WESTON Ref. No.

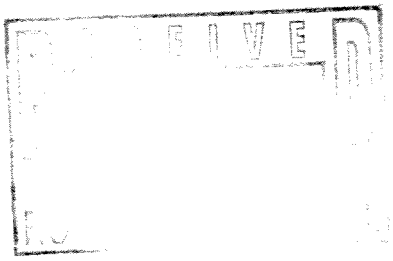
05-0074

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

SDMS 158392

P.N. P009-006

May 19, 2000



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

Subject: Additional DNAPL Investigation at Newell Street Area II-Plant Site 1 Groundwater Management Area

Dear Messrs. Olson and Tagliaferro:

In EPA's February 29, 2000 Conditional Approval letter for GE's January 14, 2000 letter report entitled DNAPL Recovery Data and Evaluation at the Newell Street Area II, EPA requested that GE conduct additional investigations in the vicinity of well N2SC-01I. In a letter dated March 15, 2000, GE outlined a plan, that was subsequently approved by EPA in a letter dated March 27, 2000, to install new wells and gather more information regarding DNAPL occurrence and potential recovery at that location. This letter describes the results of well installation and DNAPL testing conducted in accordance with the March 15, 2000 plan. The Study Area is shown on Figure 1.

Monitoring Well Installation

Four additional monitoring wells were installed at three additional locations between April 3 and 11, 2000. The locations of the newly installed wells and the existing borings/wells are shown on Figure 2. Boring logs and well construction diagrams are attached to this letter report. Wells were installed southwest (N2SC-13S and N2SC-13I), northwest (N2SC-14) and southeast (N2SC-15) of N2SC-01I. Shallow well N2SC-135 was installed because evidence of potential NAPL was detected above a peat layer at 18 feet below surface grade during installation of N2SC-13I. All wells are located within 50 feet of N2SC-01I with the exception of N2SC-14 which is located 59.5 feet away. An automated DNAPL recovery system has been operating in N2SC-01I since July 15, 1999 and has recovered 10,915 gallons of DNAPL between its

activation and the end of December 1999. N2SC-01I and all of the newly installed wells are located within a depression in a till layer which is overlain by fill, peat, sands and gravel. The elevations of the top of the till layer are shown on Figure 2 and have been updated to include data from the new wells. The four new wells were installed to determine if they could be used as additional recovery wells to increase DNAPL recovery in this area.

N2SC-13S and N2SC-15 were installed using 6 ½ -inch inner diameter hollow stem augers. N2SC-13I was completed to a depth of 32 feet below surface grade using a combination of the hollow stem auger method and the drive and wash method. N2SC-14 was installed to a depth of 38 feet below surface grade using the hollow stem auger method in combination with the drive and wash method. Continuous two foot long split spoon samples were collected from each well except N2SC-13S. Samples were not collected from this well since it is installed adjacent to N2SC-13I which had previously been sampled. Recovered soil was classified using the Unified Soil Classification System. Field screening of soil samples was performed by the headspace method using a Photo Ionization Detector. When visual observation indicated the possible presence of NAPL, a water shake test was performed. Field observations were recorded on the attached logs.

The nature of the unconsolidated materials encountered in N2SC-13I, N2SC-14 and N2SC-15 was consistent with the stratigraphy noted in other Newell Street wells installed during the Source Control Investigations (Source Control Investigation Report, HSI GeoTrans, February 9, 1999 and Source Control Investigation Addendum Report, HSI GeoTrans, June 15, 1999). Unconsolidated materials consisted of eight to fourteen feet of fill overlying ten to twelve feet of fine sand and silt with peat. This sequence overlies ten to fifteen feet of coarse sand and gravel which occurs above the till. As shown on Figure 2, the data from the new wells indicates that the trough in the till surface appears to be narrower than previously represented. The till elevations in N2SC-14 and N2SC-15 are slightly higher than the previous interpolation predicted and this results in a narrower more sinuous interpretation of the trough in the till surface.

N2SC-13I, N2SC-14 and N2SC-15 were installed with ten feet of screen directly above the till layer. N2SC-13S was screened from four to fourteen feet below surface grade because odors, stains, greasy material or sheens were noted in the split spoon samples collected between six and fourteen feet below surface grade at the N2SC-13 location. The four wells were constructed of four-inch inner diameter Schedule 40 PVC casing and 0.010 slot screen. Each well was constructed with one-foot of solid casing below the screen to act as a DNAPL accumulation sump. The annulus was filled with #0 filter sand pack to two feet above the screened interval. A two-foot bentonite seal was placed above the sand pack and the remaining annulus was filled with Portland / Volclay grout to land surface. The wells were finished above surface grade with a steel stand-pipe protective cover. The four wells were developed on April 12, 2000 by surging with surge blocks attached to a Wattera pump and assisted by a transfer pump. Wells were surged until the development water was clear or until the well volume had been purged more than three times.

DNAPL Recovery Test Analysis

Each of the wells, were gauged on April 12, 2000 before being developed and again on April 17, 2000 before the DNAPL recovery test started. Results are presented on Table 1. LNAPL was detected at .01 feet thick in both N2SC-13S and N2SC-14. The LNAPL detected in N2SC-14 is believed to be a small amount of DNAPL held on the water surface by surface tension. Well N2SC-14 is screened too deep to allow LNAPL to enter the well and no indication of LNAPL was observed in the soil samples collected near the water table from this boring. Follow-up measurements for LNAPL were conducted by BBL on both of these wells on April 17, 18, 19 and 20. No further LNAPL was detected. DNAPL was detected on April 12 and 17, 2000 in N2SC-13I and N2SC-14 at thicknesses consistent with those detected during later DNAPL testing.

DNAPL recovery tests were performed on April 18 through 20, 2000 on the newly installed wells in the Newell Street II Area. On April 18, 2000, N2SC-13I, N2SC-13S, N2SC-14, and N2SC-15 were gauged for the presence of NAPL. DNAPL was not detected in N2SC-13S or N2SC-15. DNAPL was detected in N2SC-13I at a thickness of 0.17 feet and in N2SC-14 at a thickness of 2.71 feet. DNAPL was pumped periodically from these two wells over the course of three days and recovery was recorded. The water level measurements, DNAPL thickness, and amount of DNAPL recovered are shown on Table 2.

