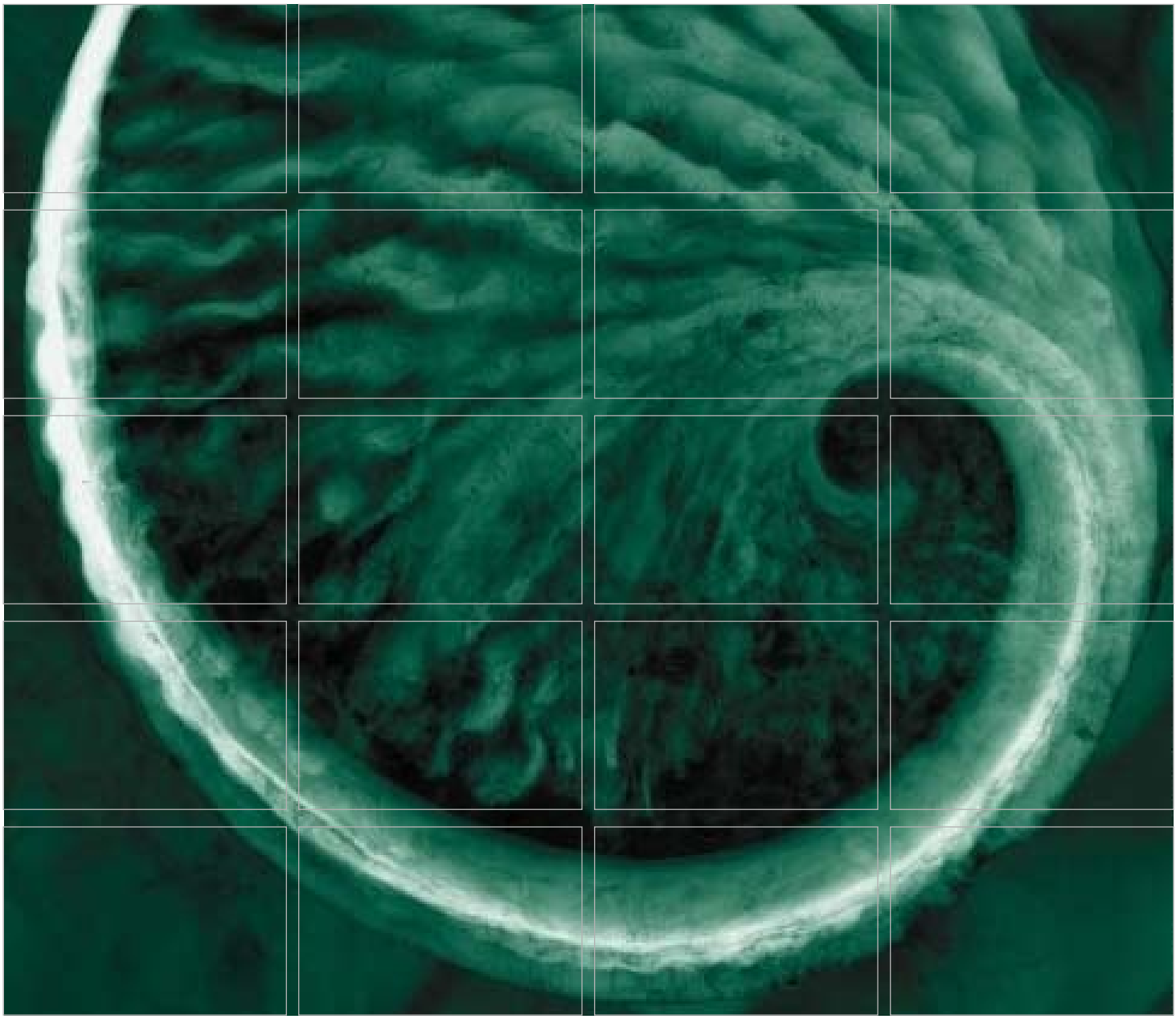

Raytheon Company

DRAFT

Phase IV – Remedy Implementation Plan Addendum

Former Raytheon Facility
430 Boston Post Road
Wayland, Massachusetts

RTN 3-22408
Tier IB Permit Number W045278
ERM Reference 0079387

14 May 2008

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DRAFT REPORT

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John C. Drobinski, P.G., LSP
Principal-in-Charge

Jason D. Flattery
Project Manager

Environmental Resources Management
399 Boylston Street, 6th Floor
Boston, Massachusetts 02116
T: (617) 646-7800
F: (617) 267-6447

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1.0 INTRODUCTION

1.1 BACKGROUND

On behalf of Raytheon Company (Raytheon), Environmental Resources Management (ERM) has prepared this Phase IV – Remedy Implementation Plan (RIP) Addendum for portions of the approximately 83-acre property located at 430 Boston Post Road in Wayland, Massachusetts (Figure 1). For purposes of this document, the Site is defined as the portion of the Former Raytheon Property covered under Release Tracking Number (RTN) 3-22408 and Tier IB Permit Number W045278. Specifically, Phase IV RIP activities are localized in the Northern Area chlorinated volatile organic compound (CVOC) Area of Concern as defined on Figure 2.

Phase IV is the fourth part of a five-phase process required under the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) for assessment and remediation of a release(s) of oil and/or hazardous materials (OHM) to the environment. This process was initiated when a Phase I – Initial Site Investigation (Phase I) was submitted to the Massachusetts Department of Environmental Protection (DEP) on 17 December 2003 (ERM, 2003). The Phase I report identifies an apparent historical release of primarily trichloroethene (TCE) in the Northern Area and includes a Tier Classification which scored the Site as Tier IB. The Phase II – Comprehensive Site Assessment (Phase II; ERM, 2005a) provides a detailed understanding of the source, nature, extent and potential for risk to receptors.

Excavation of source area saturated soil and bioremediation in groundwater were identified in the Phase III – Remedial Action Plan (Phase III; ERM, 2005b) as the preferred remedies for abatement of Site impacts. On 18 August 2006, ERM submitted a Phase IV – Remedy Implementation Plan to the DEP, presenting conceptual remedial designs for the selected remedial alternatives.

This Phase IV RIP Addendum presents additional information regarding proposed remediation of Site groundwater via bioremediation. Pursuant to 310 CMR 40.0874, this document presents the engineering concepts and design criteria that will be used to design and construct the Comprehensive Remedial Action for Site groundwater.

In summer 2007, ERM excavated source area saturated soil. Excavated soil was transported off Site for disposal at a licensed landfill. The excavation activities will be summarized in the forthcoming Final Inspection Report and Phase IV Completion Statement, as required by the MCP at 310 CMR 40.0878 and 40.0879, respectively. Following implementation of the groundwater remedy, both the soil excavation and the activities described in this Phase IV RIP Addendum will be documented in a Final Inspection Report and Phase IV Completion Statement.

Copies of the DEP transmittal form BWSC-108, as submitted electronically via eDEP, and public notification documentation are included in Appendix A.

1.2 PURPOSE & SCOPE

The purpose of this Phase IV RIP Addendum is to provide updated Site data and groundwater remedial design information to support implementation of the Comprehensive Remedial Action. This document is intended to supplement information provided in the Phase IV RIP (ERM, 2006) and therefore, is not intended to satisfy all requirements for a Phase IV RIP.

1.3 REPORT ORGANIZATION

The report is organized to satisfy the requirements of the MCP (310 CMR 40.0874). The report contains the following sections:

Section 1 *Introduction* – describes the background, purpose and scope of the Phase IV RIP Addendum.

Section 2 *Site Information* – includes a summary of new information obtained since submission of the Phase IV RIP, and an updated list of relevant Site contacts.

Section 3 *Design Basis* – includes the identification of target cleanup levels and areas of OHM-impacted groundwater that requires abatement to achieve remedial goals.

Section 4 *Remedial Design* – includes the engineering design, and construction plans and specifications for groundwater remediation.

Section 5 *Implementation Schedule* – includes a proposed schedule to implement the Comprehensive Remedial Action.

Section 6 References

2.0 NEW SITE INFORMATION

2.1 BACKGROUND

Since submission of the Phase IV RIP, additional Site characterization and monitoring activities have been conducted in the Northern Area, including:

- Three groundwater gauging rounds to evaluate seasonal fluctuations in vertical gradients and groundwater flow direction;
- Four groundwater monitoring rounds to quantify CVOC concentrations at the Site; and
- A groundwater monitoring round to provide pre-remedial characterization data for design of the bioremediation activities described in this document.

In addition, two documents were submitted to the DEP for ongoing response actions associated with RTN 3-22408, which pertain to separate release conditions at the Site:

- Downgradient Property Status Opinion for MTBE in Groundwater, dated 19 November 2007: submitted to address methyl-tertiary butyl ether (MTBE) concentrations in groundwater; and
- Class B-1 Response Action Outcome – Partial, dated 19 November 2007: submitted to address background concentrations of naturally-occurring arsenic in groundwater.

2.2 ADDITIONAL SITE ASSESSMENT ACTIVITIES

2.2.1 Groundwater Gauging

The purpose of this task was to collect the data necessary to evaluate the direction of groundwater flow and determine horizontal and vertical hydraulic gradients. ERM conducted groundwater gauging rounds at accessible Site wells on 22 September 2006, 23 April 2007, and 1 October 2007.

Table 1 summarizes the results of the groundwater gauging events. Table 2 presents the vertical gradients measured in well clusters at the Site. Figures 3 and 4 are maps of the upper and lower groundwater potentiometric surfaces, respectively, as measured during the 1 October 2007 gauging event.

2.2.2 *Groundwater Quality Sampling*

The purpose of this task was to collect the data necessary to evaluate groundwater quality. Groundwater samples were collected using low-flow sampling techniques. Geochemical field parameters, including temperature, conductivity, pH, dissolved oxygen, and oxidation-reduction potential (ORP) were measured at the time of sample collection. ERM conducted groundwater sampling programs in the Northern Area concurrently with the gauging events described above. In addition, a fourth sampling round was conducted on 6 March 2008.

Groundwater samples were analyzed for CVOCs by United States Environmental Protection Agency (USEPA) Method 8260B. Table 3 summarizes groundwater field parameter and CVOC data from the sampling events conducted since 2003. Laboratory analytical reports from the most-recent sampling rounds are presented in Appendix B.

The March 2008 sampling round also included collection of samples for analysis of several enhanced reductive dechlorination (ERD) monitoring parameters. This suite of analyses was slightly modified from that presented in the Phase IV RIP based on review of historical groundwater quality data. The analyses performed on the samples collected in March 2008 included:

- Dissolved gases (methane, ethane, and ethene) by Method AM 20 GAX;
- Total organic carbon by USEPA Method 415.1;
- Dissolved iron by USEPA Method 6010B;
- Total phosphorus via USEPA Method 365.2 and SM 4500-E;
- Sulfate by USEPA Method 375.4;
- Nitrate by USEPA Method 300.0 IC;
- Dehalococcoides via Method 1; and

- Vinyl chloride reductase (vcrA) via Method 2.

2.3 *RELEVANT CONTACTS*

The following table provides updated contact information for Site owners and those persons who will operate and/or maintain the selected remedial action alternative(s) during and following construction.

Project Contacts

Name	Role	Contact Information
John Drobinski	LSP-of-Record	ERM 399 Boylston St., 6th Floor Boston, MA 02116
Louis Burkhardt	Raytheon Senior Environmental Engineer	Raytheon Company 880 Technology Park Drive MS 2-2124-01 Billerica, MA 01821
Paula Phillips	Property Owner	Congress Group 33 Arch Street Boston, MA 2110
Robert Schelmerdeine	Property Owner	Wayland Meadows Limited Partnership c/o Levco, Inc. 145 Rosemary Street Needham, MA 02494

3.0 DESIGN BASIS

3.1 IMPACTED AREA

Tetrachloroethene (PCE), TCE, cis-1,2-dichloroethene (cDCE), and vinyl chloride (VC) have been regularly detected in Northern Area groundwater since the installation of the MW-260-series monitoring wells in 2003. These four CVOCs were observed in samples of Northern Area groundwater collected in March 2008 as summarized in the following table:

Concentrations of CVOCs Detected in March 2008

Compound	MCP Method 1 GW-1 Standard (µg/L)	Number of Detections	Number of Exceedances	Concentration Range (µg/L)	Average Concentration (µg/L)
PCE	5	9	9	8.05 - 170	51
TCE	5	13	12	2.65 – 4,020	893
cDCE	7	12	11	2.82 – 3,310	442
VC	2	5	5	2.74 - 112	38

Notes:

Groundwater samples collected from 13 Northern Area wells on 6 March 2008.
Concentration Range and Average Concentration calculations exclude non-detects.

