



05-0063
SDMS 156682

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

Transmitted Via Facsimile and FedEx

November 24, 1998

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

Mr. Dean Tagliaferro
Mr. Bryan Olson
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 DNAPL Recovery Operations

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

Enclosed please find the General Electric Company's (GE's) proposal for dense nonaqueous phase liquid (DNAPL) recovery operations at the Newell Street Area II/USEPA Area 5B Site (the Site). This proposal presents the results of the DNAPL recovery field tests, conducted in monitoring wells NS-15, NS-30, and NS-32 and proposes a design for an automated DNAPL pumping system at the Site.

Upon approval of the proposed DNAPL recovery system, GE will start procurement of all necessary equipment and will file a Notice of Intent with the Pittsfield Conservation Commission (PCC).

Please call if you have any questions or comments.

Sincerely,

John D. Ciampa
Remedial Project Manager
Q\DMN98\A9581550.WPD

JJL/dmn

Enclosures

Mr. Alan Weinberg
Mr. Dean Tagliaferro
Mr. Bryan Olson
November 24, 1998
Page 2 of 2

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Hodgkins
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ECL I-P-IV(A)(1) & (2)*

* enclosures

**GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS**

**PROPOSAL FOR DNAPL RECOVERY OPERATIONS
AT THE NEWELL STREET AREA II/USEPA AREA 5B SITE**

I. INTRODUCTION

On September 11, 1998, GE submitted a *Source Control Work Plan - Upper Reach of the Housatonic River (First ½ Mile)* to the United States Environmental Protection Agency (USEPA) and the Massachusetts Department of Environmental Protection (MDEP; collectively, the Agencies). The *Source Control Work Plan* included a proposal for the implementation of a dense NAPL (DNAPL) recovery field testing program at the Newell Street Area II/USEPA Area 5B Site (the Site). The proposed program included provisions for evaluating the field data and the submission of a proposal for the installation of an active DNAPL pumping system at the Site.

In accordance with the provisions of the *Source Control Work Plan*, GE implemented the DNAPL recovery field testing program between September 22 and September 30, 1998. This document, which has been prepared by Blasland, Bouck & Lee, Inc. (BBL) on behalf of GE, presents the results of the DNAPL recovery field test and proposes a design for an automated DNAPL pumping system at the Site. The results of the DNAPL recovery field test and the design of the proposed NAPL recovery system for the Site are presented in Sections II and III, respectively. The tentative implementation schedule is discussed in Section IV.

II. RESULTS OF THE DNAPL RECOVERY TESTING PROGRAM

GE conducted a series of one-day DNAPL recovery tests in monitoring wells NS-15, NS-30, and NS-32 between September 22 and September 30, 1998. Each individual one-day test was conducted over an approximate 6- to 7-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 Table 1. Plots of incremental DNAPL recovery volumes as a function of time for each monitoring well are presented in Figures 2 through 4. The DNAPL recovery results are discussed below.

- **Monitoring Well NS-15:** Daily DNAPL recovery tests were conducted on September 24, 25, and 28, 1998. The one-day tests ranged from 5.6 to 6.9 hours in duration. Total DNAPL recoveries for each day were 4.68, 3.48, and 4.83 gallons, respectively (see Table 1). During each test, incremental DNAPL removal volumes initially decreased through time and then stabilized (see Figure 2). The DNAPL volume present in NS-15 was observed to recover substantially between the conclusion of the September 24 test and the commencement of the September 25 test (67% of September 24 initial volume), and between the conclusion of the September 25 test and the September 28 test (85% of the September 24 initial volume).
- **Monitoring Well NS-30:** Two one-day tests were conducted on September 29 and September 30, 1998. The tests ranged from 4.3 to 6.6 hours in length, during which total DNAPL recoveries were 2.70 and 3.26 gallons, respectively (see Table 1). As anticipated, incremental DNAPL removal volumes initially decreased through time during each test, but stabilized at a higher level than that observed for well NS-15 (see Figure 3). Between the conclusion of the September 29 test and the beginning of the September 30 test, the initial volume present in well NS-30 on September 30 recovered to 69% of the initial volume present prior to the beginning of the September 29 test.

- **Monitoring Well NS-32:** Two one-day DNAPL removal tests were completed for monitoring well NS-32 on September 22 and September 23, 1998. Additionally, DNAPL was removed one time on the morning of September 24. The duration of the two tests were similar (6.6 and 6.4 hours respectively), and daily totals of 1.22 and 0.63 gallons of DNAPL were recovered during each test (see Table 1). Incremental DNAPL removal volumes decreased during the early stages of each test, and remained below 0.1 gallons for most of the two trials (see Figure 4). The overnight recovery rate of DNAPL in well NS-32 also was lower relative to wells NS-15 and NS-30.

In summary, the DNAPL recovery tests revealed that incremental recovery volumes decreased from the initial volume present in each well, but asymptotically approached a stable level through time. Over the 5- to 7-hour duration of the one-day tests, stable incremental recovery volumes of approximately 0.5 gallons per hour were observed for monitoring wells NS-15 and NS 30. In contrast, stable removal volumes for well NS-32 were less than 0.1 gallon per hour during the two one-day tests. These data provide an estimated recovery rate for wells NS-15, NS-30, and NS-32. Although the results of the short-term tests cannot be employed to predict long-term DNAPL removal volumes, the data from the recent DNAPL recovery tests indicate that an automated DNAPL recovery system appears feasible for monitoring wells NS-15, NS-30, and NS-32, although the recovery from NS-32 may be limited.

III. DESCRIPTION OF DNAPL COLLECTION SYSTEM

As discussed in Section II, GE intends to install an automated DNAPL recovery system for wells NS-15, NS-30, and NS-32. This section provides a general description of the proposed system. Figure 1 provides a site plan and Figures 5 through 7 provide additional details and system specifications.

A pneumatic DNAPL recovery pump will be installed in each of the three wells. The pumps will discharge via double wall containment piping to a 55-gallon drum located within a pre-manufactured storage building. Each of the piping runs will be insulated and heat traced to prevent freezing during winter operations. Additionally, the piping will be sloped to allow drainage back to the wells when the pumps are not in operation. The operation of the pumps will be controlled by a timer located adjacent to the well head that can be adjusted, as appropriate, to optimize DNAPL recovery. The pump air compressor and electrical controls will be located in a separate equipment storage building located adjacent to the DNAPL storage building. Additionally, all piping materials, pumps, floats, etc. that will be in contact with the DNAPL have been selected based on appropriate materials compatibility considerations.