A small quantity (0.13 gallons or 450 milliliters total) of DNAPL was recovered from N2SC-13I in the initial two days of the test. DNAPL did not return in the last two days of the test. DNAPL was consistently detected in N2SC-14 at thicknesses ranging from 2.55 and 2.78 feet. DNAPL recovery ranged from three to nine gallons each time DNAPL was pumped. Recovery rates ranged from a high of over 4.5 gallons per hour for a period of three hours on the first day of the test to a steady 1.5 gallons per hour for a period of six hours on the last day. DNAPL thickness and recovered amounts for wells N2SC-13I and N2SC-14 are graphed on Figures 3 and 4.

Conclusions

DNAPL measurements and recovery testing showed the greatest amount of DNAPL was located in N2SC-14. N2SC-14 is located within the till depression between recovery well N2SC-01I and recovery wells NS-15, 30, and 32. The larger accumulations of DNAPL do not appear to extend within the till depression to N2SC-13I to the southwest and N2SC-15 to the southeast.

DNAPL recovery testing showed that automated DNAPL recovery from N2SC-14 could be considered. At this time, however, GE is installing automated recovery in nearby well N2SC-02. Operation of this system may prove adequate to reduce thicknesses in N2SC-14. GE proposes to monitor thicknesses in N2SC-14 over the six months following start-up of the automated recovery system in N2SC-02. The need for automated recovery in N2SC-14 will be evaluated at that time based on these results.

Please do not hesitate to call me at (978) 772-7557, if you should have any questions.

Sincerely,

Andrew Silfer/ems

Andrew T. Silfer, P.E
Senior Technical Manager

Enclosure

cc: S. Acree, EPA
J. Bieke, Shea & Gardner
R. Bell, MA DEP
M. Carroll, GE
T. Conway, EPA
J.L. Cutler, MADEP
Mayor G. Doyle, City of Pittsfield
Field Supervisor, U.S. Fish & Wildlife Service, DOI
K. Finkelstein, NOAA
H. Inglis, EPA
T. LaRosa, MA EOEA
J. Milkey, MA AG
M. Nalipinski, EPA
J. Nuss, BBL
J. Novotny, GE
Pittsfield City Council, c/o Tom Hickey
Pittsfield Conservation Commission
Pittsfield Health Department
Public Information Repositories ECL I-P-IV(A)(1)
A. Thomas, GE
D. Veilleux, Roy F. Weston
A. Weinberg, MADEP
J. Ziegler, MADEP

EMS:blc

Table 1. Initial gauging data, Montoring wells N2SC-13I, N2SC-13S, N2SC-14, and N2SC-15.

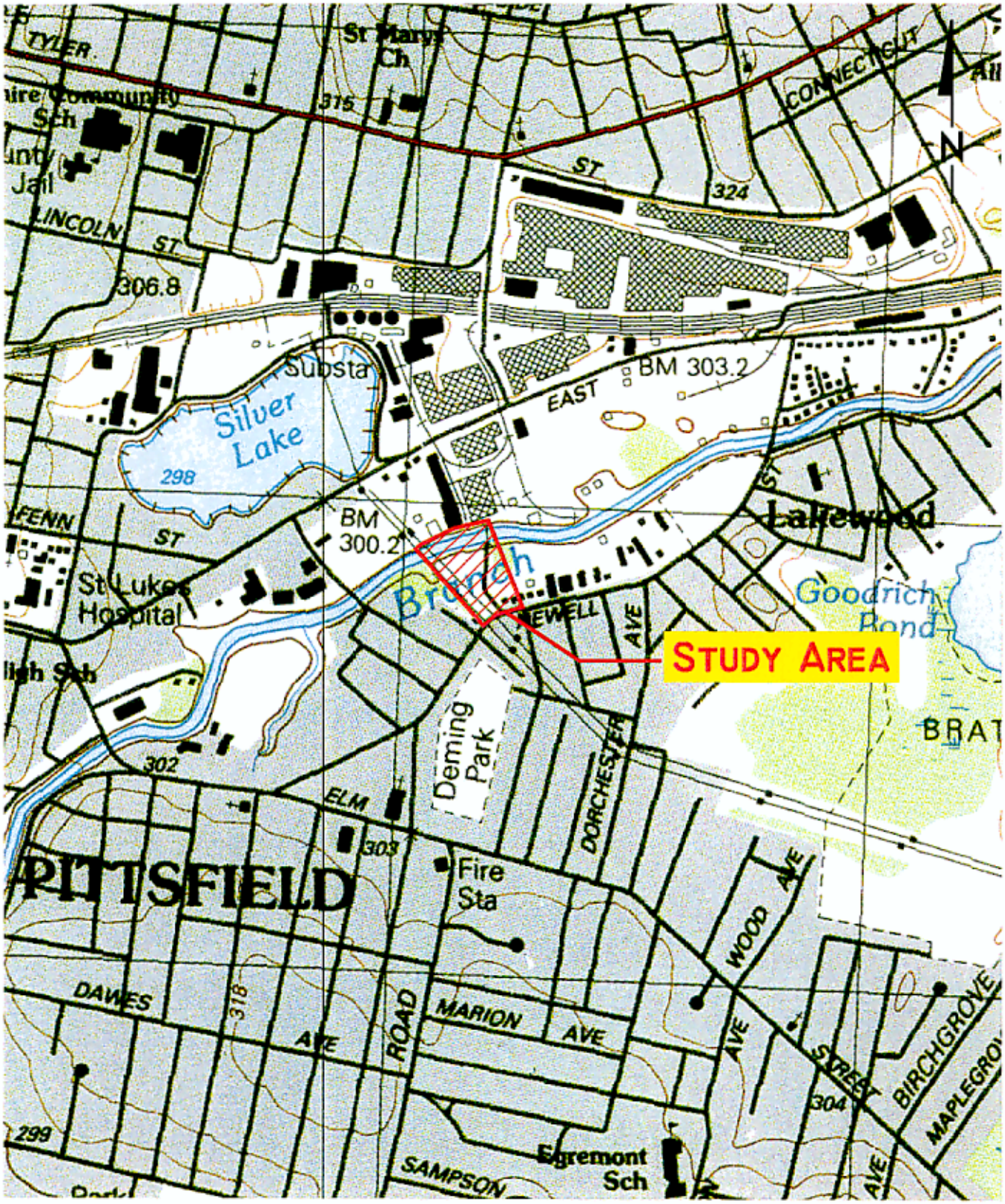
LOCATION	DATE MONITORED	TIME	DEPTH TO LNAPL (ft)	DEPTH TO Water (ft)	DEPTH TO DNAPL (ft)	LNAPL Thickness (ft)	DNAPL Thickness (ft)
N2SC-13I							
	4/12/00	2:00:00 PM		10.68	40.95		0.05
	4/17/00	1:00:00 PM		11.01	40.86		
N2SC-13S							
	4/12/00	3:15:00 PM	8.30	8.31		0.01	
	4/17/00	1:00:00 PM		8.37			
N2SC-14							
	4/12/00	3:35:00 PM	12.11	12.12	36.00	0.01	2.60
	4/17/00	1:00:00 PM		12.49	35.80		
N2SC-15							
	4/12/00	10:30:00 AM		11.40			
	4/17/00	1:00:00 PM		11.76			