The total CVOC concentrations at the 13 Northern Area wells are shown on the plan map of the Northern Area of the facility in Figure 5 and on the cross-sections in Figure 6. The groundwater concentrations at the Waterloo Profiler points (collected during the Phase II investigation in 2005) are also shown on Figure 6 to further define the extent of contamination.

3.2 REMEDIAL GOALS

The Site is located within a DEP-approved Zone II Aquifer Protection Zone. Therefore, CVOCs in groundwater above Method 1 GW-1 Cleanup Standards pose a condition of "significant risk" to human health.

The concentrations and extents of PCE, TCE, cDCE, and VC in groundwater are not anticipated to adversely impact downgradient surface water quality or potential environmental receptors. As stated in the Phase II report, the plume is in steady-state with downgradient (western) extent of the plume situated in the wetlands east of the Sudbury River. The northern boundary of the plume is located approximately 0.4 miles south of the Baldwin Pond Wellfield.

To achieve a Permanent Solution, Response Action Performance Standards (RAPS, 310 CMR 40.0191) also require consideration of abatement to background levels, if feasible. According to DEP guidance, "achievement" of background is considered "generically infeasible" for chlorinated hydrocarbons in groundwater, but indicates that a reduction in contaminant concentrations should "approach" background levels (i.e. one-half the applicable cleanup standard), if feasible. Therefore, as a secondary target cleanup goal, abatement of PCE, TCE, cDCE, and VC in groundwater will attempt to "approach" background levels, if feasible. The feasibility of abatement of CVOCs in groundwater to these levels will be based on the success of remedial measures at reducing CVOC concentrations in groundwater to Method 1 GW-1 standards.

4.0 REMEDIAL DESIGN

4.1 OVERVIEW

Enhanced reductive dechlorination is the stimulation of anaerobic biodegradation of chlorinated ethenes by the addition of a carbon substrate. Chlorinated ethenes such as PCE, TCE, cDCE and VC can be biodegraded under anaerobic conditions through reductive dechlorination. The chlorinated compounds serve as electron acceptors with other organic compounds serving as sources of electron donor and carbon substrates.

The process of reductive dechlorination involves the sequential removal of chlorine atoms and produces lesser chlorinated daughter products and ultimately innocuous non-chlorinated end products and inorganic chloride. For PCE and TCE, the sequence of this process is:

$$\text{PCE} \rightarrow \text{TCE} \rightarrow \text{cisDCE} \rightarrow \text{VC} \rightarrow \text{ethene, ethane, chloride}$$

In addition to reductive dechlorination, the daughter products (cDCE and VC), are also biodegraded through a second anaerobic biological process, cometabolic reductive oxidation, in the presence of other organic compounds and through aerobic cometabolic oxidation in the presence of methane. The mono-chlorinated product VC is also degraded through simple aerobic oxidation to carbon dioxide (CO_2) and inorganic carbon.

Under naturally occurring conditions, the rates of reductive dechlorination are often limited by the amount of available organic substrate. ERD overcomes carbon substrate limitations by the addition of readily degradable sources of organic carbon such as sugars, organic acids, vegetable oils, etc. Addition of these substrates will initially drive depletion of oxygen, nitrate and other competing electron acceptors and produce anaerobic reducing conditions.

4.2 REDUCTIVE DECHLORINATION AT THE SITE

At the shallow wells near the excavated former source area (MW-261S, MW-551, MW-552, and MW-553), the only daughter product that has been detected is cDCE (Table 3). VC has not been detected in these wells and ethene has been only intermittently detected. At the downgradient wells

(e.g. MW-264M, MW-268M, MW-266Mb), cDCE was the dominant CVOC at the March 2008 sampling event and both VC and ethene were detected. These data indicate that reductive dechlorination is occurring naturally at the Site, but at a slower rate than desired and with transient accumulation of daughter products.

Under naturally occurring conditions, the rates of reductive dechlorination are limited by the amount of available organic substrate, as indicated by the low concentrations of total organic carbon (TOC) detected in Site groundwater (0.55 to 2.9 mg/L) and the intermittently high oxidizing ORP values. The transient accumulation of daughter product cDCE may also be due to the limited availability of carbon substrate.

These conclusions were confirmed by the laboratory treatability study conducted on Site soil and groundwater (ERM, 2005b). The addition of either emulsified soybean oil or sodium lactate stimulated reductive dechlorination of PCE and TCE. However, during the short-term test, cDCE accumulated in the laboratory microcosms, as it has in Site groundwater, and complete dechlorination to ethene did not occur until the microcosms were bioaugmented with a dechlorinating enrichment culture containing *Dehalococcoides ethenogenes*.

Although bioaugmentation was required in the treatability study for complete dechlorination, the production of ethene at the Site indicates that the naturally occurring microbial population is capable of complete dechlorination. Microbial analyses have also detected the presence of *Dehalococcoides*, a dechlorinating group of bacteria that is associated with complete reductive dechlorination to ethene, in both the Site soil used for the treatability study and in two of the twelve Site groundwater samples collected during the March 2008 sampling event. A gene (vcrA) that is known to code for a vinyl chloride reductase enzyme was not detected in these two samples. However, the vcrA gene is only one of the known bacterial genes that codes for a vinyl chloride reductase and the detection of ethene production at the Site demonstrates that the ability to completely dechlorinate PCE and TCE to ethene does exist within the naturally occurring microbial community at the Site.

The low numbers of Dehalococcoides and the lack of detection of vcrA are consistent with the low rates of reductive dechlorination observed in the Northern area. Since ethene production has been detected, carbon substrate addition to stimulate the naturally occurring dechlorinating microbial community at the Site is likely to achieve complete dechlorination. However, if significant accumulation of cDCE or VC

occurs, bioaugmentation with a dechlorinating culture may be considered to more rapidly achieve the remedial goals for CVOCs at the Site.

4.3 ENHANCED REDUCTIVE DECHLORINATION DESIGN AND IMPLEMENTATION

4.3.1 Choice of Carbon Substrate

Carbon substrates generally fall into two classes, soluble and persistent, both of which were tested in the laboratory treatability study. Soluble substrates such as lactate, acetate, and ethanol readily dissolve in groundwater and are easily transported through the aquifer by advective flow with little adsorption. However, because soluble substrates are both readily degraded and transported within groundwater, frequent or continuous injection may be required to achieve consistent ERD. Persistent substrates such as emulsified oils or polylactate ester adsorb onto soil and are slowly released through dissolution and/or hydrolysis. Persistent substrates are designed to require very infrequent applications on the order of once every 2 to 3 years. However, because of their limited transport in groundwater, these substrates are generally delivered through closely spaced injection points, which reduce the cost-effectiveness of these substrates.

A soluble carbon substrate has been chosen for amendment at the Site. The advantage of a soluble substrate is that it will follow groundwater flow and move through the aquifer both vertically and horizontally to stimulate reductive dechlorination downgradient of the injection point. Intermittent injections will be required to maintain sufficient dissolved carbon concentration within the aquifer. Sodium lactate has been selected for use during the initial injection events due to its solubility, availability and ease of use. However, other soluble carbon sources such as molasses or whey powder may be supplemented during subsequent events based on availability and costs. Sodium bicarbonate will also be added to provide buffering capacity to maintain pH in the neutral range.

4.3.2 Substrate Injection System

The soluble substrate will be injected through the infiltration gallery installed at the bottom of the excavation and through a series of injection wells installed within the plume. The infiltration gallery will target distribution of substrate to the zone immediately downgradient of the former source area. While the reduced CVOC mass flux from this zone will ultimately result in decreased concentrations at the downgradient

monitoring wells, additional injection wells within the plume will reduce the time necessary to achieve the remedial goals. These wells may also be used to extract groundwater and enhance the rate of transport of the carbon substrate through the aquifer.

The infiltration gallery was constructed at the bottom of the former source zone excavation at 25 feet (ft) below ground surface (bgs). The gallery is a trench that is 40 ft wide perpendicular to groundwater flow, 15 ft long, and 6 ft high and filled with ¾-inch crushed stone and a pipe manifold. The pipe manifold consists of three 6-inch perforated polyvinyl chloride (PVC) pipes running the width of the gallery and piped to the surface. The pore volume within the gallery including the crushed stone and the three lateral pipes is approximately 10,900 gallons.

In order to distribute carbon substrate throughout the plume, additional injection wells will be installed downgradient of the infiltration gallery. These wells will be installed in rows that transect the plume perpendicular to groundwater flow. Within each row, the wells will be closely spaced to allow for overlapping radii of influence (ROI) and distribution of carbon substrate laterally across the plume.

Figure 7 shows the proposed locations of the injection wells. The initial placement of the injection wells is based on the hydrogeology and the current understanding of the vertical and lateral extent of the CVOC contamination. The hydrogeologic data used for this design can be found in the Phase II report. (Please note the Phase II report incorrectly states the groundwater seepage velocity to be 0.5 feet per day due to a typographical error. The correct value is 0.05 feet per day.) The first row of injection wells will be installed approximately 200 ft downgradient of the infiltration gallery. This row and the infiltration gallery will target the mass flux immediately downgradient of the former source area. A second row of injection points will be installed approximately 200 ft further downgradient in the vicinity of the MW-266 well cluster. This row will target the downgradient mass and will decrease the time to achieve remedial goals.

One of the proposed injection well locations is within the 100-foot buffer zone for delineated wetlands at the Site. A Request for Determination of Applicability will be submitted to the Town of Wayland Conservation Commission prior to performing activities in the resource area.

The injection wells will consist of 4-inch PVC wells with 10-ft screened intervals. The depth of the screened intervals will be set based on the depth of the plume. The first row of injection wells will be set at 20 ft bgs

and will be screened from 10 to 20 ft bgs. The second row will be set at 70 ft bgs and will be screened from 60 to 70 ft bgs. During well installation, field screening will be used to confirm the intervals for the screens.

4.3.3 Carbon Substrate Injection

Sodium lactate will be injected at a concentration of 2,000 milligrams per liter (mg/L). This concentration is the maximum practical injection concentration for lactate, which can become toxic at higher concentrations. This concentration was chosen to achieve treatment across a wide area. At this concentration, a minimum of approximately 90,000 gallons of lactate solution will be required over the course of remediation to meet the electron donor demand for the CVOCs and other electron acceptors present within the treatment area. An additional 2,000 gallons a year will be required to meet the demand from the flux of additional electron donors into the treatment area. This volume estimates the minimum requirement since carbon substrate is consumed also consumed by other processes that do not result in reductive dechlorination.

Sodium lactate is supplied as a 60% syrup and will be diluted on Site using potable water.

At the infiltration gallery, up to 20,000 gallons will be injected per event using gravity feed. This volume is equal to approximately twice the void volume within the gallery. The volume per injection event may be adjusted based on observed injection rates and the monitoring data.

At the injection wells, up to 1,500 gallons will be injected per well per event, for a total of up to 12,000 gallons. This volume is based on an estimated 15 ft ROI and 15% of the pore volume. Typically, 30 to 50% of the pore volume would be injected; however, previous work with permanganate injections at this Site indicates that this higher volume would not likely be achievable. The volume injected per point and per injection event may be adjusted based on observed injection rates and the monitoring data.

The total volume to be injected per injection event will exceed the annual demand for carbon from the flux of additional electron donors into the treatment area. At least three injection events will be required to meet the demand within the treatment area.

The injection frequency will be determined based on geochemical data. The frequency of injection is expected to be the highest in the first year and will decrease in subsequent years.

4.4 GROUNDWATER MONITORING

The purpose of this task is to monitor the performance of the ERD treatment program over time. The data collected in March 2008 will be used for baseline comparison to any data collected in the future. ERM will monitor the performance of the remedial action using data from the following wells: DEP-19M, MW-261S, MW-264M, MW-265M, MW-266Ma, MW-266Mb, MW-267S, MW-267M, MW-268M, MW-268D, MW-551, MW-552, MW-553, and four of the injection wells to be determined. Monitoring wells MW-554D and MW-555D may also be monitored to confirm the plume has not moved that far down gradient.

The initial phase of performance monitoring will consist of the measurement of geochemical parameters in the wells listed above to determine which parts of the aquifer have been dosed with sodium lactate. The geochemical parameters to be recorded are: temperature, conductivity, dissolved oxygen concentration, ORP, and pH. Potentiometric surface elevations will be measured to determine groundwater flow direction and gradient.

