Ms. Costolnick:

Loitherstein Environmental Engineering, Inc. is pleased to submit this report which summarizes the results of a Level 2 Environmental Site Assessment for the property at Lot 12, 228 Salem Street in Woburn, Massachusetts (the "Site"). The Site consists of 3.68 acres of vacant land that was formerly occupied by a leather manufacturing company between 1915 and 1989. The Site is currently one of six lots listed by the Department of Environmental Protection (DEP) as a Location To Be Investigation (LTBI).

This work was performed in accordance with your written authorization dated July 8, 1996, your verbal authorization for additional work, and the Terms and Conditions stated in the Master Environmental Service Agreement (MESA).

The purpose of the assessment was to render a professional opinion whether oil or hazardous material are present in soil or groundwater at the Site with respect to the Oil and Hazardous Material Prevention Act, Massachusetts General Laws, Chapter 21E, and the Massachusetts Contingency Plan, 310 CMR 40.0000.

Loitherstein  
Environmental  
Engineering  
Incorporated

17 Main Street  
Framingham  
Massachusetts  
01701-2907

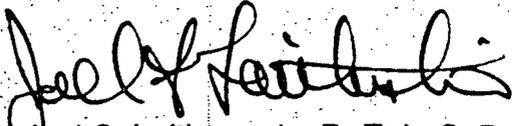
(508) 872-6400  
FAX (508) 872-6466



We trust this report meets your requirements. Please call if you have any questions or require further information.

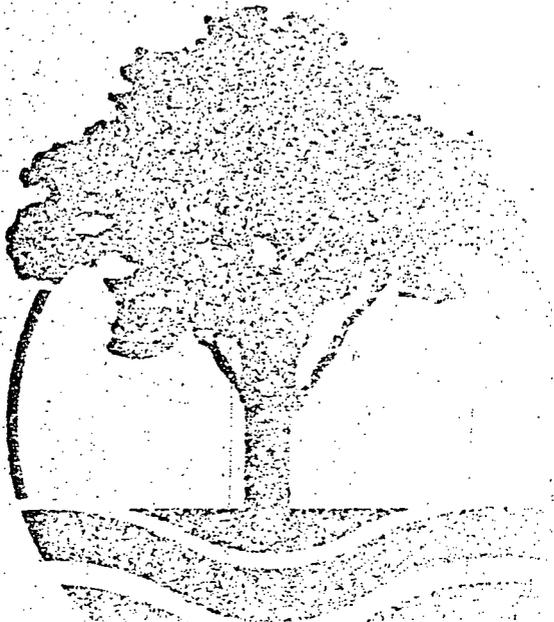
Sincerely,

LOITHERSTEIN ENVIRONMENTAL ENGINEERING, INC.



Joel S. Loitherstein, P. E., L. S. P.  
President

*Allison A. Ramo*  
Angela Mathur  
Environmental Scientist



## TABLE OF CONTENTS

	PAGE
1.00 EXECUTIVE SUMMARY	1
2.00 INTRODUCTION	2
3.00 SUBSURFACE EXPLORATIONS AND CONDITIONS	2
3.10 Geologic Conditions	3
3.20 Groundwater Flow Direction	3
3.30 Regulatory Discussion	3
3.40 Soil Screening and Sampling	4
3.50 Monitoring Well Installation and Groundwater Sampling	4
4.00 LABORATORY ANALYSES	5
4.10 Laboratory Analyses - Soil	5
4.20 Laboratory Analyses - Groundwater	5
5.00 SUMMARY OF CONCLUSIONS	6
6.00 REFERENCES	7

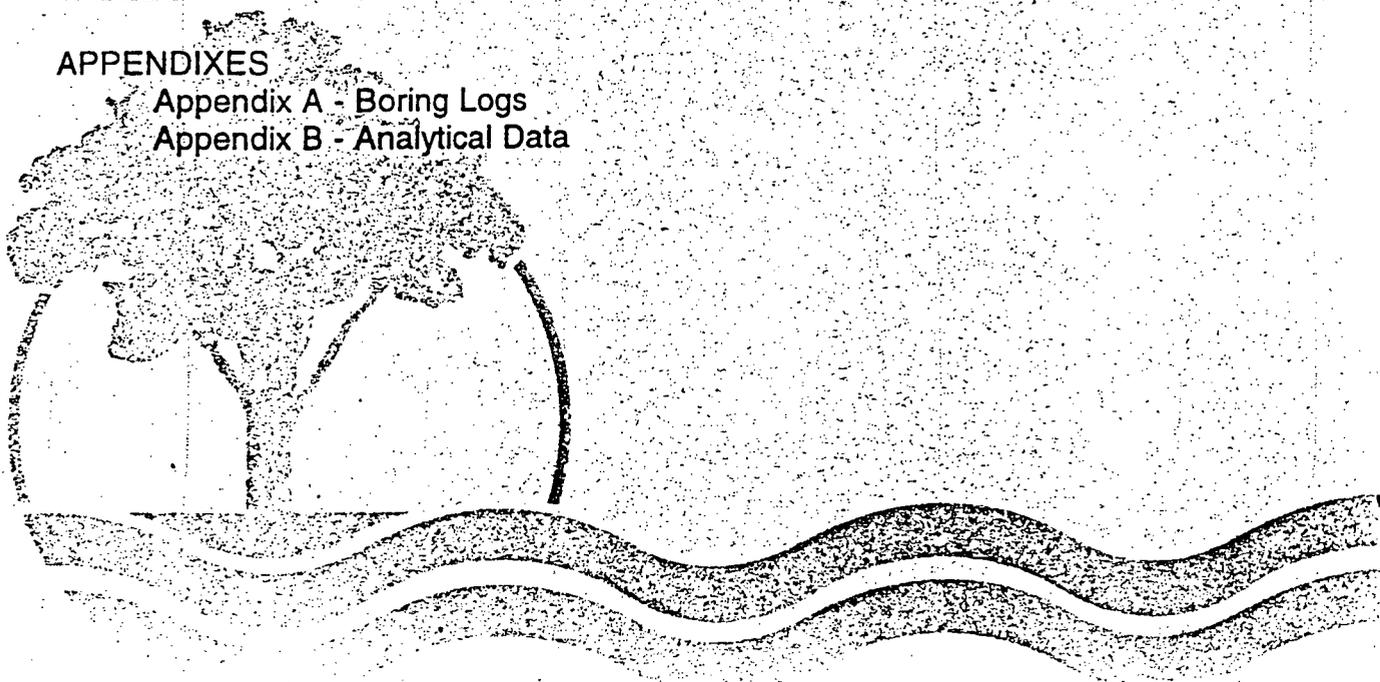
### FIGURES

- Figure 1 - Site Locus
- Figure 2 - Monitoring Well Location Plan

### TABLES

### APPENDIXES

- Appendix A - Boring Logs
- Appendix B - Analytical Data



## 1.00 EXECUTIVE SUMMARY

This Level 2 Environmental Site Assessment was requested by Mr. Marshall Sugarman for the property at Lot 12, 228 Salem Street in Woburn, Massachusetts (the "Site"). The Site consists of 3.68 acres of vacant land that was formerly occupied by a leather manufacturing company between 1915 and 1989. The Site is currently one of six lots listed by the Department of Environmental Protection (DEP) as a Location To Be Investigation (LTBI).

The purpose of the assessment was to render a professional opinion whether oil or hazardous material are present in soil or groundwater at the Site with respect to the Oil and Hazardous Material Prevention Act, Massachusetts General Laws (MGL), Chapter 21E, and the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000. Loitherstein Environmental Engineering's scope of work outlined in a proposal dated November 6, 1996, included installation of one monitoring well, sampling and analyses of soil from a detention pond, analyses of soil from the installation of one monitoring well, and the sampling and analyses of groundwater from two existing wells (RIZ-5 and RR-2) and Loitherstein Environmental Engineering's newly installed well (MW-101).

Previous environmental assessments conducted at the Site indicate that the J.J. Riley Tannery formerly used the Site for leather manufacture between 1915 and 1989. Several types of solvents and metals were reportedly used during the manufacturing process. The Site and surrounding properties were investigated in the early 1980s as part of the Wells G & H Superfund site. Wells G & H were used as public drinking water wells but were closed in the early 1980s when chlorinated solvents were detected in the drinking water. Although the Site was not found to be a contributing source of chlorinated solvents to Wells G & H, metals and low levels of volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) were found in the soil and groundwater. The northern portion of the Site was reportedly used to store sludge from a former landfill located west of the Site. In addition, a clay pipe used to carry tannery waste from a former building was also found. Extensive remediation activities at the Site include the excavation and removal of soil contaminated with arsenic and chromium and the removal of a clay pipe formerly used to carry tannery waste.

As part of this assessment, Loitherstein Environmental Engineering installed a monitoring well (MW-101) in the vicinity of the former clay pipe to evaluate whether there had been historical leaks from the clay pipe that may have affected the soil or groundwater at the Site. The groundwater from the newly installed well and two existing monitoring wells (RIZ-5 and RR-2) was sampled and analyzed for the presence of petroleum hydrocarbons (PHCs), VOCs, PAHs, metals, pH, and conductivity. Soil from a detention pond at the Site and soil obtained during the installation of MW-101 were sampled and analyzed for the presence of VOCs, PHCs, PAHs, and metals.

Lot 12, 228 Salem Street  
December 5, 1996  
Page 2

Based on the laboratory data, PHCs are present in the groundwater from MW-101 above the Category RCGW-1 Reportable Concentration. Other than the presence of cis-1,2-dichloroethene in RR-2, VOCs were not present above their method detection limits in the groundwater sampled. In addition, PAHs were not present above their method detection limits in the groundwater from the three monitoring wells. However, three metals, cadmium, arsenic, and beryllium, were detected, albeit below their Category RCGW-1 Reportable Concentrations.

The laboratory data indicate the presence of three PAHs, (benzo (a) anthracene, benzo (b) pyrene, and benzo (b) fluoranthene), and the metal, chromium, above Category RCS-1 Reportable Concentrations in the detention pond. Additional compounds were either not present above their detection limits or were detected below their Category RCS-1 Reportable Concentration.

## 2.00 INTRODUCTION

The purpose of this assessment was to render a professional opinion whether oil or hazardous material are present in soil or groundwater at the Site with respect to the Oil and Hazardous Material Prevention Act, MGL, Chapter 21E, and the MCP, 310 CMR 40.0000. Groundwater was collected from two existing groundwater monitoring wells and a newly installed groundwater monitoring well on November 21, 1996 and subsequently submitted for analyses of VOCs by EPA Method 8260, PHCs by EPA Method 8015B full, Priority Pollutant Metals, PAHs by EPA Method 8270, pH, and conductivity. Two soil samples obtained from the installation of the monitoring well were submitted for analyses of VOCs by EPA Method 8260 and Priority Pollutant Metals, and a soil sample from a detention pond for the analyses of VOCs by EPA Method 8260, PAHs by EPA Method 8270, Priority Pollutant Metals, and PHCs by EPA Method 8015B.

This assessment was performed by Ms. Angela Mathur and reviewed by Mr. Joel S. Loitherstein of Loitherstein Environmental Engineering, for Ms. Deborah Costolnick and Mr. Marshall Sugarman of Fleet Bank in Hartford, Connecticut and Woburn, Massachusetts, respectively.

## 3.00 SUBSURFACE EXPLORATION AND CONDITIONS

One boring (MW-101) was advanced by Soil Exploration Corporation of Leominster, Massachusetts and was observed by a representative of Loitherstein Environmental Engineering. The boring was advanced using a hollow stem auger. Drill water was not used. Standard penetration tests were performed in the borehole at



approximately five-foot intervals yielding split spoon samples. Soil samples were placed in 8-ounce jars and stored on ice for transportation to Loitherstein Environmental Engineering. Soil samples were then screened for headspace volatile organic compounds using a 10.2 eV photoionization detector. A log of the completed soil boring is included in Appendix A.

### 3.10 Geologic Conditions

Monitoring well MW-101 was advanced to a depth of 36 feet. Sand and gravel were encountered during the installation of this well. Groundwater was encountered at approximately 33 feet.

Previous subsurface investigations of the Site by other consultants indicate the presence of fill materials, including brick, leather, animal hides, blood, and hair. In addition, sludge containing high levels of chromium and arsenic were found at the Site.

### 3.20 Groundwater Flow Direction

A review of local topography and a USGS topographic map indicates that the closest body of water is the Aberjona River, which is located approximately 1,000 feet southeast of the Site. Groundwater appears to regionally flow in the southeasterly direction, toward the Aberjona River.

Groundwater elevation surveys at the Site and surrounding lots by other consultants confirm that groundwater flows in a southeasterly direction, toward the Aberjona River.

### 3.30 Regulatory Discussion

Loitherstein Environmental Engineering's review of the Massachusetts DEP's Bureau of Waste Site Cleanup Map indicates that the Site is located within a one-half mile Interim Wellhead Protection Area. Therefore, Category RCGW-1 Reportable Concentrations apply to the groundwater at the Site. In addition, Category RCS-1 Reportable Concentrations apply to the soil because the Site is located within this groundwater resource area.



### 3.40 Soil Screening and Sampling

Soil samples collected during the installation of MW-101 were placed in eight ounce jars. Screening of soil samples from the monitoring well borehole was conducted by Loitherstein Environmental Engineering, Inc. using an HNu meter equipped with a 10.2 eV photoionization detector. The meter is calibrated in the laboratory with isobutylene in an air matrix. Isobutylene in turn, has been referenced to benzene. Therefore, readings indicate total concentrations of VOCs. The results are reported as parts per million volumetric (ppmv) to reflect variations in instrument response to different compounds.

HNu readings ranged between ND and 3 ppmv. The highest reading, 3 ppmv, was detected in the soil sample obtained at the groundwater table. Generally, HNu readings up to 10 ppmv are considered background levels. However, this sample was submitted for laboratory analyses of VOCs by EPA Method 8260.

An additional soil sample was obtained from the detention pond area in the vicinity of a former sludge disposal area and labeled B-101/S-1. The sample was collected using a hand held auger and was taken at a depth between zero and six inches below the ground surface. The soil in the auger was placed into appropriate glassware and submitted for laboratory analyses.

### 3.50 Groundwater Sampling

Approximately three to ten times the initial standing volume of groundwater was removed from the monitoring wells with a disposable bailer prior to sample collection. A new disposable bailer for purging and sampling was used in each well to reduce the possibility of cross contamination.

Groundwater sampling was conducted on November 21, 1996. Sampling was accomplished using disposable bailers consisting of three-foot lengths of plastic fitted with a Teflon ball check valve. Samples were obtained by lowering the bailer into the well, allowing it to fill, retrieving it, and pouring the contents into precleaned 40 ml glass septum vials and one-liter jars. Collected samples were chilled for subsequent analyses.

## 4.00 LABORATORY ANALYSES

### 4.10 Laboratory Analyses - Soil

Soil sample B-101/S-1 was obtained from the detention pond area and analyzed by Matrix Analytical, Inc. of Hopkinton, Massachusetts for analyses of:

- VOCs by EPA Method 8260;
- PAHs by EPA Method 8270;
- PHCs by EPA Method 8015B; and
- Priority Pollutant Metals.

The soil sample MW-101/S-1, which was taken from between one and two feet below the ground surface, was submitted for analyses of priority pollutant metals. The soil sample MW-101/S-8, which was at the water table, was submitted for analyses of VOCs by EPA Method 8260.

Based on the available data, it appears that VOCs are not present at detectable concentrations in the soil samples at the Site. However, PHCs at 430 mg/kg, several PAHs, and several metals were detected in soil sample B-101/S-1. According to the laboratory data, the PAHs benzo (a) anthracene, benzo (b) pyrene, benzo (b) fluoranthene, and the metal, chromium, were detected above their respective Category RCS-1 Reportable Concentrations. Metals were detected in the soil sample MW-101/S-1; however, all of the detected metals are below their respective Category RCS-1 Reportable Concentrations. Furthermore, soil sample MW-101/S-8 did not contain VOCs above their respective method detection limits. These data are summarized on Table 1. A comparison of the groundwater analytical results to the applicable RCS-1 Concentration is presented in Table 2. Where the ratio is greater than 1.0, the RCS-1 concentration has been exceeded and is presented in bold.

### 4.20 Laboratory Analyses - Groundwater

Groundwater samples collected from MW-101, RR-2, and RIZ-5 were analyzed by Matrix Analytical, Inc. of Hopkinton, Massachusetts. The groundwater samples were analyzed for:

- VOCs by EPA Method 8260;
- PAHs by EPA Method 8270;
- PHCs by EPA Method 8015B Full;



Lot 12, 228 Salem Street  
December 5, 1996  
Page 6

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- Total Priority Pollutant Metals;
- Dissolved Priority Pollutant Metals;
- pH; and
- Conductivity.

According to the laboratory data, SVOCs are not present above their respective method detection limits in the groundwater in the three monitoring wells sampled. However, the VOC cis-1,2-dichloroethene was detected in the groundwater from monitoring well RR-2 at 5 µg/L, well below its Reportable Concentration of 70 µg/L. The remaining VOCs were not present above their respective method detection limits.

The laboratory data indicate that PHCs are present at 4.70 mg/L in the newly installed monitoring well, MW-101. This concentration exceeds the Category RCGW-1 Reportable Concentration for PHCs in groundwater. PHCs are not present above their respective method detection limits in groundwater from monitoring wells RIZ-5 and RR-2.

Initially, groundwater from the three monitoring wells were analyzed for the presence of total metals. The total concentration of three metals, cadmium, lead, and silver, in groundwater from RIZ-5 and MW-101 exceeded their Category RCGW-1 Reportable Concentrations which are actually referenced to dissolved concentrations. Therefore, groundwater samples from these well were analyzed for the presence of dissolved cadmium, lead, and silver. Dissolved metals were not present at detectable concentrations in the groundwater. Therefore, it is the opinion of Loitherstein Environmental Engineering that the concentrations of cadmium, lead, and silver in the groundwater are not reportable.

Groundwater samples were also analyzed for pH and conductivity. The conductivity (an indirect measure of the concentration of dissolved ions in a given sample) and pH measurements are included in Appendix B. The pH values range from 6.0 to 7.1 and conductivity values range from 700 to 750 µmhos for groundwater samples taken from the wells. It has been our experience that these values of pH and conductivity are typical of groundwater in New England. These data are summarized on Table 3. A comparison of the groundwater analytical results to the applicable RCGW-1 Concentration is presented in Table 2. Where the ratio is greater than 1.0, the RCGW-1 concentration has been exceeded and is presented in bold. A copy of the analytical data can be found in Appendix B.

