

**RELEASE ABATEMENT MEASURE
STATUS REPORT**

**51 & 100 COMMERCIAL STREET
MALDEN, MASSACHUSETTS**

RELEASE TRACKING NUMBER 3-0362
December 2009

Prepared For:



National Grid
40 Sylvan Road
Waltham, MA 02154

Prepared By:



Innovative Engineering Solutions, Inc.
25 Spring Street
Walpole, Massachusetts 02081
(508) 668-0033

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Prepared for: National Grid
40 Sylvan Road
Waltham, Massachusetts 02451

Prepared by: Innovative Engineering Solutions, Inc.
25 Spring Street
Walpole, Massachusetts 02081

Michael Lotti, L.S.P.
Project Manager and LSP of Record
License Number 4208

Joseph E. Higgins, P.E., L.S.P.
Project Reviewer

**Release Abatement Measure Status Report
51 & 100 Commercial Street
Malden, Massachusetts 02148
DEP Release Tracking Number: 3-0362**

This Release Abatement Measure (RAM) Status Report has been prepared by Innovative Engineering Solutions, Inc. (IESI) on behalf of Massachusetts Electric Company d/b/a National Grid (National Grid) in accordance with the requirements of the Massachusetts Contingency Plan (MCP) (310 CMR 40.0000). This RAM is being conducted in accordance with the RAM Plan that was submitted to the Massachusetts Department of Environmental Protection (DEP) on August 9, 2007. The RAM is being conducted at the 51 Commercial Street and 100 Commercial Street portions of the former Malden manufactured gas plant (MGP) site (the "Site") located near the intersection of Commercial and Charles Streets in Malden, Massachusetts (hereinafter referred to as the RAM Areas). The DEP assigned Release Tracking Number (RTN) 3-0362 to the Malden MGP Site. Figure 1 depicts the site locus and Figure 2 depicts the location of the RAM Areas in relation to the disposal site boundary of the former MGP. Figures 3 and 4 provide RAM Area details for 51 and 100 Commercial Street, respectively.

The objectives of this RAM are to accomplish the following:

1. Install, start up, and conduct operation, maintenance, and monitoring (OMM) activities for a non-aqueous phase liquid (NAPL) recovery system at 51 Commercial Street.
2. Install a barrier beneath the proposed building at 51 Commercial Street.
3. Manage remediation waste generated during floor and foundation removal from the prior structure at 51 Commercial Street, construction of the new building foundation and Engineered Barrier under the foundation at 51 Commercial Street, and construction and operation of the NAPL recovery systems.
4. Restore, restart, and conduct OMM activities on an existing NAPL recovery system at 100 Commercial Street.

This report describes activities conducted between June 1, 2009 and December 2, 2009. As such, the content of this report has been structured to address the specific information requirements set forth in 310 CMR 40.0445 (2)(a) through (e). The RAM Status Report is presented below. The original RAM Transmittal Form (BWSC-106) was submitted electronically via eDEP and a copy of the RAM Transmittal Form is included in Appendix A.

310 CMR 40.0445 (2)(a) The status of response operations:

During this reporting period, the activities have included well gauging at 51 Commercial, and operation of the NAPL recovery system at 100 Commercial Street. Additional information regarding the status of these activities is presented below.

Well Gauging – 51 Commercial Street

As reported in December 2008, construction of the equipment shed structure is complete and equipment installation (e.g., air compressor, down well pumps, controls, etc.) was halted due to the lack of recoverable NAPL. The extraction wells were gauged on June 1 and September 14, 2009 during this reporting period. No measureable thicknesses of NAPL were observed in the extraction wells. Table 1 summarizes the well gauging data. IESI plans to continue to periodically gauge the wells to determine if recoverable NAPL is present.

NAPL System Operation – 100 Commercial Street

The NAPL recovery system located at the 100 Commercial Street parcel of the site was reactivated in August 2008. The system had been deactivated since 2003 because of slowed NAPL recovery. During each visit, the recovery well was gauged, the system's safety interlocks were checked, the amount of NAPL and water recovered

was measured, and the thickness of NAPL in the recovery well was measured. Table 2 summarizes the data collected during this reporting period.

The total amount of NAPL recovered this period is 75 gallons. The total volume of NAPL collected since 2001 from this system is approximately 1083 gallons.