The second phase of performance monitoring will include laboratory analyses of samples collected via low-flow methods from the wells listed above. This phase will commence upon indication from the geochemical parameter monitoring that subsurface conditions have been altered by the injection. Groundwater samples will be analyzed for the suite of compounds listed in Section 2.2.2 with the exclusion of the two microbial analyses (for Dehalococcoides and vcrA). Once initiated, this phase of monitoring will continue quarterly to maintain current data on the condition of the plume. The analytical suite and monitoring locations may be altered for subsequent monitoring rounds to provide the most useful dataset for evaluation.

5.0 IMPLEMENTATION SCHEDULE

The anticipated schedule for remedial activities at the Site is presented below.

Proposed Implementation Schedule for Phase IV RIP

Date	Event
Summer 2008	Install injection wells. Conduct baseline sampling event. Conduct initial substrate injections. Initiate Quarterly Performance Monitoring Program.
Fall 2008	Submit Final Inspection Report and Phase IV Completion Statement. Submit Remedy Operation Status Opinion and Submittal prior to expiration of Tier IB permit on 23 December 2008.

6.0 REFERENCES

ERM. 2003. *Phase I – Initial Site Investigation, Former Raytheon Facility, 430 Boston Post Road, Wayland, Massachusetts*. December 17.

ERM. 2005a. *Phase II – Comprehensive Site Assessment, Former Raytheon Facility, Wayland, Massachusetts*. December 16.

ERM. 2005b. *Phase III – Remedial Action Plan, Former Raytheon Facility, 430 Boston Post Road, Wayland, MA*. December 16.

ERM. 2006. *Phase IV – Remedy Implementation Plan, Former Raytheon Facility, 430 Boston Post Road, Wayland, Massachusetts*. August 18.

Tables

DRAFT Table 1
Summary of Groundwater Gauging Data
Former Raytheon Facility
Wayland, Massachusetts

Well Designation	Measuring Point Elevation (ft. ASL)	22 September 2006		23 April 2007		1 October 2007	
		Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. ASL)	Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. ASL)	Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. ASL)
DEP-19S	120.79	3.53	117.26	2.85	117.94	5.20	115.59
DEP-19M	120.62	1.65	118.97	2.92	117.70	3.70	116.92
DEP-19D	120.78	1.68	119.10	0.00[A]	120.78	3.20	117.58
DEP-20	119.98	1.01	118.97	0.00[A]	119.98	2.40	117.58
DEP-21	119.18	0.76	118.42	0.00	119.18	2.20	116.98
HA-101	127.27	7.83	119.44	3.61	123.66	9.46	117.81
HA-102	128.14	14.35	113.79	9.50	118.64	16.42	111.72
HA-103	131.54	14.49	117.05	11.51	120.03	16.65	114.89
HA-104	132.39	17.90	114.49	14.20	118.19	Dry	Dry
IP-16S	134.77	16.61	118.16	15.74	119.03	17.37	117.40
IP-16D	134.74	16.98	117.76	*	*	*	*
IP-17S	134.80	16.41	118.39	-	-	-	-
IP-17D	134.83	18.18	116.65	16.06	118.77	19.07	115.76
MW-1S	133.79	11.92	121.87	7.85	125.94	14.17	119.62
MW-1M	133.78	13.79	119.99	11.27	122.51	15.19	118.59
MW-1D	133.74	15.04	118.70	12.61	121.13	16.24	117.5
MW-10	130.86	9.31	121.55	3.59	127.27	10.90	119.96
MW-32	124.41	15.90	108.51	0.50	123.91	-	-
MW-33S	133.58	17.70	115.88	14.73	118.85	18.95	114.63
MW-33M	133.77	18.31	115.46	14.34	119.43	19.25	114.52
MW-33D	133.57	18.30	115.27	14.24	119.33	19.21	114.36
MW-33B	133.67	18.38	115.29	14.32	119.35	19.31	114.36
MW-34	136.67	11.31	125.36	7.19	129.48	14.07	122.60
MW-37	134.43	16.28	118.15	13.77	120.66	17.65	116.78
MW-37M	134.40	17.74	116.66	14.41	119.99	18.71	115.69
MW-38	134.42	15.40	119.02	13.36	121.06	16.59	117.83
MW-40	134.84	15.04	119.80	13.79	121.05	16.28	118.56
MW-40S	134.82	14.92	119.90	13.72	121.10	16.50	118.32
MW-41	127.46	14.49	112.97	8.25	119.21	15.44	112.02
MW-42S	134.44	14.13	120.31	13.36	121.08	15.74	118.70
MW-43S	133.82	14.89	118.93	12.31	121.51	16.11	117.71
MW-43D	134.31	16.57	117.74	13.52	120.79	17.63	116.68
MW-44S	134.73	15.75	118.98	13.35	121.38	16.90	117.83
MW-44M	134.57	15.89	118.68	13.35	121.22	17.00	117.57
MW-44D	134.66	16.09	118.57	13.52	121.14	16.18	118.48
MW-45S	132.07	18.17	113.90	13.57	118.50	19.23	112.84
MW-45M	132.28	18.32	113.96	13.77	118.51	19.40	112.88

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Summary of Groundwater Gauging Data
Former Raytheon Facility
Wayland, Massachusetts

		22 September 2006		23 April 2007		1 October 2007	
Well Designation	**Measuring Point Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)
MW-45D	131.88	16.29	115.59	14.70	117.18	16.91	114.97
MW-45B	131.59	16.94	114.65	12.54	119.05	17.78	113.81
MW-46S	131.44	14.39	117.05	11.59	119.85	15.56	115.88
MW-46M	131.52	16.61	114.91	12.91	118.61	17.59	113.93
MW-47S	132.30	17.79	114.51	13.86	118.44	18.85	113.45
MW-47M	131.99	16.79	115.20	12.92	119.07	18.80	113.19
MW-47D	132.29	16.94	115.35	12.90	119.39	17.84	114.45
MW-101	134.60	19.42	115.18	16.04	118.56	20.58	114.02
MW-102	134.50	18.90	115.60	16.07	118.43	19.98	114.52
MW-103	134.50	16.47	118.03	14.25	120.25	17.34	117.16
MW-104	134.22	15.13	119.09	12.38	121.84	16.21	118.01
MW-105	134.58	15.16	119.42	12.79	121.79	16.11	118.47
MW-105M	134.22	15.54	118.68	13.65	120.57	17.69	116.53
MW-106	134.63	15.94	118.69	13.25	121.38	17.04	117.59
MW-106M	134.63	16.75	117.88	13.81	120.82	17.77	116.86
MW-107	134.65	18.51	116.14	15.70	118.95	19.65	115.00
MW-108	134.69	18.72	115.97	15.97	118.72	19.85	114.84
MW-109	134.12	25.68	108.44	15.22	118.90	19.31	114.81
MW-110	134.04	15.44	118.60	14.61	119.43	**	**
MW-111	133.88	15.92	117.96	14.91	118.97	19.05	114.83
MW-112	133.68	17.48	116.20	14.21	119.47	18.90	114.78
MW-113	133.60	24.04	109.56	14.79	118.81	18.88	114.72
MW-114	133.48	17.61	115.87	14.55	118.93	18.81	114.67
MW-115	133.56	15.71	117.85	14.85	118.71	18.93	114.63
MW-116	133.72	17.82	115.90	14.15	119.57	19.10	114.62
MW-117	134.84	17.68	117.16	15.30	119.54	Dry	Dry
MW-118	134.88	16.96	117.92	15.88	119.00	17.75	117.13
MW-201S	132.38	17.64	114.74	14.00	118.38	18.85	113.53
MW-201M	132.19	17.29	114.90	13.66	118.53	18.42	113.77
MW-201D	132.10	16.68	115.42	12.65	119.45	17.80	114.30
MW-202S	132.74	17.68	115.06	13.84	118.90	18.92	113.82
MW-202M	132.98	17.91	115.07	14.41	118.57	19.13	113.85
MW-202D	132.72	17.40	115.32	13.35	119.37	18.30	114.42
MW-203S	132.50	18.36	114.14	13.99	118.51	19.49	113.01
MW-203M	132.39	18.20	114.19	13.90	118.49	19.30	113.09
MW-203D	132.14	16.91	115.23	12.82	119.32	17.84	114.30
MW-204S	132.98	17.96	115.02	14.70	118.28	19.10	113.88

DRAFT Table 1
Summary of Groundwater Gauging Data
Former Raytheon Facility
Wayland, Massachusetts

		22 September 2006		23 April 2007		1 October 2007	
Well Designation	**Measuring Point Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)
MW-204M	132.02	17.71	114.31	13.50	118.52	18.80	113.22
MW-204D	132.30	16.94	115.36	12.95	119.35	17.74	114.56
MW-205S	131.98	17.69	114.29	13.45	118.53	18.85	113.13
MW-205M	132.12	17.81	114.31	13.61	118.51	18.95	113.17
MW-205D	131.98	16.79	115.19	12.82	119.16	18.75	113.23
MW-206S	130.82	17.00	113.82	12.35	118.47	18.09	112.73
MW-206M	130.75	16.90	113.85	12.27	118.48	17.98	112.77
MW-206D	130.66	15.96	114.70	11.60	119.06	16.85	113.81
MW-207S	129.16	15.40	113.76	10.71	118.45	16.50	112.66
MW-207M	129.29	15.68	113.61	10.81	118.48	16.67	112.62
MW-207D	129.10	13.48	115.62	10.35	118.75	15.45	113.65
MW-208S	132.14	17.50	114.64	14.21	117.93	18.73	113.41
MW-208M	132.38	17.79	114.59	13.97	118.41	19.00	113.38
MW-208D	132.38	17.11	115.27	13.05	119.33	18.05	114.33
MW-209	134.56	16.29	118.27	13.04	121.52	17.38	117.18
MW-210	134.48	16.67	117.81	13.49	120.99	17.71	116.77
MW-211	135.26	15.24	120.02	13.48	121.78	16.26	119.00
MW-212	134.39	15.21	119.18	12.75	121.64	16.25	118.14
MW-212M	133.84	16.68	117.16	13.45	120.39	17.69	116.15
MW-213	134.84	**	**	15.11	119.73	17.70	117.14
MW-214	134.60	19.49	115.11	16.05	118.55	20.64	113.96
MW-215S	133.42	14.20	119.22	12.39	121.03	15.39	118.03
MW-215M	133.48	14.28	119.20	12.46	121.02	15.45	118.03
MW-215D	133.44	14.81	118.63	12.61	120.83	15.82	117.62
MW-216S	134.54	14.85	119.69	13.44	121.10	16.06	118.48
MW-216M	134.59	14.91	119.68	13.51	121.08	16.10	118.49
MW-216D	134.59	15.93	118.66	13.52	121.07	17.02	117.57
MW-217S	130.06	14.26	115.80	10.32	119.74	15.59	114.47
MW-217M	130.44	14.96	115.48	10.90	119.54	16.15	114.29
MW-217D	130.20	14.25	115.95	10.05	120.15	15.09	115.11
MW-218S	130.24	15.10	115.14	10.93	119.31	16.34	113.90
MW-218M	130.16	15.33	114.83	10.76	119.40	16.45	113.71
MW-218D	130.02	13.33	116.69	9.97	120.05	15.13	114.89
MW-219S	118.12	4.11	114.01	-	-	5.89	112.23
MW-219M	118.09	3.39	114.70	-	-	4.65	113.44
MW-219D	117.95	3.49	114.46	-	-	4.28	113.67
MW-220S	117.09	4.10	112.99	-	-	5.31	111.78

DRAFT Table 1
Summary of Groundwater Gauging Data
Former Raytheon Facility
Wayland, Massachusetts