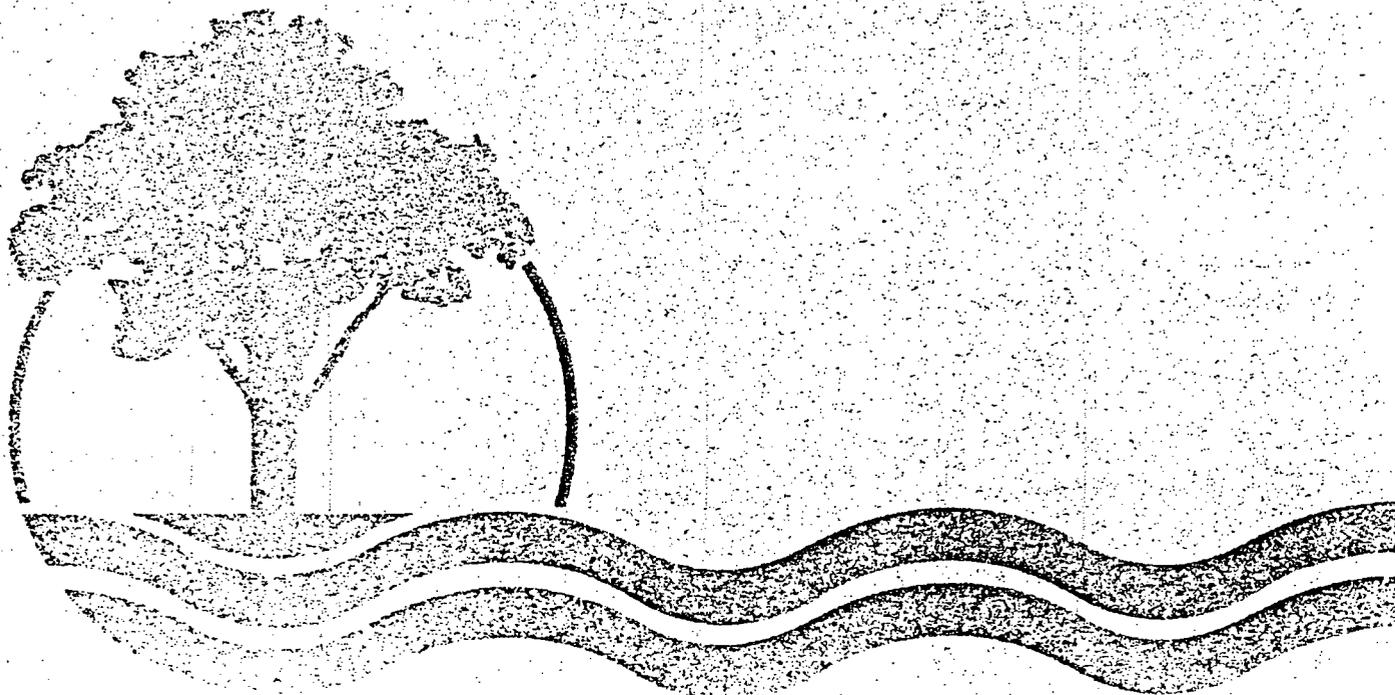


## 5.00 SUMMARY OF CONCLUSIONS

Loitherstein Environmental Engineering performed a Level 2 Site Assessment for Lot 12, 228 Salem Street in Woburn, Massachusetts. Based on the analytical data, PAHs, PHCs, and metals are present above their method detection limits in the soil from a detention pond; however, three PAHs and the metal, chromium, are present above their respective Category RCS-1 Reportable Concentrations.

The laboratory analytical data indicate the presence of one VOC, cis-1,2-dichloroethene, in the groundwater from existing monitoring well RR-2 at the Site. The remaining VOCs are not present above their method detection limits. In addition, the concentration of cis-1,2-dichloroethene is not above the Category RCGW-1 Reportable Concentration. The total concentration of several metals are also present above their method detection limits. However, none of the dissolved metals in the groundwater are present at detectable concentrations.

PHCs are present above the Category RCGW-1 Reportable Concentrations in newly installed monitoring well MW-101. PHCs are not present above their method detection limits in the groundwater from remaining two monitoring wells. The pH and conductivity measurements in groundwater range between 6.0 and 7.1, and 700 to 750  $\mu$ mhos, respectively.



**6.00 REFERENCES**

1. The Massachusetts Contingency Plan, 310 CMR 40.000, Massachusetts DEP, Bureau of Waste Site Cleanup, September 6, 1996.
2. Massachusetts DEP, BWSC, Priority Resource Map, dated October 1996.
3. Level 1 Environmental Site Assessment for Lot 12, 228 Salem Street, Woburn, Massachusetts, prepared by Loitherstein Environmental Engineering, dated November 6, 1996.

The following documents were either obtained from the DEP or provided by Fleet Bank:

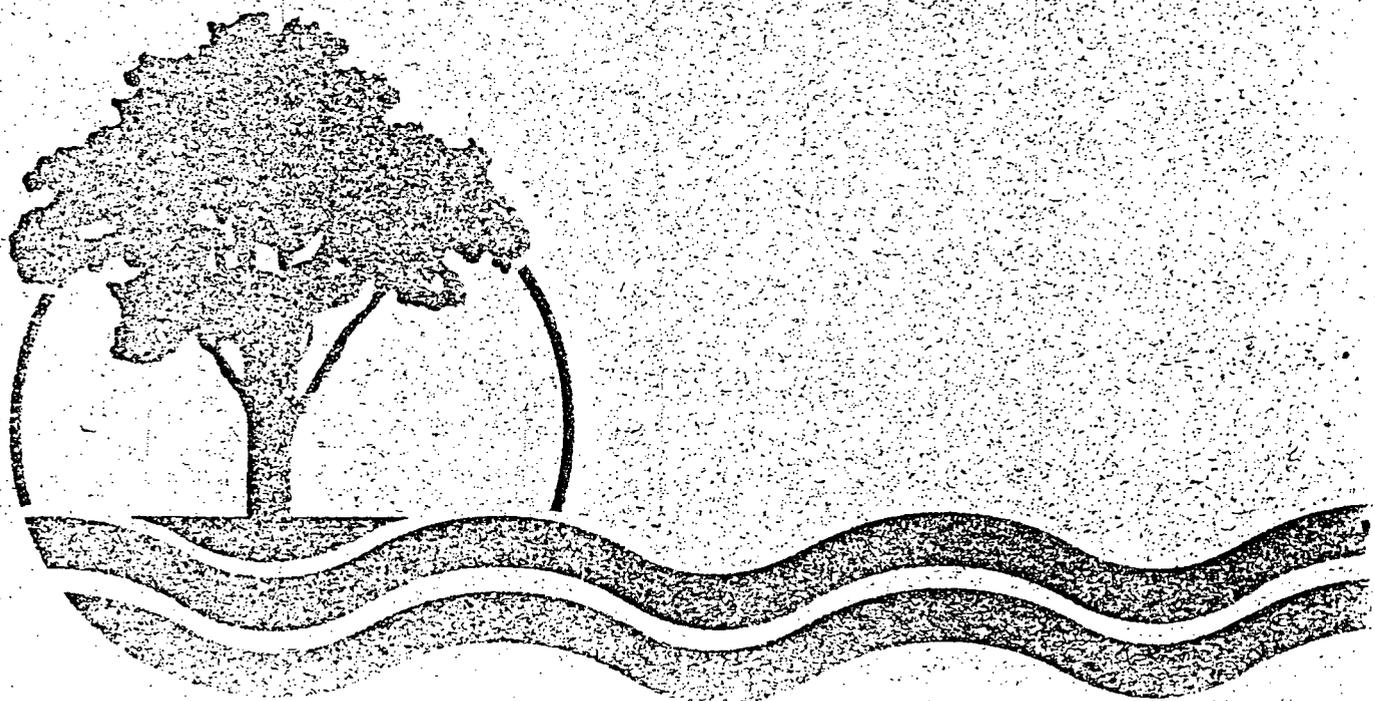
DATE	DOCUMENT NAME
10/10/80	Letter to Beatrice Food from Sabin M. Lord, Eastern Regional Engineer, RE: Hazardous Waste Barrels Woburn
8/10/93	"Environmental Site Assessment Final Report 228 Salem Street Woburn, Massachusetts" Prepared for the Maggiore Companies by 21E, Inc.
3/7/94	Letter to Stephen Johnson, DEP from 21E, Inc., RE: 228 Salem Street Woburn, Massachusetts DEP Case No. 3-0482
7/6/94	Letter to Mr. Charles Rotondo from Paragon Environmental Services, RE: 228 Salem Street Woburn, Massachusetts
10/30/94	"US Trust Comprehensive Site Assessment Lot 14, Wildwood Avenue Woburn, Massachusetts" by Paragon Environmental Services for US Trust
10/11/95	Letter from 21E, Inc. to Mitra Khadem, DEP, RE: Response to Request for Information, Former John J. Riley Company 228 Salem Street Woburn, Massachusetts DEP RTN 3-0482
1/96	"Subsurface Investigation 228 Salem Street Woburn, Massachusetts" by Rizzo Associates, Inc.
1/23/96	Letter from 21E, Inc. to Mitra Khadem, DEP, RE: 228 Salem Street Woburn, Massachusetts RTN 3-0482
1/24/96	DEP Meeting Attendance Sheet Meeting Purpose: Former Riley Tannery RTN 3-0482



DATE	DOCUMENT NAME
1/25/96	DEP Memorandum to File Through Jack Duggan and Patricia Donahue from Mitra Khadem subject: Woburn-J.J. Riley Tannery 228 Salem Street, RTN 3-0482
1/26/96	Letter from 21E, Inc. to Mitra Khadem, DEP, RE: 228 Salem Street Woburn, Massachusetts DEP RTN: 3-0482
1/26/96	"Plan of Activities (NOA Findings) 228 Salem Street Woburn, Massachusetts DEP RTN 3-0482" by 21E, Inc. to Mitra Khadem, DEP
2/5/96	BWSC Phone Notes RTN 3-0482 Woburn 228 Salem Street Contact Name Sandra Hebert prepared by Mitra Khadem
2/5/96	Letter from Valentino J. Chiaradonna, Val's Leather Waste to Wedel Corporation c/o John J. Riley
2/29/96	DEP Memorandum to The File through Patricia Donahue and Jack Duggan from Mitra Khadem subject Woburn-J.J. Riley Tannery 228 Salem Road RTN 3-0482
3/8/96	DEP Meeting Attendance Sheet Purpose: 228 Salem Street Woburn, Massachusetts
3/25/96	DEP Memorandum to File through Jack Duggan and Patricia Donahue from Mitra Khadem subject Woburn-J.J. Riley Tannery 228 Salem Street, RTN 3-0482
3/25/96	BWSC Phone Notes RTN 3-0842 228 Salem Street Woburn, Massachusetts contact name Sandra Hebert prepared by Mitra Khadem
4/8/96	Immediate Response Action Transmittal Form RTN 3-13444 228 Salem Street Woburn, Massachusetts Sandra Hebert, L.S.P. Person Undertaking IRA: John J. Riley Jr., Wedel Corporation
4/8/96	Release Notification Form RTN 3-13444 228 Salem Street Woburn, Massachusetts Person Required to Notify John J. Riley, Jr., Wedel Corporation
4/12/96	"Imminent Hazard Evaluation 228 Salem Street Woburn, Massachusetts" by 21E, Inc. for Wedel Corporation
4/12/96	"Immediate Response Action Plan DEP Case #3-13444, 228 Salem Street Woburn, Massachusetts" by 21E, Inc. for Wedel

Lot 12, 228 Salem Street  
December 5, 1996  
Page 10

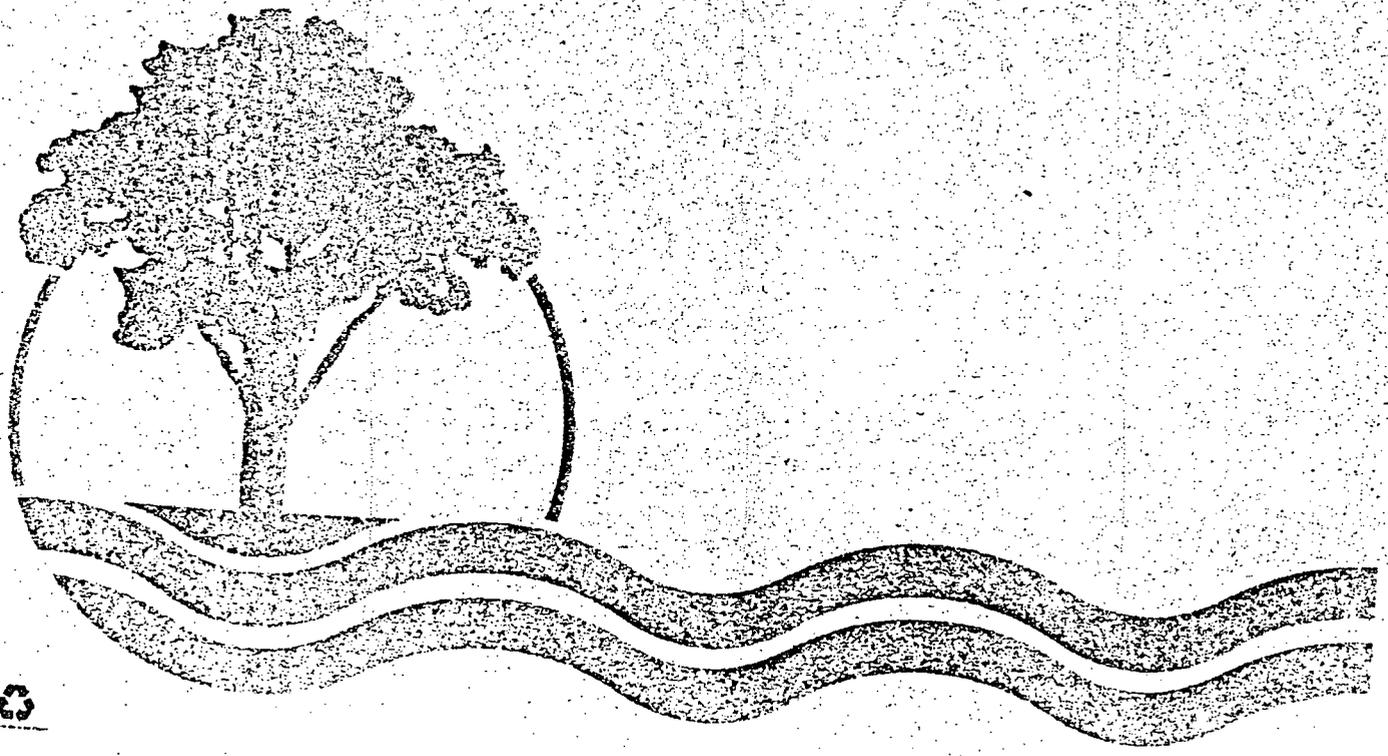
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	Corporation



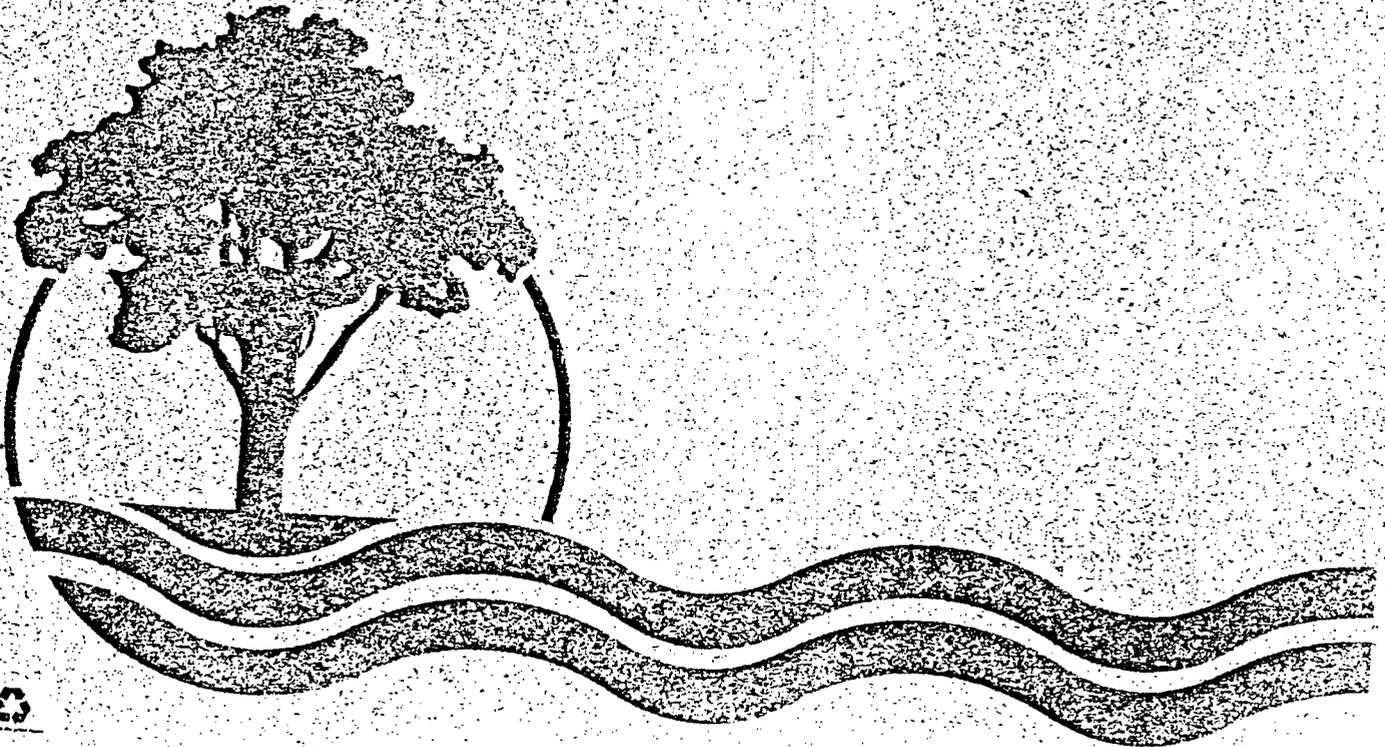
DATE	DOCUMENT NAME
4/25/96	"Report of Activities and Soil Excavation Plan Tannery Waste and Soil Contamination 228 Salem Street Woburn, MA RTN 3-0482" by 21E, Inc. to Mitra Khadem.
4/25/96	Letter from 21E, Inc. to Mitra Khadem, DEP, RE: Report of Activities and Soil Excavation Plan Tannery Waste and Soil Contamination, 228 Salem Street Woburn, Massachusetts DEP Case #3-0482
6/11/96	"IRA Status Report RTN 3-13444 228 Salem Street Woburn Massachusetts" by 21E, Inc. to DEP
7/6/96	Letter from Paragon Environmental Services to Mr. Charles Rotondo, RE: 228 Salem Street Woburn, Massachusetts
8/12/96	Response Action Outcome Statement Transmittal Form 3-13444 228 Salem Street Woburn, Massachusetts Sandra Hebert, L.S.P. Person Making Submittal John J. Riley, Jr., Wedel Corporation
8/13/96	"Response Action Outcome Statement 228 Salem Street Woburn, Massachusetts DEP Case #3-13444" by 21E, Inc.
8/14/96	"Notice of Non-Compliance and Audit Findings Completion Statement 228 Salem Street Woburn, Massachusetts DEP RTN 3-13444" by 21E, Inc. to Mitra Khadem at DEP
9/6/96	DEP Memorandum to File through Jack Duggan and Patricia Donahue from Mitra Khadem subject Woburn-J.J. Riley Tannery 228 Salem Street RTN 3-13444 Related RTN 3-0482
9/6/96	LSP Evaluation Transmittal Form RTN 3-0482 228 Salem Street Woburn, Massachusetts Sandra M. Hebert, L.S.P. Person Submitting John J. Riley, Jr., Wedel Corporation
9/11/96	Letter to Paul Maggiore from 21E, Inc., RE: Summary of Activities, Lot 12 228 Salem Street Woburn, Massachusetts
9/29/96	Letter to Maggiore Companies Attn: Mr. Paul Maggiore from DEP, RE: Woburn John J. Riley Co./Beatrice 228 Salem St. RTN #3-0482 Notice of Audit Request for Information
10/7/96	Letter to Wedel Corporation Attn.: John J. Riley, Jr. from DEP RE: Woburn John J. Riley Company/Beatrice 228 Salem Street Woburn, Massachusetts RTNs #3-0482/3-13444