310 CMR 40.0445 (2)(b) Any significant new site information or data:

There is no significant new site information and data this period.

310 CMR 40.0445 (2)(c) Details of and/or plans for the management of Remediation Waste, Remedial Wastewater, and/or Remedial Additives:

There were no shipments of remediation waste this reporting period. As stated in the August 2007 RAM Plan, NAPL recovered by the 100 Commercial Street system is stored in 55-gallon drums until filled, then replaced with an empty drum. The filled drum of NAPL is removed within 90 days of being filled.

310 CMR 40.0445 (2)(d) Any other information that the Department during its review and evaluation of a Status Report determines to be necessary to complete said Status Report, in view of site specific circumstances and conditions; and:

The DEP has not required additional information, and the DEP did not impose any conditions on the right to conduct the RAM.

310 CMR 40.0445 (2)(e) An LSP Opinion as to whether the Release Abatement Measure is being conducted in conformance with the RAM Plan and any conditions of approval established by the Department.

Having reviewed the requirements of the RAM Plan and the response actions completed to date, we are of the opinion that the RAM is being conducted in accordance with the RAM Plan.

If you require additional information or have any questions regarding this status report, please contact Michael S. Lotti, LSP of IESI at (508) 668-0033 (x 231) or Michele Leone at National Grid at (781) 907-3651.

FIGURES





Innovative Engineering Solutions, Inc.
25 SPRING STREET
WALPOLE, MASSACHUSETTS 02081
(508) 668-0033

