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

Transmitted Via FedEx

March 30, 2000

Mr. Alan Weinberg
Bureau of Waste Site Cleanup
Department of Environmental Protection
436 Dwight Street
Springfield, MA 01103

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

Re: Newell Street Area II (DEP #1-1057; USEPA Area 5B)
Proposal for Additional DNAPL Recovery Operations

Dear Mr. Weinberg, Mr. Tagliaferro, and Mr. Olson:

Enclosed please find the General Electric Company's (GE's) proposal for additional dense non-aqueous phase liquid (DNAPL) recovery operations at the Newell Street Area II/USEPA Area 5B Site (the Site). This proposal presents the results of DNAPL recovery activities, including pumping tests conducted in wells N2SC-02 and N2SC-03I between March 6 and 8, 2000 and proposes a design for the installation of two additional automated DNAPL pumping systems at the Site.

Upon approval of the proposed DNAPL recovery system, GE will start procurement of necessary materials and implement the proposed activities once these materials are received.

Please call if you have any questions or comments.

Sincerely,

John D. Ciampa/JJL

John D. Ciampa
Remediation Project Manager

JJL/smr
31201938.WPD

cc: J. Cutler, DEP*
R. Bell, DEP*
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Pittsfield Conservation Commission*
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GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

PROPOSAL FOR DNAPL RECOVERY OPERATIONS FOR WELLS N2SC-02 AND N2SC-03I AT THE NEWELL STREET AREA II/USEPA AREA 5B SITE

I. INTRODUCTION

On January 14, 2000, the General Electric Company (GE) submitted a *DNAPL Recovery Data and Evaluation at the Newell Street Area, Plant Site 1 Groundwater Management Area* (DNAPL Recovery Evaluation) to the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MDEP; collectively, the Agencies). The DNAPL Recovery Evaluation included a proposal for conducting additional DNAPL pumping over a three-day period in wells N2SC-02 and N2SC-03I at the Newell Street Area II/USEPA Area 5B Site (the Site). The proposed program included provisions for evaluating the field data and submitting a proposal for future activities based on the results of DNAPL pumping at the Site.

In a February 29, 2000 letter, the EPA provided conditional approval of the DNAPL Recovery Evaluation and also required that GE perform an evaluation of potential reasons for the decrease in DNAPL recovery rates for well N2SC-01I. This evaluation and the results of the additional pumping at wells N2SC-02 and N2SC-03I, along with a proposal for future activities, were required to be submitted to the EPA within 30 days of receipt of their February 29, 2000 letter (i.e., on or before March 30, 2000).

In accordance with the EPA's February 29, 2000 letter, GE has performed the above activities. This document, which has been prepared by Blasland, Bouck & Lee, Inc. (BBL) on behalf of GE, presents the results of the evaluation performed for well N2SC-01I and the results of the DNAPL pumping tests and proposes a design for the installation of two additional automated DNAPL recovery systems at the Site. The results of the well N2SC-01I evaluation are presented in Section II. The results of the DNAPL pumping field tests and the design of the two additional DNAPL recovery systems for the Site are presented in Sections III and IV, respectively. Regulatory requirements and the proposed schedule are discussed in Sections V and VI, respectively.

II. RESULTS OF WELL N2SC-01I EVALUATION

As required in the EPA's February 29, 2000 conditional approval letter, an evaluation regarding the fluctuation in DNAPL recovery rates for well N2SC-01I was performed. It is believed that there are several contributing factors to the reduction of DNAPL recovery in well N2SC-01I.

First, it is not unusual for DNAPL recovery rates to decline over time. At the beginning of DNAPL recovery, several physical factors favor relatively rapid DNAPL flow and recovery. Specifically, the thickness, continuity, DNAPL saturation, and relative DNAPL permeability within the DNAPL pool (and the hydraulic gradient) are highest at the beginning of DNAPL recovery. As DNAPL is depleted from the formation, these factors typically decline, resulting in a reduced DNAPL recovery rate.

Second, on December 9, 1999, GE modified the recovery system in well N2SC-01I by adding a probe which triggers the recovery pumps to turn-on when a sufficient thickness of DNAPL (approximately 2 feet) has accumulated in the well. The recovery pumps then shut-off after the DNAPL level in the well decreases by approximately 6 inches. Prior to the installation of the DNAPL-sensing probe, the pumping cycle was

controlled by a timing device. On some occasions, the pump would operate for too long of a time period and water/DNAPL emulsions would be pumped rather than just DNAPL. The new system greatly reduces the pumping of water/DNAPL emulsifications. Thus, the actual decrease in DNAPL recovery for this well may, in fact, be less than the data indicate, since prior to December 9, 1999 the recovery volume included a component of water/DNAPL emulsions.

III. RESULTS OF THE DNAPL PUMPING TESTS

GE conducted a series of one-day DNAPL pumping tests in well N2SC-02 and N2SC-03I between March 6 and March 8, 2000. Each individual one-day test was conducted over an approximate 5.5- to 7.5-hour duration using an interface probe and a submersible, pneumatic DNAPL recovery pump. During each test, the DNAPL thickness and the volume of DNAPL removed were recorded at regular intervals. The DNAPL recovery data are summarized in Attachment A (Table A-1). Plots of incremental DNAPL recovery volumes and thickness as a function of time for each well are also presented in Attachment A (Figures A-1 and A-2, respectively, for well N2SC-02 and Figures A-3 and A-4, respectively, for well N2SC-03I). The DNAPL recovery results are discussed below.

- **Well N2SC-02:** Daily DNAPL recovery tests were conducted on March 6, 7, and 8, 2000. The one-day tests ranged from 5.5 to 7.3 hours in duration. Total DNAPL recoveries for each day were 5.13, 4.28, and 4.75 liters, respectively (see Table A-1). During each test, incremental DNAPL removal volumes initially decreased through time and then stabilized (see Figure A-1). The initial DNAPL removal volume for well N2SC-02 recovered substantially between the conclusion of the March 6 test and the commencement of the March 7 test (104% of the March 6 initial volume), and between the conclusion of the March 7 test and the commencement of the March 8 test (100% of the March 6 initial volume). Measurements of DNAPL thickness in well N2SC-02 indicated that the DNAPL recharged substantially overnight, to approximately the same level as the initial measurement performed on March 6, 2000 (approximately 4 feet), and recovered to a thickness of approximately 6 to 7 inches every hour (see Figure A-2).