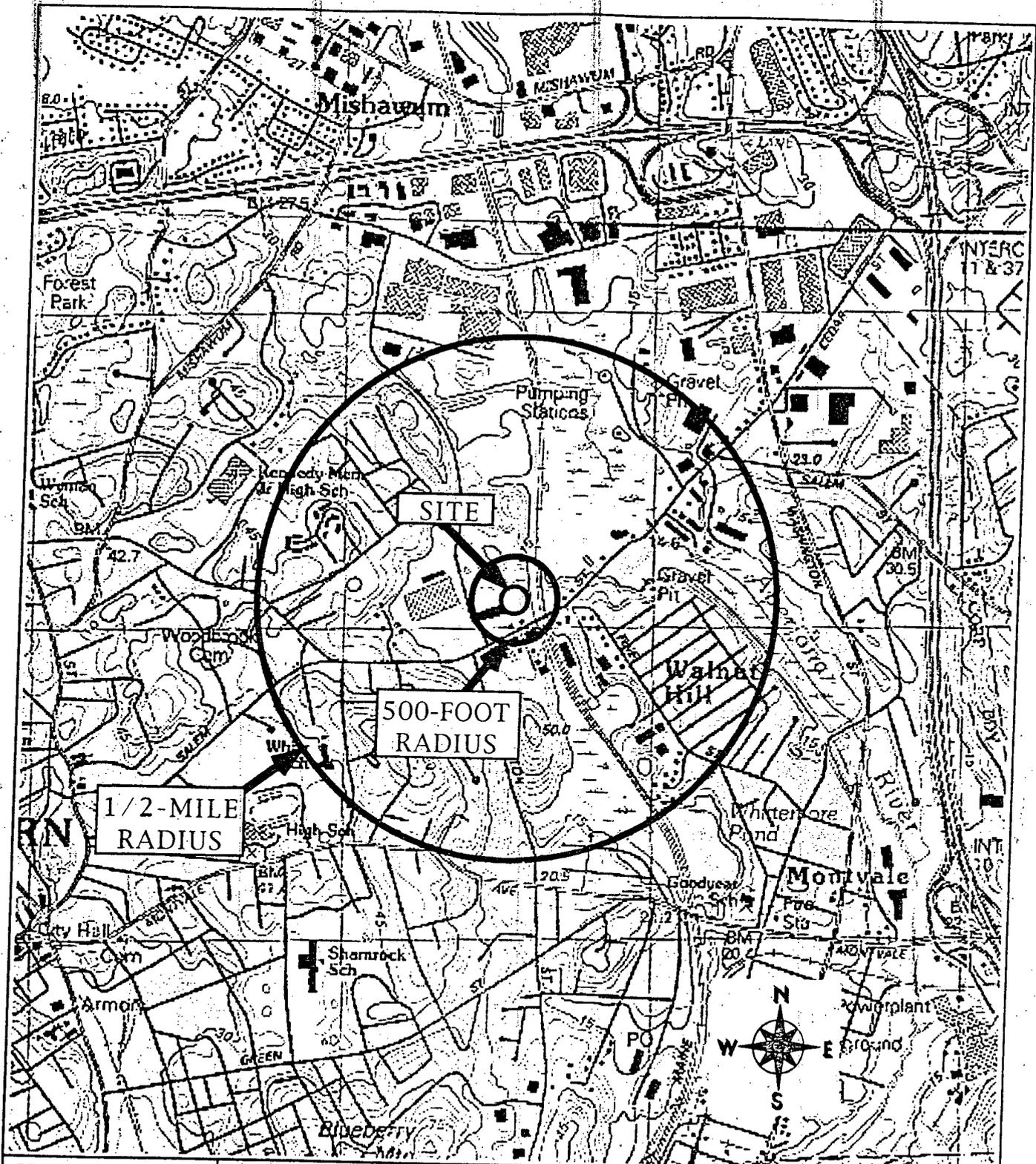


DATE	DOCUMENT NAME
10/16/96	Memorandum to File 3-0486/3-13444 Woburn - Former J.J. Riley Tannery 228 Salem Street Woburn, Massachusetts subject: Phone Notes regarding soil treatment"
undated	RAO Checklist by Mitra Khadem
undated	Letter of Transmittal to Mitra Khadem, DEP from 21E, Inc.

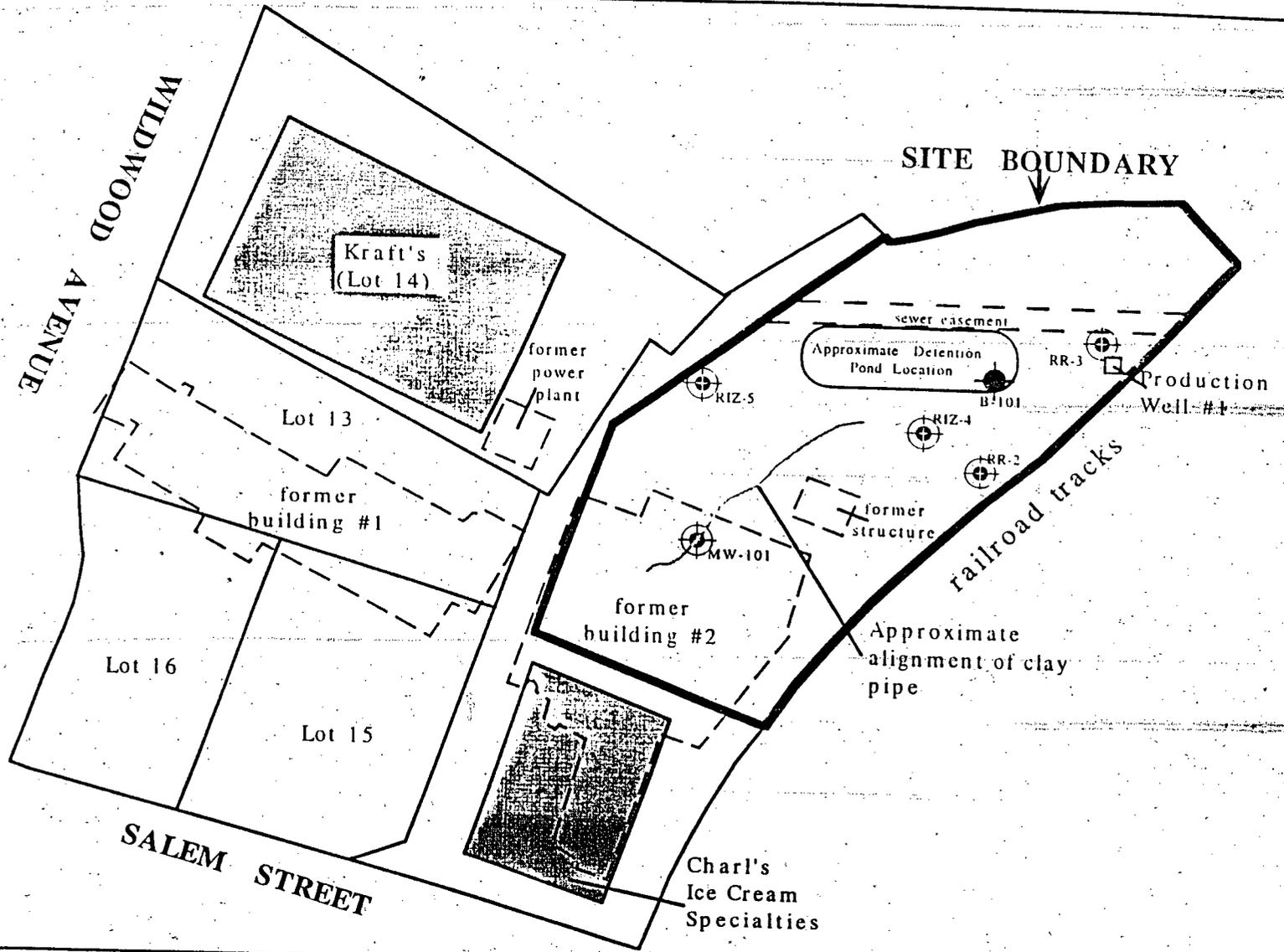


FIGURES





PROJECT NUMBER: 96154	PROPERTY AT: 228 SALEM STREET WOBURN, MASSACHUSETTS	UTM COORDINATES: 4706090mN 324580mE	SCALE: NTS
FIGURE NUMBER: 1	FIGURE NAME: SITE LOCUS	DESIGNED BY: LMG	DATE: 11/6/96



PROJECT NUMBER: <b>96154</b>	PROPERTY AT: <b>LOT 12 228 SALEM STREET WOBURN, MASSACHUSETTS</b>	FIGURE NAME: <b>SITE PLAN</b>	FIGURE NUMBER: <b>2</b>	SCALE: <b>NTS</b>	DATE: <b>11/5/96</b>
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# TABLES

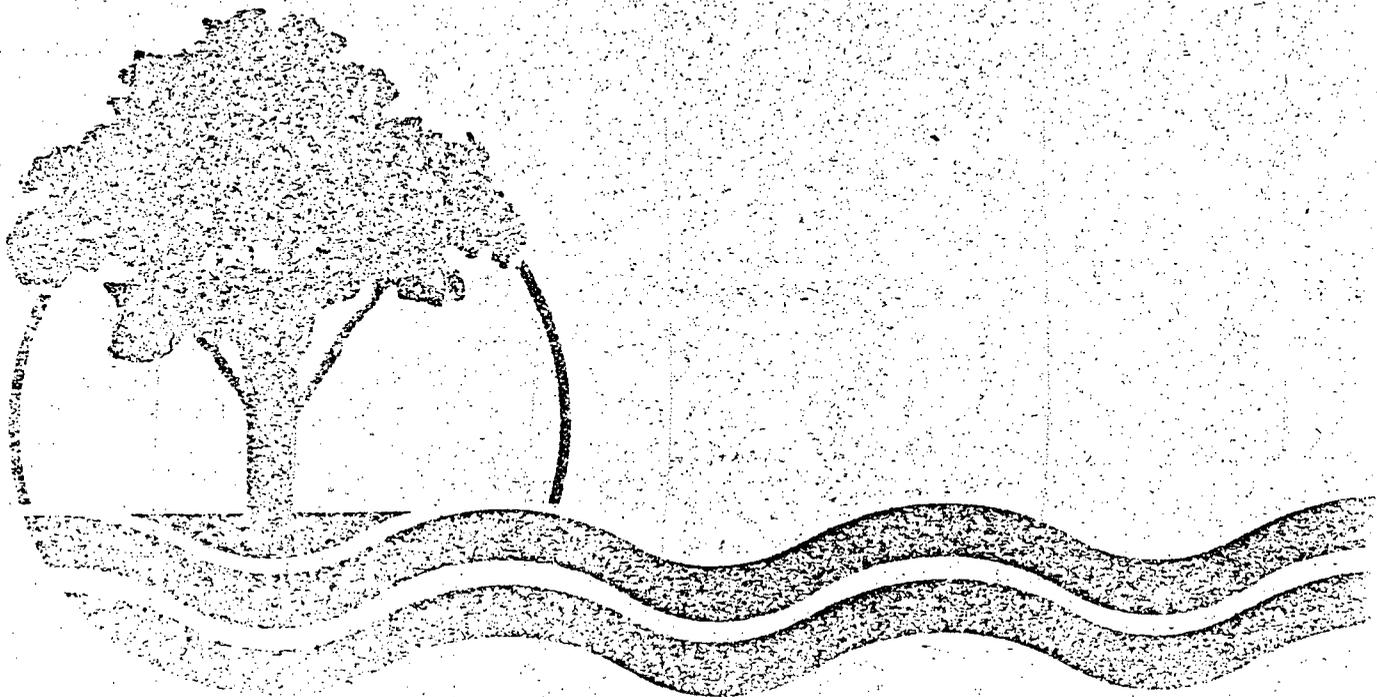


TABLE 1  
SUMMARY OF ANALYTICAL SOIL RESULTS  
OBTAINED BY LEEI  
228 SALEM STREET  
WOBBURN, MASSACHUSETTS

PARAMETER	SAMPLE DESIGNATION		
	B-101/S1 Sample Date 11/21/96	MW-101/S1 11/22/96	MW-101/S8 11/21/96
VOCs by 8260 (ug/kg)	ALL ND	NOT TESTED	ALL ND
PHCs by 8015B (mg/kg)	430	NOT TESTED	NOT TESTED
PAHs by 8270 (ug/kg)	OTHERS ND	NOT TESTED	NOT TESTED
Acenaphthene	250		
Anthracene	590		
Benzo (a) Anthracene	1,200		
Benzo (a) Pyrene	990		
Benzo (b) Fluoranthene	1,400		
Benzo (k) Fluoranthene	520		
Benzo (g,h,i) Perylene	320		
Chrysene	1,100		
Fluoranthene	3,000		
Fluorene	230		
Indeno (1,2,3-cd) Pyrene	330		
Phenanthrene	2,100		
Pyrene	2,200		
Total Metals (mg/kg)	OTHERS ND	OTHERS ND	NOT TESTED
Antimony	0.4	0.8	
Arsenic	6.7	4.8	
Beryllium	0.4	ND	
Cadmium	1.1	ND	
Chromium	1,080	4	
Copper	29	17	
Lead	79	5.4	
Mercury	0.4	ND	
Nickel	18	12	
Selenium	0.5	ND	
Silver	ND	ND	
Thallium	0.1	ND	
Zinc	393	13	

TABLE 2  
RATIO OF MEASURED CONCENTRATION IN TABLE 1  
TO  
CATEGORY RCS-1 REPORTABLE CONCENTRATION IN SOIL  
228 SALEM STREET  
WOBBURN, MASSACHUSETTS

PARAMETER	RCS-1 REPORTABLE CONCENTRATION	SAMPLE DESIGNATION		
		B-101/S1	MW-101/S1	MW-101/S8
VOCs by 8260 (ug/kg)		ALL ND	NOT TESTED	ALL ND
PHCs by 8015B (mg/kg)	500	0.86		
PAHs by 8270 (ug/kg)		OTHERS ND	NOT TESTED	NOT TESTED
Acenaphthene	20,000	0.01		
Anthracene	1,000,000	0.0005		
Benzo (a) Anthracene	700	1.7		
Benzo (a) Pyrene	700	1.4		
Benzo (b) Fluoranthene	700	2.0		
Benzo (k) Fluoranthene	7,000	0.1		
Benzo (g,h,i) Perylene	100,000	0.003		
Chrysene	7,000	0.2		
Fluoranthene	600,000	0.005		
Fluorene	400,000	0.0005		
Indeno (1,2,3-cd) Pyrene	700	0.5		
Phenanthrene	100,000	0.02		
Pyrene	500,000	0.004		
Total Metals (mg/kg)		OTHERS ND	OTHERS ND	NOT TESTED
Antimony	10	0.04	0.08	
Arsenic	30	0.2	0.2	
Beryllium	0.7	0.6		
Cadmium	30	0.04		
Chromium	1,000	1.08	0.004	
Copper	1,000	0.23	0.02	
Lead	300	0.2	0.02	
Mercury	10	0.04		
Nickel	300	0.06	0.04	
Selenium	300	0.002		
Silver	100	ND		
Thallium	8	0.01		
Zinc	2,500	0.2	0.005	

NOTES:

1. Ratios greater than 1.0 and in bold indicate Reportable Concentrations have been exceeded.
2. ND=Not Detected

TABLE 3  
SUMMARY OF ANALYTICAL GROUNDWATER RESULTS  
OBTAINED BY LEEI  
228 SALEM STREET  
WOBURN, MASSACHUSETTS

PARAMETER	MONITORING WELL		
	RIZ-5 11/21/96	RR-2 11/22/96	MW-101 11/23/96
VOCs by 8260 (ug/L)	ALL ND	ALL ND	ALL ND
cis-1,2 Dichloroethene		5	
PHCs by 8015B (mg/kg)	ND	ND	4.7
PAHs by 8270 (ug/L)	ALL ND	ALL ND	ALL ND
pH	6.1	6.0	6.0
Conductivity (umhos)	700	700	750
Metals (mg/L)	OTHERS ND	OTHERS ND	OTHERS ND
Antimony (1)	0.005		0.004
Arsenic (2,1)			0.025
Beryllium (1)	0.01		0.004
Cadmium (2)			0.003
Chromium (1)	0.31		0.11
Copper (1)	0.47		0.35
Lead (2)			
Mercury (1)			
Nickel (2)			
Selenium (1)	0.01	0.02	
Silver (2)			
Thallium (1)			
Zinc (1)	0.45	0.11	0.68

(1) Total Metals  
(2) Dissolved Metals

TABLE 4  
RATIO OF MEASURED CONCENTRATION IN TABLE 3  
TO  
CATEGORY RCGW-1 REPORTABLE CONCENTRATION IN GROUNDWATER  
228 SALEM STREET  
WOBURN, MASSACHUSETTS

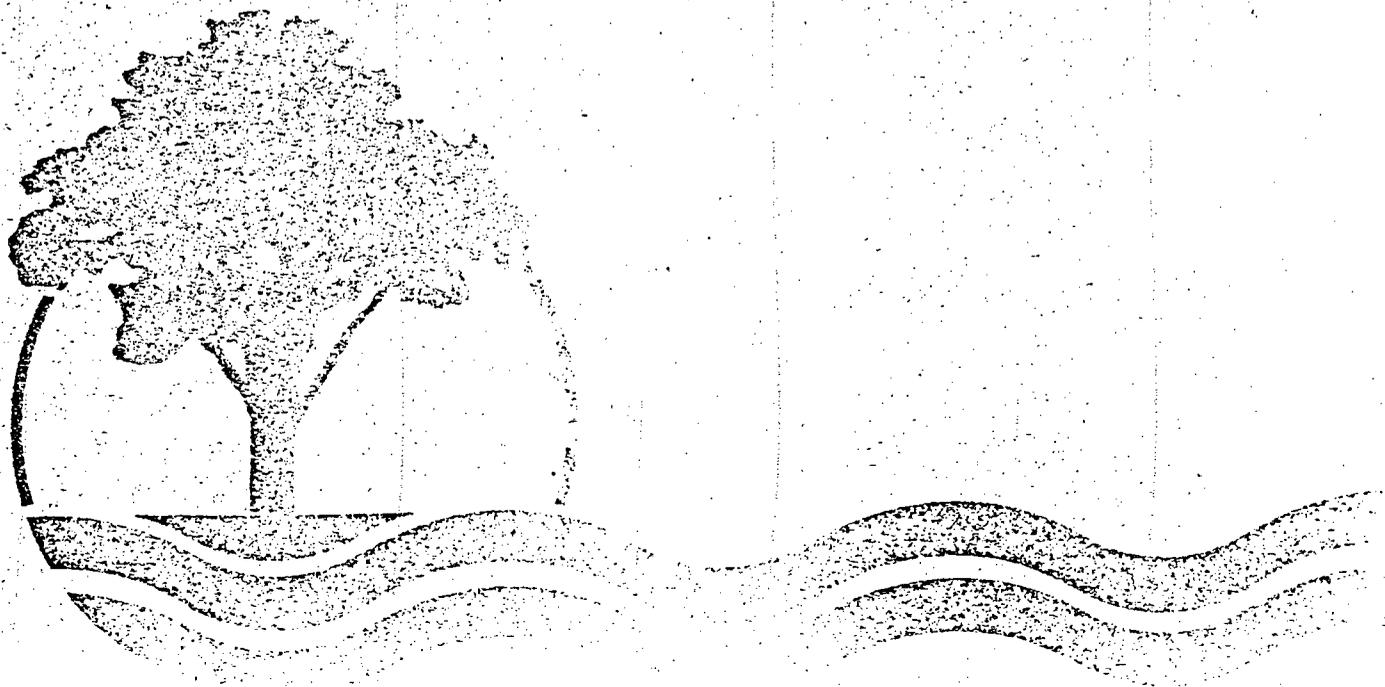
PARAMETER	RCGW-1 REPORTABLE CONCENTRATION	MONITORING WELL		
		RIZ-5	RR-2	MW-101
VOCs by 8260 (ug/L)		ALL ND	ALL ND	ALL ND
cis-1,2 Dichloroethene	70		0.07	
PHCs by 8015B (mg/kg)	1			<b>4.70</b>
PAHs by 8270 (ug/L)		ALL ND	ALL ND	ALL ND
pH	5.5-6.5	pH OK	pH OK	pH OK
Conductivity (umhos)	≤ 1,000	Cond. OK	Cond. OK	Cond. OK
Dissolved Metals (mg/L)		OTHERS ND	OTHERS ND	OTHERS ND
Antimony (1)	0.3	0.02		0.01
Arsenic (2)	0.4			0.06
Beryllium (1)	0.05	0.2		0.08
Cadmium (2)	0.01			0.3
Chromium (1)	2	0.2		0.06
Copper (1)	100	0.005		0.004
Lead (2)	0.03			
Mercury (1)	0.001			
Nickel (2)	0.08			
Selenium (1)	0.05	0.2	0.4	
Silver (2)	0.007			
Thallium (1)	0.002			
Zinc (1)	7000	0.0	0.0	0.0

