Corporate Environmental Programs
General Electric Company
100 Woodlawn Avenue, Pittsfield, MA 01201

December 10, 1999

Mr. Dean Tagliaferro
Mr. Bryan Olson
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
One Congress Street, Suite 250
Boston, MA 02203-2211

Ms. J. Lyn Cutler
Bureau of Waste Site Cleanup
Department of Environmental Protection
436 Dwight Street
Springfield, MA 01103

Subject: **DNAPL Recovery Data at the Lyman Street Area**
Plant Site 1 Groundwater Management Area

Dear Mr. Tagliaferro, Mr. Olson, and Ms. Cutler:

General Electric (GE) has conducted daily dense non-aqueous phase liquid (DNAPL) monitoring and recovery in the Lyman Street Area (Figure 1) on wells LSSC-07 and LSSC-16I (Figure 2). This monitoring/removal program was recommended in the report entitled July/August 1999 Additional Source Control Investigations, Lyman Street Site (HSI GeoTrans, 1999a). This letter presents the results of the DNAPL removal activities which were conducted between October 26 and December 3, 1999.

Background

Monitoring well LSSC-07 was installed on December 18, 1998 downgradient of wells LS-12 and LS-34 in which DNAPL had previously been detected. Details of the installation of LSSC-07 were included in the Source Control Investigation Report, Upper Reach of Housatonic River (First ½ Mile) (HSI GeoTrans, 1999b). Monitoring well LSSC-16I was installed on March 3, 1999 to further determine the westerly extent of DNAPL. Details of the installation of LSSC-16I were included in the Source Control Investigation Addendum Report, Upper Reach of Housatonic River (First ½ Mile) (HSI GeoTrans, 1999c). DNAPL has been detected regularly in both of these wells since their installation.

A three day DNAPL recovery test was performed on LSSC-07 and LSSC-16I between August 9 and 11, 1999. The results were presented in a report entitled, Additional Source Control Investigations, Lyman Street Site (HSI GeoTrans, 1999a). The DNAPL recovery rates for LSSC-07 ranged from 0.47 to 1.82 liters per day,with an average of 1.13 liters per day. For

LSSC-16I, the rates ranged from 0.03 to 0.38 liters per day, with an average of 0.11 liters per day. These recovery rates indicated that installation of an automated recovery system in these wells was not warranted. GE recommended initiating a daily DNAPL monitoring/removal program in these two monitoring wells and evaluating the results after an approximate four week period to determine whether this frequency should be modified and whether other remedial actions were warranted. That proposal was approved in an October 13, 1999 letter from the US EPA, and the daily DNAPL monitoring/removal program was initiated on October 26, 1999. This letter presents the results of five weeks of DNAPL recovery data and contains recommendations for future activities.

DNAPL Recovery Data

Between October 26 and December 3, 1999, DNAPL thickness was measured daily and if present, DNAPL was recovered from LSSC-07 and LSSC-16I. Monitoring data is summarized in Table 1. DNAPL thickness and the amount of DNAPL recovered during the five week time-period are summarized in Tables 2 and 3. Figures 3 and 4 graphically depict DNAPL thickness in LSSC-07 and LSSC-16I. Figures 5 and 6 graphically depict the amount of DNAPL recovered on each date from LSSC-07 and LSSC-16I.

Over the five week time period, DNAPL recovery rates from LSSC-07 ranged from 0.1 to 0.86 liters per day and averaged 0.194 liters per day. During the last week of the evaluation period, the recovery rate was 0.192 liters/day. This is a significant decrease from the 1.13 liters per day averaged during the three day DNAPL recovery test conducted in August 1999. DNAPL thickness and recovery rates were generally higher on the days following a weekend or holiday, when DNAPL had not been removed for a few days.

DNAPL recovery rates from LSSC-16I were lower than LSSC-07, ranging from 0 to 0.2 liters per day and averaging 0.036 liters per day over the five week period. During the last week of the evaluation period, the recovery rate was 0.014 liters/day. This is also a significant decrease from the 0.11 liters per day averaged during the three day DNAPL recovery test conducted in August 1999.