- **Well N2SC-03I:** Daily DNAPL recovery tests were conducted on March 6, 7, and 8, 2000. The one-day tests ranged from 5.3 to 7.5 hours in duration. Total DNAPL recoveries for each day were 6.19, 4.54, and 4.97 liters, respectively (see Table A-1). During each test, incremental DNAPL removal volumes decreased during the initial recording of data and then fluctuated slightly throughout the remainder of the tests (see Figure A-3). The initial DNAPL removal volume for well N2SC-03I recovered substantially between the conclusion of the March 6 test and the commencement of the March 7 test (91% of the March 6 initial volume), and between the conclusion of the March 7 test and the commencement of the March 8 test (86% of the March 6 initial volume). Measurements of DNAPL thickness in well N2SC-03I indicated that the DNAPL recharged substantially overnight, to approximately the same level as the initial measurement performed on March 6, 2000 (approximately 3.5 feet), and recovered to a thickness of approximately 9 to 12 inches every hour (see Figure A-4).

In summary, the DNAPL pumping tests indicated that recovery rates decreased during each test; however, both wells fully recharged overnight. Over the approximate 5.5- to 7.5-hour duration of the one-day tests, sustained recovery rates of approximately 0.4 and 0.6 liters per hour were observed for wells N2SC-02 and N2SC-03I, respectively. These data provide an estimated recovery rate for wells N2SC-02 and N2SC-03I. Although the results of the short-term tests cannot be employed to predict long-term DNAPL removal rates, the data from these tests indicate that an automated DNAPL recovery system appears feasible for both wells N2SC-02 and N2SC-03I.

IV. DESCRIPTION OF DNAPL COLLECTION SYSTEMS

As discussed above, GE intends to install an automated DNAPL collection system in wells N2SC-02 and N2SC-03I. This section provides a general description of the proposed system for each well. Figure 1 provides a site plan and Figures 2 and 3 provide additional system details and specifications.

A pneumatic DNAPL recovery pump will be installed in each well (wells N2SC-02 and N2SC-03I). The pump will discharge via double wall containment piping into four 1,000 gallon steel tanks located within a portable box trailer enclosure located within the GE parking lot. This collection system was installed to collect DNAPL removed from well N2SC-01I and sufficient capacity is available in this system. The piping run from the wells to the trailer will be insulated and heat traced to prevent freezing during winter operations. Additionally, consistent with previously approved DNAPL collection systems at Newell Street Area II, the piping will be sloped to allow drainage back to each well when the pump is not in operation. The operation of the pump will be controlled by a timer located adjacent to the well head that can be adjusted, as appropriate, to optimize DNAPL recovery. Alternatively, a DNAPL-sensing probe may be utilized depending on actual recovery performance of the wells. The air compressor installed for the existing in-place automated system for wells NS-15, NS-30, NS-32 and N2SC-01I will supply air for the pneumatic recovery pumps in wells N2SC-02 and N2SC-03I. Additionally, all piping materials, the pumps, floats, etc. that will contact the DNAPL have been selected based on appropriate materials compatibility considerations.

V. REGULATORY REQUIREMENTS

Based on previous correspondence with the EPA, this project is being performed as an on-site removal action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); therefore, a Notice of Intent (NOI) is not required to be submitted to the Pittsfield Conservation Commission (PCC). However, this proposal has been prepared to meet substantive requirements of the Massachusetts Wetlands Protection Act.

A portion of the above-mentioned proposed work will be performed within the 100-foot buffer zone and river front area of the Housatonic River. Both wells are located within the 100-year floodplain elevation of the River. Additionally, well N2SC-02 is located within the 100-foot buffer zone and well N2SC-03I is located outside the 100-foot buffer zone. Based on an evaluation of the site in November 1998, by White Engineering, wetland vegetation is confined to the lower portion of the river bank; therefore, this project will not impact wetland vegetation. Also, there will be no impacts on the River as the wells are located greater than 100 feet from the top of the southerly bank of the River. There will be minimal impacts (due to the installation of pipe and equipment supports) to soil and vegetation within the 100-foot buffer zone. In addition, portions of the work (the compressed air and electrical connections to the existing DNAPL collection systems) are also within the inner and outer riparian zones under protection by the Rivers Protection Act. However, there will be minimal temporary disturbance to this area due to the fact that the site has been used previously as a paved parking lot.

Approximately 1.065 cubic yards (cy) of flood storage, in the form of pipe supports, piping, and electrical closures, will be affected in this area (see Table 1). Flood storage compensation for this project (due to pipe supports, piping, and electric enclosures) is being provided by removal of approximately 478.5 linear feet of existing guardrails and support posts located in the parking lot (see Figure 1). A total of 1.130 cy is available from removal of the guardrail and support posts (see Table 1).

There is one other issue that GE would like to raise with respect to DNAPL recovery at the Site. As previously mentioned, the pneumatic DNAPL recovery pump in well N2SC-01I discharges via double wall containment piping into four 1,000-gallon steel tanks located within a portable box trailer enclosure. The box trailer is located in the GE parking lot next to well N2SC-01I. The trailer includes a steel-diked secondary containment area for each set of two tanks. Each containment area holds 110 percent of the total volume of two tanks (i.e., 2,200 gallons). The steel tanks additionally contain overfill protection, level controls, and an ultrasonic level transmitter. A backup high level float is installed for redundant protection.

At present, these tanks are emptied every 30 days or less, as required under 40 CFR 761.65(c)(1). In order to provide more flexibility in the operation of this automated DNAPL recovery system, however, GE seeks approval under 761.61(c) to empty these tanks every 90 days or less. As outlined above, the containment system meets all of the requirements for temporary storage of PCBs specified in 761.65(b)(1) except for the fact that the Newell Street parking lot is located within the 100-year floodplain of the Housatonic River. Because of the location of the containment system, GE would agree to pump the DNAPL storage tanks if a high flow event occurs and the river level approaches the trailer elevation. Since the trailer is located in the parking lot where the grade elevation is approximately 984 feet, the tanks will be pumped if the river level reaches an elevation of approximately 980 feet and the weather conditions are such that the water level is anticipated to continue to rise. It should be noted that in this area, the modeled 2 year flood event (HEC-2 model) has an elevation of approximately 977 feet and the modeled 10 year flood event has an elevation of approximately 981 feet.

The approval that GE seeks here under 761.61(c) is similar to the approval that EPA has already granted for temporary storage of PCB-containing soils and sediments in Building 65. Like the containment system in the Newell Street parking lot, Building 65 meets all the requirements for temporary storage of PCB materials in 761.65(b)(1) except that it is located within the 100-year floodplain of the Housatonic River. In a letter to GE dated April 6, 1999, EPA approved use of Building 65 for temporary storage of PCB-containing soils and sediments, provided that, as here, GE agrees to move the waste materials in the case of certain high flow conditions. EPA also confirmed its approval of the use of Building 65 for temporary storage of PCB-containing soils and sediments when it conditionally approved GE's Operations Plan for the Upper ½ Mile Reach Removal Action in a letter to GE dated September 29, 1999.