(1) Total Metals  
(2) Dissolved Metals

NOTES:

1. Ratios greater than 1.0 and in bold indicate Reportable Concentrations have been exceeded.
2. ND=Not Detected

# APPENDIX A





148 Pioneer Dr.  
Leominster, MA 01453  
(508) 840-0391

# SOIL EXPLORATION CORPORATION

## Geotechnical Drilling and Groundwater Monitor Wells

5 Monson Place  
Milford, NH 03055  
(603) 672-2135

Client **Loitherstein Environmental** Date **11/22/96** Job No: **96-1147**

Location **228 Salem St., Woburn, MA**

BORING NO. **B-1** Ground Elev. **Date Start 11/21/96** Date Complete **11/21/96** Drilling Foreman **EP** Eng./Hydrol. Geologist

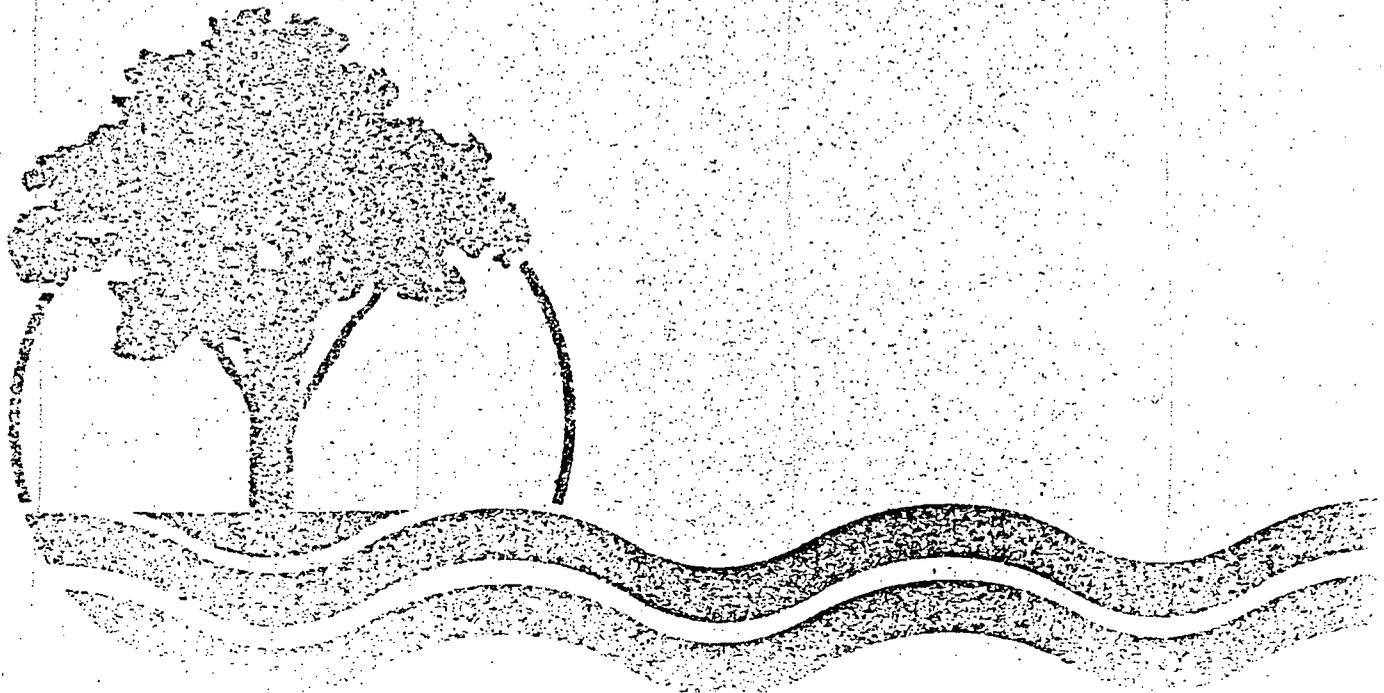
DEPTH	Sample Data					Soil and/or bedrock strata descriptions	
	No.	Sample Depth (ft.)	Blows 6" Penetration	Rec. Inches	Casing Blows Per ft.	Strata Change Depth	Visual Identification of Soil and/or Rock Strata
	1	0'0"-2'0"	13-15-13-13				Dry, medium dense, FINE TO COARSE SAND, fine to coarse gravel, nested cobbles and boulders, trace inorganic silt.
5	1	5'0"-5'2"	100/2"				
10	3	10'0"-12'0"	50-15-15-18				
15	4	15'0"-17'0"	9-11-14-17			14'0"	Dry, medium dense, FINE TO COARSE SAND, fine to coarse gravel, trace inorganic silt.
20	5	20'0"-22'0"	9-11-8-12				
25	6	25'0"-27'0"	8-12-11-9				
30	7	30'0"-32'0"	10-13-13-15				
35	8	35'0"-37'0"	8-8-8-9				
40						37'0"	End of boring at 37'0" Water level at 34'0" upon completion. Set well point at 36'0"

Type of Boring **Casing Size: Hollow Stem Auger Size: 4-1/4"**

<b>Proportion Percentages</b> Trace 0 to 10% Some 10 to 40% And 40 to 50%	<b>Granular Soils (blows per ft.)</b> 0 to 4 Very Loose      30 to 50 Dense 4 to 10 Loose        Over 50 Very Dense 10 to 30 Medium Dense	<b>Cohesive Soils (blows per ft.)</b> 0 to 2 Very Soft      8 to 15 Stiff 2 to 4 Soft            15 to 30 Very Stiff 4 to 8 Medium Stiff    Over 30 Hard
Standard penetration test (SPT) = 140# hammer falling 30" Blows are per 6" taken with an 18" long x 2" O.D. x 1 3/8" I.D. split spoon sampler unless otherwise noted.		

The terms and percentages used to describe soil and or rock are based on visual identification of the retrieved samples. ■ Moisture content indicated may be affected by time of year and water added during the drilling process ■ Water levels indicated may vary with seasonal fluctuation and the degree of soil saturation when the boring was taken. ■ The stratification lines represent the approximate boundaries between soil types, the actual transitions may be gradual. ■

## APPENDIX B





ANALYTICAL DATA  
SUMMARY

Report Date: 11/27/96

Account: Loitherstein Environmental Eng.  
Address: 17 Main St.  
Framingham, MA 01702  
508-872-6400

Project Manager: J.Loitherstein  
Project Name: 228 Salem St. (11-21-96)  
Project No.: 96154

Sample Information:

<u>Laboratory ID</u>	<u>Client/Field ID</u>	<u>Laboratory ID</u>	<u>Client/Field ID</u>
63266223-001	RIZ-5	63266223-005	MW101/S8
63266223-002	RR-2	63266223-006	MW101/S1
63266223-003	MW-101	63266223-007	QC Report-Water
63266223-004	B-101/S1	63266223-008	QC Report-Soil

Reviewed by

*Christine A. Larkin*

Christine A. Larkin  
Laboratory Manager

Lab Certifications

EPA ID: No. MA059  
Massachusetts: No. M-MA059  
Maine: Reciprocity  
Rhode Island: No. 87  
South Carolina: No. 88011

Florida(DEP): QA Plan No. 900437G  
Florida(HRS): No. E87290  
Connecticut: No. PH0515  
New York: ELAP No. 11116  
New Hampshire: No. 2041



Matrix Analytical, Inc.  
 106 South Street  
 Hopkinton, MA 01748-2295  
 1 (800) 362-8749

**F I N A L R E P O R T**

**Client Information**

Account:	Loitherstein Environmental Eng.	Project Name:	228 Salem St. (11-21-96)
Address:	17 Main St.	Project Number:	96154
	Framingham, MA 01702	Project Manager:	J.Loitherstein
		Sampler Name:	Angela Mathur

**Sample Information**

Lab ID:	63266223-001	Date Sampled:	11/21/96 09:45
Client ID:	RIZ-5	Date Received:	11/21/96 :0
Matrix:	Water	Date Reported:	11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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**SAMPLE INFORMATION**

Lab Comments: See note:  
 Nickel, Silver, Lead, Arsenic and Cadmium were collected and filtered on 11/26/96. Results represent dissolved.

**SAMPLE PREPARATION**

Metal Digestion	11/21/96	3015
Mercury Digestion	11/22/96	7470/7471

**TRACE METALS**

Antimony	0.005	mg/l	0.003	204.2	kb	11/25/96
Arsenic	ND	mg/l	0.005	200.7	th	11/27/96
Beryllium	0.010	mg/l	0.002	200.7	th	11/22/96
Cadmium	ND	mg/l	0.001	213.2	kb	11/27/96
Chromium	0.31	mg/l	0.02	200.7	th	11/22/96
Copper	0.47	mg/l	0.04	200.7	th	11/22/96
Lead	ND	mg/l	0.001	239.2	kb	11/27/96
Mercury	ND	mg/l	0.001	245.1	mm	11/22/96
Nickel	ND	mg/l	0.01	200.7	th	11/27/96
Selenium	0.010	mg/l	0.005	270.2	kb	11/25/96
Silver	ND	mg/l	0.007	200.7	th	11/27/96
Thallium	ND	mg/l	0.001	279.2	kb	11/25/96
Zinc	0.45	mg/l	0.05	200.7	th	11/22/96

**VOLATILE ORGANICS**

Acetone	ND	ug/l	100	8260A	db	11/22/96
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Client Information

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 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-001  
 Client ID: RIZ-5  
 Matrix: Water

Date Sampled: 11/21/96 09:45  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>VOLATILE ORGANICS</b>						
Acrolein	ND	ug/l	100	8260A	db	11/22/96
Acrylonitrile	ND	ug/l	100	8260A	db	11/22/96
Benzene	ND	ug/l	1	8260A	db	11/22/96
Bromobenzene	ND	ug/l	5	8260A	db	11/22/96
Bromochloromethane	ND	ug/l	5	8260A	db	11/22/96
Bromodichloromethane	ND	ug/l	5	8260A	db	11/22/96
Bromoform	ND	ug/l	5	8260A	db	11/22/96
Bromomethane	ND	ug/l	5	8260A	db	11/22/96
2-Butanone	ND	ug/l	100	8260A	db	11/22/96
n-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
sec-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
tert-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
Carbon Disulfide	ND	ug/l	5	8260A	db	11/22/96
Carbon Tetrachloride	ND	ug/l	5	8260A	db	11/22/96
Chlorobenzene	ND	ug/l	5	8260A	db	11/22/96
Chloroethane	ND	ug/l	5	8260A	db	11/22/96
2-Chloroethylvinyl Ether	ND	ug/l	5	8260A	db	11/22/96
Chloroform	ND	ug/l	5	8260A	db	11/22/96
Chloromethane	ND	ug/l	5	8260A	db	11/22/96
2-Chlorotoluene	ND	ug/l	5	8260A	db	11/22/96
4-Chlorotoluene	ND	ug/l	5	8260A	db	11/22/96
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	8260A	db	11/22/96
Dibromochloromethane	ND	ug/l	5	8260A	db	11/22/96
1,2-Dibromoethane	ND	ug/l	5	8260A	db	11/22/96
Dibromomethane	ND	ug/l	5	8260A	db	11/22/96



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Address:	17 Main St.	Project Number:	96154
	Framingham, MA 01702	Project Manager:	J.Loitherstein
		Sampler Name:	Angela Mathur

Sample Information

Lab ID:	63266223-001	Date Sampled:	11/21/96 09:45
Client ID:	RIZ-5	Date Received:	11/21/96 : 0
Matrix:	Water	Date Reported:	11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
1,2-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,3-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,4-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
Dichlorodifluoromethane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,2-Dichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
cis-1,2-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
trans-1,2-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
1,2-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,3-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
2,2-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
cis-1,3-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
trans-1,3-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
Ethylbenzene	ND	ug/l	5	8260A	db	11/22/96
Hexachlorobutadiene	ND	ug/l	5	8260A	db	11/22/96
2-Hexanone	ND	ug/l	5	8260A	db	11/22/96
Iodomethane	ND	ug/l	5	8260A	db	11/22/96
Isopropylbenzene	ND	ug/l	5	8260A	db	11/22/96
p-Isopropyltoluene	ND	ug/l	5	8260A	db	11/22/96
Methylene Chloride	ND	ug/l	5	8260A	db	11/22/96
4-Methyl-2-Pentanone	ND	ug/l	50	8260A	db	11/22/96
MTBE	ND	ug/l	5	8260A	db	11/22/96
Naphthalene	ND	ug/l	5	8260A	db	11/22/96



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 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-001  
 Client ID: RIZ-5  
 Matrix: Water

Date Sampled: 11/21/96 09:45  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
n-Propylbenzene	ND	ug/l	5	8260A	db	11/22/96
Styrene	ND	ug/l	5	8260A	db	11/22/96
1,1,1,2-Tetrachloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1,2,2-Tetrachloroethane	ND	ug/l	5	8260A	db	11/22/96
Tetrachloroethene	ND	ug/l	5	8260A	db	11/22/96
Toluene	ND	ug/l	5	8260A	db	11/22/96
1,2,3-Trichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,2,3-Trichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,2,4-Trichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,1,1-Trichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1,2-Trichloroethane	ND	ug/l	5	8260A	db	11/22/96
Trichloroethene	ND	ug/l	5	8260A	db	11/22/96
Trichlorofluoromethane	ND	ug/l	5	8260A	db	11/22/96
1,2,4-Trimethylbenzene	ND	ug/l	5	8260A	db	11/22/96
1,3,5-Trimethylbenzene	ND	ug/l	5	8260A	db	11/22/96
Vinyl Acetate	ND	ug/l	5	8260A	db	11/22/96
Vinyl Chloride	ND	ug/l	2	8260A	db	11/22/96
o-Xylene	ND	ug/l	5	8260A	db	11/22/96
p-m-Xylene	ND	ug/l	5	8260A	db	11/22/96
<b><u>SURROGATE STUDIES - VOLATILES</u></b>						
Bromofluorobenzene	94	Percent			db	11/22/96
Dibromofluoromethane	91	Percent			db	11/22/96
Toluene-D8	91	Percent			db	11/22/96

**PAH's**

Extraction Date: 11/22/96 fc



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Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-001  
 Client ID: RIZ-5  
 Matrix: Water

Date Sampled: 11/21/96 09:45  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>PAH's</b>						
Acenaphthene	ND	ug/l	5	8270A	mf	11/26/96
Acenaphthylene	ND	ug/l	5	8270A	mf	11/26/96
Anthracene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (a) Anthracene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (a) Pyrene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (b) Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (k) Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (g,h,i) Perylene	ND	ug/l	5	8270A	mf	11/26/96
Chrysene	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,h) Acridine	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,j) Acridine	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,h) Anthracene	ND	ug/l	5	8270A	mf	11/26/96
7H-Dibenzo (c,g) Carbazole	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,e) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Dibenzo (a,i) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Dibenzo (a,h) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Fluorene	ND	ug/l	5	8270A	mf	11/26/96
Indeno (1,2,3-cd) Pyrene	ND	ug/l	5	8270A	mf	11/26/96
2-Methyl Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
3-Methylcholanthrene	ND	ug/l	5	8270A	mf	11/26/96
1-Methyl Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
Phenanthrene	ND	ug/l	5	8270A	mf	11/26/96
Pyrene	ND	ug/l	5	8270A	mf	11/26/96



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Address:	17 Main St.	Project Number:	96154
	Framingham, MA 01702	Project Manager:	J. Loitherstein
		Sampler Name:	Angela Mathur

Sample Information

Lab ID:	63266223-001	Date Sampled:	11/21/96 09:45
Client ID:	RIZ-5	Date Received:	11/21/96 : 0
Matrix:	Water	Date Reported:	11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<u>SURROGATE STUDIES - BASE NEUTRALS</u>						
2-Fluorobiphenyl	88	Percent			mf	11/26/96
Nitrobenzene-D5	106	Percent			mf	11/26/96
p-Terphenyl-D14	92	Percent			mf	11/26/96
<u>MISCELLANEOUS TESTING</u>						
Conductivity	700	umhos	0.1	SM17 2510(B) da		11/22/96
pH	6.1			9045	mo	11/21/96
<u>EXTRACT. PETROLEUM HYDROCARBON ANALYSIS</u>						
Extractable Pet. Hydrocarbons C8 - C40	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Extractable Petroleum Hydrocarbon ID				The chromatographic pattern for this sample is not characteristic of any of the petroleum hydrocarbons listed below.		
Diesel / #2 Fuel Oil	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Kerosene (#1) / Jet Fuel	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Petroleum Naphtha	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Paint Thinner	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Lubricating Oil	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
#4 Fuel Oil/#6 Fuel Oil	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
#6 Fuel Oil/Asphalt	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
non-target Petroleum Hydrocarbons	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Chromatogram File	112696-024R				jc	11/27/96
<u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u>						
Purgeable Pet. Hydrocarbons C5 - C12	ND	ug/l	100	8015B (Prop.) jc		11/23/96