The DNAPL and equipment storage buildings will be provided with heating and ventilation for year-round operation. The DNAPL storage building also includes a 122 gallon secondary containment sump (i.e., 220 percent of the drum volume). Level floats will be installed in the 55-gallon drum and the containment sump that will shut off the pumps in the event of a high level in the drum or a high level in the sump.

When the drum becomes full, GE will remove and appropriately dispose of the drum. Based on the results of the recovery testing program and the estimated stable yield of the three wells (1.1 gallons per hour), the drum will initially be replaced approximately once every two days. However, it should be pointed out that these initial results are from a short-term test and it is anticipated that the overall recovery volumes/rates will decrease as the system continues to operate.

In addition to the three wells mentioned above, two other wells (N2SC-1I and N2SC-2) installed as part of the Source Control investigations have initially indicated the presence of DNAPL at thicknesses of approximately 3 to 3.5 feet. GE will monitor these wells on a weekly basis and remove DNAPL if a thickness of greater than 0.5 feet is measured. If the thickness of DNAPL is consistently greater than 1 foot over a 4 to 6 week period, GE will evaluate the need to include these wells in the automated DNAPL recovery system. Furthermore, additional wells may be included in the automated DNAPL recovery system pending evaluation of the results of the Source Control investigations.

IV. ANTICIPATED SCHEDULE

The proposed schedule for the construction and implementation of the Newell Street Area II automated DNAPL recovery system is illustrated on Figure 8. GE has already purchased the DNAPL recovery pumps. Upon receipt of Agency approval of the proposed DNAPL recovery system design, GE will prepare and submit a Notice of Intent (NOI) to the Pittsfield Conservation Commission (PCC). During PCC review, GE proposes to install the DNAPL recovery pumps, operate the pumps manually on a daily basis, and purchase the enclosures and remaining equipment. During this enhanced manual recovery phase, it is anticipated that DNAPL will be pumped from each well at least once per day, placed in approved containers, and removed from the Site. The enhanced manual recovery effort will continue until GE receives the necessary Order of Conditions from the PCC, and the automated system is constructed and operational. The remaining installation activities will be initiated within 10 days following the PCC's issuance of an Order of Conditions covering this work, unless the Order is appealed. This schedule may be subject to modification, if necessary, to accommodate possible constraints associated with PCC review, inclement weather, and obtaining access permission from the Western Massachusetts Electric Company (for Well NS-30).

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Tables

TABLE 1

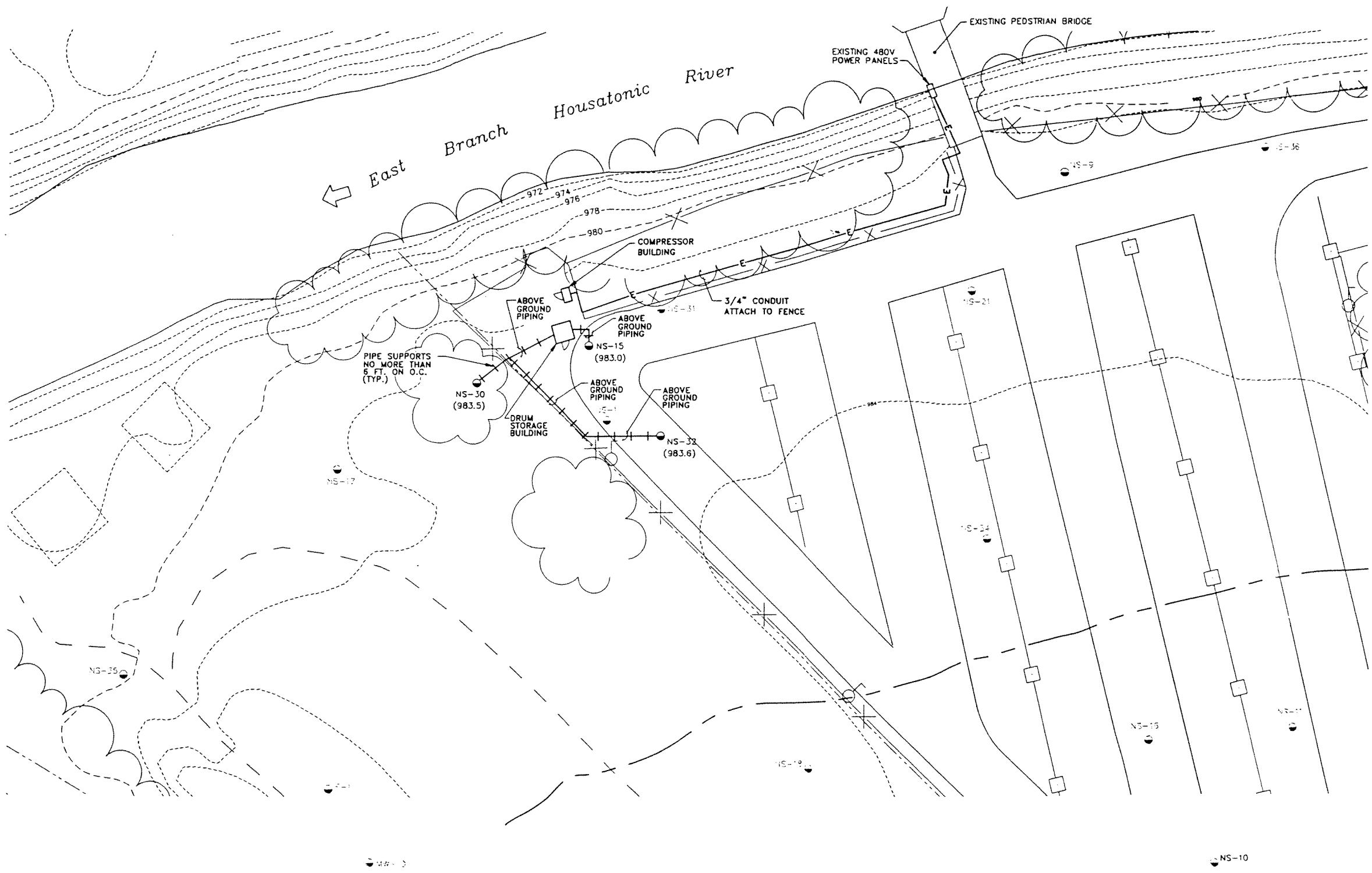
GENERAL ELECTRIC COMPANY
 PITTSFIELD, MASSACHUSETTS
 NEWELL STREET AREA II/USEPA AREA 5B