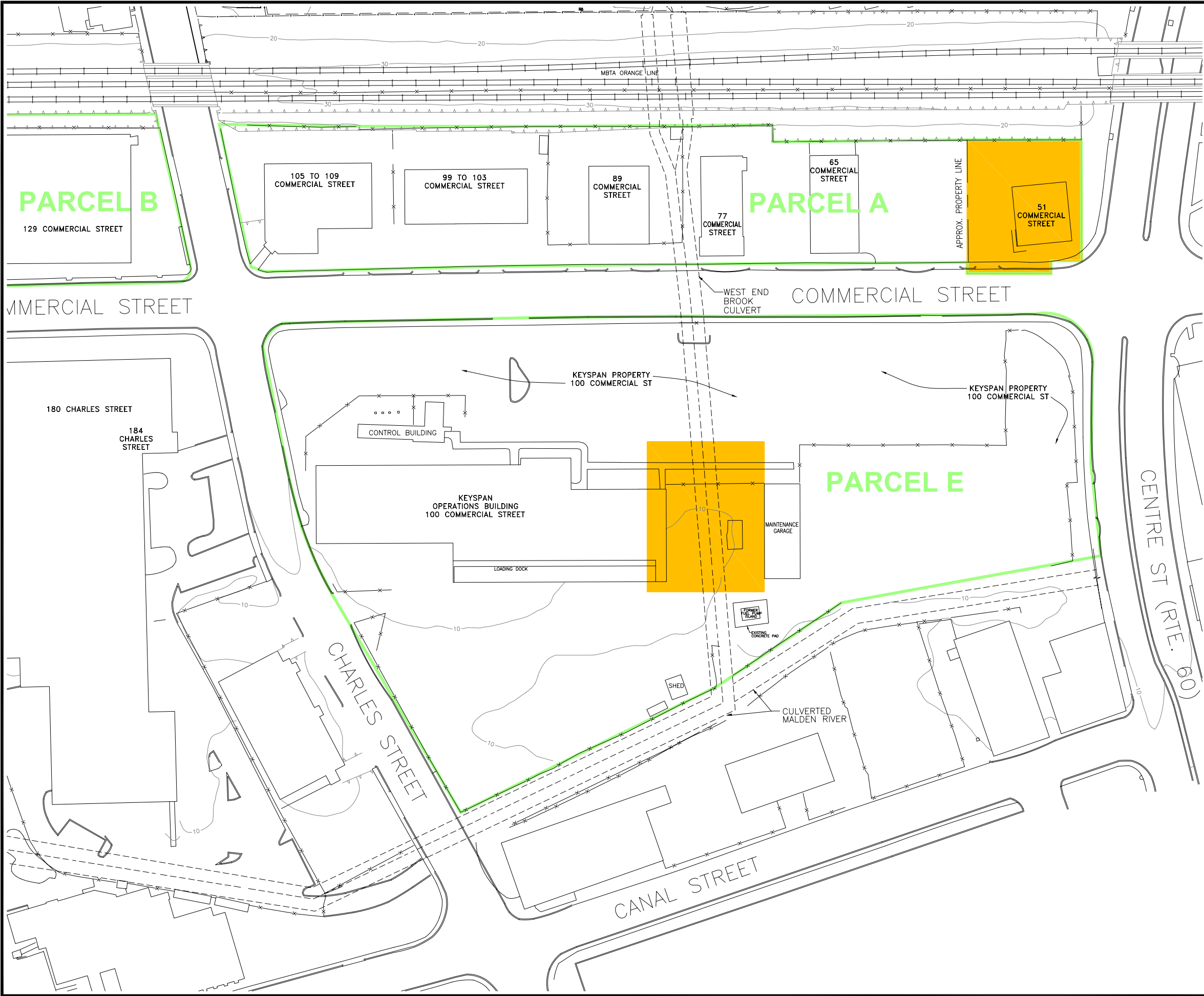
0 2000

SCALE IN FEET
1:24000

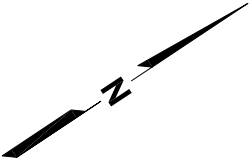
SITE LAT/LONG: 42°25'30"N 71°04'30"W
UTM: 329,298E 4,699,051N ZONE 19
USGS Topographic Map:
Boston North, Massachusetts 1991

FIGURE 1
SITE LOCATION MAP

Former Malden MGP Site
Malden, Massachusetts



 APPROXIMATE RAM AREA



THIS PLAN BASED ON THE SITE PLAN DATED DECEMBER 2001
BY HALEY & ALDRICH, INC.

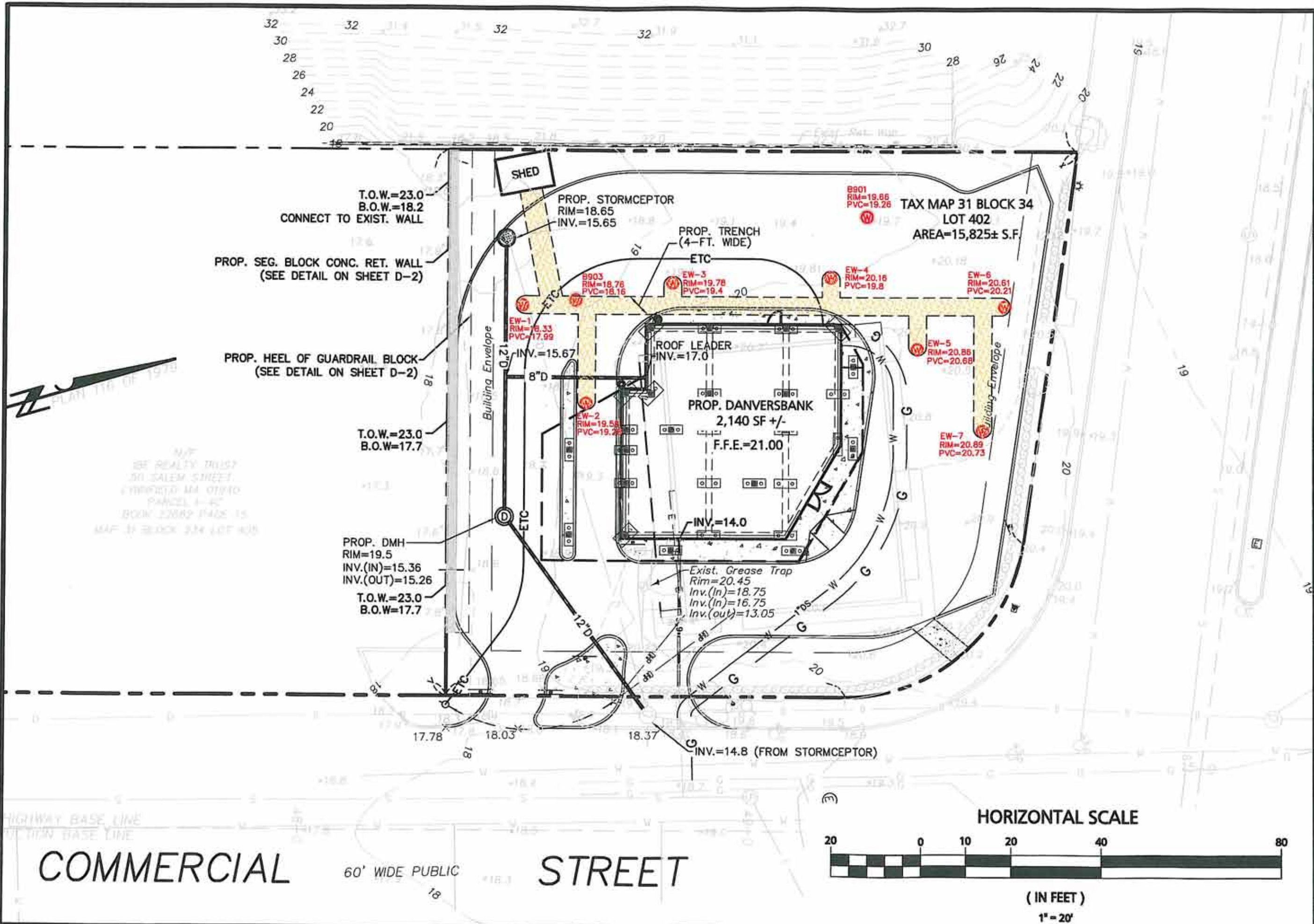
HALEY & ALDRICH, INC. NOTES:

1. BASE PLAN ADAPTED FROM "TOPOGRAPHIC WORKSHEET
OF THE MANUFACTURED GAS PLANT, MALDEN, MA"
FOR MASSACHUSETTS ELECTRIC COMPANY,
WESTBOROUGH, MA, BY EASTERN TOPOGRAPHICS,
WOLFEBORO, NH, SHEETS 1 AND 2, AT A SCALE OF 1 IN.
EQUALS 40 FT., JUNE 1995, AND CITY OF MALDEN
ASSESSOR'S PLAN SHEET NO. 53, BY FAY, SPOFFORD &
THORNDIKE, INC., BOSTON, MA, AT A SCALE OF 1 IN.
EQUALS 40 FT., UPDATED JUNE 1976 AND REVISED
30 JULY 1979.
2. LOCATION OF TEST BORINGS AND TEST PITS WERE
DETERMINED BY HALEY & ALDRICH, INC.



Innovative Engineering Solutions, Inc.
25 SPRING STREET
WALPOLE, MASSACHUSETTS 02081
(508) 668-0033

TITLE RAM AREAS				
SITE FORMER MALDEN MGP SITE				
CLIENT NATIONAL GRID				
DRAWN DMR	CHECKED ML	FILENAME NG MALDEN RAM AREAS	DATE 12/27/07	FIGURE 2



COMMERCIAL

STREET

HORIZONTAL SCALE

(IN FEET)

1" = 20'

Engineering Alliance, Inc.
Civil Engineering & Land Planning Consultants
100 Commercial Street
Danvers, MA 01923
Tel: (781) 331-1340
Fax: (781) 417-0020

PROJECT: Proposed Site Plan
51 COMMERCIAL STREET
(Tax Map 31 Block 34 Lot 402)
Malden, Massachusetts

PROJECT #: 07-16702
SCALE: AS NOTED
DATE: October 17, 2007
DWG FILE NAME: 07-16702.dwg
DESIGN BY: Andrew Sweet
CHECKED BY: Richard A. Salvo, P.E.