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

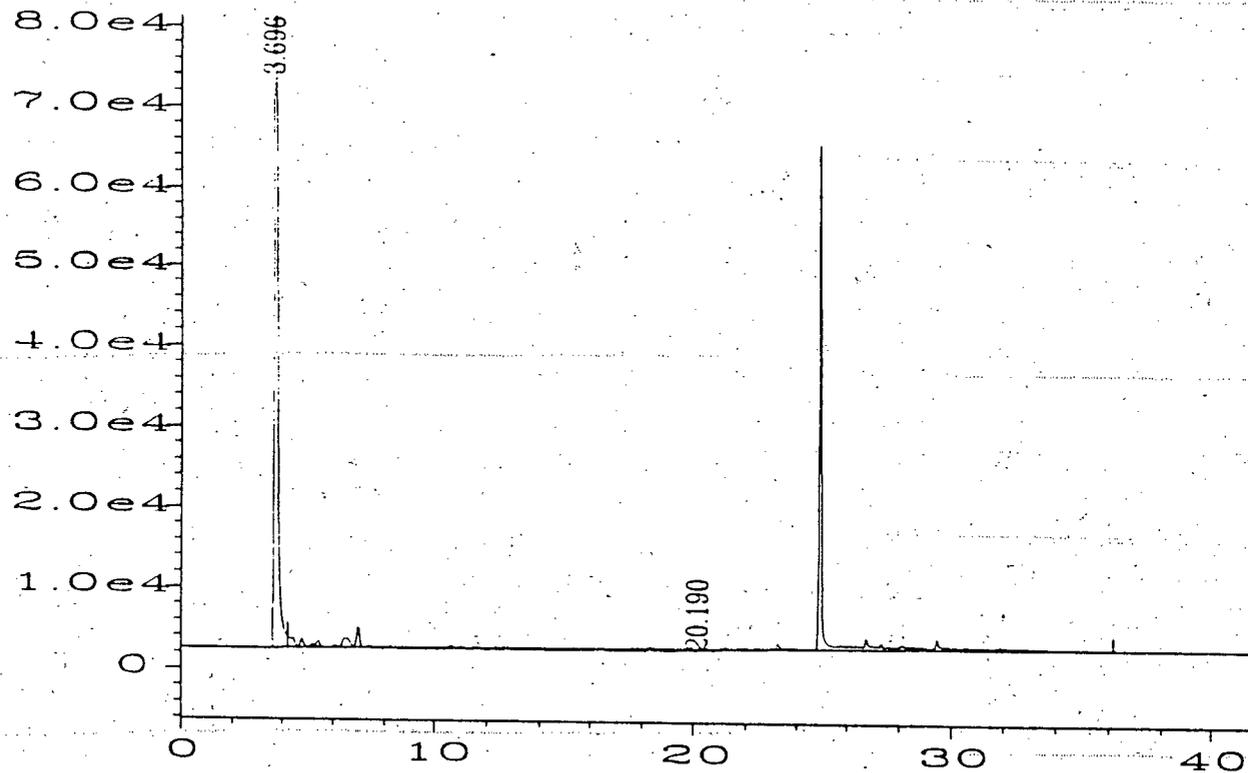
Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-001  
 Client ID: RIZ-5  
 Matrix: Water

Date Sampled: 11/21/96 09:45  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

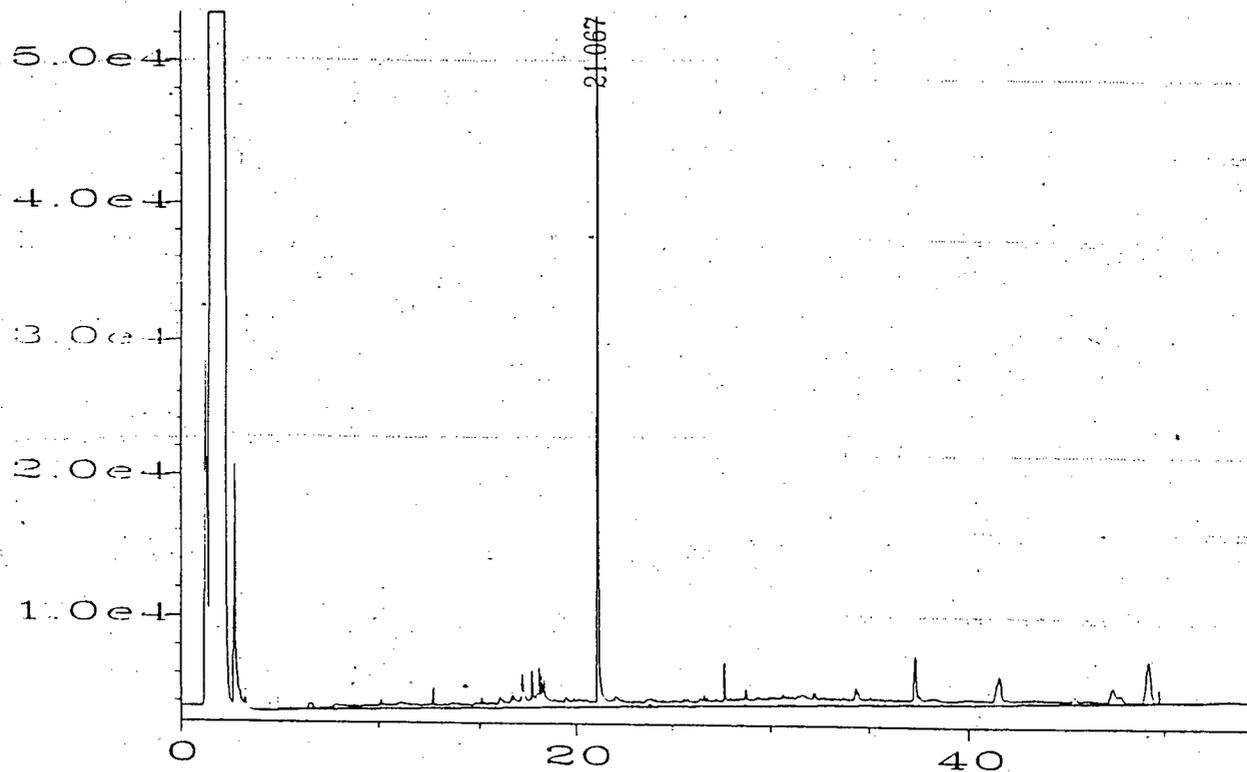
Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u></b>						
Chromatogram File	112296-022F				jc	11/23/96



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Report Date:	11/26/96	
Account Name:	Loitherstein Environmental Eng.	Purgeable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	RIZ-5	Lab ID: 63266223-001
Analysis Date:	11/23/96	File No: 112296-022F

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Report Date:	11/27/96	
Account Name:	Loitherstein Environmental Eng.	Extractable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	RIZ-5	Lab ID: 63266223-001
Analysis Date:	11/27/96	File No: 112696-024R



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**F I N A L   R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-002  
 Client ID: RR-2  
 Matrix: Water

Date Sampled: 11/21/96  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>SAMPLE PREPARATION</b>						
Metal Digestion	11/21/96			3015		
Mercury Digestion	11/22/96			7470/7471		
<b>TRACE METALS</b>						
Antimony	ND	mg/l	0.003	204.2	kb	11/25/96
Arsenic	ND	mg/l	0.005	200.7	th	11/26/96
Beryllium	ND	mg/l	0.002	200.7	th	11/22/96
Cadmium	ND	mg/l	0.001	213.2	kb	11/26/96
Chromium	ND	mg/l	0.02	200.7	th	11/22/96
Copper	ND	mg/l	0.04	200.7	th	11/22/96
Lead	0.004	mg/l	0.001	239.2	kb	11/26/96
Mercury	ND	mg/l	0.001	245.1	mm	11/22/96
Nickel	0.02	mg/l	0.01	200.7	th	11/22/96
Selenium	ND	mg/l	0.005	270.2	kb	11/25/96
Silver	ND	mg/l	0.007	200.7	th	11/22/96
Thallium	ND	mg/l	0.001	279.2	kb	11/25/96
Zinc	0.11	mg/l	0.05	200.7	th	11/22/96
<b>VOLATILE ORGANICS</b>						
Acetone	ND	ug/l	100	8260A	db	11/22/96
Acrolein	ND	ug/l	100	8260A	db	11/22/96
Acrylonitrile	ND	ug/l	100	8260A	db	11/22/96
Benzene	ND	ug/l	1	8260A	db	11/22/96
Bromobenzene	ND	ug/l	5	8260A	db	11/22/96
Bromochloromethane	ND	ug/l	5	8260A	db	11/22/96



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F I N A L R E P O R T

Client Information

Account:	Loitherstein Environmental Eng.	Project Name:	228 Salem St. (11-21-96)
Address:	17 Main St.	Project Number:	96154
	Framingham, MA 01702	Project Manager:	J.Loitherstein
		Sampler Name:	Angela Mathur

Sample Information

Lab ID:	63266223-002	Date Sampled:	11/21/96
Client ID:	RR-2	Date Received:	11/21/96 : 0
Matrix:	Water	Date Reported:	11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
Bromodichloromethane	ND	ug/l	5	8260A	db	11/22/96
Bromoform	ND	ug/l	5	8260A	db	11/22/96
Bromomethane	ND	ug/l	5	8260A	db	11/22/96
2-Butanone	ND	ug/l	100	8260A	db	11/22/96
n-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
sec-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
tert-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
Carbon Disulfide	ND	ug/l	5	8260A	db	11/22/96
Carbon Tetrachloride	ND	ug/l	5	8260A	db	11/22/96
Chlorobenzene	ND	ug/l	5	8260A	db	11/22/96
Chloroethane	ND	ug/l	5	8260A	db	11/22/96
2-Chloroethylvinyl Ether	ND	ug/l	5	8260A	db	11/22/96
Chloroform	ND	ug/l	5	8260A	db	11/22/96
Chloromethane	ND	ug/l	5	8260A	db	11/22/96
2-Chlorotoluene	ND	ug/l	5	8260A	db	11/22/96
4-Chlorotoluene	ND	ug/l	5	8260A	db	11/22/96
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	8260A	db	11/22/96
Dibromochloromethane	ND	ug/l	5	8260A	db	11/22/96
1,2-Dibromoethane	ND	ug/l	5	8260A	db	11/22/96
Dibromomethane	ND	ug/l	5	8260A	db	11/22/96
1,2-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,3-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,4-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
Dichlorodifluoromethane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloroethane	ND	ug/l	5	8260A	db	11/22/96



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**F I N A L   R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-002  
 Client ID: RR-2  
 Matrix: Water

Date Sampled: 11/21/96  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
1,2-Dichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
cis-1,2-Dichloroethene	5	ug/l	5	8260A	db	11/22/96
trans-1,2-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
1,2-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,3-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
2,2-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
cis-1,3-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
trans-1,3-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
Ethylbenzene	ND	ug/l	5	8260A	db	11/22/96
Hexachlorobutadiene	ND	ug/l	5	8260A	db	11/22/96
2-Hexanone	ND	ug/l	5	8260A	db	11/22/96
Iodomethane	ND	ug/l	5	8260A	db	11/22/96
Isopropylbenzene	ND	ug/l	5	8260A	db	11/22/96
p-Isopropyltoluene	ND	ug/l	5	8260A	db	11/22/96
Methylene Chloride	ND	ug/l	5	8260A	db	11/22/96
4-Methyl-2-Pentanone	ND	ug/l	50	8260A	db	11/22/96
MTBE	ND	ug/l	5	8260A	db	11/22/96
Naphthalene	ND	ug/l	5	8260A	db	11/22/96
n-Propylbenzene	ND	ug/l	5	8260A	db	11/22/96
Styrene	ND	ug/l	5	8260A	db	11/22/96
1,1,1,2-Tetrachloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1,2,2-Tetrachloroethane	ND	ug/l	5	8260A	db	11/22/96
Tetrachloroethene	ND	ug/l	5	8260A	db	11/22/96



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F I N A L R E P O R T

Client Information

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-002  
 Client ID: RR-2  
 Matrix: Water

Date Sampled: 11/21/96 :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<u>VOLATILE ORGANICS</u>						
Toluene	ND	ug/l	5	8260A	db	11/22/96
1,2,3-Trichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,2,3-Trichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,2,4-Trichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,1,1-Trichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1,2-Trichloroethane	ND	ug/l	5	8260A	db	11/22/96
Trichloroethene	ND	ug/l	5	8260A	db	11/22/96
Trichlorofluoromethane	ND	ug/l	5	8260A	db	11/22/96
1,2,4-Trimethylbenzene	ND	ug/l	5	8260A	db	11/22/96
1,3,5-Trimethylbenzene	ND	ug/l	5	8260A	db	11/22/96
Vinyl Acetate	ND	ug/l	5	8260A	db	11/22/96
Vinyl Chloride	ND	ug/l	2	8260A	db	11/22/96
o-Xylene	ND	ug/l	5	8260A	db	11/22/96
p-m-Xylene	ND	ug/l	5	8260A	db	11/22/96
<u>SURROGATE STUDIES - VOLATILES</u>						
Bromofluorobenzene	97	Percent			db	11/22/96
Dibromofluoromethane	90	Percent			db	11/22/96
Toluene-D8	96	Percent			db	11/22/96
<u>PAH's</u>						
Extraction Date:	11/22/96				fc	
Acenaphthene	ND	ug/l	5	8270A	mf	11/26/96
Acenaphthylene	ND	ug/l	5	8270A	mf	11/26/96
Anthracene	ND	ug/l	5	8270A	mf	11/26/96



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 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-002  
 Client ID: RR-2  
 Matrix: Water

Date Sampled: 11/21/96 :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>PAH's</b>						
Benzo (a) Anthracene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (a) Pyrene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (b) Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (k) Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (g,h,i) Perylene	ND	ug/l	5	8270A	mf	11/26/96
Chrysene	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,h) Acridine	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,j) Acridine	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,h) Anthracene	ND	ug/l	5	8270A	mf	11/26/96
7H-Dibenzo (c,g) Carbazole	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,e) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Dibenzo (a,i) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Dibenzo (a,h) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Fluorene	ND	ug/l	5	8270A	mf	11/26/96
Indeno (1,2,3-cd) Pyrene	ND	ug/l	5	8270A	mf	11/26/96
2-Methyl Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
3-Methylcholanthrene	ND	ug/l	5	8270A	mf	11/26/96
1-Methyl Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
Phenanthrene	ND	ug/l	5	8270A	mf	11/26/96
Pyrene	ND	ug/l	5	8270A	mf	11/26/96
<b>SURROGATE STUDIES - BASE NEUTRALS</b>						
2-Fluorobiphenyl	74	Percent			mf	11/26/96



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**F I N A L   R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-002  
 Client ID: RR-2  
 Matrix: Water

Date Sampled: 11/21/96 :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>SURROGATE STUDIES - BASE NEUTRALS</u></b>						
Nitrobenzene-D5	89	Percent			mf	11/26/96
p-Terphenyl-D14	85	Percent			mf	11/26/96
<b><u>MISCELLANEOUS TESTING</u></b>						
Conductivity	700	umhos	0.1	SM17 2510(B) da		11/22/96
pH	6.0			9045	mo	11/21/96
<b><u>EXTRACT. PETROLEUM HYDROCARBON ANALYSIS</u></b>						
Extractable Ret. Hydrocarbons C8 - C40	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Extractable Petroleum Hydrocarbon ID				The chromatographic pattern for this sample is not characteristic of any of the petroleum hydrocarbons listed below.		
Diesel / #2 Fuel Oil	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Kerosene (#1) / Jet Fuel	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Petroleum Naphtha	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Paint Thinner	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Lubricating Oil	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
#4 Fuel Oil/#6 Fuel Oil	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
#6 Fuel Oil/Asphalt	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
non-target Petroleum Hydrocarbons	ND	mg/l	0.25	8015B (Prop.) jc		11/27/96
Chromatogram File	112696-018R				jc	11/27/96
<b><u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u></b>						
Purgeable Pet. Hydrocarbons C5 - C12	ND	ug/l	100	8015B (Prop.) jc		11/23/96



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**F I N A L   R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

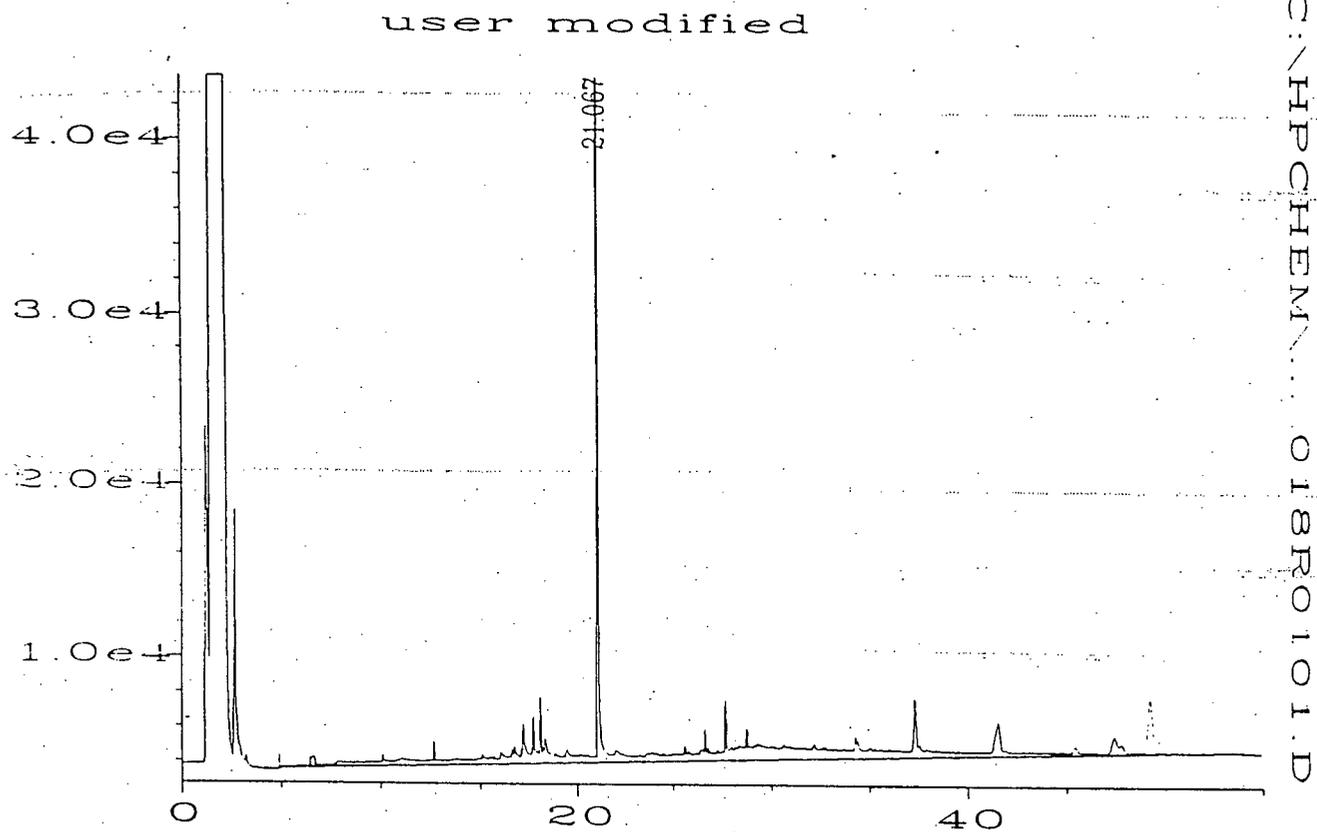
Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

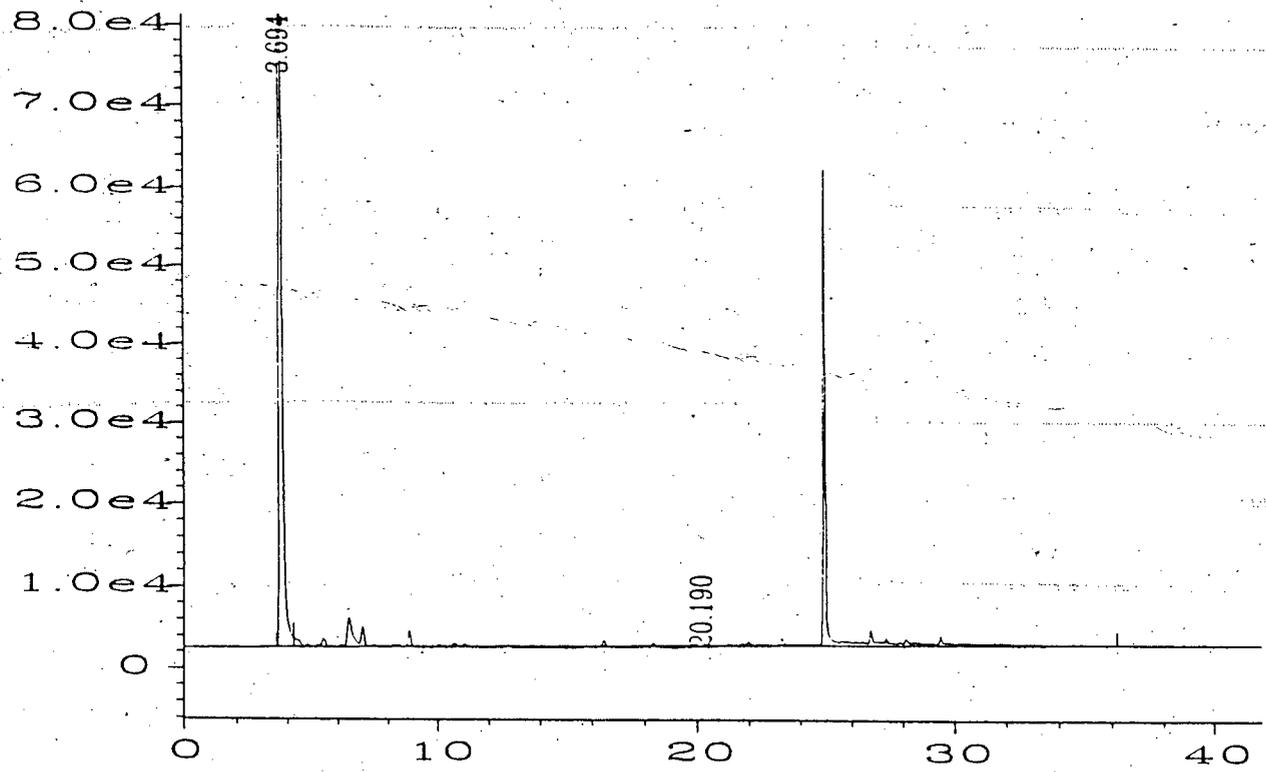
Lab ID: 63266223-002  
 Client ID: RR-2  
 Matrix: Water

Date Sampled: 11/21/96 :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u>						
Chromatogram File	112296-023F				jc	11/23/96



Report Date:	11/27/96	
Account Name:	Loitherstein Environmental Eng.	Extractable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	RR-2	Lab ID: 63266223-002
Analysis Date:	11/27/96	File No: 112696-018R



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Report Date:	11/26/96	
Account Name:	Loitherstein Environmental Eng.	Purgeable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	RR-2	Lab ID: 63266223-002
Analysis Date:	11/23/96	File No: 112296-023F



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F I N A L R E P O R T

Client Information

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-003  
 Client ID: MW-101  
 Matrix: Water

Date Sampled: 11/21/96 12:30  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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SAMPLE INFORMATION

Lab Comments: See note:  
 Nickel, Lead and Cadmium were collected and filtered on 11/26/96.  
 Results represent dissolved.