		22 September 2006		23 April 2007		1 October 2007	
Well Designation	**Measuring Point Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)	**Depth to Water** (ft. below measuring point)	**Potentiometric Surface Elevation** (ft. ASL)
MW-220M	117.29	3.11	114.18	-	-	0.30	116.99
MW-220D	116.99	2.44	114.55	-	-	-	-
MW-221M	120.07	3.11	116.96	0.58	119.49	5.18	114.89
MW-221D	120.22	4.19	116.03	0.00[A]	120.22	5.05	115.17
MW-261S	131.28	11.98	119.30	8.64	122.64	13.51	117.77
MW-262S	129.60	9.99	119.61	6.62	122.98	+	+
MW-262M	130.52	14.16	116.36	10.65	119.87	+	+
MW-262D	129.73	12.29	117.44	9.30	120.43	+	+
MW-263S	127.96	9.22	118.55	6.62	121.34	10.06	117.90
MW-263M	127.77	8.59	119.37	6.72	121.05	10.57	117.20
MW-264S	126.32	8.31	118.01	4.33	121.99	10.23	116.09
MW-264M	126.28	7.80	118.48	5.10	121.18	9.19	117.09
MW-264D	126.63	10.18	116.45	6.72	119.91	11.15	115.48
MW-265S	130.06	11.82	118.24	6.15	123.91	13.66	116.40
MW-265M	129.89	11.51	118.38	8.56	121.33	12.88	117.01
MW-265D	130.07	13.47	116.60	10.10	119.97	14.50	115.57
MW-266S	126.79	10.08	116.71	5.71	121.08	11.57	115.22
MW-266Ma	127.72	10.29	117.43	7.22	120.50	11.55	116.17
MW-266Mb	126.88	9.45	117.43	6.41	120.47	10.68	116.20
MW-266D	127.70	11.19	116.51	7.80	119.90	12.22	115.48
MW-266B	128.14	11.32	116.82	8.09	120.05	12.26	115.88
MW-267S	125.30	9.06	116.24	5.61	119.69	10.19	115.11
MW-267M	125.40	9.34	116.06	5.81	119.59	10.39	115.01
MW-267D	125.88	9.74	116.14	6.17	119.71	10.78	115.10
MW-267B	124.02	8.10	115.92	5.00	119.02	9.11	114.91
MW-268S	123.66	7.73	115.93	4.20	119.46	8.98	114.68
MW-268M	123.41	7.78	115.63	4.30	119.11	9.01	114.40
MW-268D	124.86	9.43	115.43	6.57	118.29	10.42	114.44
MW-268B	122.34	6.69	115.65	3.46	118.88	8.05	114.29
MW-269S	125.54	10.64	114.90	6.12	119.42	12.78	112.76
MW-269Ma	124.96	10.44	114.52	5.24	119.72	12.56	112.40
MW-269Mb	125.42	10.33	115.09	6.25	119.17	11.32	114.10
MW-269D	125.34	11.59	113.75	6.95	118.39	12.51	112.83
MW-307	124.86	10.71	114.15	6.24	118.62	11.98	112.88
MW-313S	114.61	3.81	110.80	-	-	-	-
MW-313D	114.37	1.62	112.75	-	-	-	-
MW-314S	114.10	*	*	*	*	*	*

DRAFT Table 1
Summary of Groundwater Gauging Data
Former Raytheon Facility
Wayland, Massachusetts

Well Designation	Measuring Point Elevation (ft. ASL)	22 September 2006		23 April 2007		1 October 2007	
		Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. ASL)	Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. ASL)	Depth to Water (ft. below measuring point)	Potentiometric Surface Elevation (ft. ASL)
MW-314D	114.09	*	*	*	*	*	*
MW-315S	114.07	+	+	+	+	+	+
MW-315D	113.79	*	*	*	*	*	*
MW-403	134.39	18.89	115.50	15.71	118.68	19.79	114.60
MW-404	134.94	16.85	118.09	16.12	118.82	18.75	116.19
MW-405S	134.90	18.32	116.58	16.00	118.90	18.56	116.34
MW-551	129.30	10.02	119.28	6.45	122.85	11.51	117.79
MW-552	130.09	10.77	119.32	7.51	122.58	12.25	117.84
MW-553	130.33	10.83	119.50	7.36	122.97	12.54	117.79
MW-554S	120.93	9.22	111.71	2.44	118.49	11.70	109.23
MW-554Ma	120.82	6.22	114.60	2.44	118.38	7.21	113.61
MW-554Mb	120.96	5.91	115.05	2.23	118.73	6.91	114.05
MW-554D	120.96	6.59	114.37	2.70	118.26	7.60	113.36
MW-555S	121.10	9.83	111.27	3.22	117.88	-	-
MW-555Ma	121.25	6.48	114.77	2.52	118.73	-	-
MW-555Mb	121.26	7.23	114.03	2.92	118.34	-	-
MW-555D	121.19	7.00	114.19	2.91	118.28	-	-
MW-556S	120.93	10.26	110.67	2.72	118.21	12.99	107.94
MW-556M	121.00	6.43	114.57	2.62	118.38	7.44	113.56
MW-556D	120.92	6.44	114.48	3.29	117.63	7.45	113.47
MW-TP-3	131.08	11.64	119.44	6.47	124.61	13.26	117.82

Notes:

- = Not measured / not accessible.

* = Well damaged, water level not recorded.

** = Not measured, obstruction in well.

+ = Well destroyed, water level not recorded.

Dry = Not measured, well dry.

^{A} = Well artesian.

DRAFT Table 2
Summary of Vertical Hydraulic Gradient Data
Former Raytheon Facility
Wayland, Massachusetts

Well Designation	22 September 2006 Head Elevation (feet)	22 September 2006 Vertical Gradient (feet/feet)	22 September 2006 Direction	23 April 2007 Head Elevation (feet)	23 April 2007 Vertical Gradient (feet/feet)	23 April 2007 Direction	1 October 2007 Head Elevation (feet)	1 October 2007 Vertical Gradient (feet/feet)	1 October 2007 Direction
DEP-19S	117.26	-0.06840	Up	117.94	0.00960	Down	115.59	-0.05320	Up
DEP-19M	118.97			117.70			116.92		
DEP-19M	118.97	-0.01300	Up	117.70			116.92	-0.06600	Up
DEP-19D	119.10			Artesian			117.58		
MW-1S	121.87	0.06836	Down	125.94	0.12473	Down	119.62	0.03745	Down
MW-1M	119.99			122.51			118.59		
MW-1M	119.99	0.08600	Down	122.51	0.09200	Down	118.59	0.07267	Down
MW-1D	118.70			121.13			117.50		
MW-262S	119.61	0.12481	Down	122.98	0.11943	Down	Destroyed		
MW-262M	116.36			119.87			Destroyed		
MW-262M	116.36	-0.04344	Up	119.87	-0.02253	Up	Destroyed		
MW-262D	117.44			120.43			Destroyed		
MW-263S	118.55	-0.02993	Up	121.34	0.01058	Down	117.90	0.02555	Down
MW-263M	119.37			121.05			117.20		
MW-264S	118.01	-0.01918	Up	121.99	0.03306	Down	116.09	-0.04082	Up
MW-264M	118.48			121.18			117.09		
MW-264M	118.48	0.05820	Down	121.18	0.03641	Down	117.09	0.04616	Down
MW-264D	116.45			119.91			115.48		
MW-265S	118.24	-0.00474	Up	123.91	0.08740	Down	116.40	-0.02066	Up
MW-265M	118.38			121.33			117.01		
MW-265M	118.38	0.04045	Down	121.33	0.03091	Down	117.01	0.03273	Down
MW-265D	116.60			119.97			115.57		
MW-266S	116.71	-0.01931	Up	121.08	0.01555	Down	115.22	-0.02548	Up
MW-266Ma	117.43			120.50			116.17		

DRAFT Table 2
Summary of Vertical Hydraulic Gradient Data
Former Raytheon Facility
Wayland, Massachusetts

Well Designation	22 September 2006 Head Elevation (feet)	22 September 2006 Vertical Gradient (feet/feet)	22 September 2006 Direction	23 April 2007 Head Elevation (feet)	23 April 2007 Vertical Gradient (feet/feet)	23 April 2007 Direction	1 October 2007 Head Elevation (feet)	1 October 2007 Vertical Gradient (feet/feet)	1 October 2007 Direction
MW-266Ma	117.43	0.00000	Static	120.50	0.00222	Down	116.17	-0.00222	Up
MW-266Mb	117.43			120.47			116.20		
MW-266Mb	117.43	0.02334	Down	120.47	0.01446	Down	116.20	0.01826	Down
MW-266D	116.51			119.90			115.48		
MW-266D	116.51	-0.00933	Up	119.90	-0.00452	Up	115.48	-0.01204	Up
MW-266B	116.82			120.05			115.88		
MW-267S	116.24	0.01164	Down	119.69	0.00647	Down	115.11	0.00647	Down
MW-267M	116.06			119.59			115.01		
MW-267M	116.06	-0.00279	Up	119.59	-0.00418	Up	115.01	-0.00314	Up
MW-267D	116.14			119.71			115.10		
MW-267D	116.14	0.00684	Down	119.71	0.02144	Down	115.10	0.00590	Down
MW-267B	115.92			119.02			114.91		
MW-268S	115.93	0.01726	Down	119.46	0.02014	Down	114.68	0.01611	Down
MW-268M	115.63			119.11			114.40		
MW-268M	115.63	0.00565	Down	119.11	0.02315	Down	114.40	-0.00113	Up
MW-268D	115.43			118.29			114.44		
MW-268D	115.43	-0.00843	Up	118.29	-0.02261	Up	114.44	0.00575	Down
MW-268B	115.65			118.88			114.29		
MW-269S	114.90	0.02612	Down	119.42	-0.02062	Up	112.76	0.02474	Down
MW-269Ma	114.52			119.72			112.40		
MW-269Ma	114.52	-0.01147	Up	119.72	0.01107	Down	112.40	-0.03421	Up
MW-269Mb	115.09			119.17			114.10		
MW-269Mb	115.09	0.02143	Down	119.17	0.01247	Down	114.10	0.02031	Down
MW-269D	113.75			118.39			112.83		

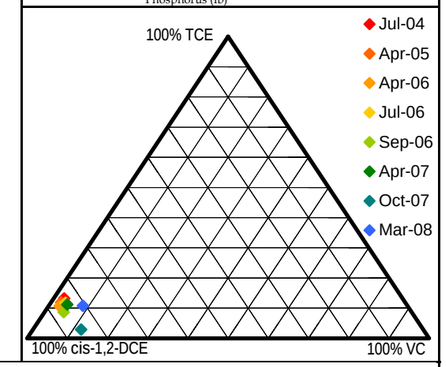
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

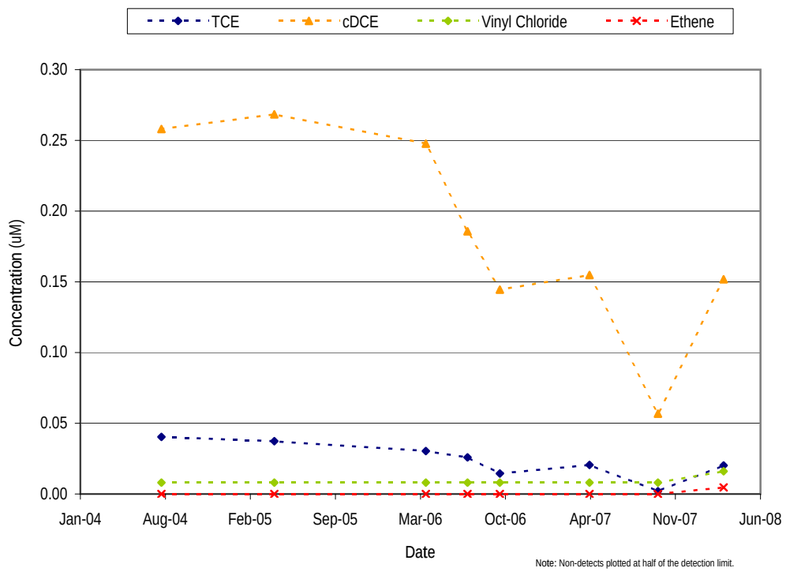
Well Identification:	Well Category:	Well Construction:		Notes:
DEP-19M	Monitoring Well	Top of Casing Elevation (ft AMSL):	120.62	NA = Not Analyzed/ Not Applicable
		Screened Interval (ft BGS):	30.0-40.0	
		Well Screen Elevation (ft AMSL):	85.6	
		Screened Geologic Interval:	Unknown	