Table 2. Bail down test, Montoring wells N2SC-13I, N2SC-13S, N2SC-14, and N2SC-15.

LOCATION	DATE MONITORED	TIME	DEPTH TO Water (ft)	DEPTH TO DNAPL (ft)	DNAPL Thickness (ft)	DNAPL RECOVERED (Gallons)	NOTES
N2SC-13I							
	4/18/00	9:05:00 AM	10.98	40.84	0.17		
	4/18/00	10:25:00 AM	10.98	40.84	0.17	0.11	
	4/18/00	11:45:00 AM	10.98				
	4/18/00	12:45:00 PM	10.97				
	4/18/00	1:50:00 PM	10.97	41.00	0.01	0.01	
	4/18/00	3:10:00 PM	10.97	41.00	0.01		
	4/19/00	8:55:00 AM	10.98	41.00	0.01	0.01	
	4/19/00	10:10:00 AM	10.98				
	4/19/00	11:10:00 AM	10.98				
	4/19/00	12:10:00 PM	10.98				
	4/19/00	1:10:00 PM	10.98				
	4/19/00	2:25:00 PM	10.99				
	4/19/00	3:40:00 PM	10.99				
	4/20/00	8:30:00 AM	11.05				
	4/20/00	10:30:00 AM	11.03				
	4/20/00	12:15:00 PM	11.01				
	4/20/00	2:10:00 PM	11.02				
N2SC-13S							
	4/18/00	9:05:00 AM	8.42				

Table 2. (continued)

LOCATION	DATE MONITORED	TIME	DEPTH TO Water (ft)	DEPTH TO DNAPL (ft)	DNAPL Thickness (ft)	DNAPL RECOVERED (Gallons)	NOTES
N2SC-14							
	4/18/00	9:05:00 AM	12.39	35.81	2.71	5.00	
	4/18/00	11:15:00 AM	12.39	35.97	2.55	9.00	Pumped well for approximately 2 1/2 hours, pump not fast enough to evacuate DNAPL from well. Still .46' of product in well.
	4/18/00	3:05:00 PM	12.38	35.89	2.66		
	4/19/00	9:10:00 AM	12.39	35.80	2.76	5.00	
	4/19/00	11:10:00 AM	12.38	35.97	2.59	4.00	
	4/19/00	1:05:00 PM	12.38	35.95	2.61	4.00	
	4/19/00	3:40:00 PM	12.39	35.90	2.66		
	4/20/00	8:40:00 AM	12.50	35.78	2.78	3.00	
	4/20/00	10:35:00 AM	12.51	35.91	2.65	3.00	
	4/20/00	12:20:00 PM	12.50	35.97	2.59	3.00	
	4/20/00	2:15:00 PM	12.51	35.93	2.63	3.00	
	4/20/00	4:25:00 PM	12.50	35.88	2.68		
N2SC-15							
	4/18/00	9:05:00 AM	11.72				