SAMPLE PREPARATION

Metal Digestion	11/21/96	3015
Mercury Digestion	11/22/96	7470/7471

TRACE METALS

Antimony	0.004	mg/l	0.003	204.2	kb	11/25/96
Arsenic	0.025	mg/l	0.005	200.7	th	11/26/96
Beryllium	0.004	mg/l	0.002	200.7	th	11/22/96
Cadmium	ND	mg/l	0.001	213.2	kb	11/27/96
Chromium	0.11	mg/l	0.02	200.7	th	11/22/96
Copper	0.35	mg/l	0.04	200.7	th	11/22/96
Lead	ND	mg/l	0.001	239.2	kb	11/27/96
Mercury	ND	mg/l	0.001	245.1	mm	11/22/96
Nickel	ND	mg/l	0.01	200.7	th	11/27/96
Selenium	ND	mg/l	0.005	270.2	kb	11/25/96
Silver	ND	mg/l	0.007	200.7	th	11/22/96
Thallium	ND	mg/l	0.001	279.2	kb	11/25/96
Zinc	0.68	mg/l	0.05	200.7	th	11/22/96

VOLATILE ORGANICS

Acetone	ND	ug/l	100	8260A	db	11/22/96
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Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-003  
 Client ID: MW-101  
 Matrix: Water

Date Sampled: 11/21/96 12:30  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>VOLATILE ORGANICS</b>						
Acrolein	ND	ug/l	100	8260A	db	11/22/96
Acrylonitrile	ND	ug/l	100	8260A	db	11/22/96
Benzene	ND	ug/l	1	8260A	db	11/22/96
Bromobenzene	ND	ug/l	5	8260A	db	11/22/96
Bromochloromethane	ND	ug/l	5	8260A	db	11/22/96
Bromodichloromethane	ND	ug/l	5	8260A	db	11/22/96
Bromoform	ND	ug/l	5	8260A	db	11/22/96
Bromomethane	ND	ug/l	5	8260A	db	11/22/96
2-Butanone *	ND	ug/l	100	8260A	db	11/22/96
n-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
sec-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
tert-Butylbenzene	ND	ug/l	5	8260A	db	11/22/96
Carbon Disulfide	ND	ug/l	5	8260A	db	11/22/96
Carbon Tetrachloride	ND	ug/l	5	8260A	db	11/22/96
Chlorobenzene	ND	ug/l	5	8260A	db	11/22/96
Chloroethane	ND	ug/l	5	8260A	db	11/22/96
2-Chloroethylvinyl Ether	ND	ug/l	5	8260A	db	11/22/96
Chloroform	ND	ug/l	5	8260A	db	11/22/96
Chloromethane	ND	ug/l	5	8260A	db	11/22/96
2-Chlorotoluene	ND	ug/l	5	8260A	db	11/22/96
4-Chlorotoluene	ND	ug/l	5	8260A	db	11/22/96
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	8260A	db	11/22/96
Dibromochloromethane	ND	ug/l	5	8260A	db	11/22/96
1,2-Dibromoethane	ND	ug/l	5	8260A	db	11/22/96
Dibromomethane	ND	ug/l	5	8260A	db	11/22/96



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**F I N A L R E P O R T**

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 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-003  
 Client ID: MW-101  
 Matrix: Water

Date Sampled: 11/21/96 12:30  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>VOLATILE ORGANICS</b>						
1,2-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,3-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,4-Dichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
Dichlorodifluoromethane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,2-Dichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
cis-1,2-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
trans-1,2-Dichloroethene	ND	ug/l	5	8260A	db	11/22/96
1,2-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,3-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
2,2-Dichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,1-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
cis-1,3-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
trans-1,3-Dichloropropene	ND	ug/l	5	8260A	db	11/22/96
Ethylbenzene	ND	ug/l	5	8260A	db	11/22/96
Hexachlorobutadiene	ND	ug/l	5	8260A	db	11/22/96
2-Hexanone	ND	ug/l	5	8260A	db	11/22/96
Iodomethane	ND	ug/l	5	8260A	db	11/22/96
Isopropylbenzene	ND	ug/l	5	8260A	db	11/22/96
p-Isopropyltoluene	ND	ug/l	5	8260A	db	11/22/96
Methylene Chloride	ND	ug/l	5	8260A	db	11/22/96
4-Methyl-2-Pentanone	ND	ug/l	50	8260A	db	11/22/96
MTBE	ND	ug/l	5	8260A	db	11/22/96
Naphthalene	ND	ug/l	5	8260A	db	11/22/96



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 106 South Street  
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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-003  
 Client ID: MW-101  
 Matrix: Water

Date Sampled: 11/21/96 12:30  
 Date Received: 11/21/96 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
n-Propylbenzene	ND	ug/l	5	8260A	db	11/22/96
Styrene	ND	ug/l	5	8260A	db	11/22/96
1,1,1,2-Tetrachloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1,2,2-Tetrachloroethane	ND	ug/l	5	8260A	db	11/22/96
Tetrachloroethene	ND	ug/l	5	8260A	db	11/22/96
Toluene	ND	ug/l	5	8260A	db	11/22/96
1,2,3-Trichloropropane	ND	ug/l	5	8260A	db	11/22/96
1,2,3-Trichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,2,4-Trichlorobenzene	ND	ug/l	5	8260A	db	11/22/96
1,1,1-Trichloroethane	ND	ug/l	5	8260A	db	11/22/96
1,1,2-Trichloroethane	ND	ug/l	5	8260A	db	11/22/96
Trichloroethene	ND	ug/l	5	8260A	db	11/22/96
Trichlorofluoromethane	ND	ug/l	5	8260A	db	11/22/96
1,2,4-Trimethylbenzene	ND	ug/l	5	8260A	db	11/22/96
1,3,5-Trimethylbenzene	ND	ug/l	5	8260A	db	11/22/96
Vinyl Acetate	ND	ug/l	5	8260A	db	11/22/96
Vinyl Chloride	ND	ug/l	2	8260A	db	11/22/96
o-Xylene	ND	ug/l	5	8260A	db	11/22/96
p-m-Xylene	ND	ug/l	5	8260A	db	11/22/96
<b><u>SURROGATE STUDIES - VOLATILES</u></b>						
Bromofluorobenzene	97	Percent			db	11/22/96
Dibromofluoromethane	90	Percent			db	11/22/96
Toluene-D8	95	Percent			db	11/22/96
<b><u>PAH's</u></b>						
Extraction Date:	11/22/96				fc	



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F I N A L R E P O R T

Client Information

Account: Loitherstein Environmental Eng.  
Address: 17 Main St.  
Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
Project Number: 96154  
Project Manager: J. Loitherstein  
Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-003  
Client ID: MW-101  
Matrix: Water

Date Sampled: 11/21/96 12:30  
Date Received: 11/21/96 :0  
Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>PAH's</b>						
Acenaphthene	ND	ug/l	5	8270A	mf	11/26/96
Acenaphthylene	ND	ug/l	5	8270A	mf	11/26/96
Anthracene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (a) Anthracene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (a) Pyrene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (b) Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (k) Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Benzo (g,h,i) Perylene	ND	ug/l	5	8270A	mf	11/26/96
Chrysene	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,h) Acridine	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,j) Acridine	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,h) Anthracene	ND	ug/l	5	8270A	mf	11/26/96
7H-Dibenzo (c,g) Carbazole	ND	ug/l	5	8270A	mf	11/26/96
Dibenzo (a,e) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Dibenzo (a,i) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Dibenzo (a,h) Pyrene	ND	ug/l	10	8270A	mf	11/26/96
Fluoranthene	ND	ug/l	5	8270A	mf	11/26/96
Fluorene	ND	ug/l	5	8270A	mf	11/26/96
Indeno (1,2,3-cd) Pyrene	ND	ug/l	5	8270A	mf	11/26/96
2-Methyl Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
3-Methylcholanthrene	ND	ug/l	5	8270A	mf	11/26/96
1-Methyl Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
Naphthalene	ND	ug/l	5	8270A	mf	11/26/96
Phenanthrene	ND	ug/l	5	8270A	mf	11/26/96
Pyrene	ND	ug/l	5	8270A	mf	11/26/96



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**F I N A L R E P O R T**

Client Information

Account:	Loitherstein Environmental Eng.	Project Name:	228 Salem St. (11-21-96)
Address:	17 Main St.	Project Number:	96154
	Framingham, MA 01702	Project Manager:	J.Loitherstein
		Sampler Name:	Angela Mathur

Sample Information

Lab ID:	63266223-003	Date Sampled:	11/21/96 12:30
Client ID:	MW-101	Date Received:	11/21/96 : 0
Matrix:	Water	Date Reported:	11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<u>SURROGATE STUDIES - BASE NEUTRALS</u>						
2-Fluorobiphenyl	93	Percent			mf	11/26/96
Nitrobenzene-D5	108	Percent			mf	11/26/96
p-Terphenyl-D14	89	Percent			mf	11/26/96
<u>MISCELLANEOUS TESTING</u>						
Conductivity	750	umhos	0.1	SM17 2510(B) da		11/22/96
pH	6.0			9045	mo	11/21/96
<u>EXTRACT. PETROLEUM HYDROCARBON ANALYSIS</u>						
Extractable Pet. Hydrocarbons C8 - C40	4.7	mg/l	0.25	8015B (Prop.)	jc	11/27/96
Extractable Petroleum Hydrocarbon ID				The chromatographic pattern for this sample is not characteristic of any of the petroleum hydrocarbons listed below.		
Diesel / #2 Fuel Oil	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
Kerosene (#1) / Jet Fuel	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
Petroleum Naphtha	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
Paint Thinner	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
Lubricating Oil	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
#4 Fuel Oil/#6 Fuel Oil	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
#6 Fuel Oil/Asphalt	ND	mg/l	0.25	8015B (Prop.)	jc	11/27/96
non-target Petroleum Hydrocarbons	4.7	mg/l	0.25	8015B (Prop.)	jc	11/27/96
Chromatogram File	112696-074F				jc	11/27/96
<u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u>						
Purgeable Pet. Hydrocarbons C5 - C12	ND	ug/l	100	8015B (Prop.)	jc	11/23/96



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F I N A L R E P O R T

*Client Information*

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

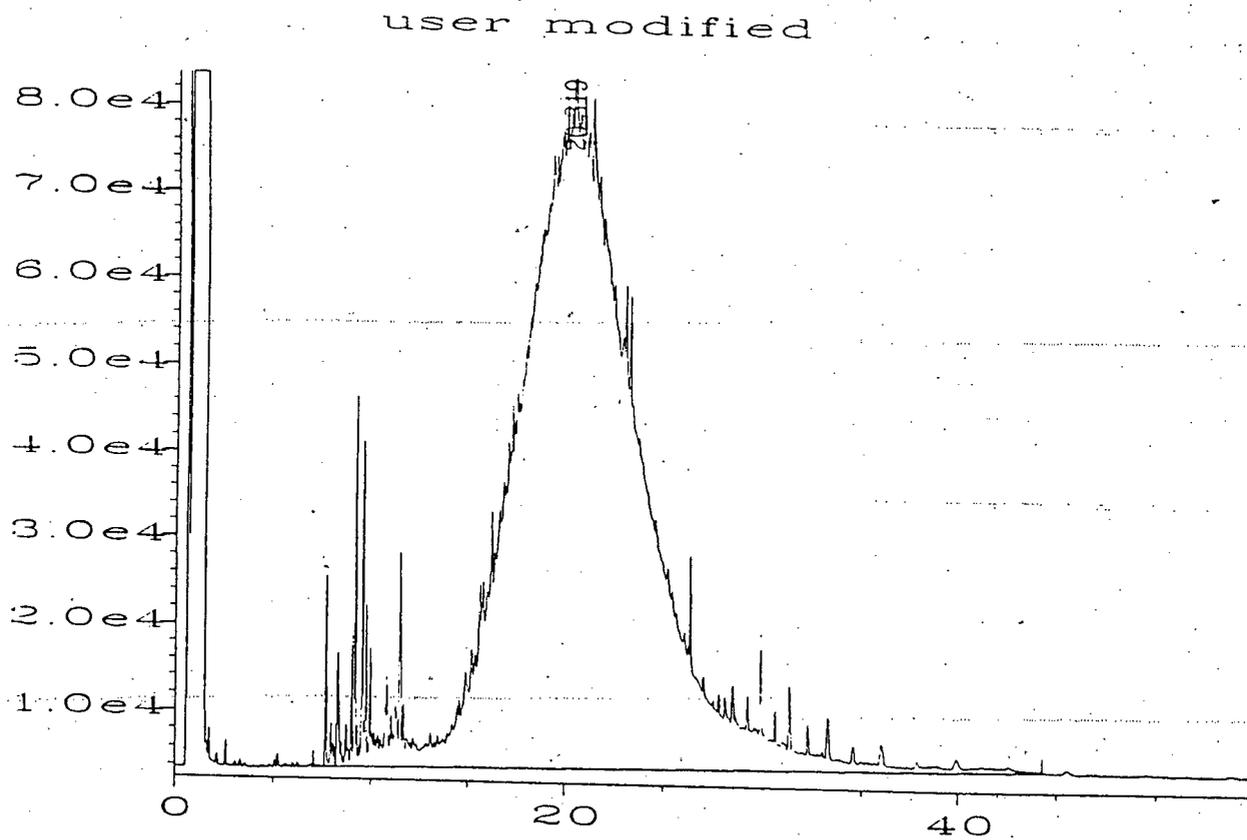
Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

*Sample Information*

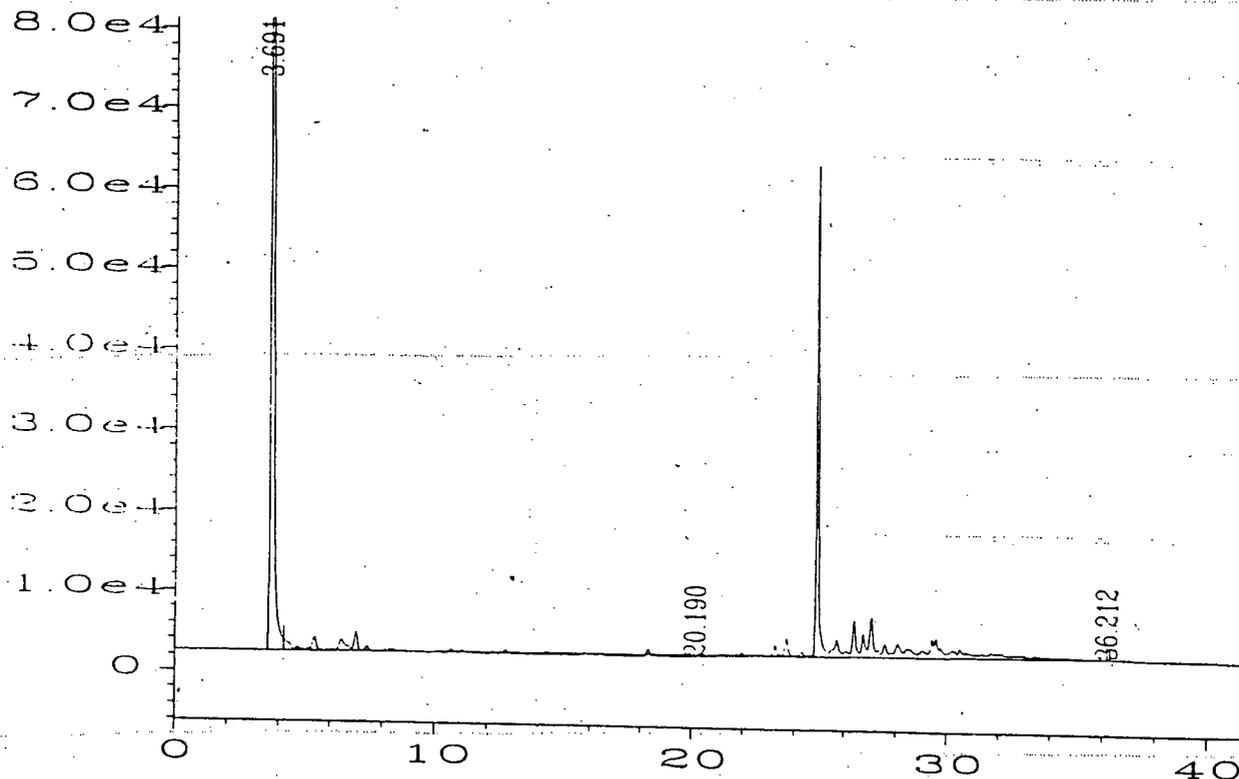
Lab ID: 63266223-003  
 Client ID: MW-101  
 Matrix: Water

Date Sampled: 11/21/96 12:30  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u> Chromatogram File					jc	11/23/96



Report Date:	11/27/96	
Account Name:	Loitherstein Environmental Eng.	Extractable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	MW-101	Lab ID: 63266223-003
Analysis Date:	11/27/96	File No: 112696-074F