Summary of DNAPL Recovery Data

Monitoring Well	Date	Elapsed Time of Daily Test (hours)	Incremental Volume of DNAPL Removal (gal)	Total Daily Volume
NS-15	09/24/98	0.0	2.59	4.68
		2.6	0.91	
		4.1	0.63	
		5.6	0.55	
	09/25/98	0.0	1.73	3.48
		2.0	0.37	
		4.0	0.67	
		6.0	0.71	
	09/28/98	0.0	2.19	4.83
		1.9	0.68	
		3.1	0.54	
		4.3	0.44	
5.6		0.53		
6.9		0.45		
NS-30	09/29/98	0.0	0.86	2.70
		1.3	0.65	
		2.9	0.61	
		4.3	0.58	
	09/30/98	0.0	0.59	3.26
		1.3	0.62	
		2.6	0.53	
		3.8	0.49	
		4.9	0.54	
		6.6	0.49	
NS-32	09/22/98	0.0	0.98	1.22
		1.0	0.03	
		2.0	0.09	
		3.0	0.05	
		6.6	0.07	
	09/23/98	0.0	0.26	0.63
		1.3	0.16	
		2.4	0.06	
		3.4	0.04	
		4.4	0.04	
		5.4	0.03	
		6.4	0.04	
	09/24/98	0.0	0.28	0.28

BLASLAND, BOUCK & LEE, INC.
e n g i n e e r s & s c i e n t i s t s

Figures

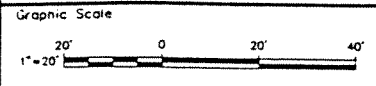


- LEGEND**
- NS-32 (983.6) ○ MONITORING WELL (GRADE ELEVATION IDENTIFIED IN PARENTHESES)
 - E — ELECTRIC SUPPLY
 - - - - - 100 - FOOT BUFFER ZONE

- 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).

SITE PLAN
SCALE: 1" = 20'

X: 20140X01.DWG
L: ON=*, OFF=REF
P: CONT-DJD/CONT-MVB
11/24/98 SYR-54 DCC. WDN
20137010/2013701.DWG



No.	Date	Revisions	Init

Project Mgr. _____
Designed by _____
Drawn by _____
Checked by _____



GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B PARCEL J9-23-12
DNAPL RECOVERY SYSTEM
SITE PLAN

File Number
201.37.01F
Date
NOVEMBER 1998
Blasland, Bouck & Lee, Inc.
Corporate Headquarters

FIGURE 2

General Electric Company
Pittsfield, Massachusetts

Newell Street Area II/USEPA Area 5B

DNAPL Removal Volume vs. Time: Daily Results for NS-15

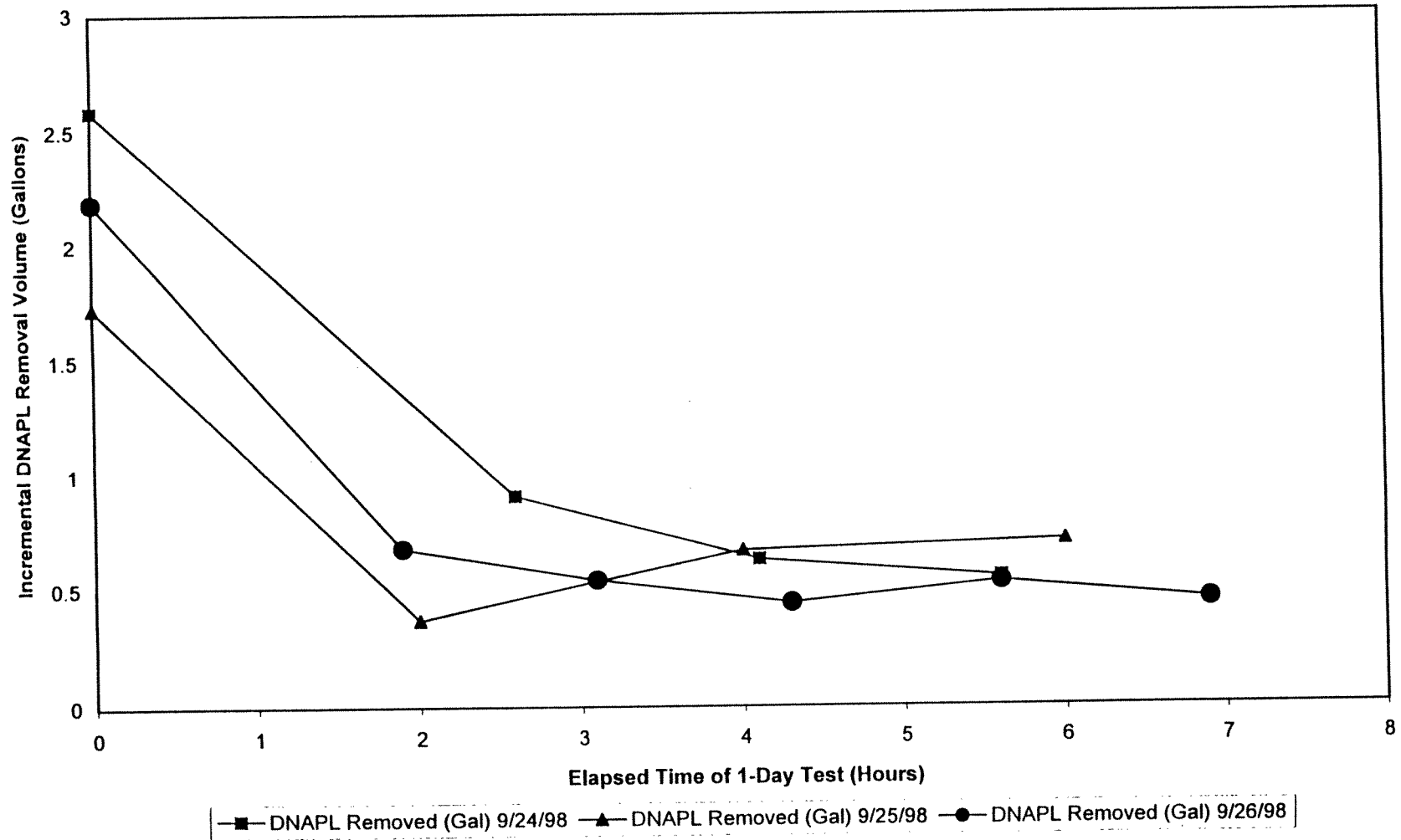


FIGURE 3

General Electric Company
Pittsfield, Massachusetts

Newell Street Area II/USEPA Area 5B
DNAPL Removal Volume vs. Time: Daily Results for NS-30