Contour Interval 3 Meters

National Geodetic Vertical Datum Of 1929

5/9/00

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Figure 1 Study Area

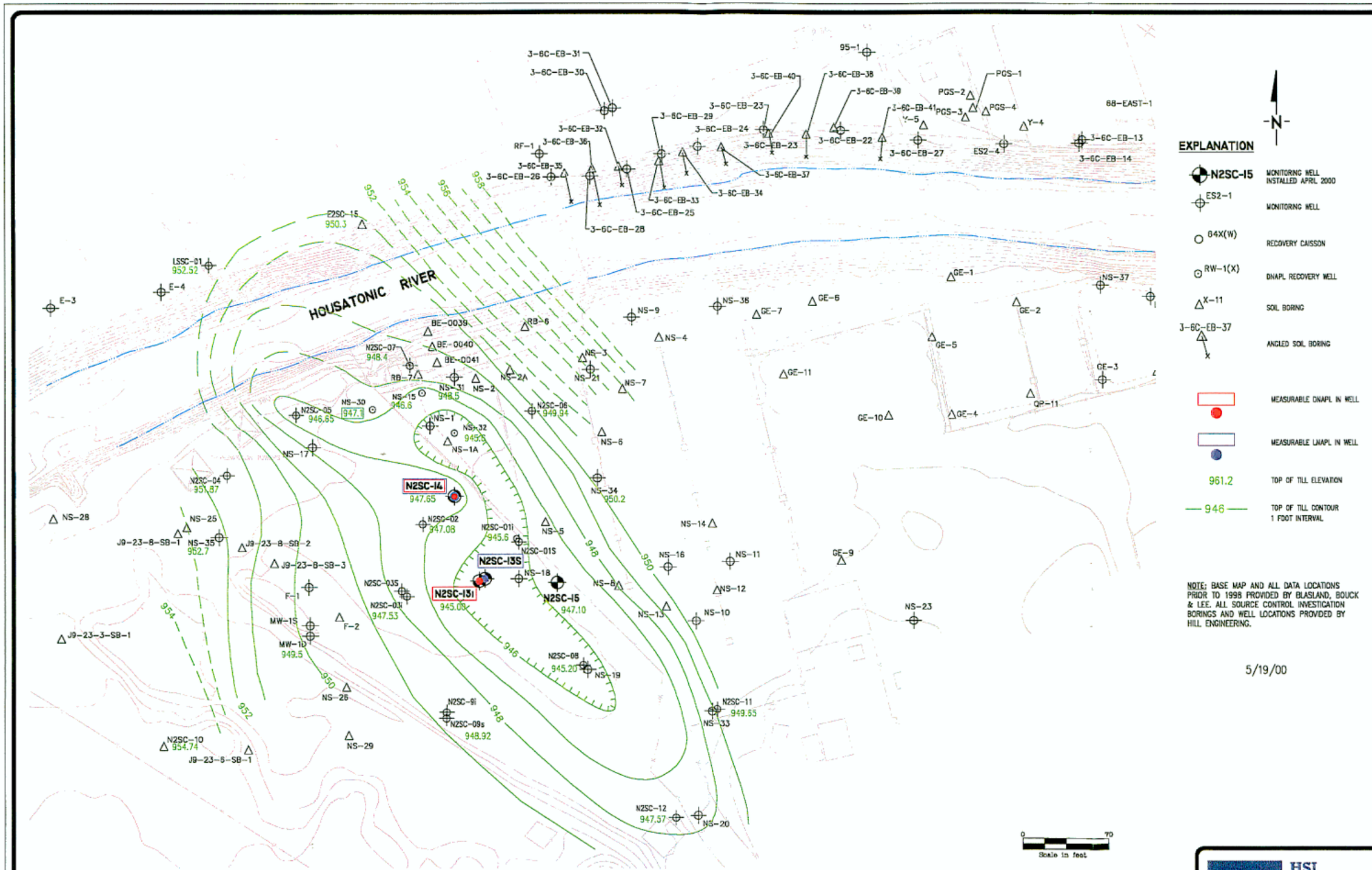
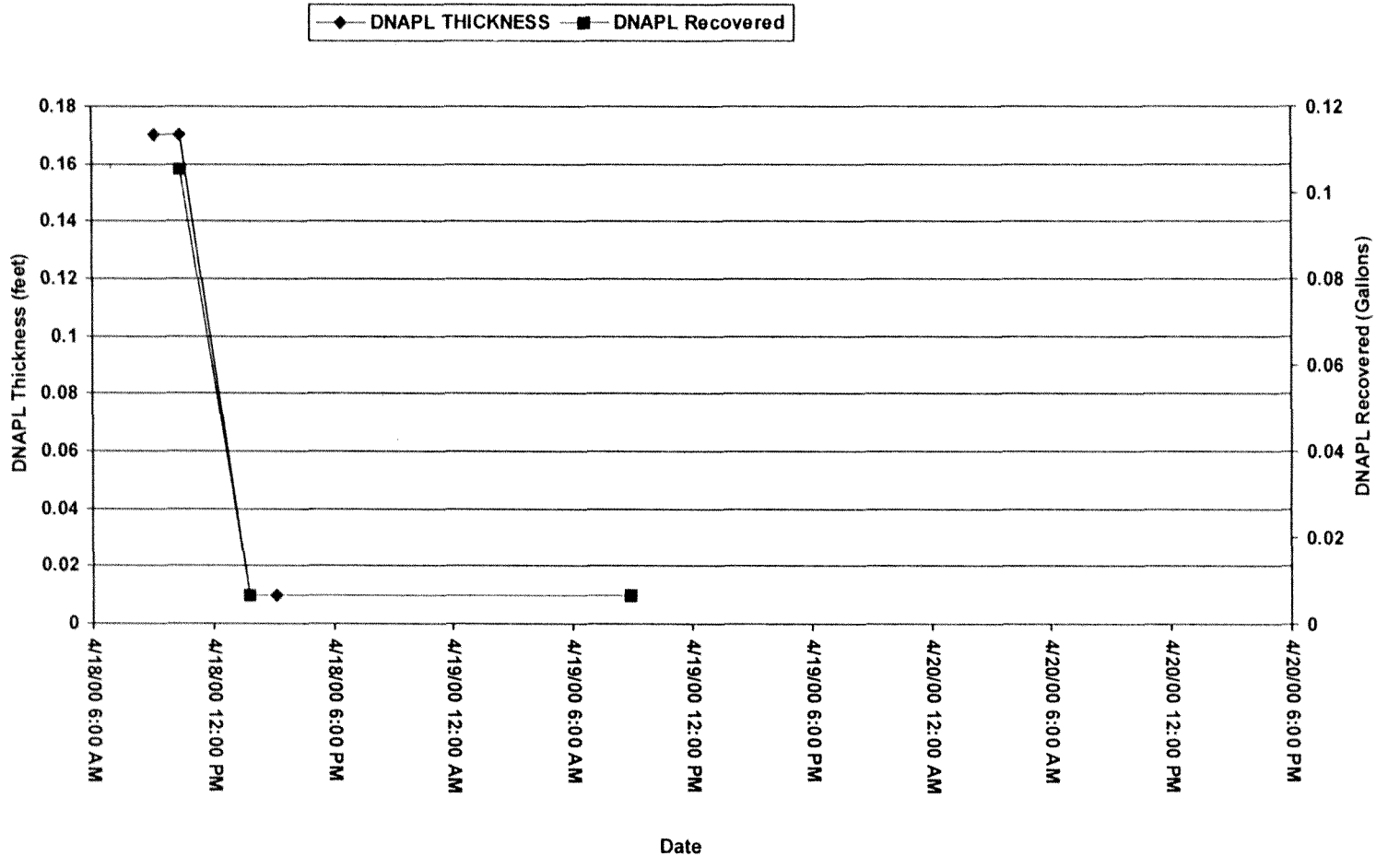