C:\NHP\CHEM\...024F\0101.D

Report Date:	11/26/96	
Account Name:	Lotharstein Environmental Eng.	Purgeable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	MW-101	Lab ID: 63266223-003
Analysis Date:	11/23/96	File No: 112296-024F



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**FINAL REPORT**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-004  
 Client ID: B-101/S1  
 Matrix: Soil

Date Sampled: 11/21/96 09:00  
 Date Received: 11/21/96 :0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>SAMPLE PREPARATION</b>						
Metal Digestion	11/22/96			3051		
Mercury Digestion	11/22/96			7470/7471		
<b>TRACE METALS</b>						
Antimony	0.4	mg/kg	0.3	7041	kb	11/25/96
Arsenic	6.7	mg/kg	0.5	7060	kb	11/25/96
Beryllium	0.4	mg/kg	0.4	6010A	th	11/22/96
Cadmium	1.1	mg/kg	0.5	7131	kb	11/26/96
Chromium	1,080	mg/kg	2.0	6010A	th	11/22/96
Copper	29	mg/kg	4.0	6010A	th	11/22/96
Lead	70	mg/kg	10	6010A	th	11/22/96
Mercury	0.4	mg/kg	0.1	7471	mm	11/22/96
Nickel	18	mg/kg	1.0	6010A	th	11/22/96
Selenium	0.5	mg/kg	0.5	7740	kb	11/25/96
Silver	ND	mg/kg	2.0	6010A	th	11/22/96
Thallium	0.1	mg/kg	0.1	7841	kb	11/25/96
Zinc	393	mg/kg	5.0	6010A	th	11/22/96
<b>VOLATILE ORGANICS</b>						
Acetone	ND	ug/kg	100	8260A	lj	11/21/96
Acrolein	ND	ug/kg	100	8260A	lj	11/21/96
Acrylonitrile	ND	ug/kg	100	8260A	lj	11/21/96
Benzene	ND	ug/kg	1	8260A	lj	11/21/96
Bromobenzene	ND	ug/kg	5	8260A	lj	11/21/96
Bromochloromethane	ND	ug/kg	5	8260A	lj	11/21/96



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FINAL REPORT

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 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-004  
 Client ID: B-101/S1  
 Matrix: Soil

Date Sampled: 11/21/96 09:00  
 Date Received: 11/21/96 :0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>VOLATILE ORGANICS</b>						
Bromodichloromethane	ND	ug/kg	5	8260A	lj	11/21/96
Bromoform	ND	ug/kg	5	8260A	lj	11/21/96
Bromomethane	ND	ug/kg	5	8260A	lj	11/21/96
2-Butanone	ND	ug/kg	100	8260A	lj	11/21/96
n-Butylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
sec-Butylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
tert-Butylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
Carbon Disulfide	ND	ug/kg	5	8260A	lj	11/21/96
Carbon Tetrachloride	ND	ug/kg	5	8260A	lj	11/21/96
Chlorobenzene	ND	ug/kg	5	8260A	lj	11/21/96
Chloroethane	ND	ug/kg	5	8260A	lj	11/21/96
2-Chloroethylvinyl Ether	ND	ug/kg	5	8260A	lj	11/21/96
Chloroform	ND	ug/kg	5	8260A	lj	11/21/96
Chloromethane	ND	ug/kg	5	8260A	lj	11/21/96
2-Chlorotoluene	ND	ug/kg	5	8260A	lj	11/21/96
4-Chlorotoluene	ND	ug/kg	5	8260A	lj	11/21/96
1,2-Dibromo-3-Chloropropane	ND	ug/kg	5	8260A	lj	11/21/96
Dibromochloromethane	ND	ug/kg	5	8260A	lj	11/21/96
1,2-Dibromoethane	ND	ug/kg	5	8260A	lj	11/21/96
Dibromomethane	ND	ug/kg	5	8260A	lj	11/21/96
1,2-Dichlorobenzene	ND	ug/kg	5	8260A	lj	11/21/96
1,3-Dichlorobenzene	ND	ug/kg	5	8260A	lj	11/21/96
1,4-Dichlorobenzene	ND	ug/kg	5	8260A	lj	11/21/96
Dichlorodifluoromethane	ND	ug/kg	5	8260A	lj	11/21/96
1,1-Dichloroethane	ND	ug/kg	5	8260A	lj	11/21/96



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FINAL REPORT

Client Information

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 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-004  
 Client ID: B-101/S1  
 Matrix: Soil

Date Sampled: 11/21/96 09:00  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>VOLATILE ORGANICS</b>						
1,2-Dichloroethane	ND	ug/kg	5	8260A	lj	11/21/96
1,1-Dichloroethene	ND	ug/kg	5	8260A	lj	11/21/96
cis-1,2-Dichloroethene	ND	ug/kg	5	8260A	lj	11/21/96
trans-1,2-Dichloroethene	ND	ug/kg	5	8260A	lj	11/21/96
1,2-Dichloropropane	ND	ug/kg	5	8260A	lj	11/21/96
1,3-Dichloropropane	ND	ug/kg	5	8260A	lj	11/21/96
2,2-Dichloropropane	ND	ug/kg	5	8260A	lj	11/21/96
1,1-Dichloropropene	ND	ug/kg	5	8260A	lj	11/21/96
cis-1,3-Dichloropropene	ND	ug/kg	5	8260A	lj	11/21/96
trans-1,3-Dichloropropene	ND	ug/kg	5	8260A	lj	11/21/96
Ethylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
Hexachlorobutadiene	ND	ug/kg	5	8260A	lj	11/21/96
2-Hexanone	ND	ug/kg	5	8260A	lj	11/21/96
Iodomethane	ND	ug/kg	5	8260A	lj	11/21/96
Isopropylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
p-Isopropyltoluene	ND	ug/kg	5	8260A	lj	11/21/96
Methylene Chloride	ND	ug/kg	5	8260A	lj	11/21/96
4-Methyl-2-Pentanone	ND	ug/kg	50	8260A	lj	11/21/96
MTBE	ND	ug/kg	5	8260A	lj	11/21/96
Naphthalene	ND	ug/kg	5	8260A	lj	11/21/96
n-Propylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
Styrene	ND	ug/kg	5	8260A	lj	11/21/96
1,1,1,2-Tetrachloroethane	ND	ug/kg	5	8260A	lj	11/21/96
1,1,1,2,2-Tetrachloroethane	ND	ug/kg	5	8260A	lj	11/21/96
Tetrachloroethene	ND	ug/kg	5	8260A	lj	11/21/96



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-004  
 Client ID: B-101/S1  
 Matrix: Soil

Date Sampled: 11/21/96 09:00  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
Toluene	ND	ug/kg	5	8260A	lj	11/21/96
1,2,3-Trichloropropane	ND	ug/kg	5	8260A	lj	11/21/96
1,2,3-Trichlorobenzene	ND	ug/kg	5	8260A	lj	11/21/96
1,2,4-Trichlorobenzene	ND	ug/kg	5	8260A	lj	11/21/96
1,1,1-Trichloroethane	ND	ug/kg	5	8260A	lj	11/21/96
1,1,2-Trichloroethane	ND	ug/kg	5	8260A	lj	11/21/96
Trichloroethene	ND	ug/kg	5	8260A	lj	11/21/96
Trichlorofluoromethane	ND	ug/kg	5	8260A	lj	11/21/96
1,2,4-Trimethylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
1,3,5-Trimethylbenzene	ND	ug/kg	5	8260A	lj	11/21/96
Vinyl Acetate	ND	ug/kg	5	8260A	lj	11/21/96
Vinyl Chloride	ND	ug/kg	2	8260A	lj	11/21/96
o-Xylene	ND	ug/kg	5	8260A	lj	11/21/96
p-m-Xylene	ND	ug/kg	5	8260A	lj	11/21/96
<b><u>SURROGATE STUDIES - VOLATILES</u></b>						
Bromofluorobenzene	89	Percent			lj	11/21/96
Dibromofluoromethane	86	Percent			lj	11/21/96
Toluene-D8	94	Percent			lj	11/21/96
<b><u>PAH's</u></b>						
Extraction Date:	11 22 96				fc	
Acenaphthene	250	ug/kg	100	8270A	mf	11/26/96
Acenaphthylene	ND	ug/kg	100	8270A	mf	11/26/96
Anthracene	590	ug/kg	100	8270A	mf	11/26/96



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FINAL REPORT

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Project Name: 228 Salem St. (11-21-96)  
Project Number: 96154  
Project Manager: J.Loitherstein  
Sampler Name: Angela Mathur

Sample Information

Lab ID: 63266223-004  
Client ID: B-101/S1  
Matrix: Soil

Date Sampled: 11/21/96 09:00  
Date Received: 11/21/96 :0  
Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>PAH's</b>						
Benzo (a) Anthracene	1,200	ug/kg	100	8270A	mf	11/26/96
Benzo (a) Pyrene	990	ug/kg	100	8270A	mf	11/26/96
Benzo (b) Fluoranthene	1,400	ug/kg	100	8270A	mf	11/26/96
Benzo (k) Fluoranthene	520	ug/kg	100	8270A	mf	11/26/96
Benzo (g,h,i) Perylene	320	ug/kg	100	8270A	mf	11/26/96
Chrysene	1,100	ug/kg	100	8270A	mf	11/26/96
Dibenzo (a,h) Acridine	ND	ug/kg	100	8270A	mf	11/26/96
Dibenzo (a,j) Acridine	ND	ug/kg	100	8270A	mf	11/26/96
Dibenzo (a,b) Anthracene	ND	ug/kg	100	8270A	mf	11/26/96
7H-Dibenzo (c,g) Carbazole	ND	ug/kg	100	8270A	mf	11/26/96
Dibenzo (a,e) Pyrene	ND	ug/kg	250	8270A	mf	11/26/96
Dibenzo (a,i) Pyrene	ND	ug/kg	250	8270A	mf	11/26/96
Dibenzo (a,h) Pyrene	ND	ug/kg	250	8270A	mf	11/26/96
Fluoranthene	3,000	ug/kg	100	8270A	mf	11/26/96
Fluorene	230	ug/kg	100	8270A	mf	11/26/96
Indeno (1,2,3-cd) Pyrene	330	ug/kg	100	8270A	mf	11/26/96
2-Methyl Naphthalene	ND	ug/kg	100	8270A	mf	11/26/96
3-Methylcholanthrene	ND	ug/kg	100	8270A	mf	11/26/96
1-Methyl Naphthalene	ND	ug/kg	100	8270A	mf	11/26/96
Naphthalene	ND	ug/kg	100	8270A	mf	11/26/96
Phenanthrene	2,100	ug/kg	100	8270A	mf	11/26/96
Pyrene	2,200	ug/kg	100	8270A	mf	11/26/96
<b>SURROGATE STUDIES - BASE NEUTRALS</b>						
2-Fluorobiphenyl	61	Percent			mf	11/26/96



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

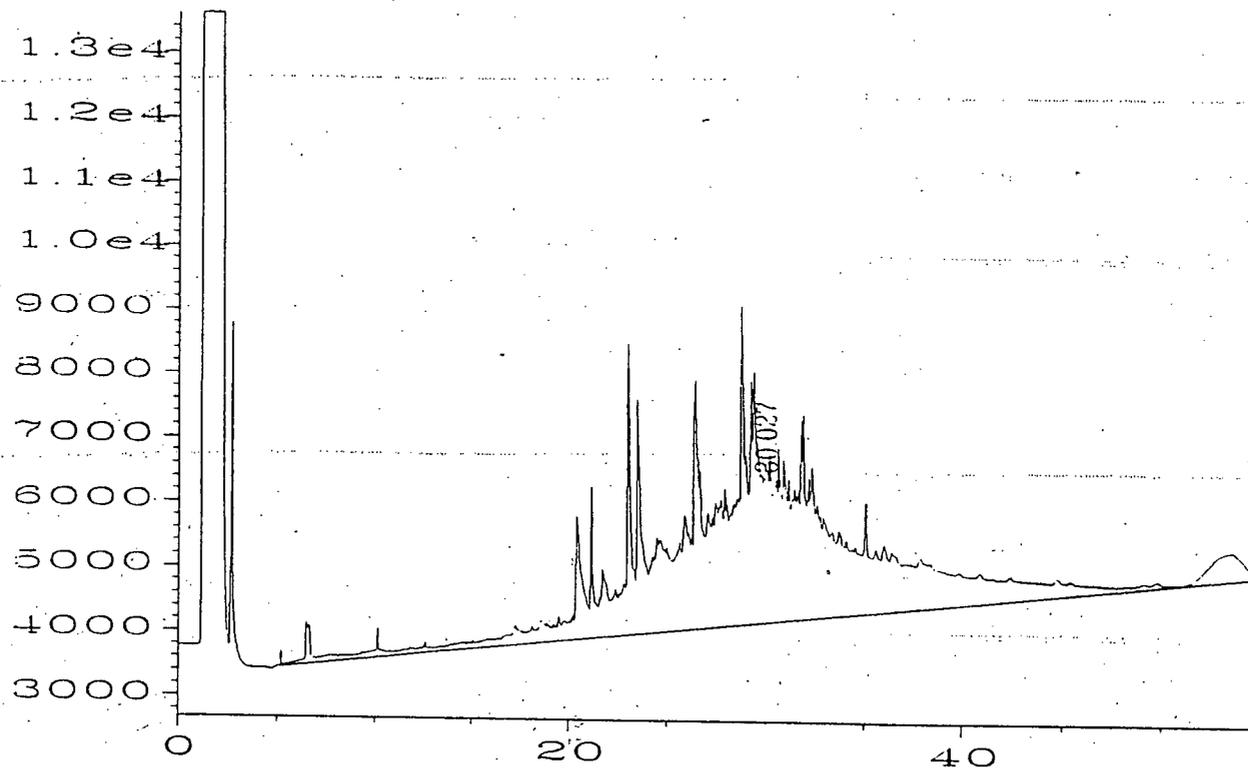
Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-004  
 Client ID: B-101/S1  
 Matrix: Soil

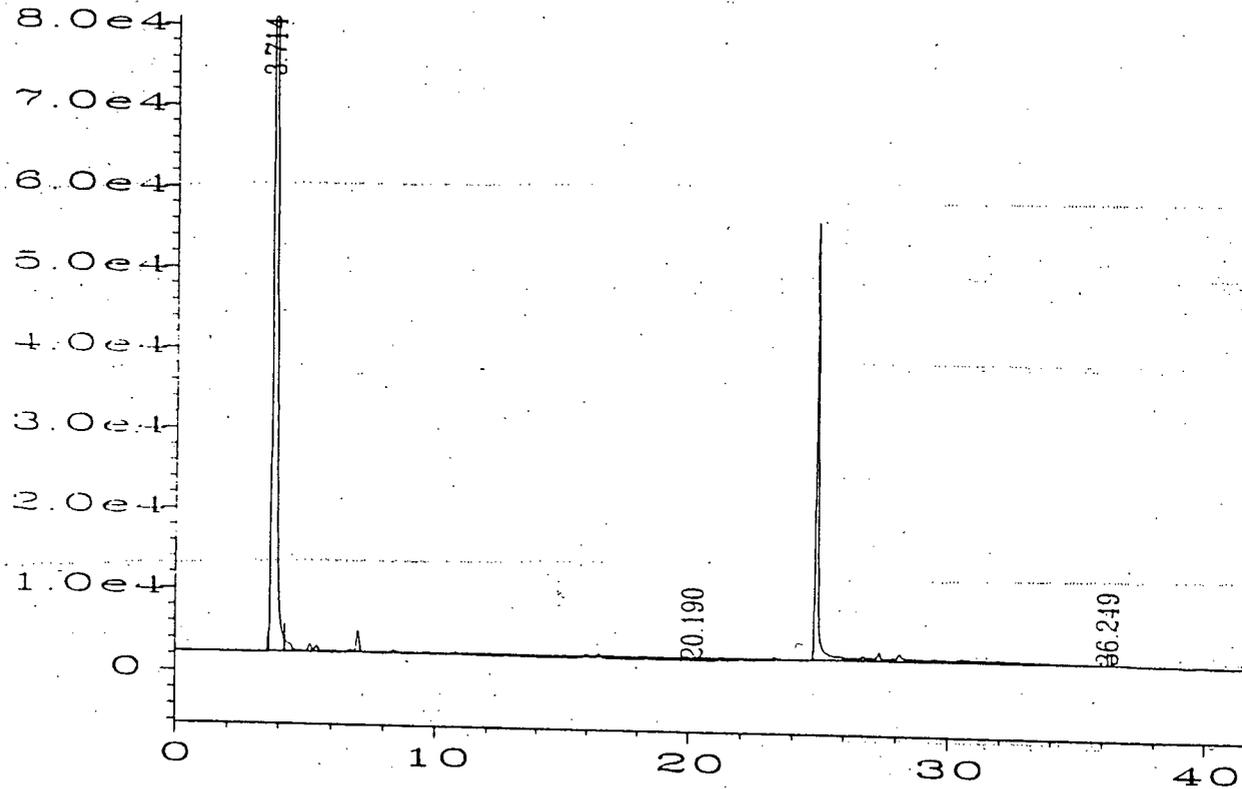
Date Sampled: 11/21/96 09:00  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyze
<b><u>SURROGATE STUDIES - BASE NEUTRALS</u></b>						
Nitrobenzene-D5	66	Percent			mf	11/26/96
p-Terphenyl-D14	78	Percent			mf	11/26/96
<b><u>MISCELLANEOUS TESTING</u></b>						
Percent Moisture	15.8	Percent			mm	11/22/96
<b><u>EXTRACT. PETROLEUM-HYDROCARBON ANALYSIS</u></b>						
Extractable Pet. Hydrocarbons C8 - C40	430	mg/kg	250	8015B (Prop.) jc		11/27/96
Extractable Petroleum Hydrocarbon ID	The chromatographic pattern for this sample most closely resembles #6 Fuel Oil.					
Diesel / #2 Fuel Oil	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
Kerosene (#1) / Jet Fuel	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
Petroleum Naphtha	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
Paint Thinner	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
Lubricating Oil	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
#4 Fuel Oil/#6 Fuel Oil	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
#6 Fuel Oil/Asphalt	430	mg/kg	250	8015B (Prop.) jc		11/27/96
non-target Petroleum Hydrocarbons	ND	mg/kg	250	8015B (Prop.) jc		11/27/96
Chromatogram File	112696-017R				jc	11/27/96
<b><u>PURGE. PETROLEUM HYDROCARBON ANALYSIS</u></b>						
Purgeable Pet. Hydrocarbons C5 - C12	ND	ug/kg	1000	8015B (Prop.) jc		11/25/96
Chromatogram File	112596-010F				jc	11/25/96



CHROMATOGRAM OF PETROLI.D

Report Date:	11/27/96	
Account Name:	Loitherstein Environmental Eng.	Extractable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	B101/S1	Lab ID: 63266223-004
Analysis Date:	11/27/96	File No: 112696-017F



C:\NHP\CHEM\11\010F0101.D

Report Date:	11/26/96	
Account Name:	Lotharstein Environmental Eng.	Purgeable Petroleum Hydrocarbons
Project Name:	228 Salem St.	Project No. 96154
Client ID:	B101/S1	Lab ID: 63266223-004
Analysis Date:	11/25/96	File No: 112596-010F



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-005  
 Client ID: MW101/S8  
 Matrix: Soil