Recommendations

Recovery rates noted in LSSC-07 and LSSC-16I during the three day DNAPL recovery test in August could not be sustained during the longer five week recovery period between October 26 and December 3, 1999. In LSSC-07 and in LSSC-16I, recovery rates during the last week of the five week evaluation period were 83% and 87% lower than the average rates observed during the three day recovery test in August. Figures 3 and 4 show that there was a general decline in the daily DNAPL thickness during the five week monitoring period. During

the first week of monitoring, the average DNAPL thickness in wells LSSC-07 and LSSC-16I was 0.81 feet and 0.28 feet, respectively, compared to an average thickness of 0.30 feet and 0.06 feet, respectively, during the last week of monitoring. In LSSC-07 it was noted that the DNAPL thickness did typically increase after recovery was not performed for a couple of days (i.e. during weekends). Based on these observations, we conclude that daily manual DNAPL recovery is not necessary, and that less frequent monitoring/recovery would be equally effective. We propose a revised schedule of weekly monitoring/recovery for well LSSC-16I and a schedule of three times per week for well LSSC-07. During these monitoring events, any DNAPL which is present will be manually removed from the wells. These results will be presented in the monthly summary reports for the activities at the Pittsfield/Housatonic Site. Pending Agency approval of this proposal and implementation, GE will periodically assess the recovery results and the need for future program modifications.

Sincerely,

John D Ciampa /ems

John D. Ciampa
Remedial Project Manager

Enclosure

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Public Information Repositories ECL I-R-IV(A)(1)*

* w/enclosures

Table 1. Lyman Street DNAPL Recovery Test.

Location	Date Measured	Measuring Point Elevation	Depth to Water	Groundwater Elevation	Depth to DNAPL	Notes
LSSC-07						
	10/27/99	982.48	10.37	972.11	24.18	
	10/28/99	982.48	10.45	972.03	24.55	
	10/29/99	982.48	10.43	972.05	24.66	
	11/1/99	982.48	10.58	971.90	23.95	
	11/2/99	982.48	10.59	971.89	24.70	
	11/3/99	982.48	9.66	972.82	24.76	
	11/4/99	982.48	9.78	972.70	24.84	
	11/5/99	982.48	10.02	972.46	24.82	
	11/8/99	982.48	10.31	972.17	24.37	
	11/9/99	982.48	10.36	972.12	24.64	
	11/10/99	982.48	10.37	972.11	24.93	
	11/11/99	982.48	10.35	972.13	24.85	
	11/12/99	982.48	10.36	972.12	24.88	
	11/15/99	982.48	10.54	971.94	24.18	
	11/16/99	982.48	10.55	971.93	24.90	
	11/17/99	982.48	10.61	971.87	24.78	
	11/18/99	982.48	10.71	971.77	24.85	
	11/19/99	982.48	10.73	971.75	24.85	
	11/22/99	982.48	10.72	971.76	24.54	
	11/23/99	982.48	10.70	971.78	24.89	
	11/24/99	982.48	10.78	971.70	24.88	
	11/29/99	982.48	10.79	971.69	24.88	
	11/30/99	982.48	10.45	972.03	24.98	
	12/1/99	982.48	10.26	972.22	24.61	
	12/2/99	982.48	10.41		24.94	

Table 1. (continued)