VI. ANTICIPATED SCHEDULE

Upon receipt of Agency approval of the proposed DNAPL collection systems, GE will order the necessary materials and implement the proposed activities once these materials are received. The estimated time for procurement and delivery of equipment is 6 to 8 weeks and the estimated installation time is 4 weeks. This schedule may be modified, if necessary, to accommodate possible constraints associated with material procurement and inclement weather. GE will continue to perform previously approved monitoring and DNAPL recovery for wells N2SC-02 and N2SC-03I until the automated recovery system is operational.

Tables

TABLE 1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

COMPENSATORY STORAGE

New Items - Well heads and Piping

Fill Volumes (Cubic Yards)				
Elevation Range (Feet AMSL)	Piping/Conduit	Pipe Rack	Control Panel	Total
983 - 984	0.009	0.03	0	0.039
984 - 985	0.016	0.03	0.1	0.146
985 - 986	0.73	0.05	0.1	0.88
986 - 987	0	0	0	0
987 - 988	0	0	0	0
988 - 989	0	0	0	0
989 - 990	0	0	0	0
Total	0.755	0.11	0.2	1.065

Removal of Existing Guard Rails

Cut Volumes (Cubic Yards)				
Elevation Range (Feet AMSL)	Guard Rail	Post		Total
983 - 984	-0.19	-0.13		-0.32
984 - 985	-0.68	-0.13		-0.81
985 - 986	0	0		0
986 - 987	0	0		0
987 - 988	0	0		0
988 - 989	0	0		0
989 - 990	0	0		0
Total	-0.87	-0.26		-1.13

Total Volume of Fill =	**1.065 CY**
Total Volume of Cut =	**-1.130 CY**
Surplus Compensatory Volume =	**0.065 CY**
Existing Surplus Compensatory Volume * =	**0.032 CY**
Total Surplus Compensatory Volume =	**0.097 CY**

** Floodplain Volume from guard rails removed for Well N2SC-01I DNAPL Collection System*

Figures

East Branch Housatonic River

EXISTING PEDSTRIAN BRIDGE

EXISTING ELEC. POWER PANELS

EXISTING COMPRESSOR BUILDING

EXISTING JUNCTION BOX

EXISTING ABOVE GROUND PIPING

NS-31

NS-15 (983.0)

NS-30 (983.5)

EXISTING DRUM STORAGE BUILDING

NS-1

NS-32 (983.6)

NS-17

CONTAINMENT PIPE HEAT TRACED AND INSULATED

(2) 3/4"ø STEEL CARRIER PIPE INSIDE 3"ø STEEL CONTAINMENT PIPE

EXISTING STORAGE TANK TRAILER

N2SC-02 (983.53)

N2SC-01I (983.6)

PARCELL J9-23-8

PIPE SUPPORTS NO MORE THAN 10 FEET O.C. (TYP.)

(1) 3/4"ø STEEL CARRIER PIPE INSIDE 3"ø STEEL CONTAINMENT PIPE

CONTAINMENT PIPE HEAT TRACED AND INSULATED

N2SC-03I (983.28)

REMOVE 214 FEET OF GUARDRAIL

REMOVE 264.5 FEET OF GUARDRAIL

NEWELL STREET PARKING LOT PARCEL J9-23-12

LEGEND

NS-32 (983.6) MONITORING WELL (GRADE ELEVATION IDENTIFIED IN PARENTHESES)

——E—— ELECTRIC SUPPLY

——— 100 – FOOT BUFFER ZONE

NOTES:

1. THE BASE MAP FEATURES PRESENTED ON THIS FIGURE WERE PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
2. MONITORING WELL LOCATIONS HAVE BEEN SURVEYED TO KNOWN PHYSICAL FEATURES BY BLASLAND, BOUCK & LEE, INC. AND HILL ENGINEERS, ARCHITECTS, PLANNERS, INC. WELL LOCATIONS SHOWN ON THIS MAPPING ARE APPROXIMATE. HOWEVER SURVEY DATA ARE AVAILABLE TO IDENTIFY PRECISE SAMPLING LOCATIONS.
3. LIMITS OF BUILDINGS, PROPERTY BOUNDARIES, AND ROADS ARE APPROXIMATE.
4. THE 100 YEAR FLOODPLAIN ELEVATION IS 990 FEET PER THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA).
5. REMOVE 250 FEET OF GUARDRAIL IN ADJACENT PARKING AREA TO THE EAST.

SITE PLAN

SCALE: 1"=20'

X: 20140X01.DWG
L: ON=*, OFF=REF
P: CONT-DJ3/CONT-MVB
3/28/00 SYR-54 DCC
10130001/10130G01.DWG

Graphic Scale
20' 0 20' 40'
1"=20'

No.	Date	Revisions	Init

Project Mgr. MOG
Designed by TEM
Drawn by DCC
Checked by WGS
Prof. Eng. JOHN W. FRANZ JR.
PE License MA 35355