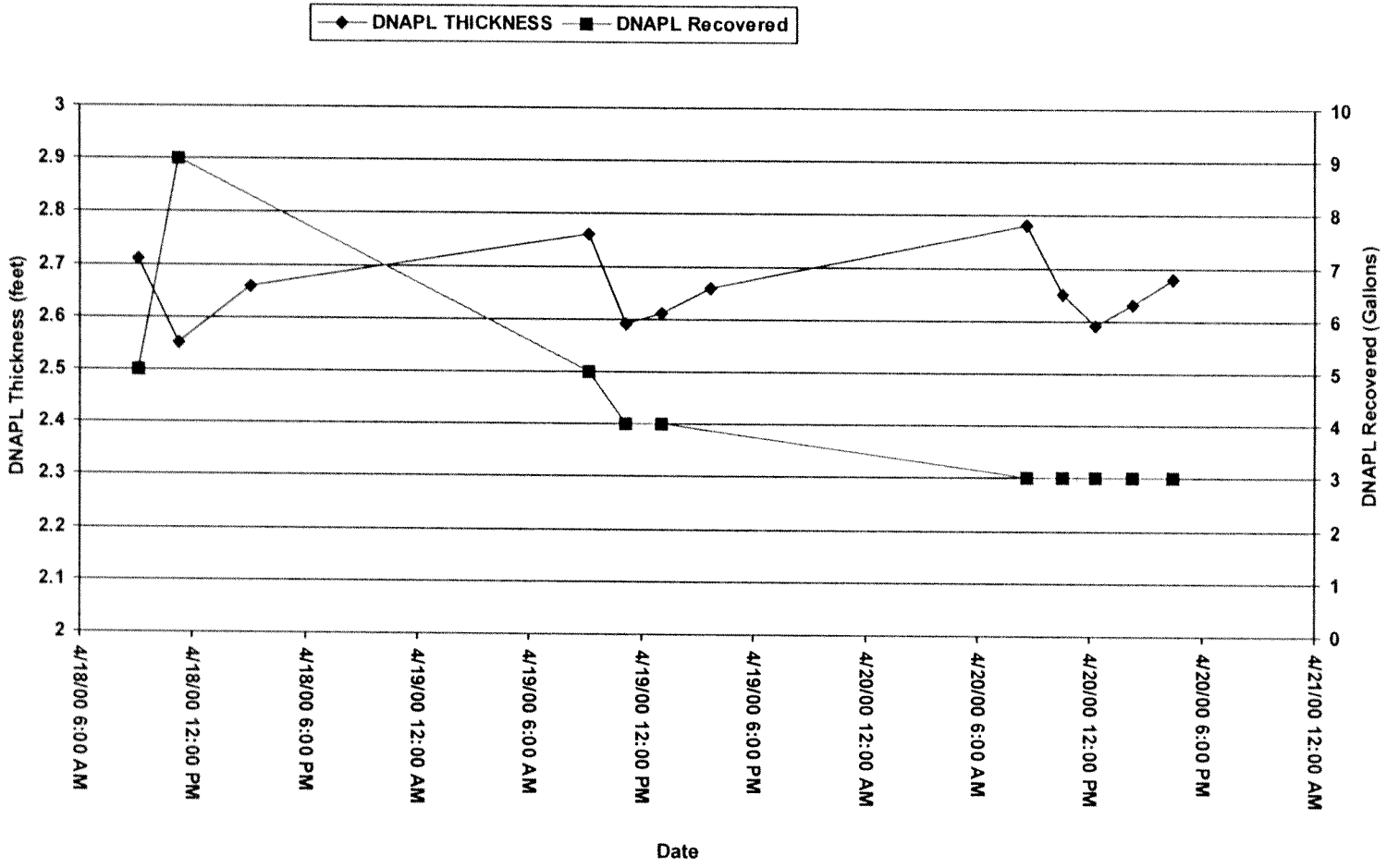
Figure 2 Top of Till Contours and Recently Installed Monitoring Wells

Figure 3. Manual DNAPL Recovery and Thickness: N2SC-13I



Data from 4/18/00 through 4/20/00

Figure 4. Manual DNAPL Recovery and Thickness: N2SC-14



Data from 4/18/00 through 4/20/00

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER P009-002
PROJECT NAME Source Control Upper Reach Housatonic River
LOCATION Pittsfield, Massachusetts
DRILLING METHOD Hollow Stem Augers, Drive and Wash
SAMPLING METHOD Split Spoon
GROUND ELEVATION 983.00 ft. NGVD
MEASURING POINT ELEVATION 984.75 ft. NGVD
LOGGED BY SKC
NORTHING 532549.03790

BORING/WELL NUMBER N2SC-13I
DATE DRILLED 4/5/00 - 4/6/00
CASING TYPE/DIAMETER 4" inner diameter PVC
SCREEN TYPE/SLOT .010 Slot 4" inner diameter PVC
GRAVEL PACK TYPE #0 Silica Sand
GROUT TYPE/QUANTITY Portland/Volclay
DEPTH(ft BGS)/ELEVATION OF WATER 10.68 / 972.32 on 4/12/2000
DRILLING CONTRACTOR Parratt Wolff
EASTING 131638.26968