Danversbank
1 Court Street
Danvers, MA 01923

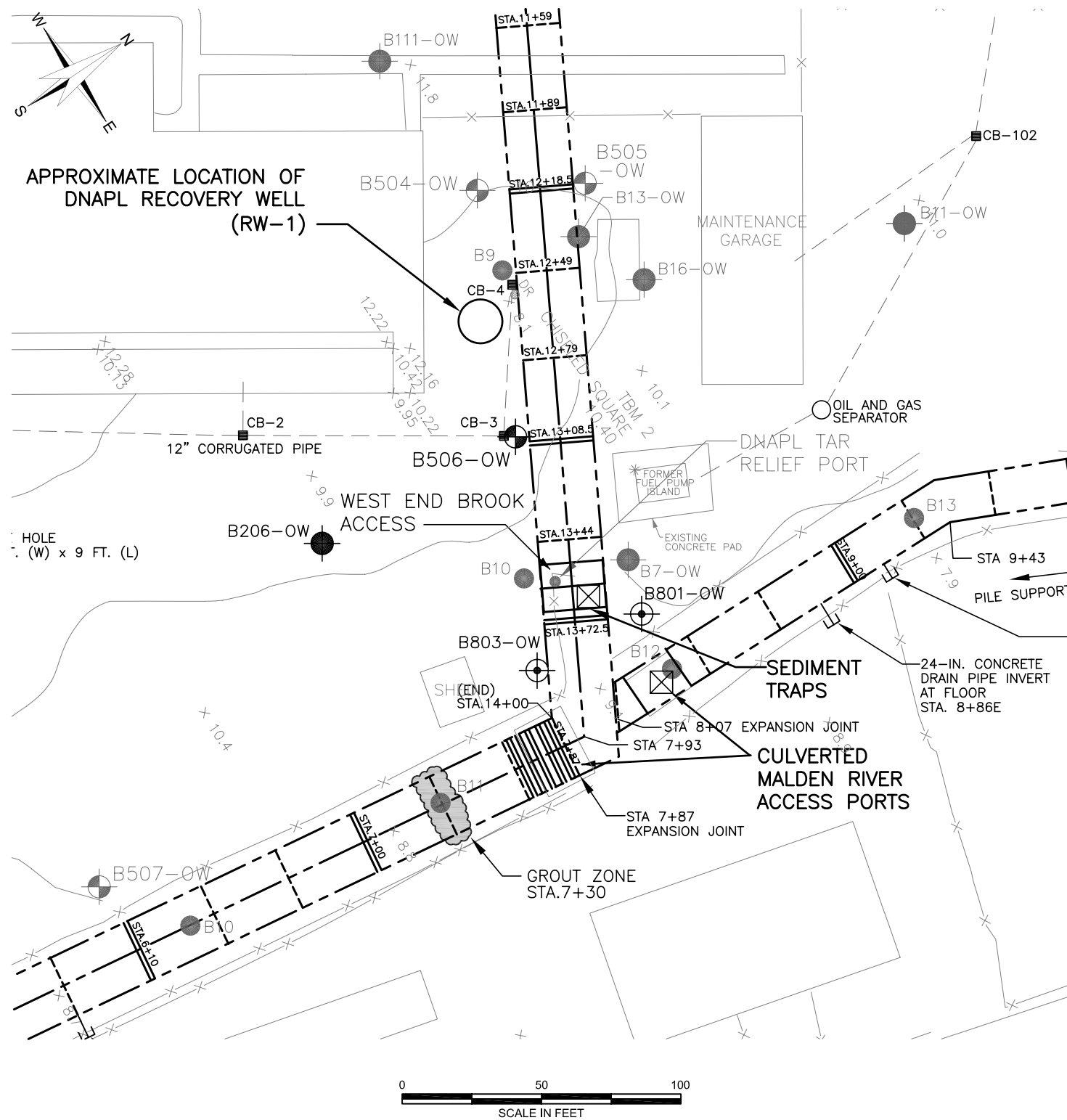
DRAWING TITLE:
Combined Site and
Remediation Plan

DWG. NO.
1 of 1



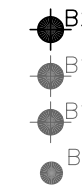




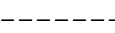
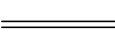
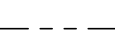

APPLICANT:

DESCRIPTION OF REVISION

DATE



LEGEND:

-  **B803** DESIGNATION AND APPROXIMATE LOCATION OF 8-IN. DIA. DNAPL RECOVERY OBSERVATION WELL INSTALLED BY GEOLOGIC INC. IN NOVEMBER 1998
-  **B504** DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING AND OBSERVATION WELL INSTALLED BY GUILD DRILLING DURING THE PERIOD 25 TO 30 JULY 1996
-  **B206** DRILLED 27-29 JULY AND 1-11 AUGUST 1988
-  **B111** DRILLED 2-7 MAY 1988
-  **B11** DRILLED 23-25 NOVEMBER AND 1-3 DECEMBER 1987
-  **B10** WEST END BROOK MALDEN RIVER CULVERT DESIGN BORINGS
-  **OW** INDICATES GROUNDWATER MONITORING WELL WAS INSTALLED IN THE COMPLETED BOREHOLE
-  DESIGNATES LOCATION OF CONSTRUCTION JOINT
-  DESIGNATES LOCATION OF EXPANSION JOINT
-  WEST END BROOK/ MALDEN RIVER CULVERT
-  12" DRAINAGE PIPES CONNECTING EXISTING CATCH BASINS