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

SITE PLAN

GENERAL

File Number 101.30.XXF
Date MARCH 2000

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

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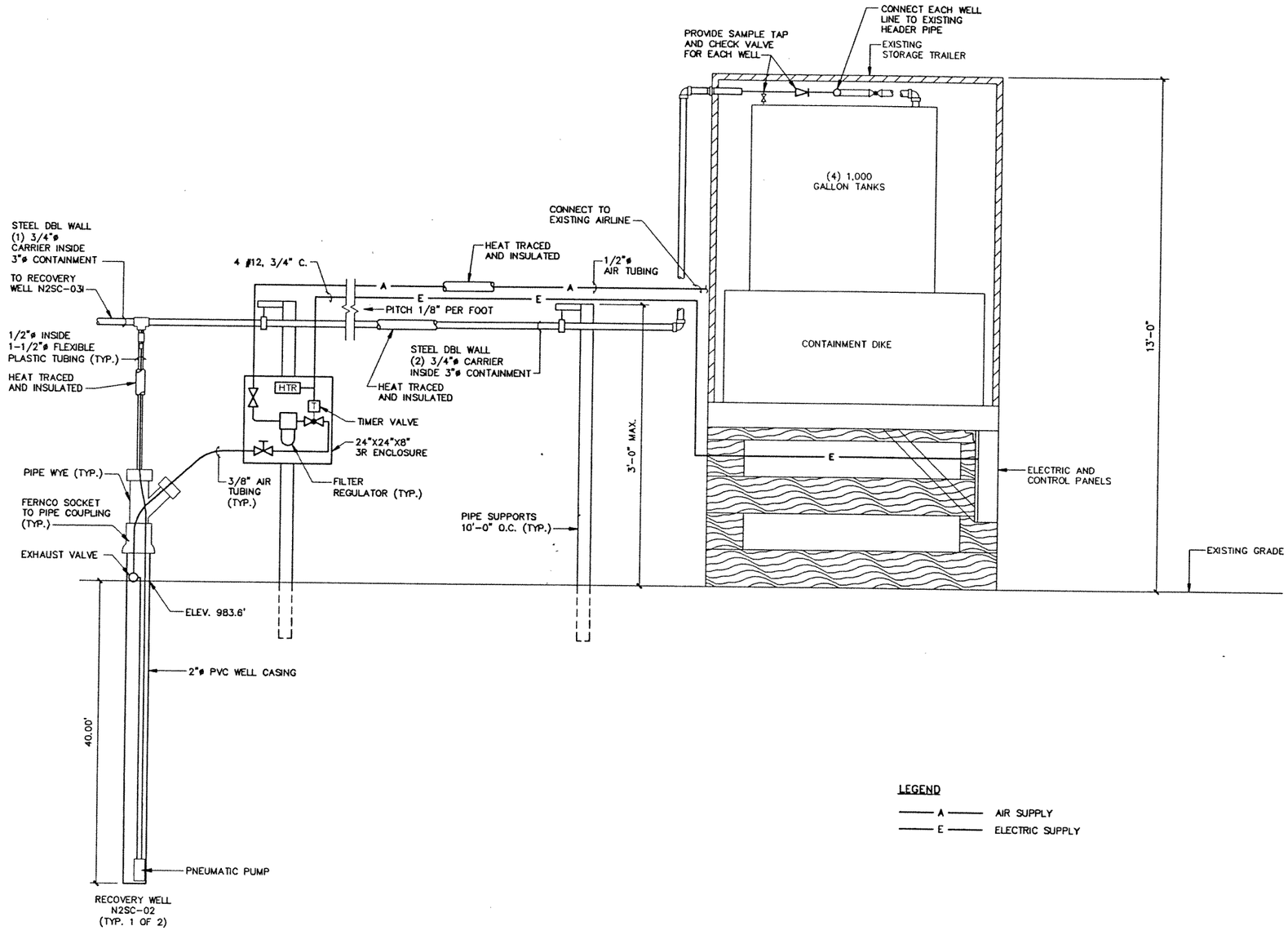
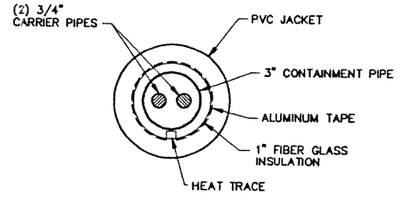


DNAPL RECOVERY SYSTEM SCHEMATIC

NOT TO SCALE



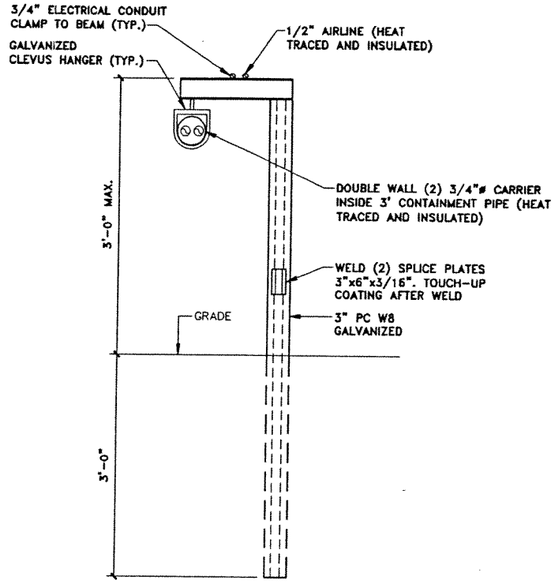
PIPE SECTION

NOT TO SCALE

LEGEND

—— A —— AIR SUPPLY

—— E —— ELECTRIC SUPPLY



PIPE SUPPORT DETAIL

NOT TO SCALE

L: ON=*, OFF=REF
P: CONT-DJD/CONT-MVB
3/28/00 SYR-54 DCC
10130001/10130G02.DWG

Graphic Scale	No.	Date	Revisions	Init

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

Project Mgr.	MOG
Designed by	TEM
Drawn by	DCC
Checked by	WGS
Prof. Eng.	JOHN W. FRANZ JR.
PE License	MA 35355