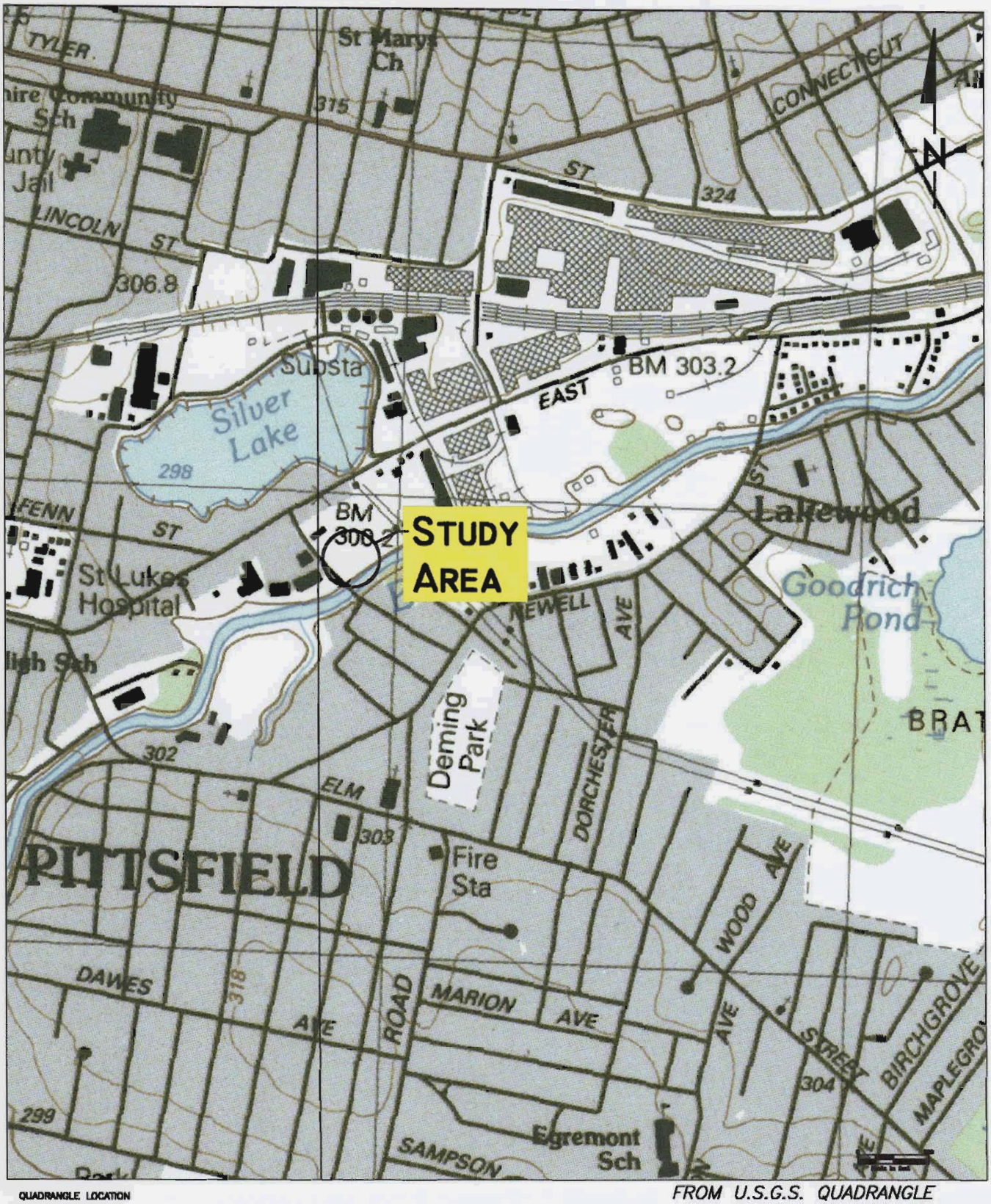
Location	Date Measured	Measuring Point Elevation	Depth to Water	Groundwater Elevation	Depth to DNAPL	Notes
	12/3/99	982.48	10.36		24.60	
LSSC-161						
	10/27/99	980.88	8.76	972.12	28.32	
	10/28/99	980.88	8.76	972.12	28.21	
	10/29/99	980.88	8.76	972.12	28.21	
	11/1/99	980.88	8.89	971.99	28.38	
	11/2/99	980.88	8.90	971.98	28.53	
	11/3/99	980.88	8.00	972.88		
	11/4/99	980.88	8.11	972.77	28.52	
	11/5/99	980.88	8.34	972.54	28.44	
	11/8/99	980.88	8.64	972.24	28.40	
	11/9/99	980.88	8.65	972.23		
	11/10/99	980.88	8.69	972.19	28.49	
	11/11/99	980.88	8.69	972.19	28.52	
	11/12/99	980.88	8.67	972.21	28.49	
	11/15/99	980.88	8.85	972.03	28.52	
	11/16/99	980.88	8.86	972.02	28.49	
	11/17/99	980.88	8.94	971.94	28.46	
	11/18/99	980.88	9.02	971.86	28.42	
	11/19/99	980.88	9.04	971.84	28.48	
	11/22/99	980.88	9.02	971.86	28.48	
	11/23/99	980.88	9.02	971.86	28.40	
	11/24/99	980.88	9.07	971.81	28.55	
	11/29/99	980.88	9.07	971.81	28.55	
	11/30/99	980.88	9.04	971.84	28.50	
	12/1/99	980.88	8.58	972.30	28.49	
	12/2/99	980.88	8.71		28.53	
	12/3/99	980.88	8.63		28.51	