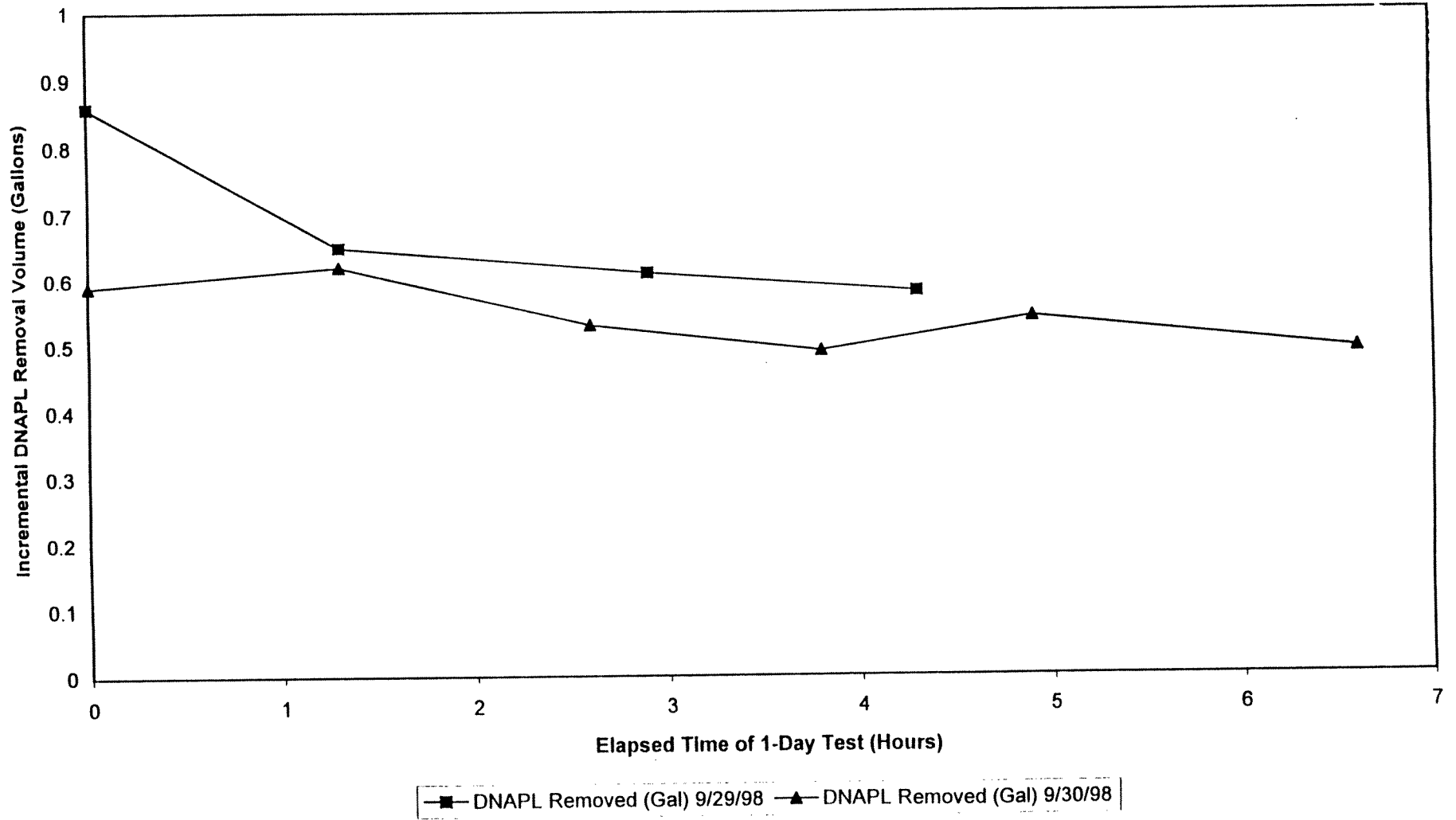
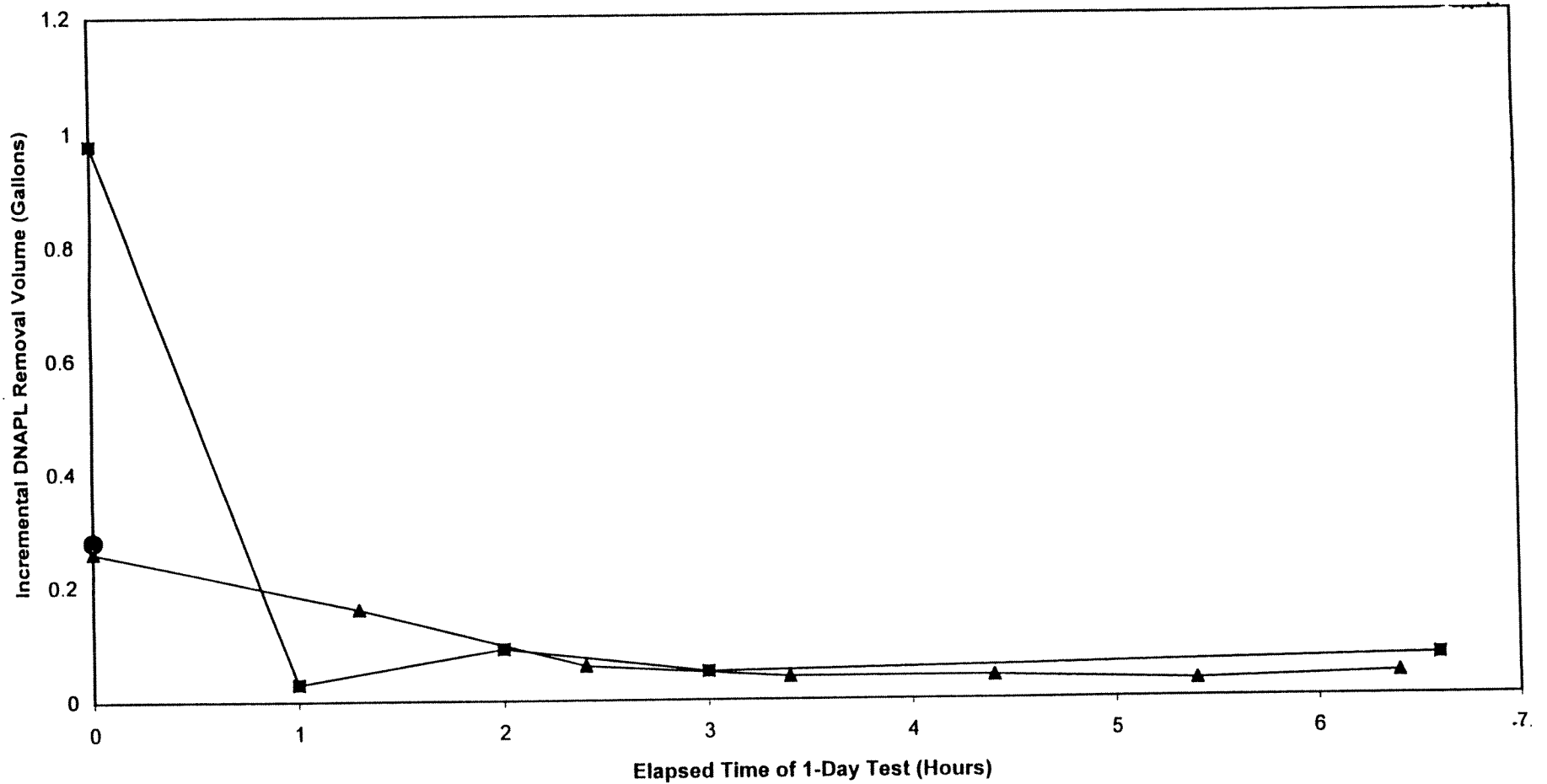