NOTES:

1. BASE PLAN ADAPTED FROM THE FOLLOWING SOURCES:
 - "TOPOGRAPHIC WORKSHEET OF THE MANUFACTURED GAS PLANT, MALDEN, MA" FOR MASSACHUSETTS ELECTRIC COMPANY, WESTBOROUGH, MA, BY EASTERN TOPOGRAPHICS, WOLFEBORO, NH, SHEETS 1 AND 2, AT A SCALE OF 1 IN. EQUALS 40 FT., JUNE 1995.
 - CITY OF MALDEN ASSESSOR'S PLAN SHEET NO. 53, BY FAY, SPOFFORD & THORNDIKE, INC., BOSTON, MA, AT A SCALE OF 1 IN. EQUALS 40 FT., UPDATED JUNE 1976 AND REVISED 30 JULY 1979.
2. CULVERT LOCATION SHOWN WAS OBTAINED FROM THE FOLLOWING SOURCES:
 - * RECORD PLANS "MALDEN RIVER FLOOD CONTROL PROJECT IN THE CITY OF MALDEN" CONTRACT E77-3FC, REF. E-503. PREPARED FOR COMMONWEALTH OF MASSACHUSETTS METROPOLITAN DISTRICT COMMISSION (MDC) , DATED DECEMBER 1977.
 - * RECORD PLANS "WEST END BROOK FLOOD CONTROL PROJECT, STADIUM ROAD TO MALDEN RIVER; CONTRACT C-375 PREPARED FOR THE COMMONWEALTH OF MASSACHUSETTS, METROPOLITAN DISTRICT COMMISSION (MDC), DATED JUNE 1970.

HALEY & ALDRICH

RAM PLAN
FORMER MALDEN MGP SITE
MALDEN, MASSACHUSETTS

SITE PLAN:
100 COMMERCIAL STREET RW-1 AREA

SCALE: AS SHOWN
AUGUST 2007

FIGURE 5

TABLES

Table 1
Monitoring Well Gauging Data
51 Commercial Street
Malden, Massachusetts

Well Location	Date	Depth to LNAPL ² (ft)	Depth to Water ¹ (ft)	Depth to DNAPL ² (ft)	DNAPL Thickness (ft)	Well Bottom Depth (ft)
EW-1	05-Sep-07	ND	8.00	ND ³	-	12.50
	05-Oct-07	ND	8.30	ND	-	12.40
	01-May-08	ND	6.40	ND	-	11.45
	10-Sep-08	ND	7.00	ND	-	11.99
	11-Feb-09	ND	6.81	ND	-	12.35
	01-Jun-09	ND	7.06	ND	-	12.35
	14-Sep-09	ND	7.12	ND	-	12.07
EW-2	05-Sep-07	ND	9.25	ND	-	14.20
	05-Oct-07	ND	9.55	ND	-	14.20
	01-May-08	ND	7.81	ND	-	13.50
	10-Sep-08	ND	9.22	ND	-	13.59
	11-Feb-09	ND	8.05	ND	-	13.69
	01-Jun-09	ND	8.31	ND	-	13.69
	14-Sep-09	ND	8.39	ND	-	13.97
EW-3	05-Sep-07	ND	9.55	ND	-	14.40
	05-Oct-07	ND	9.66	ND	-	14.45
	01-May-08	ND	7.51	ND	-	11.80
	10-Sep-08	ND	7.87	ND	-	11.9
	11-Feb-09	ND	7.80	ND	-	13.52
	01-Jun-09	ND	8.00	ND	-	13.52
	14-Sep-09	ND	8.01	ND	-	13.52
EW-4	05-Sep-07	ND	9.90	ND	-	15.25
	05-Oct-07	ND	10.06	ND	-	14.90
	01-May-08	ND	7.89	ND	-	12.00
	10-Sep-08	ND	8.21	ND	-	13.77
	11-Feb-09	ND	8.17	ND	-	14.35
	01-Jun-09	ND	9.35	ND	-	14.35
	14-Sep-09	ND	8.39	ND	-	14.35
EW-5	05-Sep-07	ND	10.80	ND	-	14.10
	05-Oct-07	ND	10.94	ND	-	14.00
	01-May-08	ND	7.80	ND	-	11.65
	10-Sep-08	ND	8.14	ND	-	11.71
	11-Feb-09	ND	8.09	ND	-	12.3
	01-Jun-09	ND	9.32	ND	-	12.3
	14-Sep-09	ND	8.31	ND	-	12.3
EW-6	05-Sep-07	ND	10.35	ND	-	14.36
	05-Oct-07	ND	10.50	ND	-	14.20
	01-May-08	ND	8.16	ND	-	13.00
	10-Sep-08	ND	8.61	ND	-	12.77
	11-Feb-09	ND	8.46	ND	-	13.09
	01-Jun-09	ND	9.68	ND	-	13.09
	14-Sep-09	ND	8.66	ND	-	13.09
EW-7	05-Sep-07	-	DRY	-	-	9.92
	05-Oct-07	-	DRY	-	-	10.00
	01-May-08	ND	6.50	ND	-	7.20
	10-Sep-08	ND	6.99	ND	-	7.81
	11-Feb-09	ND	7.09	ND	-	7.28
	01-Jun-09	ND	7.09	ND	-	7.28
	14-Sep-09	ND	7.10	ND	-	7.28
00A-B903-OW	01-May-08	ND	7.85	ND	-	19.00
	10-Sep-08	ND	8.28	ND	-	15.2