Table 2. DNAPL recovery test - monitoring well LSSC-07

Date	Time	DNAPL Thickness in Feet	DNAPL Recovered in Liters
10/26/99	10:30	1.40	0.86
10/27/99	10:30	0.90	0.6
10/28/99	11:55	0.53	0.3
10/29/99	11:55	0.42	0.29
11/1/99	10:30	1.13	0.7
11/2/99	10:30	0.39	0.24
11/3/99	10:30	0.33	0.2
11/4/99	11:00	0.24	0.15
11/5/99	12:30	0.26	0.15
11/8/99	12:30	0.72	0.45
11/9/99	11:30	0.44	0.4
11/10/99	8:30	0.15	0.185
11/11/99	13:00	0.24	0.15
11/12/99	12:00	0.21	0.19
11/15/99	14:30	0.90	0.08
11/16/99	8:30	0.19	0.13
11/17/99	11:00	0.30	0.24
11/18/99	10:30	0.24	0.3
11/19/99	14:00	0.24	0.3
11/22/99	10:35	0.54	0.45
11/23/99	11:00	0.20	0.12
11/24/99	8:30	0.21	0.13
11/29/99	15:00	0.21	0.13
11/30/99	15:00	0.11	0.1
12/1/99	10:30	0.50	0.3
12/2/99	10:00	0.22	0.13
12/3/99	13:30	0.50	0.3

Table 3. DNAPL recovery test - monitoring well LSSC-16I

Date	Time	DNAPL Thickness in Feet	DNAPL Recovered in Liters
10/26/99	10:30	0.26	0.16
10/27/99	10:30	0.22	0.14
10/28/99	11:55	0.33	0.18
10/29/99	11:55	0.32	0.2
11/1/99	10:30	0.13	0.08
11/2/99	10:30	0.01	0.005
11/3/99	10:30	0	0
11/4/99	11:00	0.02	0.01
11/5/99	12:30	0.10	0.01
11/8/99	12:30	0.14	0.02
11/9/99	11:30	0	0
11/10/99	8:30	0.04	0.035
11/11/99	13:00	0.01	0.01
11/12/99	12:00	0.04	0.03
11/15/99	14:30	0.02	0.005
11/16/99	8:30	0.05	0.005
11/17/99	11:00	0.07	0.09
11/18/99	10:30	0.12	0.18
11/19/99	14:00	0.06	0.04
11/22/99	10:35	0.05	0.03
11/23/99	11:00	0.14	0.09
11/24/99	8:30	0.02	0.015
11/29/99	15:00	0.01	0.015
11/30/99	15:00	0.06	0.01
12/1/99	10:30	0.07	0.03
12/2/99	10:00	0.01	0.005
12/3/99	13:30	0.05	0.01



QUADRANGLE LOCATION

0 1000

Scale in feet

FROM U.S.G.S. QUADRANGLE
PITTSFIELD, MASSACHUSETTS

Contour Interval 3 Meters

National Geodetic Vertical Datum Of 1929

12/10/99

HSI GEOTRANS
A TETRA TECH COMPANY

9912LOCUS.DWG

Figure 1 Study Area Location Map

EXPLANATION

APPROXIMATE DELINEATION OF FORMER OXBOW

ES2-1 MONITORING WELL

RW-1(X) EXTRACTION WELL

APPROXIMATE WATER'S EDGE

NOTE: BASE MAP AND ALL DATA LOCATIONS PRIOR TO 1998 PROVIDED BY BLASLAND, BOUCK & LEE. ALL SOURCE CONTROL INVESTIGATION BORINGS AND WELL LOCATIONS PROVIDED BY HILL ENGINEERING.