BBL
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engineers & scientists

GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS

NEWELL STREET AREA II/USEPA AREA 5B

MISCELLANEOUS DETAILS

GENERAL

File Number 101.30.XXF

Date MARCH 2000

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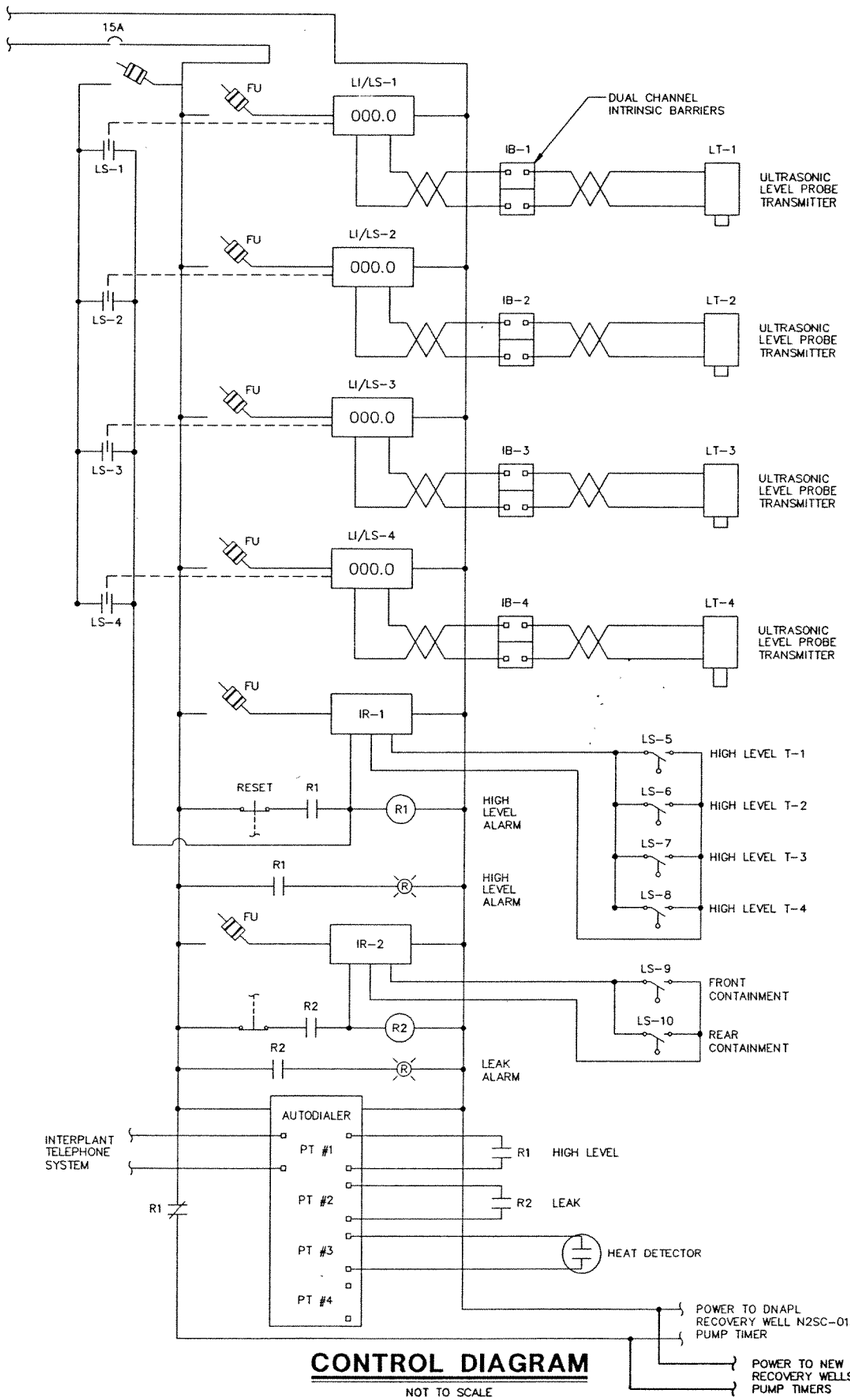
Syracuse, NY 13214
315-446-9120



CONTROL DIAGRAM

NOT TO SCALE

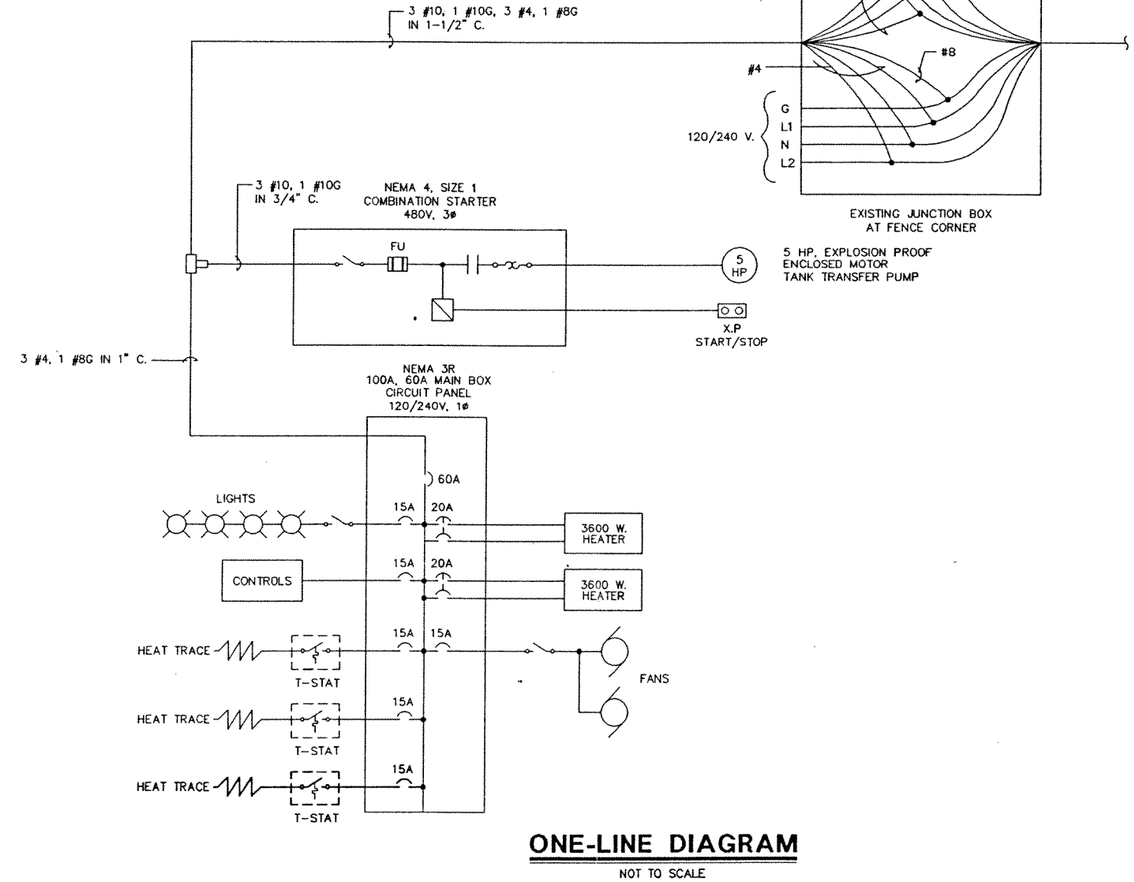
L: ON=*, OFF=REF
P: CONT-DJD/CONT-MVB
3/23/00 SYR-54 DCC
10130001/10130ED1.DWG

GENERAL SPECIFICATIONS:

1. RECOVERY PUMP: PNEUMATIC DNAPL PUMP AS MANUFACTURED BY QED ENVIRONMENTAL SYSTEMS, INC.
   - A. TWO (2) PUMP PART # LP1301 FOR 2" DIAMETER WELLS
     TWO (2) MINI PULSE PUMP CYCLE TIMER, PART # MPS360, 120 VOLTS, WITH FILTER REGULATOR.
     TWO (2) 2" DIAMETER WELL EXHAUST VALVES, PART # L353
   - B. TUBING: 60 FT. NYLON, PART # L417, 1/2" O.D. LIQUID. 3/8" O.D. AIR
     TUBING: 60 FT. UV-BLACK NYLON, PART # 35097, 1/2" O.D.
     TUBING: 60 FT. 3/8" NYLON AIR, PART # 35716
     TUBING FITTINGS: MISC. FITTINGS PACKAGE, PART # PP-CUSTOM
2. TWO (2) TIMER AND REGULATOR ENCLOSURE: HOFFMAN STEEL ENCLOSURE, 24"X24"X8", CATALOG # A-24R248HCR. PADLOCK HASP. CONTINUOUS HINGE.
3. PIPING:
   - A. DOUBLE-WALL PRODUCT PIPE: CARBON STEEL PIPING, SCHEDULE 40 SEAMLESS, ASTM B31.1, 3/4" CARRIER PIPE WITH 3" CONTAINMENT PIPE. WELDED JOINTS.
   - B. FLEXIBLE PRODUCT TUBING: 1/2" INSIDE, NALGENE 880 KYNAR BY THE NALGE COMPANY. 1-1/2" OUTSIDE, NALGENE 689 POLYPROPYLENE COPOLYMER TUBING.
   - C. AIR TUBING: 1/2" GALVANIZED STEEL, THREADED PIPING. USE TEFLON TAPE ON JOINTS.
4. INSULATION - 3" CONTAINMENT: 1" THICK FIBERGLASS WITH PVC JACKET.
   - 1/2" AIR: USE 3/4" URETHANE FOAM.

ELECTRICAL SPECIFICATIONS:

1. AREA INSIDE OF TRAILER SHALL BE CONSIDERED AN EXPLOSIVE HAZARDOUS AREA, CLASS 1 DIVISION II. WELL SHALL BE CONSIDERED A CLASS 1, DIVISION I AREA.
2. CONDUIT: RIGID GALVANIZED STEEL CONDUIT, 3/4" DIAMETER. THREADED COUPLINGS FOR OUTDOOR USE, THREADED CAST FITTINGS AND DEVICE/JUNCTION BOXES.
3. HEAT TRACE: THERMON TYPE FD. FM RATED CLASS I DIVISION 2, 5 WATTS PER FOOT, 120 VAC, ET-7 END CAPS, TBX-4LC CONNECTORS AS NEEDED.
4. HEAT TRACE CONTROLS: TWO THERMON N-7G-040 THERMOSTATS.



ONE-LINE DIAGRAM

NOT TO SCALE

Graphic Scale	No.	Date	Revisions	Init

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

Project Mgr.	MOG
Designed by	TEM
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NEWELL STREET AREA II/USEPA AREA 5B

ONE-LINE DIAGRAM AND SPECIFICATIONS

ELECTRICAL

File Number
101.30.XXF

Date
MARCH 2000

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

Attachments

Attachment A

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Results of the DNAPL Pumping Tests

TABLE A-1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

Summary of DNAPL Recovery Data

Monitoring Well	Date	Pumping Start Time	Pumping Finish Time	Measurement Elapsed Time (Hours)	Measured DNAPL Thickness (Feet)	Removal Elapsed Time (Hours)	Incremental Volume of DNAPL Removal (Liters)	Total Daily Volume (Liters)
N2SC-02	03/06/2000	935	950	0.0	3.97	0.3	2.40	
		1050	1100	1.3	1.07	1.4	0.66	
		1200	1220	2.4	0.81	2.8	0.50	
		1320	1330	3.8	0.76	3.9	0.47	
		1430	1440	4.9	0.53	5.1	0.32	
		1540	1545	6.1	0.59	6.2	0.36	
		1645	1655	7.2	0.69	7.3	0.42	5.13
	03/07/2000	1010	1050	0.0	3.99	0.7	2.50	
		1150	1200	1.7	1.17	1.8	0.72	
		1300	1315	2.8	0.66	3.1	0.40	
		1415	1420	4.1	0.64	4.2	0.39	
		1520	1540	5.2	0.44	5.5	0.27	4.28
	03/08/2000	945	1003	0.0	3.96	0.3	2.40	
		1103	1109	1.3	0.84	1.4	0.51	
		1209	1214	2.4	0.53	2.5	0.31	
		1314	1320	3.5	0.80	3.6	0.50	
		1420	1426	4.6	0.85	4.7	0.51	
		1526	1534	5.7	0.60	5.8	0.34	
		1634	1640	6.8	0.35	6.9	0.19	4.75
N2SC-03I	03/06/2000	910	925	0.0	3.65	0.3	2.20	
		1025	1035	1.3	1.08	1.4	0.66	
		1135	1145	2.4	1.12	2.6	0.69	
		1245	1300	3.6	1.14	3.8	0.70	
		1400	1410	4.8	0.98	5.0	0.60	
		1510	1530	6.0	1.18	6.3	0.72	
		1630	1640	7.3	1.02	7.5	0.62	6.19
	03/07/2000	935	1005	0.0	3.25	0.5	2.00	
		1105	1115	1.5	0.73	1.7	0.45	
		1215	1225	2.7	1.24	2.8	0.76	
		1325	1340	3.8	1.39	4.1	0.85	
		1440	1455	5.1	0.79	5.3	0.48	4.54
	03/08/2000	915	928	0.0	3.20	0.2	1.90	
		1028	1037	1.2	0.89	1.4	0.52	
		1137	1144	2.4	0.83	2.5	0.51	
		1244	1251	3.5	1.19	3.6	0.71	
		1351	1400	4.6	0.65	4.8	0.38	
		1500	1508	5.8	1.00	5.9	0.62	
		1608	1616	6.9	0.59	7.0	0.34	4.97