FIGURE 4

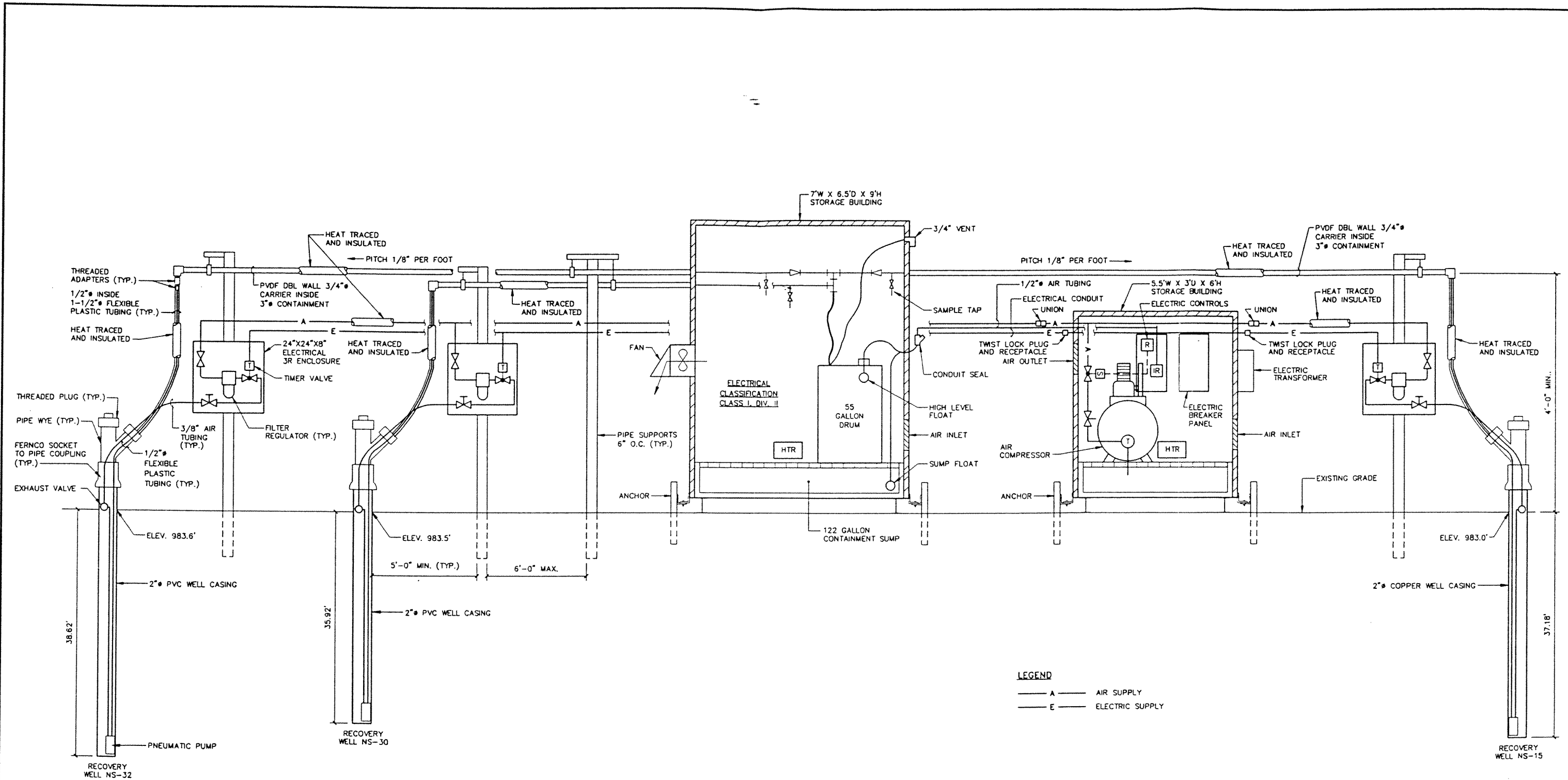
General Electric Company
Pittsfield, Massachusetts

Newell Street Area II/USEPA Area 5B

DNAPL Removal Volume vs. Time: Daily Results for NS-32



—■— DNAPL Removed (Gal) 9/22/98 —▲— DNAPL Removed (Gal) 9/23/98 —●— DNAPL Removed (Gal) 9/24/98