Notes:

1. Depth to liquid measurements are obtained using a water level indicator and/or an oil-water interface probe.
2. DNAPL = Dense Non-Aqueous Phase Liquids. LNAPL = Light Non-Aqueous Phase Liquids.
3. ND=Not detected.

Table 2
Recovery Well RW-1 Gauging Data
100 Commercial Street
Malden, MA

Date	Depth to Water	Depth to NAPL	Depth to Bottom	Thickness NAPL	Total Gallons Recovered	Gallons Per Day
8/5/2008	1.68	8.80	14.30	5.50	36	36.0
8/6/2008	1.75	11.00	14.30	3.30	83	47.0
8/7/2008	1.70	12.00	14.30	2.30	83	0.0
8/11/2008	1.43	13.10	14.30	1.20	83	0.0
8/12/2008	1.43	13.10	14.30	1.20	117	34.0
8/21/2008	1.86	12.70	14.30	1.60	167	5.6
8/26/2008	1.85	11.55	14.30	2.75	178	2.2
9/2/2008	2.00	10.60	14.30	3.70	186	1.1
9/8/2008	2.60	11.80	14.30	2.50	203	2.8
9/18/2008	1.95	11.10	14.30	3.20	217	1.4
10/1/2008	1.35	14.30	14.30	0.00	227	0.8
10/9/2008	1.72	13.48	14.30	0.82	235	1.0
10/23/2008	2.10	13.26	14.30	1.04	248	0.9
11/7/2008	2.40	13.80	14.30	0.50	256	0.5
11/22/2008	2.05	13.75	14.30	0.55	262	0.4
12/3/2008	1.62	14.30	14.30	0.00	267	0.5
1/6/2009	1.60	14.10	14.30	0.20	281	0.4
1/30/2009	1.41	13.97	14.30	0.33	281	0.0
2/11/2009	1.90	14.29	14.30	0.01	281	0.0
3/11/2009	1.60	13.30	14.30	1.00	281	0.0
4/7/2009	0.50	14.11	14.30	0.19	293	0.4
5/13/2009	1.00	14.21	14.30	0.09	294	0.03
6/3/2009	1.88	14.25	14.30	0.05	294	0.00
6/19/2009	0.00	14.23	14.30	0.07	294	0.02
6/29/2009	1.40	13.34	14.30	0.96	295	0.06
7/17/2009	1.76	12.97	14.30	1.33	296	0.04
7/29/2009	1.52	13.85	14.30	0.45	315	1.62
8/24/2009	1.65	13.76	14.3	0.54	331	0.62
9/14/2009	1.9	13.4	14.3	0.90	341	0.48
10/7/2009	1.9	13.4	14.3	0.90	358	0.72
11/3/2009	1.8	14.19	14.2	0.01	364	0.22
11/23/2009	1.83	14.1	14.2	0.10	369	0.25

Notes NAPL - non-aqueous phase liquid

All data collected by IESI personnel



Table 2
Recovery Well RW-1 Gauging Data
100 Commercial Street
Malden, MA