FIGURE A-1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

DNAPL Removal Volume vs. Time: Daily Results for N2SC-02

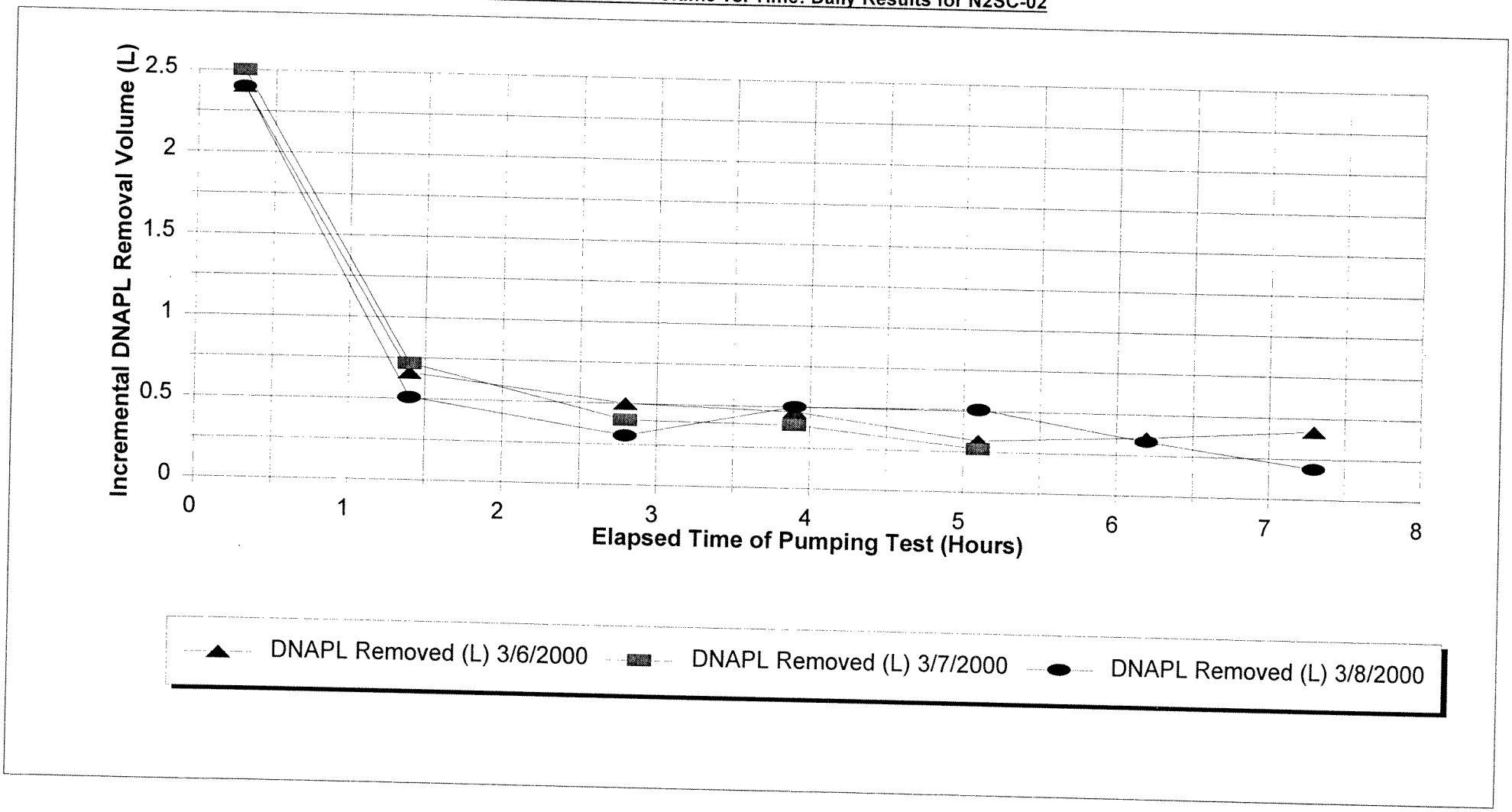
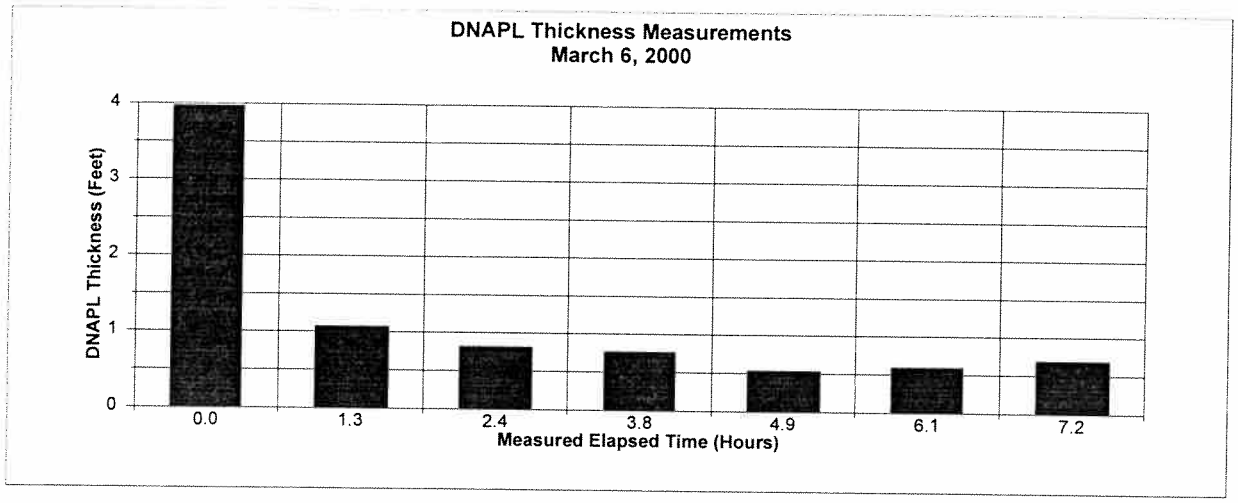
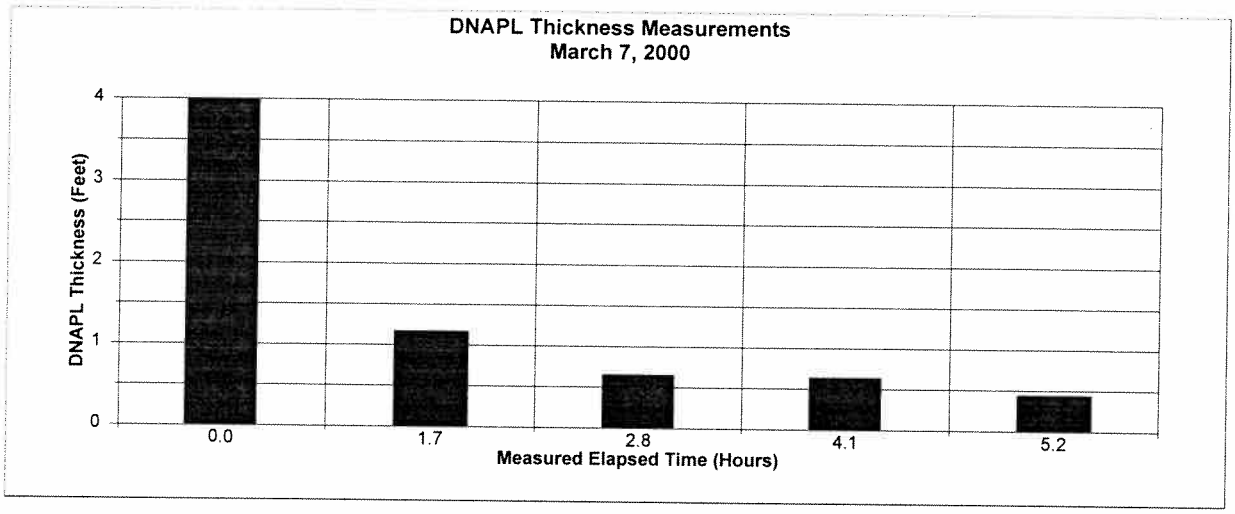