PID (ppm)	BLOW COUNTS	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH
2	2 5 5 7	SS01					Loose, Top 0.8 Moderate to Dark yellowish Brown, fine SAND and SILT with few gravel and roots, dry, well graded (TOPSOIL). Mid 0.5 Dark Gray, fine diatomaceous SAND, dry, poorly graded (FILL). Bottom 0.4 Dusky yellowish Brown, fine SAND and SILT and PEAT, wood fragments, fibers, glass, mica chips, dry, graded, slight odor (FILL).	2.0
5.2	5 5 5 4	SS02					Same as above (bottom) (FILL).	4.0
4.8	3 2 1 2	SS03		5			Loose, Top 0.4 same as above. Bottom 0.9 Dark Gray, diatomaceous fine SAND, dry, poorly graded (FILL).	6.0
10.3	2 3 5 6	SS04					Top 0.3 same as above (bottom). Mid 0.6 Dusky Yellow to Moderate olive Brown, SILT with few gravel, moist, well graded. Bottom 0.4 Dark Gray, SILT and fine SAND, moist, possible black staining, very strong odor, slight greasy feel but no sheen observed (FILL).	8.0
11	7 10 11 10	SS05					Medium Dense, Dark Gray and Dusky Yellow, SILT with little gravel and coarse sand, long metal rod in spoon, moist, well graded, odor (FILL).	10.0
400	5 3 2 2	SS06		10			Loose, Top 0.8 Grayish Black, sandy SILT with few gravel, wet, well graded, strong odor and staining, slight sheen in Top 0.3. Bottom 0.9 Grayish Brown, SILT with trace diatomaceous sand, wood chips and fibers (FILL).	12.0
350	2 2 3 5	SS07					Same as above (bottom) with band of staining and slight sheen in fibers in top 0.5, strong odor (FILL).	14.0
420	2 1 2 1	SS08		15			Very loose, Grayish Brown, fine SAND and SILT with wood fragments and organics, moist, poorly graded (SM, PT).	16.0
425	2 2 3 5	SS09					Loose, Top 1.2 Grayish Brown, fine SAND and SILT with few organics, 2 mm bands of Light olive Gray fine sand, laminated in bottom 0.5 (SM, PT). Bottom 0.1 Light olive Gray, SAND and little gravel, moist, well graded (SW, GW).	18.0
92	6 6 6 5	SS10					Medium dense, Light olive Gray, SAND with some gravel, 0.05 thick band of Greenish Black sand at 0.15, wet, well graded (SW, GW).	20.0
9.4	7 7 7 9	SS11		20			Medium dense, Light olive Gray, SAND with few gravel and little fines, wet, well graded, sand is subangular, gravel is subround (SW, GW).	22.0
12.7	9 10 10 11	SS12					Same as above, with more fines, wet, well graded (GM).	24.0
6.6	7 9 9 9	SS13		25			Medium dense, Light olive Gray, SILT with trace clay, wet, poorly graded (ML).	26.0
N/A	6 7 7 8	SS14					No Recovery (all slough).	28.0
5.3	6 6 6 7	SS15					Medium dense, Light olive Gray, coarse SAND and little silt/clay, wet, well graded, subangular (SW).	30.0
8.8	6 6 6 7	SS16		30			Medium dense, Light olive Brown, medium to coarse SAND with trace silt, very coarse bands approx. 0.05 thick, wet, graded, subangular (SP).	32.0
60	8 8 8 8	SS17					Medium dense, Light olive Gray, SAND with trace silt, wet, graded, angular to subangular, slight odor (SM).	34.0
510	4 5	SS18		35			Medium dense, Top 0.3 same as above (SM). Mid 0.35	

Continued Next Page

WELL DIAGRAM

- Portland/Volclay Grout
- Enviroplug Bentonite Seal
- #0 Filter Sand
- .010 Slot 4" PVC Schedule 40 Screen

BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00

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BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER P009-002 **BORING/WELL NUMBER** N2SC-13I

PROJECT NAME Source Control Upper Reach Housatonic River **DATE DRILLED** 4/5/00 - 4/6/00

Continued from Previous Page

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH	WELL DIAGRAM
180	10 8 12 12	SS19					Light olive Gray, SILT, wet, heavy sheen and free product (ML). Bottom 0.55 Dark greenish Gray, coarse SAND and cobbles with few fines, wet, well graded, stained (SW). Dense, same as above (bottom).	36.0	
400	4 4 3 2	SS20					Loose, Light olive Gray, SILT with little fine sand and coarse gravel and trace clay, wet, well graded, gravel subangular, slight sheen on spoon but not in sample (ML, GM).	38.0	1' 4" PVC Schedule 40 Sump
115	8 11 15 17	SS21		40			Dense, Light olive Gray to Dusky Yellow, SILT with little clay and coarse sand and gravel, moist, well graded, gravel subangular (TILL).	40.0	
							END OF BORING 42.0 ft.	42.0	

Notes:

BGS - Below Ground Surface
NA - Not applicable
ND - Not detected
PID - Photo Ionization Detector reading
NGVD - elevation with reference to National Geodesic Vertical Datum

BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00

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BORING/WELL CONSTRUCTION LOG

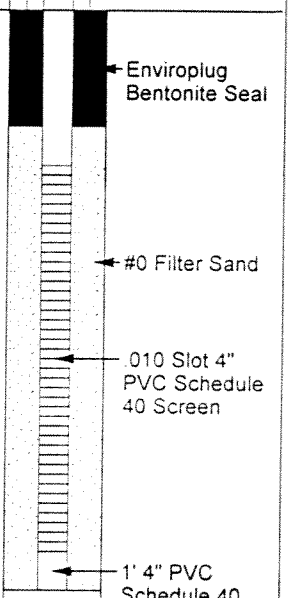
PROJECT NUMBER P009-002
PROJECT NAME Source Control Upper Reach Housatonic River
LOCATION Pittsfield, Massachusetts
DRILLING METHOD Hollow Stem Augers
SAMPLING METHOD Split Spoon
GROUND ELEVATION 983.10 ft. NGVD
MEASURING POINT ELEVATION 985.15 ft. NGVD
LOGGED BY SKC
NORTHING 532550.94876

BORING/WELL NUMBER N2SC-13S
DATE DRILLED 4/11/00
CASING TYPE/DIAMETER 4" inner diameter PVC
SCREEN TYPE/SLOT .010 Slot 4" inner diameter PVC
GRAVEL PACK TYPE #0 Silica Sand
GROUT TYPE/QUANTITY Portland/Volclay
DEPTH(ft BGS)/ELEVATION OF WATER 8.31 / 974.79 on 4/12/2000
DRILLING CONTRACTOR Parratt Wolff
EASTING 131642.83741

PID (ppm)	BLOW COUNTS	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH
				5			See boring log for N2SC-13I. ▼	
N/A	26 5 2 1	SS01		10			No recovery, sheen in spoon.	10.0
55	2 1 1 1	SS02					Very loose, Top 0.3 Light olive Gray, coarse SAND and SILT (SM), wet, well graded, staining and slight sheen. Mid 0.1 Dark Gray fibers (wood?), stained, wet. Bottom 0.7 Olive Gray to Dark yellowish Brown, SILT and organic material, cohesive, moist (ML, PT).	12.0
				15			END OF BORING 15.0 ft.	14.0

Notes:
BGS - Below Ground Surface
NA - Not applicable
ND - Not detected
PID - Photo Ionization Detector reading
NGVD - elevation with reference to National Geodesic Vertical Datum