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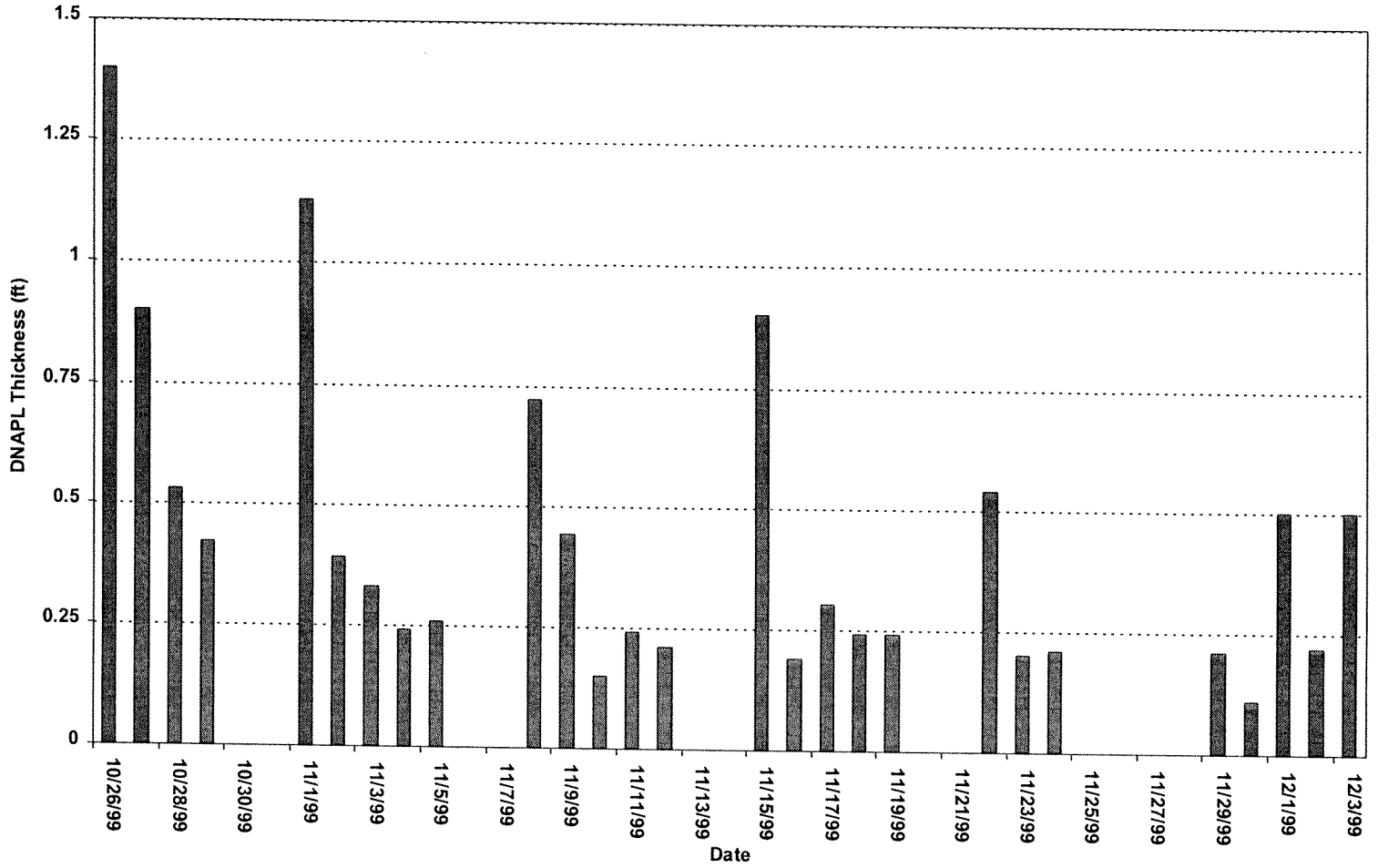
9912lyman-site.dwg