FIGURE A-2

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

DNAPL Thickness vs. Time: Daily Results for N2SC-02





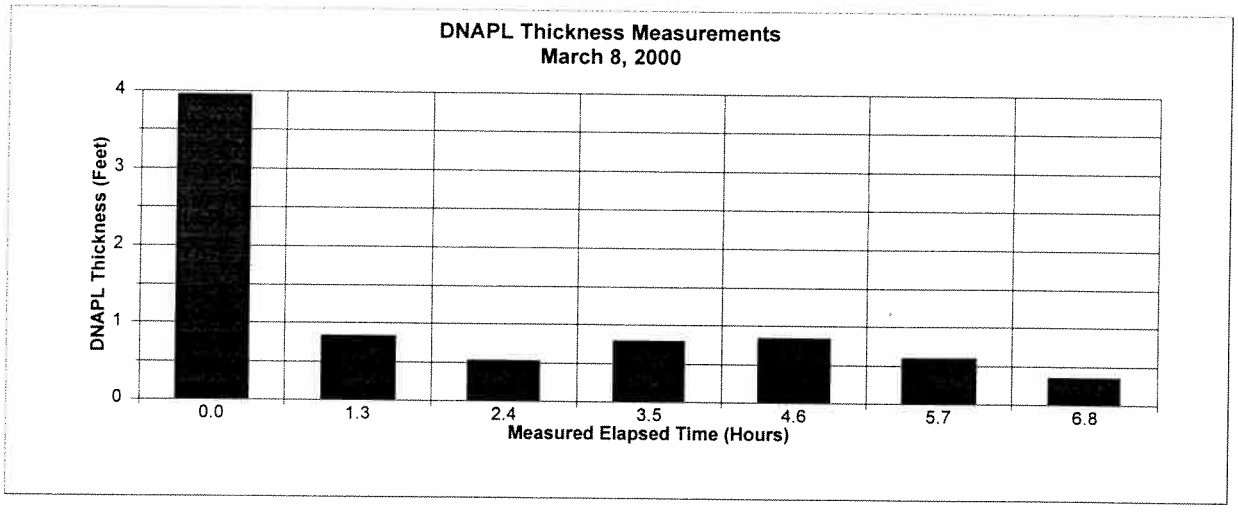


FIGURE A-3

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

DNAPL Removal Volume vs. Time: Daily Results for N2SC-03I

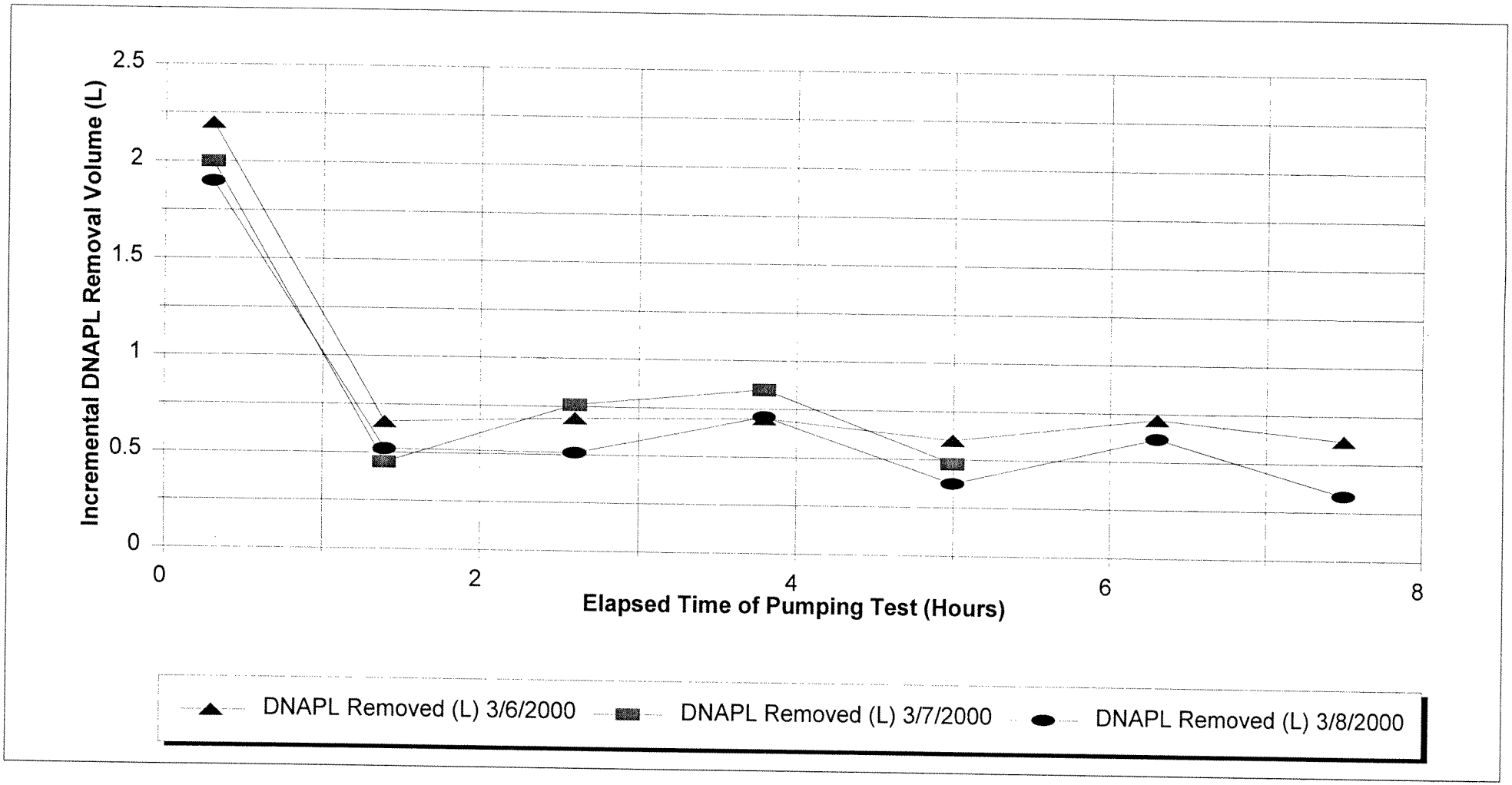


FIGURE A-4

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B

DNAPL Thickness vs. Time: Daily Results for N2SC-03I