DNAPL RECOVERY SYSTEM SCHEMATIC
NOT TO SCALE

L: ON=, OFF=REF
P: CONT-D.O/CONT-MVB
11/24/98 SYR-54 DEC. MON
20137010/2013702.0WC

Graphic Scale
NO ALTERATIONS PERMITTED HEREON EXCEPT

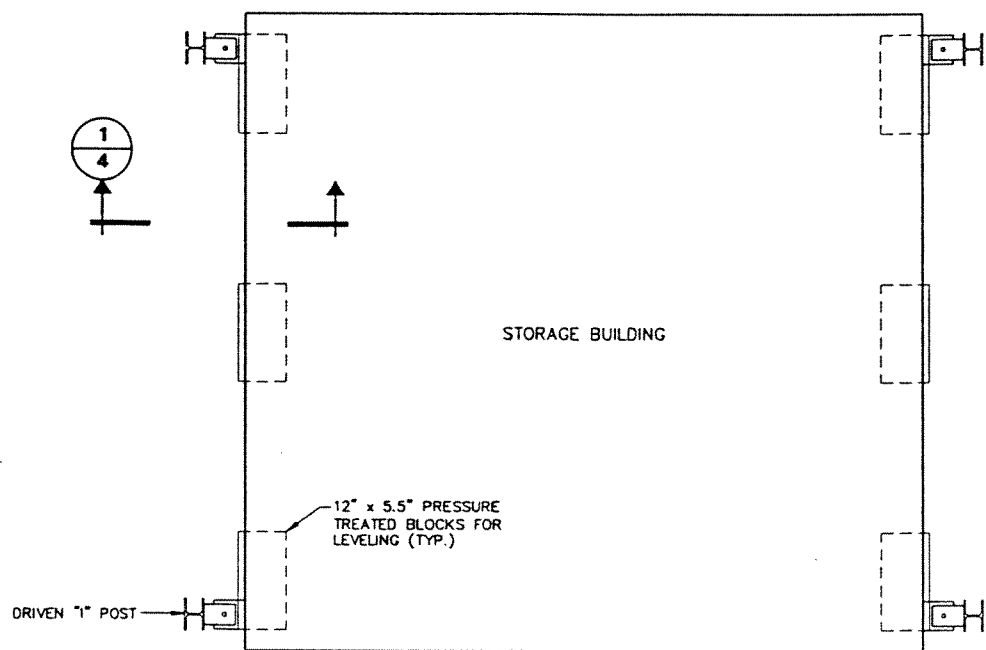
No.	Date	Revisions	Init

Project Mgr. _____
Designed by _____
Drawn by _____
Checked by _____

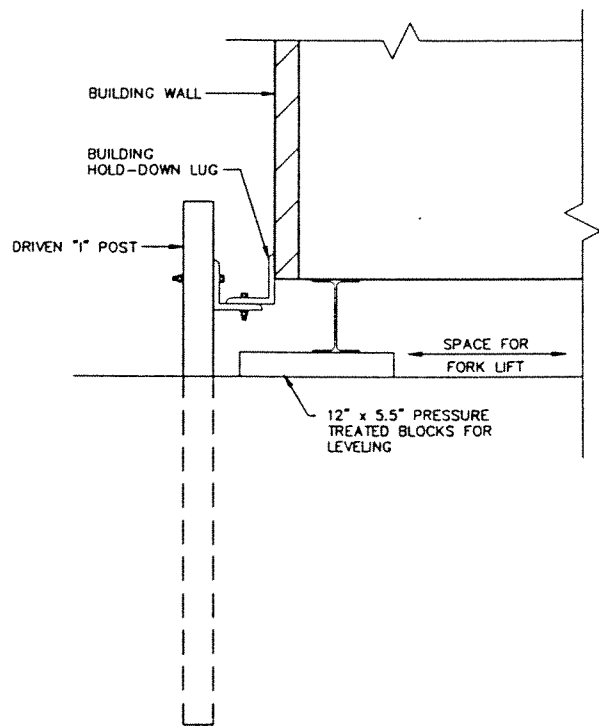


GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B PARCEL J9-23-12
DNAPL RECOVERY SYSTEM

File Number
201.37.02F
Date
NOVEMBER 1998
Blastand, Bouck & Lee, Inc.
Corporate Headquarters

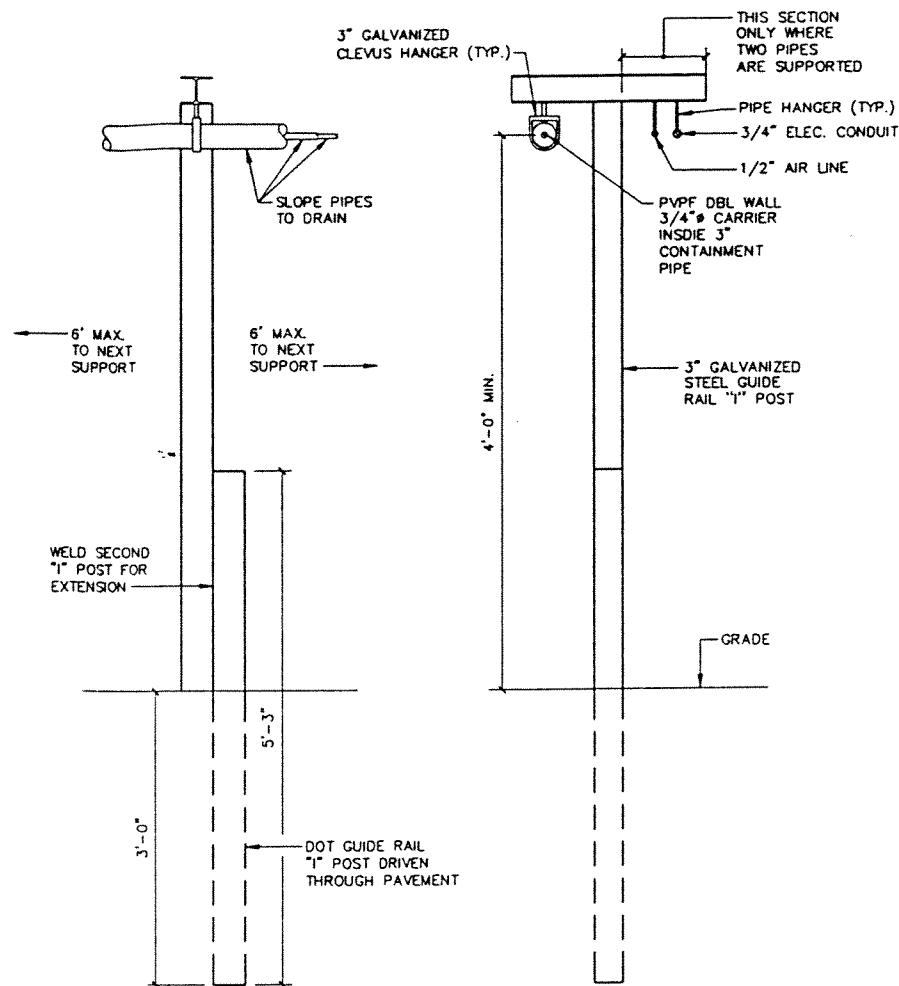


PLAN
NOT TO SCALE



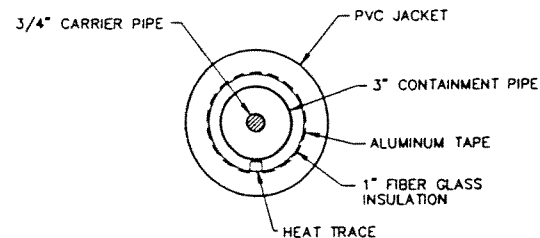
BUILDING ANCHOR

SECTION 1/4
NOT TO SCALE



PIPE SUPPORT DETAIL

NOT TO SCALE



PIPE SECTION

NOT TO SCALE

GENERAL SPECIFICATIONS:

1. STORAGE BUILDINGS: CHEMICAL STORAGE BUILDINGS AS MANUFACTURED BY SAFETY STORAGE. FACTORY MUTUAL APPROVED FOR STORAGE OF HAZARDOUS CHEMICALS.