WELL DIAGRAM



BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00

HSI GEOTRANS
A TETRA TECH COMPANY

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER P009-002
PROJECT NAME Source Control Upper Reach Housatonic River
LOCATION Pittsfield, Massachusetts
DRILLING METHOD Hollow Stem Augers, Drive and Wash
SAMPLING METHOD Split Spoon
GROUND ELEVATION 983.40 ft. NGVD
MEASURING POINT ELEVATION 985.06 ft. NGVD
LOGGED BY SKC
NORTHING 532617.19815

BORING/WELL NUMBER N2SC-14
DATE DRILLED 4/6/00 - 4/11/00
CASING TYPE/DIAMETER 4" inner diameter PVC
SCREEN TYPE/SLOT .010 Slot 4" inner diameter PVC
GRAVEL PACK TYPE #0 Silica Sand
GROUT TYPE/QUANTITY Portland/Volclay
DEPTH(ft BGS)/ELEVATION OF WATER 12.12 / 971.28 on 4/12/2000
DRILLING CONTRACTOR Parratt Wolff
EASTING 131618.22579

PID (ppm)	BLOW COUNTS	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH
0.2	2 4 6 7	SS01					Medium dense, Top 0.3 Moderate to Dusky yellowish Brown, SILT with gravel and roots, moist, graded (TOPSOIL). Mid 0.5 Dark Gray, diatomaceous SAND, dry, poorly graded (FILL). Bottom 0.9 Moderate yellowish Brown, SILT interbedded with Dark Gray sand with coal slag and glass fragments, dry, graded (FILL).	2.0
1.4	6 6 6 5	SS02					Medium dense, Top 1.0 Dark Gray, diatomaceous fine SAND with rust mottling, band of Light Brown coarse sand and coal slag at base, dry. Bottom 0.5 Dusky yellowish Brown, fine SAND with coal slag, dry (FILL).	4.0
0.2	3 3 3 3	SS03		5			Loose, Top 1.0 Dark Gray, diatomaceous fine SAND with silvery paper, dry. Bottom 0.5 Dark to Dusky yellowish Brown, fine SAND with little silt and trace gravel, coal slag, dry (FILL).	6.0
1.2	2 2 2 3	SS04					Very loose, Top 1.1 Dark Gray, diatomaceous fine SAND with silvery paper and brick fragments, grading to Dusky yellowish Brown, dry (FILL). Bottom 0.9 Dark yellowish Brown, silty fine SAND with rust mottling and roots, moist, poorly graded (SP).	8.0
3.4	4 3 3 5	SS05					Loose, Olive Gray, fine SAND interbedded with bands of Moderate olive Brown to Dusky Yellow fine sand, trace gravel, moist, poorly graded (SP).	10.0
2.2	4 3 2 2	SS06		10			Loose, Light olive Gray, fine SAND, wet, poorly graded (SP).	12.0
82	2 2 2 3	SS07					Very loose, Top 0.9 same as above (SP). Bottom 0.3, Olive Black, wood fragments with little fine sand and trace silt, wet (PT).	14.0
76	2 2 4 4	SS08					Loose, Light olive Gray, fine SAND with layers of 2 mm to 0.1' interbedded PEAT, wet, poorly graded (SP, PT).	16.0
80	4 5 4 3	SS09		15			Loose, Top 0.5 Light olive Brown, coarse SAND with little gravel, bands of Fe staining, wet, graded, subangular to subround (SW/GW). Bottom 0.4 Light olive Gray, laminated SILT and CLAY, wet (ML/CL).	18.0
30	8 8 7 6	SS10					Spoon driven twice (1st time no recovery). Medium dense, Olive Gray, silt and fine SAND grading to coarse SAND and gravel with little silt, wet, subround, well graded (SW).	20.0
45	6 7 6 6	SS11		20			Medium dense, same as above with 0.2' layers of coarse sand and gravel (SW, GW).	22.0
22	5 6 6 6	SS12					Medium dense, same as above (SW, GW).	24.0
140	5 5 6 6	SS13		25			Medium dense, same as above (SW, GW).	26.0
65	5 5 4 7	SS14					Loose, same as above (SW, GW).	28.0
160	8 11 15 17	SS15					Dense, Olive Gray, fine SAND with some silt, sand has horizontal preferred orientation, silty sections are laminated, wet, poorly graded, (SP, SM).	30.0
N/A	8 11 10 11	SS16		30			Gneiss cobble stuck in spoon tip.	32.0
700	7 5 5 5	SS17					Medium dense, Top 0.4 Moderate yellowish Brown, coarse SAND and GRAVEL, wet, well graded, subangular, sheen present. Bottom 0.8 Light olive Gray, medium SAND and some gravel, wet, well graded, subangular, stained black	34.0
400	7 7	SS18		35				

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WELL DIAGRAM

- Portland/Volclay Grout
- Enviroplug Bentonite Seal
- #0 Filter Sand
- .010 Slot 4" PVC Schedule 40 Screen

BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00

HSI GEOTRANS
A TETRA TECH COMPANY

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER P009-002 **BORING/WELL NUMBER** N2SC-14

PROJECT NAME Source Control Upper Reach Housatonic River **DATE DRILLED** 4/6/00 - 4/11/00

Continued from Previous Page

PID (ppm)	BLOW COUNTS	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	5 5						in top of section, beige grease or oil present in stained section (SW, GW).	36.0	
360	5 5 4 5	SS19					Medium dense, Top 0.1 Light olive Gray, GRAVEL with few fines, wet, well graded (GW). Mid 0.4 Dark yellowish Brown, coarse SAND and GRAVEL with few fines, wet, well graded, angular (SW/GW). Bottom 0.1 Light olive Gray, SILT, wet (ML). Free product running down inside of spoon.	38.0	1' 4" PVC Schedule 40 Sump
							Loose, Top 0.1 Light olive Brown to Dusky Yellow, SILT and GRAVEL, wet, well graded, subangular, sheen present (possibly from side of spoon). Bottom 0.8 Light olive Gray to Moderate olive Brown, laminated SILT and CLAY with trace gravel, wet to moist, well graded, angular gravel, no sheens observed (TILL).		

END OF BORING 38.0 ft.