	Sample Date:	23-Jul-04	14-Apr-05	6-Apr-06	13-Jul-06	27-Sep-06	26-Apr-07	4-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride									
Tetrachloroethene	ug/L	0.61	0.64	0.61	0.56	< 0.50	< 0.50	< 0.50	< 2.00
Trichloroethene	ug/L	5.3	4.9	4.0	3.4	1.9	2.7	< 0.50	2.65
cis-1,2-Dichloroethene	ug/L	25	26	24	18	14	15	5.5	14.7
Vinyl Chloride	ug/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.00
Ethene	ug/L	NA	NA	NA	NA	NA	NA	NA	0.13
Ethane	ug/L	NA	NA	NA	NA	NA	NA	NA	0.039
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters									
Dissolved Oxygen (DO)	mg/L	0.23	0.29	NA	NA	NA	3.77	4.54	NA
Nitrogen, Nitrate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Methane (dissolved gas)	ug/L	NA	NA	NA	NA	NA	NA	NA	0.48
Oxidation Reduction Potential (ORP)	mV	-63.5	-22.3	NA	NA	NA	-141	-166	NA
Alkalinity, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids									
Total Organic Carbon	mg/L	NA	NA	NA	NA	NA	NA	NA	1.0
Lactic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.38	6.55	NA	NA	NA	7.22	7.71	NA
Nutrients									
Nitrogen, Total Kjeldahl (TKN)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Other									
Specific Conductivity	uS/cm	224	207	NA	NA	NA	289	230	NA
Hydrogen Sulfide Odor	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA
Black Precipitate Presence	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA

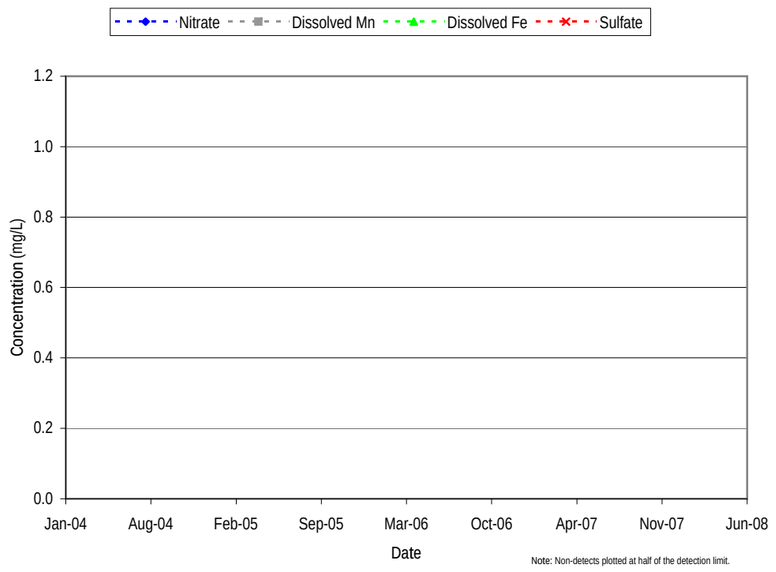
Substrate Injection Log:

Injection Dates								
Injection Well								
Injection Vol. (gal)								
Sodium Lactate (lb)								
Bromide (lb)								
TOC Concentration Range (mg/L)								
TOC Concentration Range (mg/L)								
Injection Dates								
Injection Well								
Injection Vol. (gal)								
Yeast Extract (lb)								
Phosphorus (lb)								

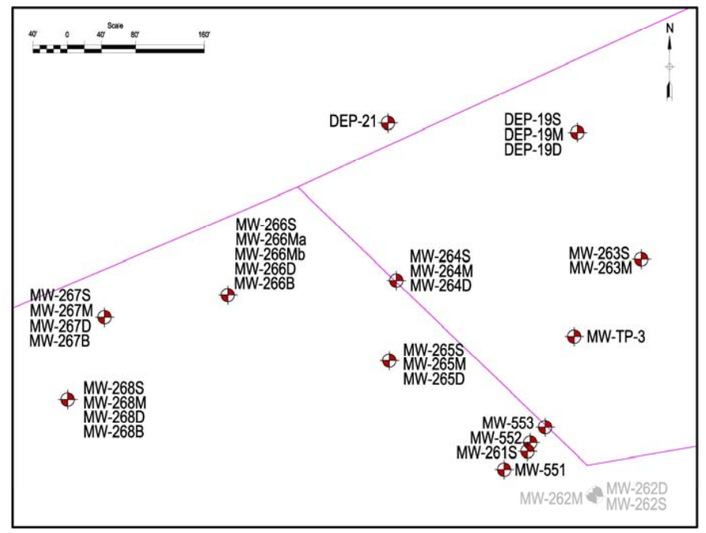




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



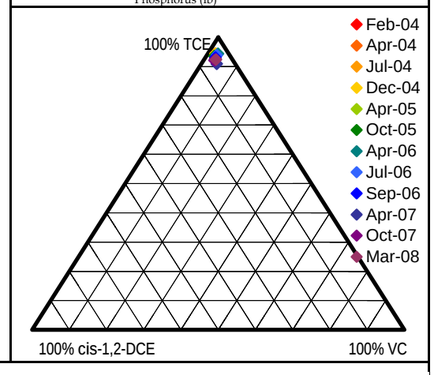
Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

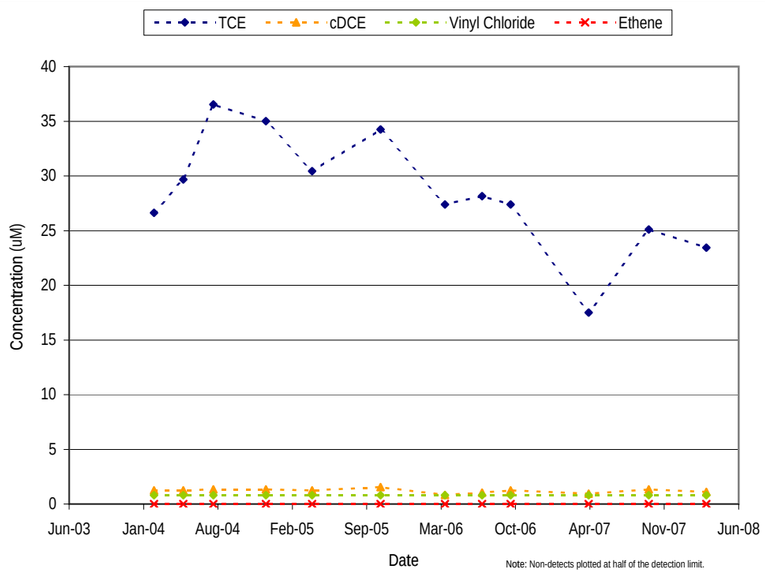
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

Well Identification:	Well Category:	Well Construction:	Notes:
MW-261S	Monitoring Well	Top of Casing Elevation (ft AMSL): 131.28 Screened Interval (ft BGS): 17.0-22.0 Well Screen Elevation (ft AMSL): 110.3 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

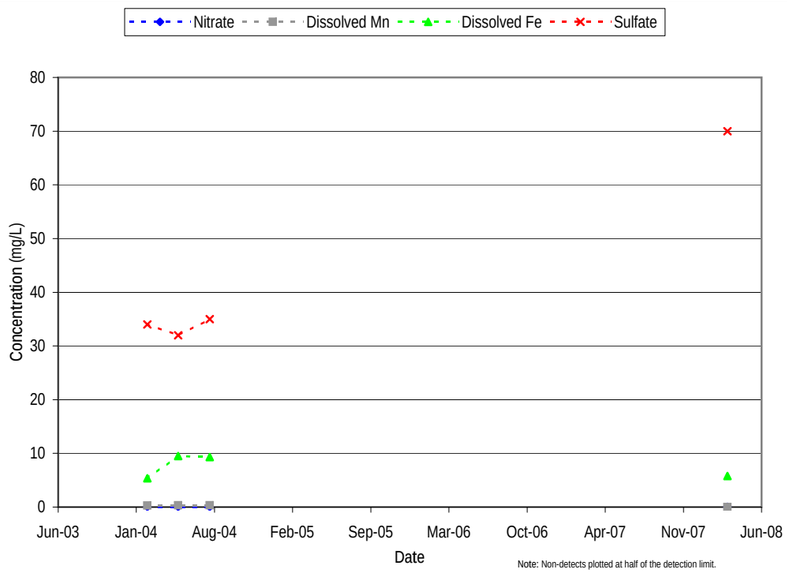
Sample Date:		11-Feb-04	30-Apr-04	20-Jul-04	8-Dec-04	11-Apr-05	12-Oct-05	3-Apr-06	12-Jul-06	27-Sep-06	25-Apr-07	3-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	60	58	75	90	79	98	56	78	68	52	79	70.8
Trichloroethene	ug/L	3,500	3,900	4,800	4,600	4,000	4,500	3,600	3,700	3,600	2,300	3,300	3,080
cis-1,2-Dichloroethene	ug/L	120	120	130	130	120	150	80	100	120	92	130	108
Vinyl Chloride	ug/L	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 40.0
Ethene	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	0.10
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	6.7	6.9	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	0.70	0.40	1.2	0.25	0.25	0.26	1.74	0.41	0.32	0.69	0.44	1.10
Nitrogen, Nitrate	mg/L	< 0.10	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	0.2645	0.3300	0.3170	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	5.34	9.50	9.32	NA	NA	NA	NA	NA	NA	NA	NA	5.8
Sulfate	mg/L	34	32	35	NA	NA	NA	NA	NA	NA	NA	NA	70
Methane (dissolved gas)	ug/L	<0.300	0.322	0.366	NA	NA	NA	NA	NA	NA	NA	NA	0.27
Oxidation Reduction Potential (ORP)	mV	-20	-13	-61.1	-72.8	-38.2	-60	31.6	-83.9	-21.2	-159	-80.9	-82.1
Alkalinity, Total	mg/L	40	49	52	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	0.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.8	6.0	6.1	6.7	6.7	6.8	6.7	6.8	6.6	6.8	6.4	6.7
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	0.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.04
Other													
Specific Conductivity	uS/cm	198	210	197	192	184	196	173	193	179	178	189	184
Hydrogen Sulfide Odor	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	Orange Floc

Substrate Injection Log:	Feb-04	Apr-04	Jul-04	Dec-04	Apr-05	Oct-05	Apr-06	Jul-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Sodium Lactate (lb)												
Bromide (lb)												
TOC Concentration Range (mg/L)												
TOC Concentration Range (mg/L)												
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Sodium Lactate (lb)												
Yeast Extract (lb)												
Phosphorus (lb)												

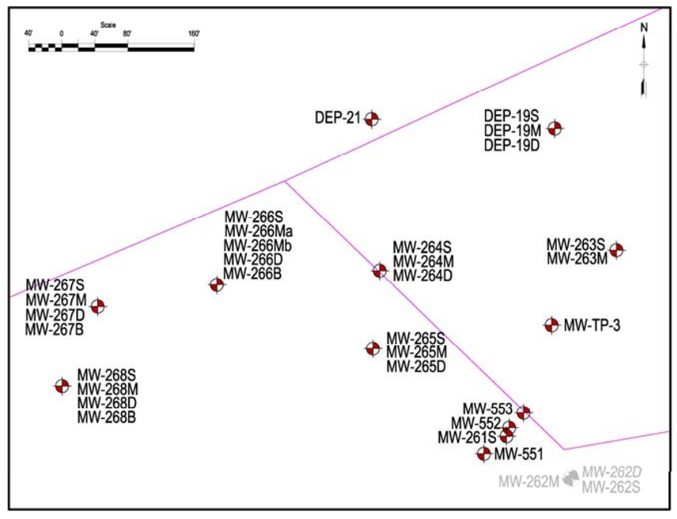




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

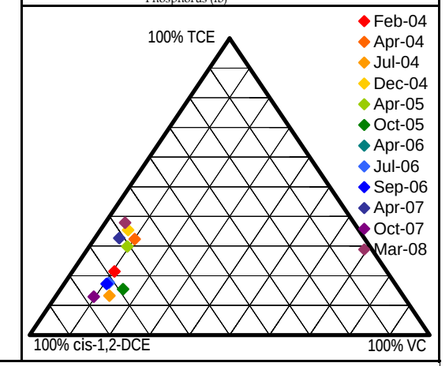
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