Date Sampled: 11/21/96 :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
Acetone	ND	ug/kg	100	8260A	lj	11/22/96
Acrolein	ND	ug/kg	100	8260A	lj	11/22/96
Acrylonitrile	ND	ug/kg	100	8260A	lj	11/22/96
Benzene	ND	ug/kg	1	8260A	lj	11/22/96
Bromobenzene	ND	ug/kg	5	8260A	lj	11/22/96
Bromochloromethane	ND	ug/kg	5	8260A	lj	11/22/96
Bromodichloromethane	ND	ug/kg	5	8260A	lj	11/22/96
Bromoform	ND	ug/kg	5	8260A	lj	11/22/96
Bromomethane	ND	ug/kg	5	8260A	lj	11/22/96
2-Butanone	ND	ug/kg	100	8260A	lj	11/22/96
n-Butylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
sec-Butylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
tert-Butylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
Carbon Disulfide	ND	ug/kg	5	8260A	lj	11/22/96
Carbon Tetrachloride	ND	ug/kg	5	8260A	lj	11/22/96
Chlorobenzene	ND	ug/kg	5	8260A	lj	11/22/96
Chloroethane	ND	ug/kg	5	8260A	lj	11/22/96
2-Chloroethylvinyl Ether	ND	ug/kg	5	8260A	lj	11/22/96
Chloroform	ND	ug/kg	5	8260A	lj	11/22/96
Chloromethane	ND	ug/kg	5	8260A	lj	11/22/96
2-Chlorotoluene	ND	ug/kg	5	8260A	lj	11/22/96
4-Chlorotoluene	ND	ug/kg	5	8260A	lj	11/22/96
1,2-Dibromo-3-Chloropropane	ND	ug/kg	5	8260A	lj	11/22/96
Dibromochloromethane	ND	ug/kg	5	8260A	lj	11/22/96
1,2-Dibromoethane	ND	ug/kg	5	8260A	lj	11/22/96



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
Address: 17 Main St.  
Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
Project Number: 96154  
Project Manager: J.Loitherstein  
Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-005  
Client ID: MW101/S8  
Matrix: Soil

Date Sampled: 11/21/96 :  
Date Received: 11/21/96 : 0  
Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyze
<b>VOLATILE ORGANICS</b>						
Dibromomethane	ND	ug/kg	5	8260A	lj	11/22/96
1,2-Dichlorobenzene	ND	ug/kg	5	8260A	lj	11/22/96
1,3-Dichlorobenzene	ND	ug/kg	5	8260A	lj	11/22/96
1,4-Dichlorobenzene	ND	ug/kg	5	8260A	lj	11/22/96
Dichlorodifluoromethane	ND	ug/kg	5	8260A	lj	11/22/96
1,1-Dichloroethane	ND	ug/kg	5	8260A	lj	11/22/96
1,2-Dichloroethane	ND	ug/kg	5	8260A	lj	11/22/96
1,1-Dichloroethene	ND	ug/kg	5	8260A	lj	11/22/96
cis-1,2-Dichloroethene	ND	ug/kg	5	8260A	lj	11/22/96
trans-1,2-Dichloroethene	ND	ug/kg	5	8260A	lj	11/22/96
1,2-Dichloropropane	ND	ug/kg	5	8260A	lj	11/22/96
1,3-Dichloropropane	ND	ug/kg	5	8260A	lj	11/22/96
2,2-Dichloropropane	ND	ug/kg	5	8260A	lj	11/22/96
1,1-Dichloropropene	ND	ug/kg	5	8260A	lj	11/22/96
cis-1,3-Dichloropropene	ND	ug/kg	5	8260A	lj	11/22/96
trans-1,3-Dichloropropene	ND	ug/kg	5	8260A	lj	11/22/96
Ethylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
Hexachlorobutadiene	ND	ug/kg	5	8260A	lj	11/22/96
2-Hexanone	ND	ug/kg	5	8260A	lj	11/22/96
Iodomethane	ND	ug/kg	5	8260A	lj	11/22/96
Isopropylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
p-Isopropyltoluene	ND	ug/kg	5	8260A	lj	11/22/96
Methylene Chloride	ND	ug/kg	5	8260A	lj	11/22/96
4-Methyl-2-Pentanone	ND	ug/kg	50	8260A	lj	11/22/96
MTBE	ND	ug/kg	5	8260A	lj	11/22/96



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-005  
 Client ID: MW101/S8  
 Matrix: Soil

Date Sampled: 11/21/96  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>VOLATILE ORGANICS</u></b>						
Naphthalene	ND	ug/kg	5	8260A	lj	11/22/96
n-Propylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
Styrene	ND	ug/kg	5	8260A	lj	11/22/96
1,1,1,2-Tetrachloroethane	ND	ug/kg	5	8260A	lj	11/22/96
1,1,2,2-Tetrachloroethane	ND	ug/kg	5	8260A	lj	11/22/96
Tetrachloroethene	ND	ug/kg	5	8260A	lj	11/22/96
Toluene	ND	ug/kg	5	8260A	lj	11/22/96
1,2,3-Trichloropropane	ND	ug/kg	5	8260A	lj	11/22/96
1,2,3-Trichlorobenzene	ND	ug/kg	5	8260A	lj	11/22/96
1,2,4-Trichlorobenzene	ND	ug/kg	5	8260A	lj	11/22/96
1,1,1-Trichloroethane	ND	ug/kg	5	8260A	lj	11/22/96
1,1,2-Trichloroethane	ND	ug/kg	5	8260A	lj	11/22/96
Trichloroethene	ND	ug/kg	5	8260A	lj	11/22/96
Trichlorofluoromethane	ND	ug/kg	5	8260A	lj	11/22/96
1,2,4-Trimethylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
1,3,5-Trimethylbenzene	ND	ug/kg	5	8260A	lj	11/22/96
Vinyl Acetate	ND	ug/kg	5	8260A	lj	11/22/96
Vinyl Chloride	ND	ug/kg	2	8260A	lj	11/22/96
o-Xylene	ND	ug/kg	5	8260A	lj	11/22/96
p-m-Xylene	ND	ug/kg	5	8260A	lj	11/22/96
<b><u>SURROGATE STUDIES - VOLATILES</u></b>						
Bromofluorobenzene	95	Percent			lj	11/22/96
Dibromofluoromethane	86	Percent			lj	11/22/96
Toluene-D8	95	Percent			lj	11/22/96



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 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-005  
 Client ID: MW101/S8  
 Matrix: Soil

Date Sampled: 11/21/96  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyze
<u>MISCELLANEOUS TESTING</u>						
Percent Moisture	7.2	Percent				11/22/96



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**F I N A L R E P O R T**

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name: Angela Mathur

**Sample Information**

Lab ID: 63266223-006  
 Client ID: MW101/S1  
 Matrix: Soil

Date Sampled: 11/21/96  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyze
<b>SAMPLE PREPARATION</b>						
Metal Digestion	11/22/96			3051		
Mercury Digestion	11/22/96			7470/7471		
<b>TRACE METALS</b>						
Antimony	0.8	mg/kg	0.3	7041	kb	11/25/96
Arsenic	4.8	mg/kg	0.5	7060	kb	11/25/96
Beryllium	ND	mg/kg	0.4	6010A	th	11/22/96
Cadmium	ND	mg/kg	0.5	7131	kb	11/26/96
Chromium	4.0	mg/kg	2.0	6010A	th	11/22/96
Copper	17	mg/kg	4.0	6010A	th	11/22/96
Lead	5.4	mg/kg	10	6010A	kb	11/26/96
Lead analysis performed by method 7421 Detection Limit is 0.1 mg/kg						
Mercury	ND	mg/kg	0.1	7471	mm	11/22/96
Nickel	12	mg/kg	1.0	6010A	th	11/22/96
Selenium	ND	mg/kg	0.5	7740	kb	11/25/96
Silver	ND	mg/kg	2.0	6010A	th	11/22/96
Thallium	ND	mg/kg	0.1	7841	kb	11/25/96
Zinc	13	mg/kg	5.0	6010A	th	11/22/96
<b>MISCELLANEOUS TESTING</b>						
Percent Moisture	4.1	Percent			mm	11/22/96



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 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name:

Sample Information

Lab ID: 63266223-007  
 Client ID: QC Report-Water  
 Matrix: Water

Date Sampled: / / :  
 Date Received: 11/21/96 :0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyze
<u>DUPLICATE STUDIES</u>						
Antimony ID:	6223-002					
Antimony Variance:	0	Percent				
Arsenic ID:	6223-002					
Arsenic Variance:	0	Percent				
Beryllium ID:	6223-002					
Beryllium Variance:	0	Percent				
Cadmium ID:	6223-002					
Cadmium Variance:			Insignificant - not calculated			
Chromium ID:	6223-002					
Chromium Variance:	0	Percent				
Copper ID:	6223-002					
Copper Variance:	0	Percent				
Lead ID:	6223-002					
Lead Variance:	0	Percent				
Mercury ID:	6181-001					
Mercury Variance:	0	Percent				
Nickel ID:	6223-002					
Nickel Variance:	0	Percent				
Selenium ID:	6223-002					
Selenium Variance:	0	Percent				
Silver ID:	6223-002					
Silver Variance:	0	Percent				
Thallium ID:	6223-002					
Thallium Variance:	0	Percent				



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 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name:

Sample Information

Lab ID: 63266223-007  
 Client ID: QC Report-Water  
 Matrix: Water

Date Sampled: / / :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyze
<u>DUPLICATE STUDIES</u>						
Zinc ID:	6223-002					
Zinc Variance:	0	Percent				
<u>MATRIX SPIKE STUDIES - METALS</u>						
Antimony ID:	6223-002					
Antimony Recovery:	82	Percent				
Arsenic ID:	6223-002					
Arsenic Recovery:	73	Percent				
Beryllium ID:	6223-002					
Beryllium Recovery:	85	Percent				
Cadmium ID:	6223-002					
Cadmium Recovery:	78	Percent				
Chromium ID:	6223-002					
Chromium Recovery:	86	Percent				
Copper ID:	6223-002					
Copper Recovery:	87	Percent				
Lead ID:	6223-002					
Lead Recovery:	78	Percent				
Mercury ID:	6181-001					
Mercury Recovery:	100	Percent				
Nickel ID:	6223-002					
Nickel Recovery:	83	Percent				
Selenium ID:	6223-002					
Selenium Recovery:	82	Percent				
Silver ID:	6223-002					



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Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name:

**Sample Information**

Lab ID: 63266223-007  
 Client ID: QC Report-Water  
 Matrix: Water

Date Sampled: / / :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b><u>MATRIX SPIKE STUDIES - METALS</u></b>						
Silver Recovery:	104	Percent				
Thallium ID:	6223-002					
Thallium Recovery:	82	Percent				
Zinc ID:	6223-002					
Zinc Recovery:	83	Percent				
<b><u>METHOD BLANKS</u></b>						
Method Blank - Semi Volatile	ND	ug/l		625/8270A		
Method Blank - Volatile	ND	ug/l		8260		
<b><u>MATRIX SPIKE STUDIES - VOLATILES</u></b>						
Sample ID:	6223-001					
Benzene	92	Percent				
Chlorobenzene	89	Percent				
1,1-Dichloroethene	85	Percent				
Toluene	84	Percent				
Trichloroethene	89	Percent				
<b><u>MATRIX SPIKE STUDIES BASE/NEUTRALS</u></b>						
Sample ID:	6219-002					
Acenaphthene	63	Percent				
Pyrene	80	Percent				

**METHOD SUMMARIES**

Acid/Base Neutral analysis is performed using H/P 5970 GC/MS systems with autosampler. Analysis is performed with J&W megabore column. Tuning is based on DFTPP criteria. Procedural guidelines described in SW846 are used for all analysis. Data reduction is accomplished using H/P RTE 1000 computer systems.



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 Address: 17 Main St.  
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Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name:

**Sample Information**

Lab ID: 63266223-007  
 Client ID: QC Report-Water  
 Matrix: Water

Date Sampled: / / :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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METHOD SUMMARIES

Metal analysis is performed on digested extracts using Atomic Absorption or ICP Spectroscopy. AA samples are atomized using FASTAC auto deposition and are automatically deposited into graphite cells. Mercury is determined by Cold Vapor AA. ICP samples are automatically sampled, nebulized, and transported into the plasma torch. Final results are produced by auto data/reduction and graphics printer.

Extractable and Purgeable Petroleum Hydrocarbon Analysis is based on SW-846 Proposed Method 8015B. Extractable Petroleum Hydrocarbons are prepared by solvent extraction and analyzed using Gas Chromatography-Flame Ionization Detection (GC-FID). Purgeable Petroleum Hydrocarbons are prepared by purge and trap and analyzed using GC-FID.

The Extractable Petroleum Hydrocarbon quantitation includes target and/or non-target Petroleum Hydrocarbons in the C8 - C40 range. Target hydrocarbon quantitation is based on the response factor of a standard for the fuel identified. Non-target quantitation is based on the response factor of a diesel fuel standard.

The Purgeable Petroleum Hydrocarbon quantitation includes target and/or non-target Petroleum Hydrocarbons in the C5 - C12 range. Target and non-target hydrocarbon quantitation is based on the response factor of a gasoline standard.



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F I N A L R E P O R T

**Client Information**

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name:

**Sample Information**

Lab ID: 63266223-007  
 Client ID: QC Report-Water  
 Matrix: Water

Date Sampled: / / :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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METHOD SUMMARIES

Volatile organic analysis is performed using H/P 5995 or 5970 GC/MS, Tekmar purge and trap, and ALS autosampler. Chromatography incorporates packed and megabore columns. Data reduction is performed on RTE 1000 and ChemStation systems. Tuning is based on BFB standards. Procedural guidelines follow EPA or SW846 for all analyses.

METHOD REFERENCES

1. Test Methods For Evaluating Solid Waste: Physical Chemical Methods. EPA SW 846. November 1986.
2. Methods For Chemical Analysis of Water and Wastes. EPA 600/4-79-200. Revised March 1983.
3. Standard Methods For Examination of Water and Wastewater. APHA-AWWA-WACF., 18th Edition. 1992.
4. EPA Methods For The Determination of Organic Compounds in Drinking Water.



Matrix Analytical, Inc.  
 106 South Street  
 Hopkinton, MA 01748-2295  
 1 (800) 362-8749

F I N A L R E P O R T

Client Information

Account: Loitherstein Environmental Eng.  
 Address: 17 Main St.  
 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J. Loitherstein  
 Sampler Name:

Sample Information

Lab ID: 63266223-008  
 Client ID: QC Report-Soil  
 Matrix: Soil

Date Sampled: / / : :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>DUPLICATE STUDIES</b>						
Antimony ID:	6223-004					
Antimony Variance:	25	Percent				
Arsenic ID:	6223-004					
Arsenic Variance:	3	Percent				
Beryllium ID:	6223-004					
Beryllium Variance:	0	Percent				
Cadmium ID:	6223-004					
Cadmium Variance:	0	Percent				
Chromium ID:	6223-004					
Chromium Variance:	1	Percent				
Copper ID:	6223-004					
Copper Variance:	0	Percent				
Lead ID:	6223-004					
Lead Variance:	0	Percent				
Mercury ID:	6200-002					
Mercury Variance:	0	Percent				
Nickel ID:	6223-004					
Nickel Variance:	5	Percent				
Selenium ID:	6223-004					
Selenium Variance:	11	Percent				
Silver ID:	6223-004					
Silver Variance:	0	Percent				
Thallium ID:	6223-004					
Thallium Variance:	0	Percent				
Zinc ID:	6223-004					



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Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>DUPLICATE STUDIES</b>						
Zinc Variance:	1	Percent				
<b>MATRIX SPIKE STUDIES - METALS</b>						
Antimony ID:	6223-004					
Antimony Recovery:	77	Percent				
Arsenic ID:	6223-004					
Arsenic Recovery:	87	Percent				
Beryllium ID:	6223-004					
Beryllium Recovery:	96	Percent				
Cadmium ID:	6223-004					
Cadmium Recovery:	95	Percent				
Chromium ID:	6223-004					
Chromium Recovery			Unable to report spike recovery due to the high level in the sample.			
Copper ID:	6223-004					
Copper Recovery:	98	Percent				
Lead ID:	6223-004					
Lead Recovery:	92	Percent				
Mercury ID:	6200-002					
Mercury Recovery:	100	Percent				
Nickel ID:	6223-004					
Nickel Recovery:	95	Percent				
Selenium ID:	6223-004					
Selenium Recovery:	88	Percent				



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FINAL REPORT

Client Information

Account: Loitherstein Environmental Eng.  
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 Framingham, MA 01702

Project Name: 228 Salem St. (11-21-96)  
 Project Number: 96154  
 Project Manager: J.Loitherstein  
 Sampler Name:

Sample Information

Lab ID: 63266223-008  
 Client ID: QC Report-Soil  
 Matrix: Soil

Date Sampled: / / :  
 Date Received: 11/21/96 : 0  
 Date Reported: 11/27/96

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
<b>MATRIX SPIKE STUDIES - METALS</b>						
Silver ID:	6223-004					
Silver Recovery:	33	Percent				
Thallium ID:	6223-004					
Thallium Recovery:	101	Percent				
Zinc ID:	6223-004					
Zinc Recovery:	86	Percent				
<b>METHOD BLANKS</b>						
Method Blank - Semi Volatile	ND	ug/l		625/8270A		
Method Blank - Volatile	ND	ug/l		8260		
<b>MATRIX SPIKE STUDIES - VOLATILES</b>						
Sample ID:	6142-005					
Benzene	91	Percent				
Chlorobenzene	87	Percent				
1,1-Dichloroethene	91	Percent				
Toluene	82	Percent				
Trichloroethene	88	Percent				
<b>MATRIX SPIKE STUDIES BASE/NEUTRALS</b>						
Sample ID:	6223-004					
Acenaphthene	54	Percent				
Pyrene	49	Percent				

METHOD SUMMARIES

Acid/Base Neutral analysis is performed using H/P 5970 GC/MS systems with autosampler. Analysis is performed with J&W megabore column. Tuning is based on DFTPP criteria. Procedural guidelines described in SW846 are used for all analysis. Data reduction is accomplished using H/P RTE 1000 computer systems.



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Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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**METHOD SUMMARIES**

Metal analysis is performed on digested extracts using Atomic Absorption or ICP Spectroscopy. AA samples are atomized using FASTAC auto deposition and are automatically deposited into graphite cells. Mercury is determined by Cold Vapor AA. ICP samples are automatically sampled, nebulized, and transported into the plasma torch. Final results are produced by auto data/reduction and graphics printer.

NOTE: Analytical results have been corrected and are reported on a dry weight basis. If required, detection limits can also be corrected to dry weight using the percent moisture data included in this report.

Extractable and Purgeable Petroleum Hydrocarbon Analysis is based on SW-846 Proposed Method 8015B. Extractable Petroleum Hydrocarbons are prepared by solvent extraction and analyzed using Gas Chromatography-Flame Ionization Detection (GC-FID). Purgeable Petroleum Hydrocarbons are prepared by purge and trap and analyzed using GC-FID.

The Extractable Petroleum Hydrocarbon quantitation includes target and/or non-target Petroleum Hydrocarbons in the C8 - C40 range. Target hydrocarbon quantitation is based on the response factor of a standard for the fuel identified. Non-target quantitation is based on the response factor of a diesel fuel standard.



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Date Sampled: / / :  
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Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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METHOD SUMMARIES

The Purgeable Petroleum Hydrocarbon quantitation includes target and/or non-target Petroleum Hydrocarbons in the C5 - C12 range. Target and non-target hydrocarbon quantitation is based on the response factor of a gasoline standard.

Volatile organic analysis is performed using H/P 5995 or 5970 GC/MS, Tekmar purge and trap, and ALS autosampler. Chromatography incorporates packed and megabore columns. Data reduction is performed on RTE 1000 and ChemStation systems. Tuning is based on BFB standards. Procedural guidelines follow EPA or SW846 for all analyses.

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