A. DRUM STORAGE BUILDING:

NOMINAL DIMENSIONS: 7.0' X 6.5' X 9.0' HIGH
122 GALLON CONTAINMENT SUMP
ELECTRICAL COMPONENTS RATED FOR A CLASS 1, DIV. 2 AREA
VENTILATION FAN (CLASS 2)
1000 WATT HEATER (CLASS 2)
100 WATT INCANDESCENT LIGHT (CLASS 2)

B. COMPRESSOR BUILDING:

NOMINAL DIMENSIONS: 5.6' X 3.0' X 6.0' HIGH
86 GALLON CONTAINMENT SUMP
VENTILATION FAN
1000 WATT HEATER
100 WATT INCANDESCENT LIGHT

2. RECOVERY PUMPS: PNEUMATIC DNAPL RECOVERY PUMPS AS MANUFACTURED BY QED ENVIRONMENTAL SYSTEMS, INC.

A. THREE (3) PUMPS PART # LP1301 FOR 2" DIAMETER WELLS
THREE (3) MINI PULSE PUMP CYCLE TIMER, PART # MPS360, 120V, W/ FILTER-REGULATOR
THREE (3) 2" DIAMETER WELL EXHAUST VALVES, PART # L353

B. TUBING: 120 FT. NYLON, PART # L417, 1/2" OD LIQUID, 3/8" OD AIR TUBING, 50 FT. UV-BLACK NYLON, PART # 35097, 1/2" OD TUBING; 75 FT. 3/8" NYLON AIR, PART # 35716
TUBING FITTINGS: MISC. FITTINGS PACKAGE, PART # PP-CUSTOM

3. PIPING:

A. DOUBLE-WALL PRODUCT PIPE: GUARDIAN PIPING SYSTEMS BY CHEMTROL: 3/4" PVDF CARRIER PIPE W/ 3" PVDF CONTAINMENT PIPE. THERMAL FUSED 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. THREE (3) TIMER AND REGULATOR ENCLOSURE: HOFFMAN STEEL ENCLOSURE, 24" X 24" X 8", CATALOG # A-24R248HCR. PADLOCK HASP, CONTINUOUS HINGE.

5. AIR COMPRESSOR: 3 HP, CAST IRON, OIL LUBRICATED, AIR COMPRESSOR DAYTON STOCK NUMBER 48237. 30 GALLON HORIZONTAL TANK, THREE PHASE, 460 VOLT MOTOR, DEVELOP 9.4 CFM AT 90 PSI. FURNISH WITH AUTOMATIC, TIMER CONTROLLED DRAIN BLOW-OFF.

6. HEAT TRACE: THERMON TYPE FD; FM RATED CLASS 1, DIV. 2; 5 WATTS PER FOOT, 120 VAC, ET-7 END CAPS, TBX-4LC CONNECTORS AS NEEDED.

7. HEAT TRACE CONTROLS: THREE THERMON N-7C-040 THERMOSTATS.

8. INSULATION: 3" CONTAINMENT: 1" THICK FIBERGLASS W/PVC JACKET. 1/2" AIR: USE 3/4" URETHANE FOAM.

L: ON=, OFF=REF
P: CONT-DJ/CONT-MVB
11/24/98 STR-54 DCC HDM GMS
20137010/2013703.DWG

No.	Date	Revisions	Init	Project Mgr.

Graphic Scale

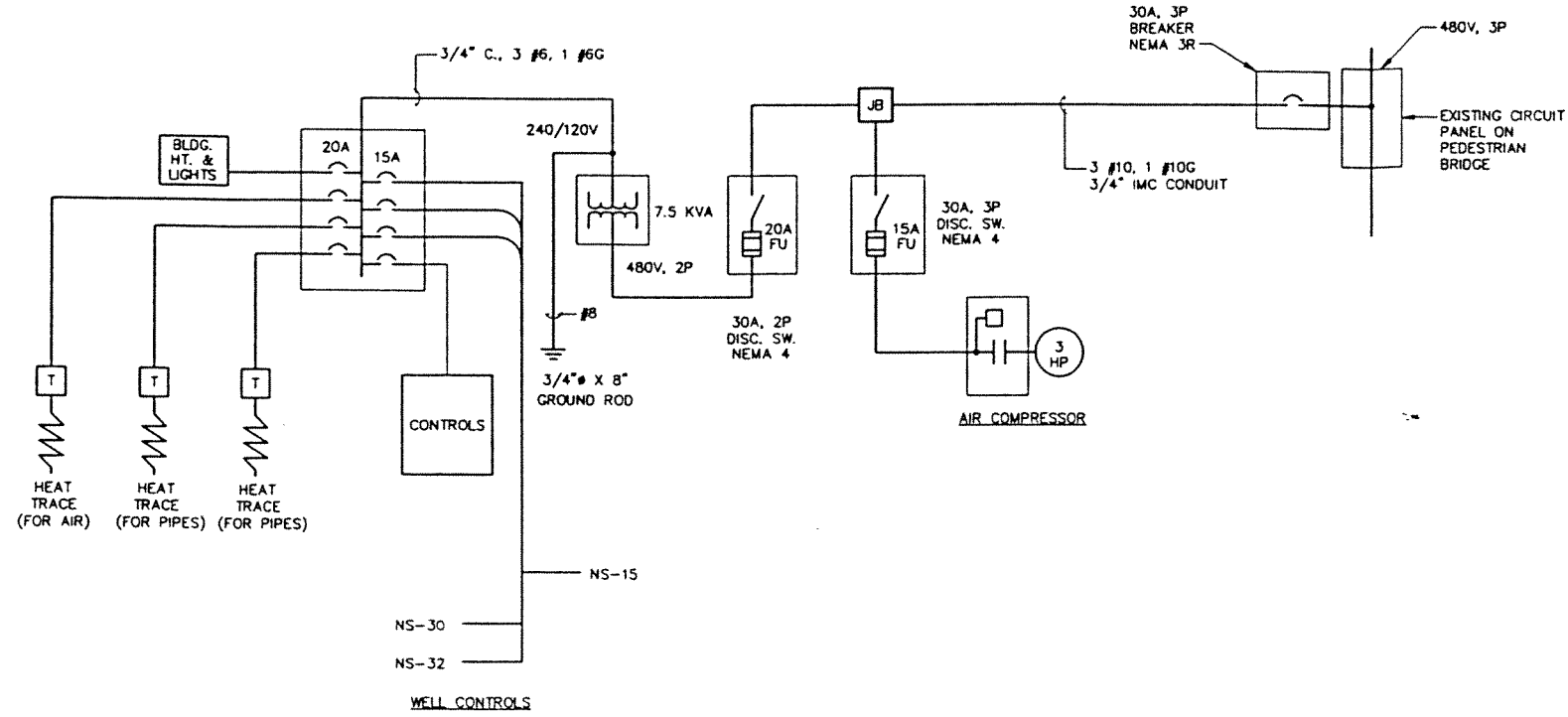
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Checked by _____



GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
NEWELL STREET AREA II/USEPA AREA 5B PARCEL J9-23-12

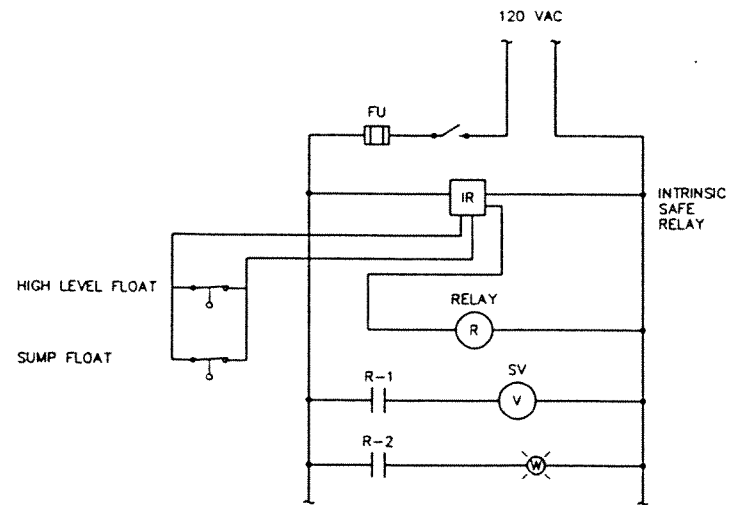
GENERAL DETAILS AND SPECIFICATIONS

File Number 201.37.03F
Date NOVEMBER 1998
Biasland, Bouck & Lee, Inc. Corporate Headquarters



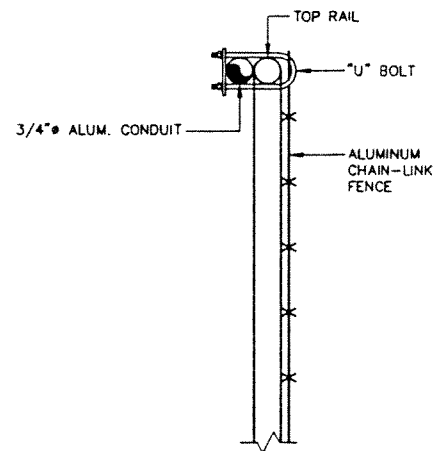
ELECTRICAL ONE-LINE DIAGRAM

NOT TO SCALE



CONTROL DIAGRAM

NOT TO SCALE



ELECTRICAL FEEDER SUPPORT DETAIL

NOT TO SCALE

ELECTRICAL SPECIFICATIONS:

1. GENERAL ELECTRIC DRY TYPE QMS, CATALOG # 9T21B1008G02 INDOOR/OUTDOOR, 7.5 KVA, 480 VOLT SINGLE PHASE PRIMARY, 120/240 VOLT SECONDARY.
2. GENERAL ELECTRIC FUSED SAFETY DISC. SWITCHES: NEMA 3R, HEAVY DUTY TYPE TH.
3. GENERAL ELECTRIC SERIES AL, 100 AMP MAIN BREAKER, 12 BRANCH CIRCUIT, 10,000 AMPS RMS SHORT CIRCUIT. FOUR (4) 20 A, 1P BREAKERS, FOUR(4) 15 A, 1P BREAKERS.
4. FLOATS: GEMS PART # LS 1800 SLIDING MAGNETIC SWITCH, ALL TEFLON TYPE.
 - A. BARREL FLOAT, 1-1/4" DIAMETER, 1/8" NPT THREADED STEM, FURNISH WITH 2" MALE BRASS THREADED PLUG.
 - B. SUMP FLOAT, 1-1/4" DIAMETER, 1/8" NPT THREADED STEM, FURNISH WITH 3" PVC FLANGE.
5. INTRINSIC RELAY: GEMS SAFE-PAK, SOLID STATE INTRINSIC SAFE RELAY, UL, FM APPROVED FOR PROTECTION OF CIRCUITS IN CLASS I, DIV. 1 AREAS.
6. RELAYS: ICE CUBE, PLUG-IN WITH SOCKET, DPDT, 120 VOLT, 5 AMP RATED CONTACTS.
7. CONDUIT: IMC RATED ALUMINUM CONDUIT, 3/4" DIAMETER, COMPRESSION COUPLINGS FOR OUTDOOR USE, THREADED CAST FITTINGS AND DEVICE/JUNCTION BOXES.

L: ON=*, OFF=REF
 P: CONT-DJD/CONT-MVB
 11/17/98 SYR-54 DEC. MON
 20137010/20137004.DWG

No.	Date	Revisions	Init

Project Mgr. _____
 Designed by _____
 Drawn by _____
 Checked by _____

BBL
 BLASLAND, BOUCK & LEE, INC.

GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS
 NEWELL STREET AREA II/USEPA AREA 5B PARCEL J9-23-12

ELECTRICAL DETAILS AND SPECIFICATIONS

File Number
201.37.04F
 Date
NOVEMBER 1998
 Blasland, Bouck & Lee, Inc.
 Corporate Headquarters
 5723 Towpath Road

FIGURE 8

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

SCHEDULE FOR PREPARATION AND INSTALLATION OF DNAPL RECOVERY SYSTEM

Work Activities	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
Submit DNAPL Recovery System for Newell Street Parking Lot to Agencies -----▲											
Receive Agency Approval -----▲											
Install Pumps -----											
Submit DNAPL Recovery System for Newell Street Parking Lot to PCC -----▲											
Perform Enhanced Manual Removal -----											
Receive PCC Approval -----▲											
Purchase and Receive Enclosures and Remaining Equipment -----											
Install Piping, Enclosures, and Remaining Equipment -----											

Notes:

▲ - Submittal/Approval Date

----- - Activity Duration

PCC - Pittsfield Conservation Commission

DNAPL - dense nonaqueous phase liquid