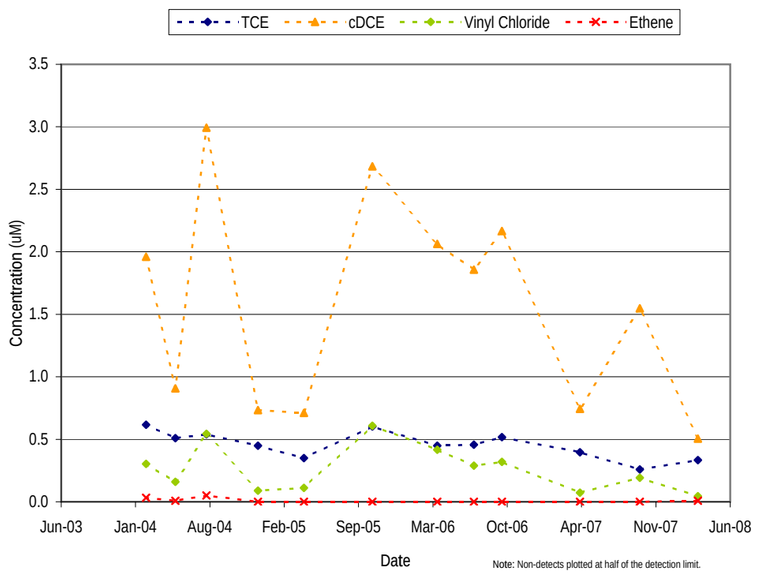
Well Identification:	Well Category:	Well Construction:	Notes:
MW-264M	Monitoring Well	Top of Casing Elevation (ft AMSL): 126.28 Screened Interval (ft BGS): 34.0-44.0 Well Screen Elevation (ft AMSL): 89.0 Screened Geologic Interval: Fine Sand	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

Sample Date:		11-Feb-04	30-Apr-04	23-Jul-04	8-Dec-04	11-Apr-05	12-Oct-05	5-Apr-06	12-Jul-06	26-Sep-06	24-Apr-07	2-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	12	7.5	10	7.6	6.4	13	7.6	10	13	9.1	11	8.05
Trichloroethene	ug/L	81	67	71	59	46	79	59	60	68	52	34	43.9
cis-1,2-Dichloroethene	ug/L	190	88	290	71	69	260	200	180	210	72	150	48.9
Vinyl Chloride	ug/L	19	10	34	5.5	7.0	38	26	18	20	4.6	12	2.74
Ethene	ug/L	0.888	< 0.500	1.39	NA	NA	NA	NA	NA	NA	NA	NA	0.20
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	24	30	30	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	0.90	0.67	0.50	0.38	0.45	0.26	0.37	0.40	0.29	0.25	0.61	0.54
Nitrogen, Nitrate	mg/L	< 0.10	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	0.4782	0.3500	0.336	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	14.4	11.0	15.5	NA	NA	NA	NA	NA	NA	NA	NA	11
Sulfate	mg/L	28	18	34	NA	NA	NA	NA	NA	NA	NA	NA	28
Methane (dissolved gas)	ug/L	8.20	12.8	4.44	NA	NA	NA	NA	NA	NA	NA	NA	7.9
Oxidation Reduction Potential (ORP)	mV	48	98	15.1	-20.5	52.9	-37.4	-15.4	-31.7	-10.0	-15.8	-102	-106
Alkalinity, Total	mg/L	80	72	76	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.2	5.5	5.2	6.2	6.4	6.5	6.3	6.4	6.5	6.4	6.2	6.4
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05
Other													
Specific Conductivity	uS/cm	286	290	345	256	272	293	274	282	282	267	343	274
Hydrogen Sulfide Odor	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N

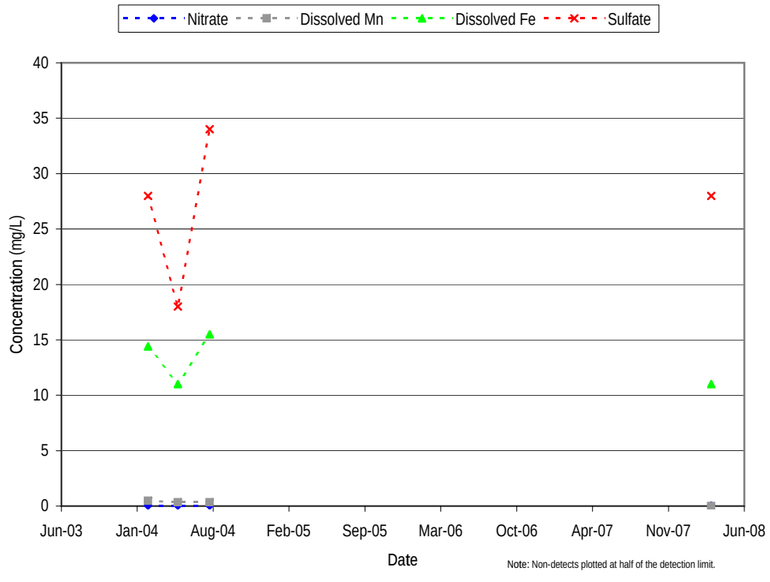
Substrate Injection Log:

	Feb-04	Apr-04	Jul-04	Dec-04	Apr-05	Oct-05	Apr-06	Jul-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Sodium Lactate (lb)												
Bromide (lb)												
TOC Concentration Range (mg/L)												
TOC Concentration Range (mg/L)												
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Yeast Extract (lb)												
Phosphorus (lb)												

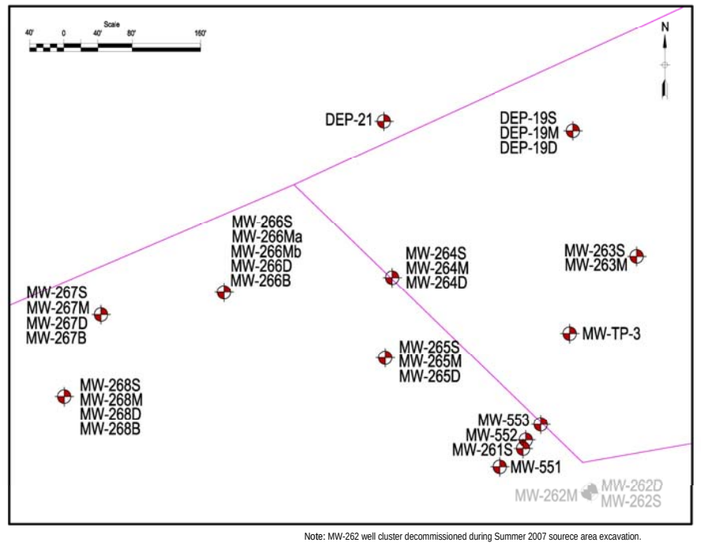




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.

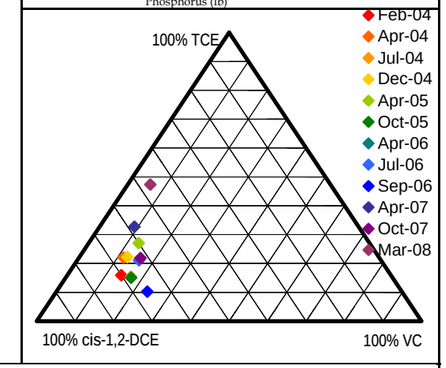


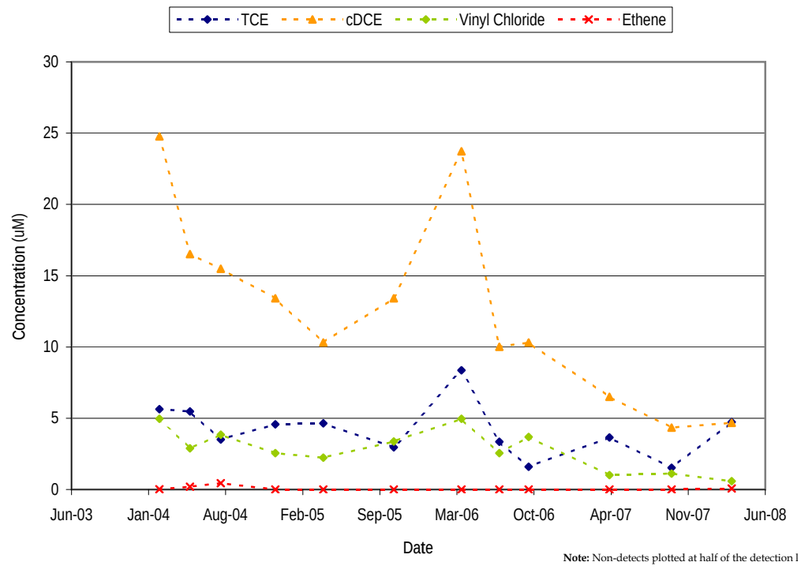
Note: MW-262 well cluster decommissioned during Summer 2007 source area excavation.

DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

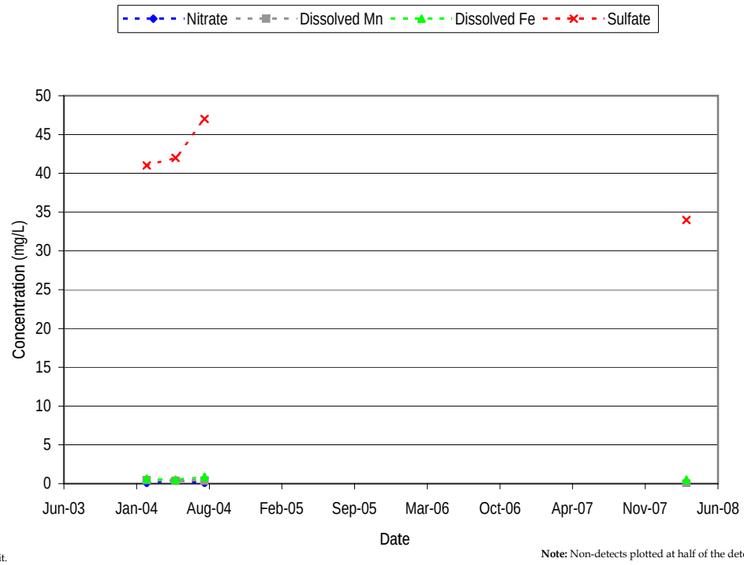
Well Identification:	Well Category:	Well Construction:	Notes:	Substrate Injection Log:
MW-265M	Monitoring Well	Top of Casing Elevation (ft AMSL): 129.89 Screened Interval (ft BGS): 40.0-45.0 Well Screen Elevation (ft AMSL): 87.5 Screened Geologic Interval: Fine Sand	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable	Injection Dates Injection Well Injection Vol. (gal) Sodium Lactate (lb) Bromide (lb) TOC Concentration Range (mg/L) TOC Concentration Range (mg/L) Injection Dates Injection Well Injection Vol. (gal) Yeast Extract (lb) Phosphorus (lb)

	Sample Date:	11-Feb-04	30-Apr-04	19-Jul-04	08-Dec-04	11-Apr-05	11-Oct-05	05-Apr-06	12-Jul-06	26-Sep-06	24-Apr-07	02-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	< 50	34	30	31	34	41	54	34	33	39	31	39.3
Trichloroethene	ug/L	740	720	460	600	610	390	1,100	440	210	480	200	622
cis-1,2-Dichloroethene	ug/L	2,400	1,600	1,500	1,300	1,000	1,300	2,300	970	1,000	630	420	454
Vinyl Chloride	ug/L	310	180	240	160	140	210	310	160	230	63	70	36.8
Ethene	ug/L	< 0.500	5.22	12.3	NA	NA	NA	NA	NA	NA	NA	NA	1.8
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	22	18	28	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	0.60	0.70	0.32	0.39	0.68	0.46	0.67	5.60	0.57	0.71	0.67	0.37
Nitrogen, Nitrate	mg/L	<0.10	0.41	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	0.4485	0.3600	0.3870	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	0.644	0.520	0.892	NA	NA	NA	NA	NA	NA	NA	NA	0.52
Sulfate	mg/L	41	42	47	NA	NA	NA	NA	NA	NA	NA	NA	34
Methane (dissolved gas)	ug/L	< 0.300	6.43	11.6	NA	NA	NA	NA	NA	NA	NA	NA	4.7
Oxidation Reduction Potential (ORP)	mV	195	99	127	88.8	135	119	108	35.5	68.3	87	-61.1	-30.1
Alkalinity, Total	mg/L	90	79	84	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.3	6.3	6.3	6.1	NA	6.5	6.3	6.3	6.0	6.4	6.1	6.3
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	< 0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.01
Other													
Specific Conductivity	uS/cm	319	304	353	267	288	289	276	333	303	264	300	248
Hydrogen Sulfide Odor	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N

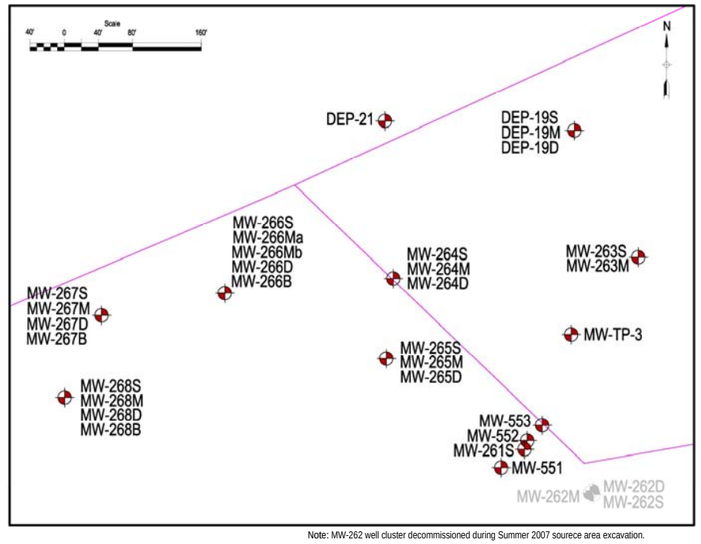




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.