Figure 2 Study Area Location Map

Figure 3. DNAPL Thickness LSSC-07



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HSI GeoTrans, inc

Figure 4. DNAPL Thickness LSSC-16I

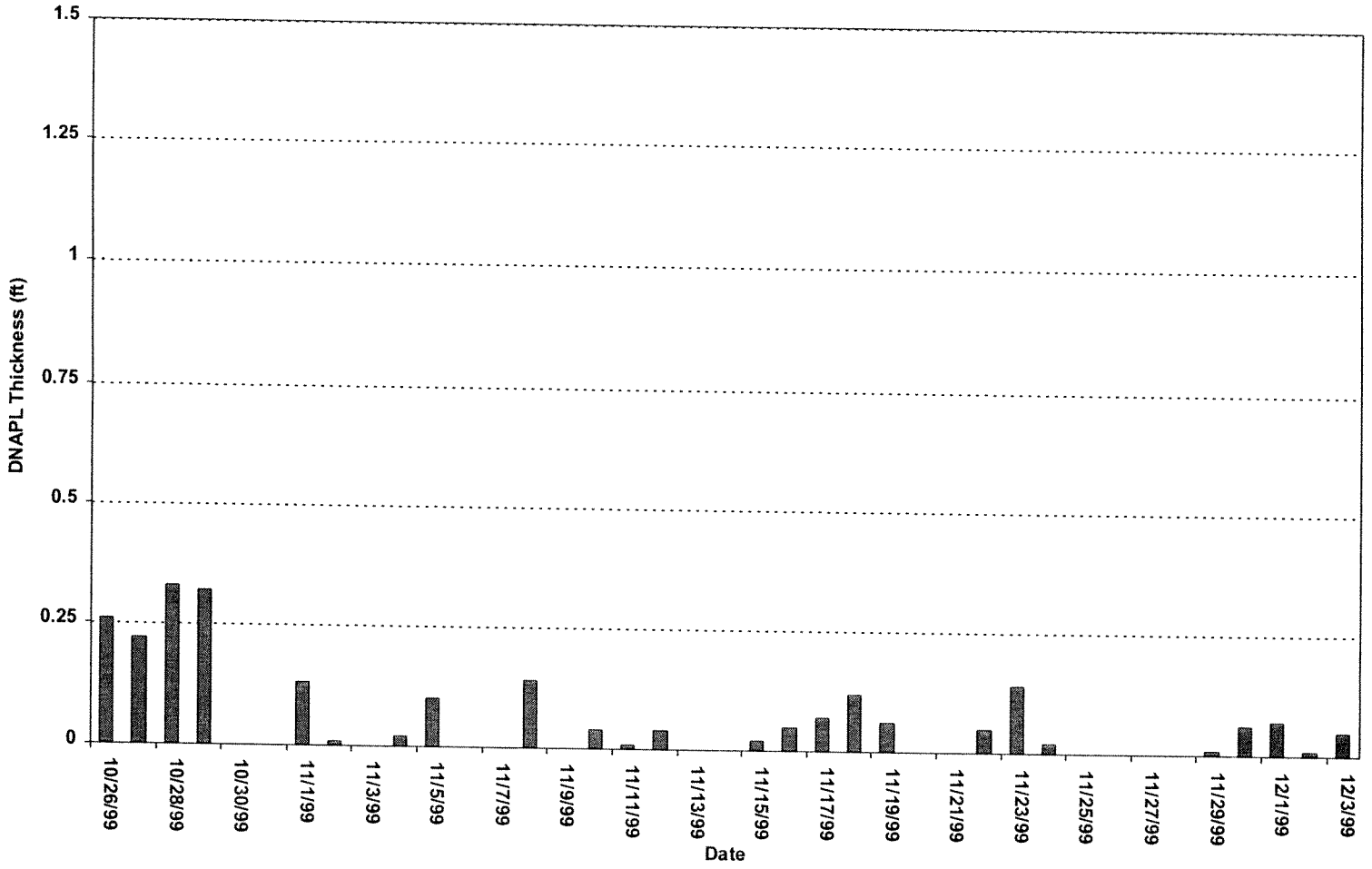

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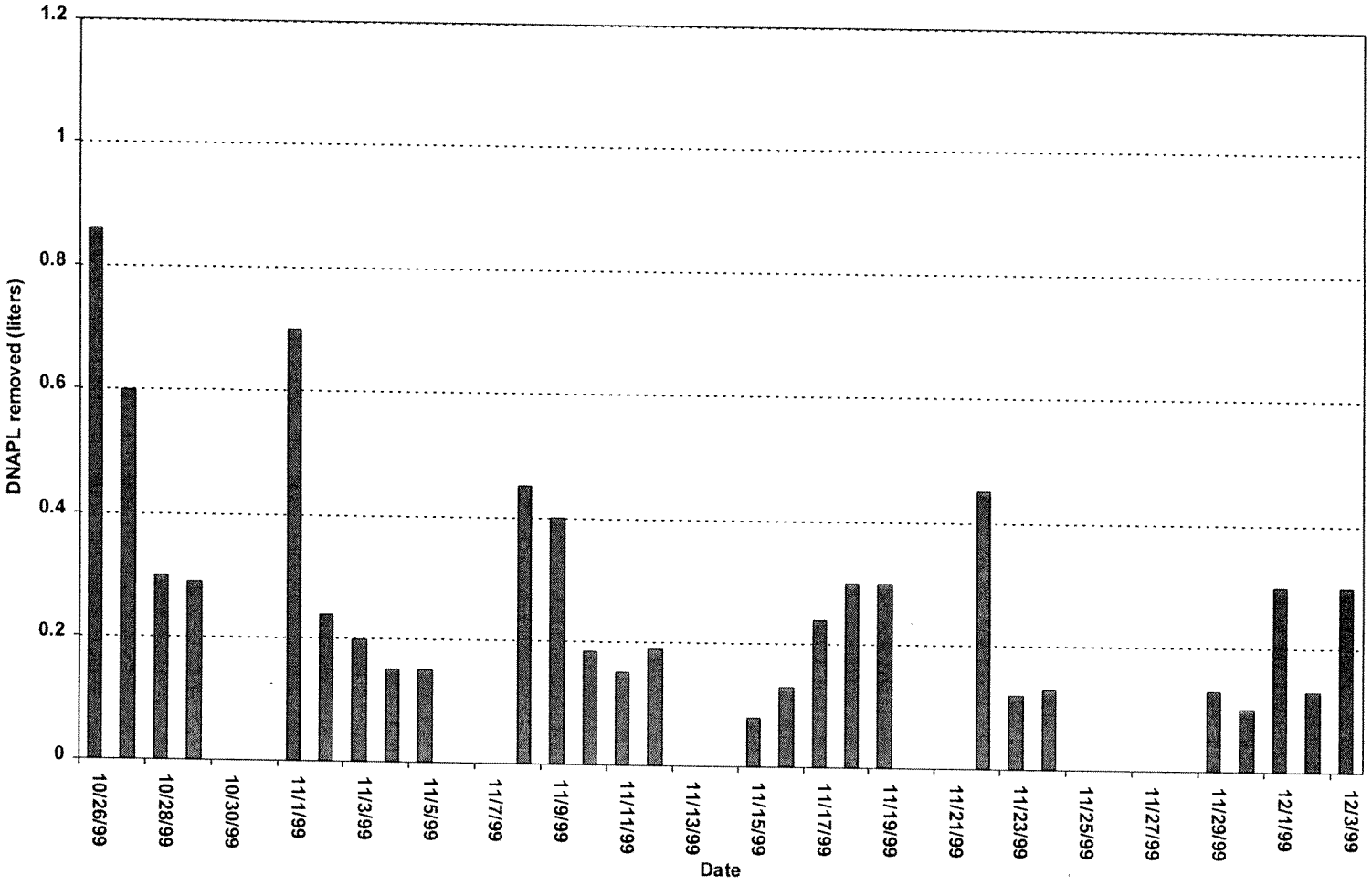
Figure 5. Volume of DNAPL Removed, LSSC-07