Notes:

BGS - Below Ground Surface
NA - Not applicable
ND - Not detected
PID - Photo Ionization Detector reading
NGVD - elevation with reference to National Geodesic Vertical Datum

BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00

HSI GEOTRANS
A TETRA TECH COMPANY

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER P009-002
PROJECT NAME Source Control Upper Reach Housatonic River
LOCATION Pittsfield, Massachusetts
DRILLING METHOD Hollow Stem Augers
SAMPLING METHOD Split Spoon
GROUND ELEVATION 984.10 ft. NGVD
MEASURING POINT ELEVATION 985.58 ft. NGVD
LOGGED BY SKC
NORTHING 532547.80791

BORING/WELL NUMBER N2SC-15
DATE DRILLED 4/3/00 - 4/4/00
CASING TYPE/DIAMETER 4" inner diameter PVC
SCREEN TYPE/SLOT .010 Slot 4" inner diameter PVC
GRAVEL PACK TYPE #0 Silica Sand
GROUT TYPE/QUANTITY Portland/Volclay
DEPTH(ft BGS)/ELEVATION OF WATER 11.40 / 972.7 on 4/12/2000
DRILLING CONTRACTOR Parratt Wolff
EASTING 131701.26207

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH
0.8	2 6 8 7	SS01					Medium dense, Dusky yellowish Brown to Olive Black, sandy topsoil with coal slag and brick fragments, dry, well graded (FILL).	2.0
2.5	5 4 3 3	SS02					Loose, Top 0.9 Moderate yellowish Brown to Dark yellow Orange, fine SAND, moist, poorly graded. Bottom 0.8 Dusky yellowish Brown, coarse GRAVEL and fine SAND with some silt, glass fragments, wood, and fibers, moist, slight odor (FILL).	4.0
1.8	3 1 1 2	SS03		5			Very loose, Dusky yellowish Brown to Grayish Brown, SILT and GRAVEL with brick and mica sheet fragments, moist, well graded (FILL).	6.0
0.2	4 6 8 6	SS04					Medium dense, Top 1.0 Dark yellowish Brown to Olive Gray, SILT with little gravel, mica, and ceramic fragments, slight odor (FILL). Bottom 0.2 Light olive Brown, CLAY with little gravel, moist, similar to till formation in area (FILL).	8.0
0	3 3 2 3	SS05					Loose, Top 0.3 Dark to Moderate yellowish Brown, SAND with some silt, moist, graded (SP). Bottom 1.0 Light olive Gray, fine SAND and little silt, graded (SP).	10.0
0.4	2 2 2 1	SS06		10			Top 0.3 Loose, Dark yellowish Brown, fine SAND with trace silt and wood fragments, very moist, graded (SW). Bottom 1.3 Light olive Gray to Olive Gray, fine SAND and SILT with black mottling, faint laminations, wet, well graded (SM).	12.0
1.9	2 1 1 2	SS07					Very loose, Olive Gray to Olive Black, fine SAND with trace silt/clay, laminated with black and Light olive Gray interbedded layers, wet, graded (SW).	14.0
4.1	1 2 2 3	SS08		15			Loose, Top 1.1 Light olive Gray to Olive Gray bands of laminated fine SAND, wet, poorly graded. Bottom 0.1 Olive Black, GRAVEL and little silt, wet, staining and odor (GW).	16.0
35	6 7 7 8	SS09					Medium dense, Top 0.8 same as above (top) (SP). Bottom 0.8 Light olive Gray, fine SAND with little silt, laminated, wet, graded (SP).	18.0
6.5	4 5 6 8	SS10					Loose, Olive Gray grading to Light Olive Gray, fine SAND and silt, laminated, graded, wet (SM)	20.0
7.5	5 8 10 8	SS11		20			Medium dense, Top 0.4 Olive Black, fine SAND, wet, poorly graded (SP). Mid 0.6 Light olive Gray, laminated SILT with some fine sand, wet, graded (SM). Bottom 0.5 Light olive Gray, GRAVEL and SAND with little silt, (GW/SW).	22.0
20	7 8 8 7	SS12					Same as above (bottom) (GW/SW).	24.0
30	6 7 8 8	SS13		25			Medium dense, Top 0.8 Light olive Gray, SILT with trace clay, laminated, wet (ML). Bottom 0.7 Light olive Gray, GRAVEL with few sand and silt, wet, well graded (GW).	26.0
6.8	6 6 6 4	SS14					Medium dense, same as above (bottom) (GW).	28.0
2.6	3 4 4 4	SS15					Loose, same as above (bottom) but coarser (GW).	30.0
3	4 4 4 4	SS16		30			Medium dense, same as above (GW), lens of 0.05' Light olive Gray, laminated silt at top of spoon.	32.0
1.5		SS17					Same as above (GW).	34.0
1.75	5 4	SS18		35			Same as above (GW).	

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WELL DIAGRAM

- Portland/Volclay Grout
- Enviroplug Bentonite Seal
- #0 Filter Sand
- .010 Slot 4" PVC Schedule

BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00

HSI GEOTRANS
A TETRA TECH COMPANY

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER P009-002 **BORING/WELL NUMBER** N2SC-15

PROJECT NAME Source Control Upper Reach Housatonic River **DATE DRILLED** 4/3/00 - 4/4/00

Continued from Previous Page

PID (ppm)	BLOW COUNTS	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DISCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	5 4								40 Screen
200	4 5 4 3	SS19					Top 0.5 same as above (GW) with heavy sheen. Bottom 0.5 Pale Olive to Light olive Gray, laminated SILT, wet (ML).	36.0	
130	5 7 9 12	SS20					Top 0.2 interbedded SILT and GRAVEL layers, wet, gravel layers have heavy sheen (GW, ML). Bottom 0.6 Dusky Yellow to Light olive Gray, laminated SILT and CLAY with few gravel, moist, well graded (TILL).	38.0	
60	10 13 14 17	SS21		40			Dense, same as above (bottom) (TILL).	40.0	1' 4" PVC Schedule 40 Sump
								42.0	

END OF BORING 42.0 ft.

Notes:

BGS - Below Ground Surface
NA - Not applicable
ND - Not detected
PID - Photo Ionization Detector reading
NGVD - elevation with reference to National Geodesic Vertical Datum

BORING_WELL P009.GPJ HSI_MA.GDT 5/9/00