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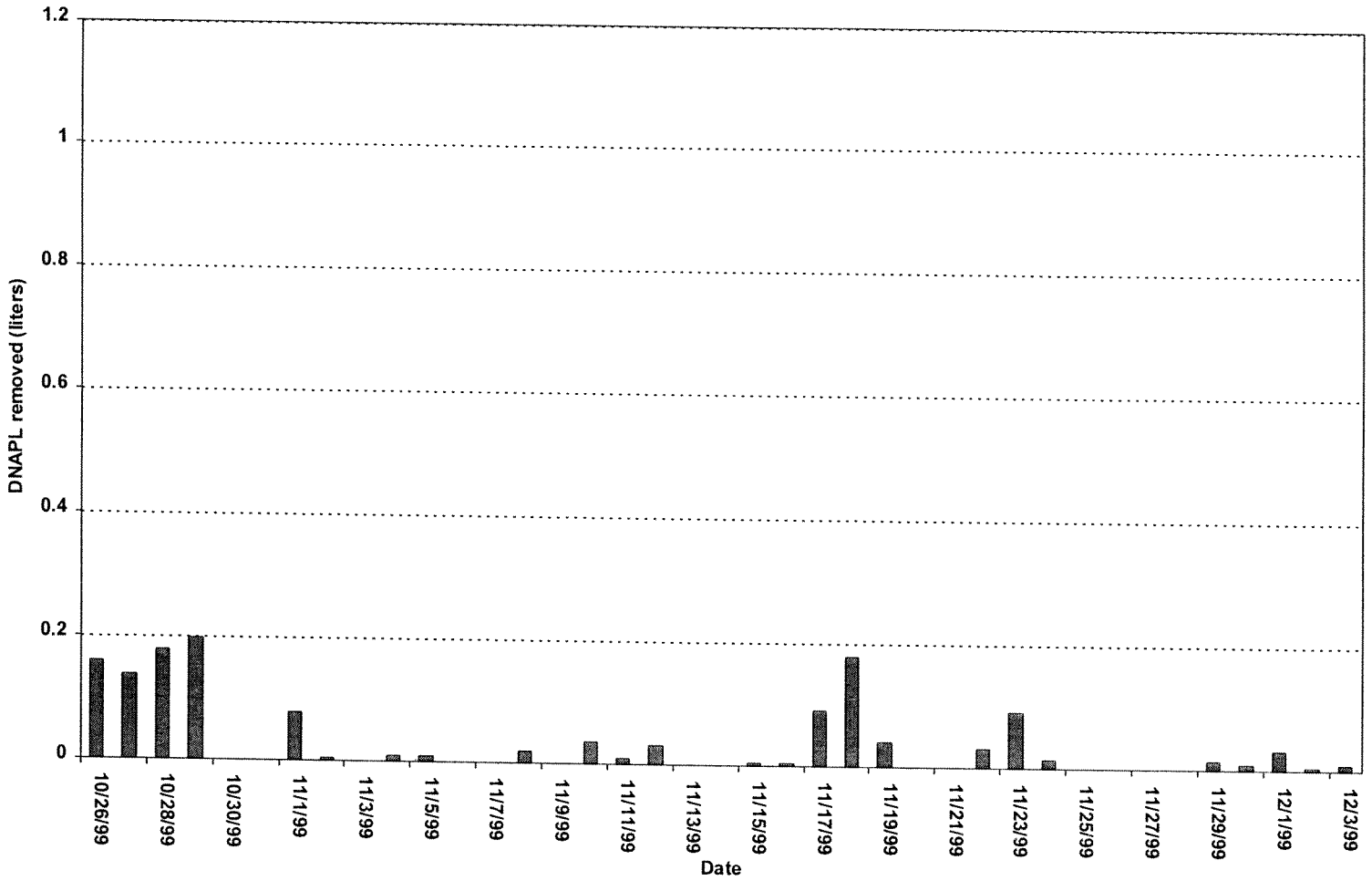
HSI GeoTrans, inc

Figure 6. Volume of DNAPL Removed, LSSC-16I



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HSI GeoTrans, inc

References

HSI GeoTrans 1999a. July/August 1999 Additional Source Control Investigations, Lyman Street Site, Pittsfield, Massachusetts, September 9, 1999.

HSI GeoTrans 1999b. Source Control Investigation Report, Upper Reach of Housatonic River (First ½ Mile), February 9, 1999.

HSI GeoTrans 1999c. Source Control Investigation Addendum Report, Upper Reach of Housatonic River (First ½ Mile), June 15, 1999.