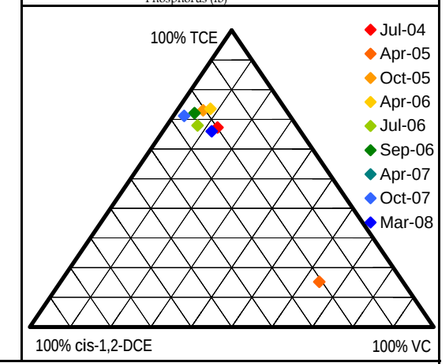


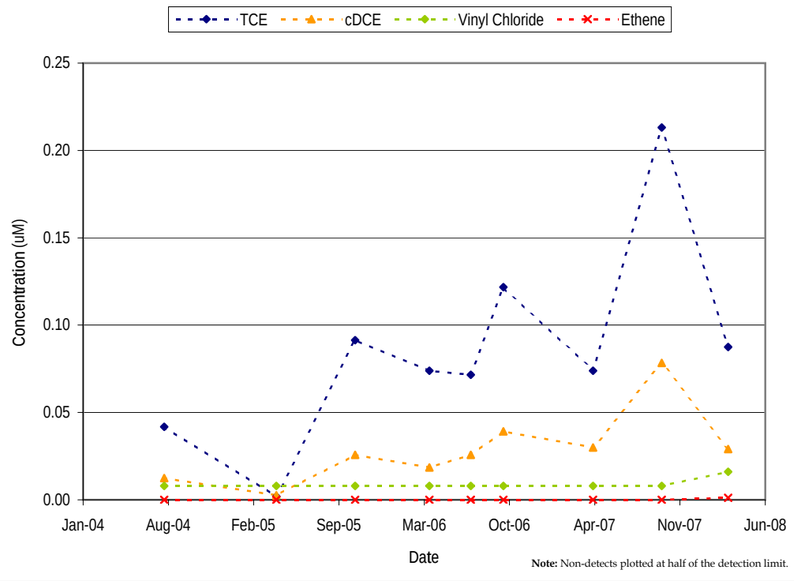
Note: MW-262 well cluster decommissioned during Summer 2007 source area excavation.

DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

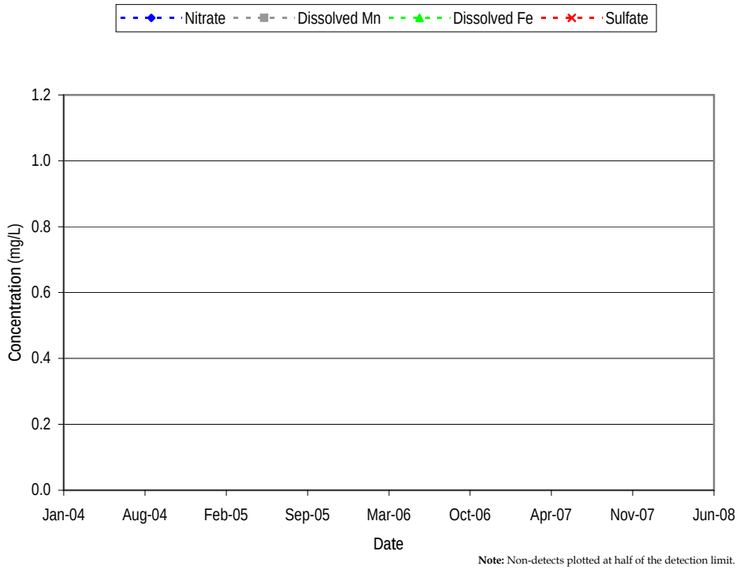
Well Identification:	Well Category:	Well Construction:	Notes:	Substrate Injection Log:
MW-266Ma	Monitoring Well	Top of Casing Elevation (ft AMSL): 127.72 Screened Interval (ft BGS): 47.0-52.0 Well Screen Elevation (ft AMSL): 78.2 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable	Injection Dates Injection Well Injection Vol. (gal) Sodium Lactate (lb) Bromide (lb) TOC Concentration Range (mg/L) TOC Concentration Range (mg/L) Injection Dates Injection Well Injection Vol. (gal) Yeast Extract (lb) Phosphorus (lb)

	Sample Date:	22-Jul-04	11-Apr-05	13-Oct-05	5-Apr-06	11-Jul-06	26-Sep-06	24-Apr-07	2-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride										
Tetrachloroethene	ug/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.61	< 2.00
Trichloroethene	ug/L	5.5	< 0.50	12	9.7	9.4	16.0	9.7	28	11.5
cis-1,2-Dichloroethene	ug/L	1.2	< 0.50	2.5	1.8	2.5	3.8	2.9	7.6	2.82
Vinyl Chloride	ug/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.00
Ethene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	0.034
Ethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters										
Dissolved Oxygen (DO)	mg/L	0.43	1.64	0.35	0.76	0.26	0.32	0.31	0.62	NA
Nitrogen, Nitrate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	4.9
Sulfate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	24
Methane (dissolved gas)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	19
Oxidation Reduction Potential (ORP)	mV	22.4	331	11.3	20.5	89.2	-20.6	-20.4	-130	NA
Alkalinity, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids										
Total Organic Carbon	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	0.68
Lactic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.15	5.62	6.39	6.18	5.88	6.13	6.45	6.41	NA
Nutrients										
Nitrogen, Total Kjeldahl (TKN)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.01
Other										
Specific Conductivity	uS/cm	410	94	465	420	386	552	229	723	NA
Hydrogen Sulfide Odor	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA	N
Black Precipitate Presence	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA	N

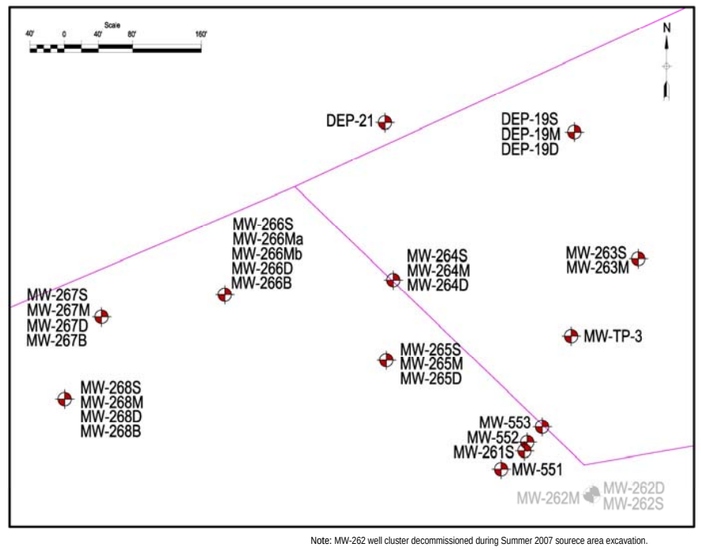




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

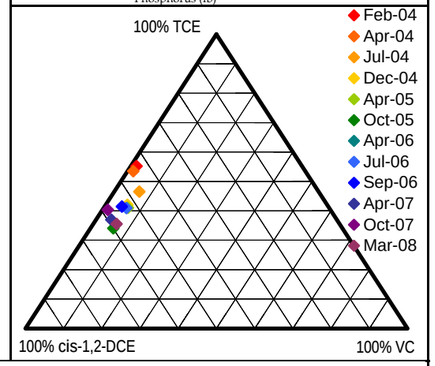
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

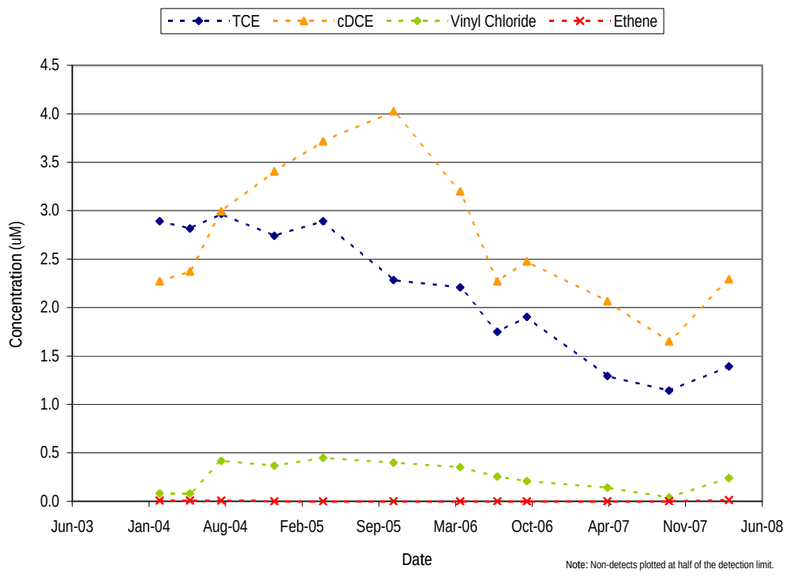
Well Identification:	Well Category:	Well Construction:	Notes:
MW-266Mb	Monitoring Well	Top of Casing Elevation (ft AMSL): 126.88 Screened Interval (ft BGS): 58.0-68.0 Well Screen Elevation (ft AMSL): 67.2 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

	Sample Date:	11-Feb-04	30-Apr-04	21-Jul-04	6-Dec-04	12-Apr-05	13-Oct-05	5-Apr-06	11-Jul-06	26-Sep-06	24-Apr-07	2-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	49	43	53	50	55	42	53	48	43	36	22	32.7
Trichloroethene	ug/L	380	370	390	360	380	300	290	230	250	170	150	183
cis-1,2-Dichloroethene	ug/L	220	230	290	330	360	390	310	220	240	200	160	222
Vinyl Chloride	ug/L	< 10	< 10	26	23	28	25	22	16	13	8.8	< 5.0	15.0
Ethene	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	0.37
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	8.3	7.8	7.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	0.40	1.32	0.39	0.58	0.49	0.37	0.70	0.27	0.25	0.28	0.70	0.28
Nitrogen, Nitrate	mg/L	<0.10	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	0.1626	0.1600	0.1556	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	21.2	20.0	21.3	NA	NA	NA	NA	NA	NA	NA	NA	21
Sulfate	mg/L	32	26	31	NA	NA	NA	NA	NA	NA	NA	NA	10
Methane (dissolved gas)	ug/L	1.57	11.1	11.9	NA	NA	NA	NA	NA	NA	NA	NA	4.5
Oxidation Reduction Potential (ORP)	mV	-65	-40	-62.7	-15.5	-38.3	-52.9	-68.8	-84.1	-63.1	-71.6	-124	-158
Alkalinity, Total	mg/L	77	71	70	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	0.90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.8	6.0	6.5	6.3	6.7	6.8	6.6	6.6	6.5	6.6	6.5	6.7
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05
Other													
Specific Conductivity	uS/cm	282	260	248	271	239	228	243	233	235	243	275	258
Hydrogen Sulfide Odor	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N

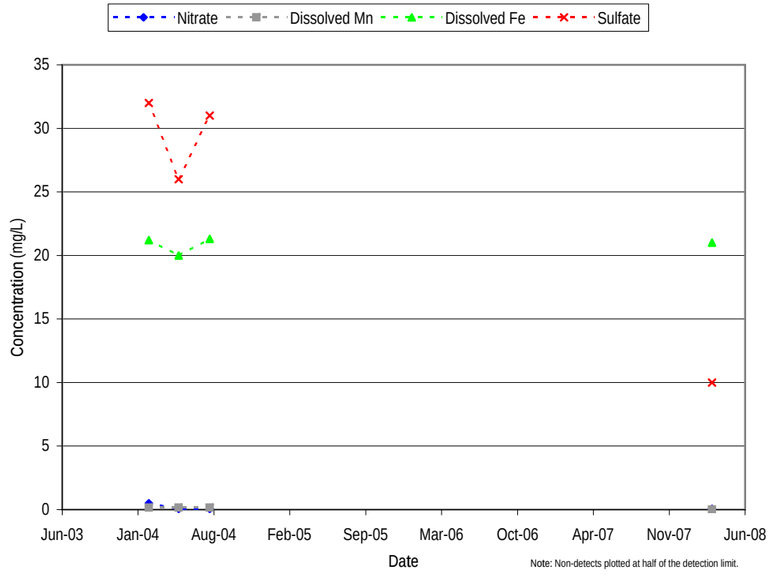
Substrate Injection Log:

	Feb-04	Apr-04	Jul-04	Dec-04	Apr-05	Oct-05	Apr-06	Jul-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Sodium Lactate (lb)												
Bromide (lb)												
TOC Concentration Range (mg/L)												
TOC Concentration Range (mg/L)												
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Yeast Extract (lb)												
Phosphorus (lb)												

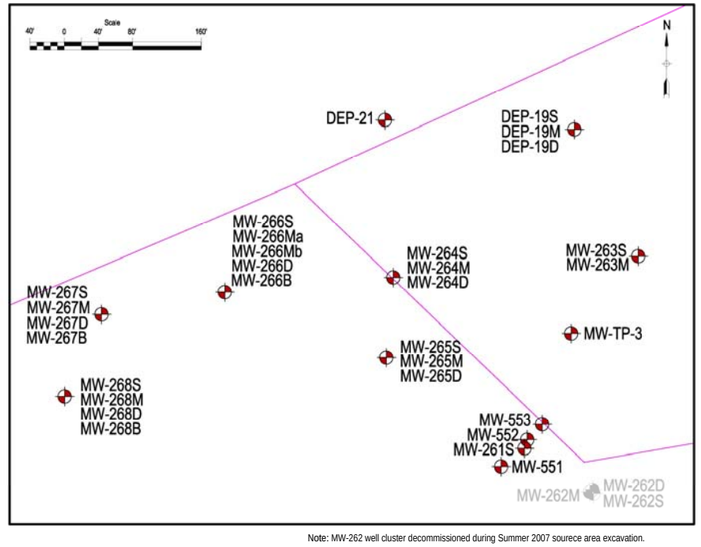




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 source area excavation.

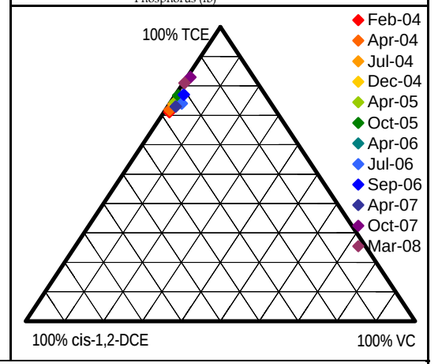
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

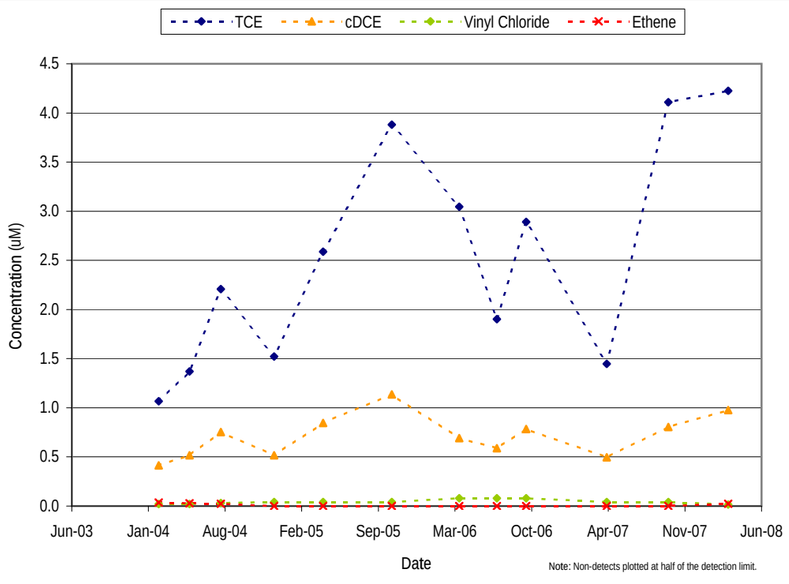
Well Identification:	Well Category:	Well Construction:	Notes:
MW-267S	Monitoring Well	Top of Casing Elevation (ft AMSL): 125.3 Screened Interval (ft BGS): 72.0-77.0 Well Screen Elevation (ft AMSL): 51.2 Screened Geologic Interval: Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

Sample Date:		10-Feb-04	30-Apr-04	21-Jul-04	7-Dec-04	14-Apr-05	10-Oct-05	4-Apr-06	11-Jul-06	26-Sep-06	24-Apr-07	2-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	1.5	1.8	3.8	2.5	4.4	8.7	6.1	< 5.0	6.2	3.6	13.0	9.81
Trichloroethene	ug/L	140	180	290	200	340	510	400	250	380	190	540	555
cis-1,2-Dichloroethene	ug/L	40	50	73	50	82	110	67	57	76	48	78	94.7
Vinyl Chloride	ug/L	< 2.5	< 2.5	< 4.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 5.0	< 5.0	< 2.00
Ethene	ug/L	0.992	0.801	0.627	NA	NA	NA	NA	NA	NA	NA	NA	0.68
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	61	60	63	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	0.60	0.61	0.17	0.36	1.10	0.22	0.21	0.46	0.29	0.35	0.23	0.43
Nitrogen, Nitrate	mg/L	0.84	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	1.719	1.800	1.734	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	10.4	9.10	11.7	NA	NA	NA	NA	NA	NA	NA	NA	23
Sulfate	mg/L	58	48	53	NA	NA	NA	NA	NA	NA	NA	NA	63
Methane (dissolved gas)	ug/L	480	427	488	NA	NA	NA	NA	NA	NA	NA	NA	440
Oxidation Reduction Potential (ORP)	mV	12	328	486	-44.3	-59.2	-64.9	-75.1	-68.7	-49.0	-44.2	-142	-124
Alkalinity, Total	mg/L	30	36	42	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	0.77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.5	4.6	6.5	6.7	6.5	6.9	6.8	6.8	6.7	6.7	6.6	6.7
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	0.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	0.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.3
Other													
Specific Conductivity	uS/cm	413	416	378	435	448	420	404	395	444	219	470	471
Hydrogen Sulfide Odor	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N

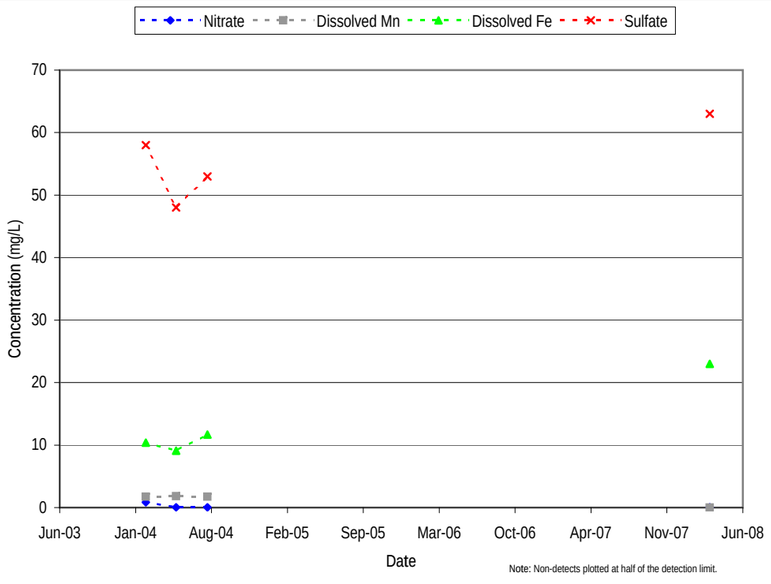
Substrate Injection Log:

	Feb-04	Apr-04	Jul-04	Dec-04	Apr-05	Oct-05	Apr-06	Jul-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Sodium Lactate (lb)												
Bromide (lb)												
TOC Concentration Range (mg/L)												
TOC Concentration Range (mg/L)												
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Yeast Extract (lb)												
Phosphorus (lb)												

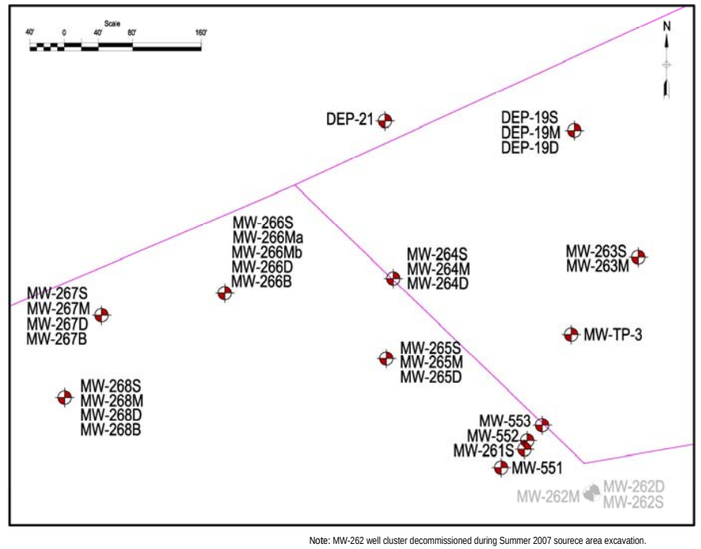




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

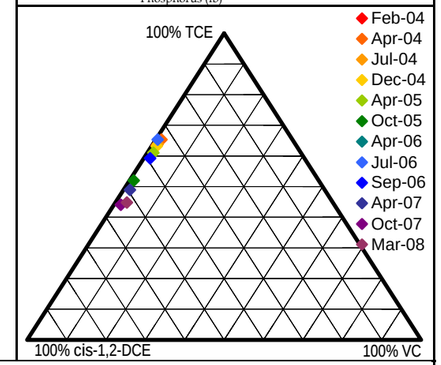
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

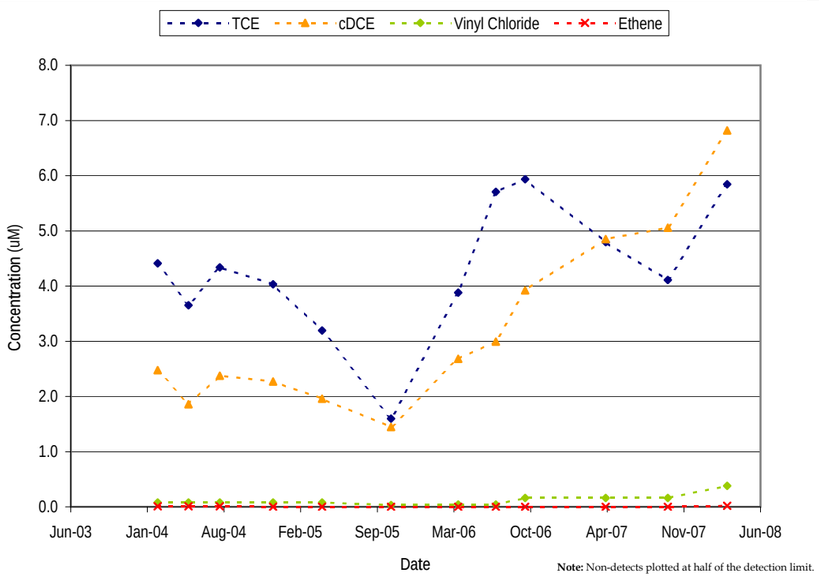
Well Identification:	Well Category:	Well Construction:	Notes:
MW-267M	Monitoring Well	Top of Casing Elevation (ft AMSL): 125.4 Screened Interval (ft BGS): 85.0-95.0 Well Screen Elevation (ft AMSL): 38.3 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

	Sample Date:	**10-Feb-04**	**30-Apr-04**	**21-Jul-04**	**7-Dec-04**	**14-Apr-05**	**11-Oct-05**	**4-Apr-06**	**11-Jul-06**	**26-Sep-06**	**24-Apr-07**	**3-Oct-07**	**6-Mar-08**
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	19	12	22	25	14	5.7	24	28	40	38	34.0	45.3
Trichloroethene	ug/L	580	480	570	530	420	210	510	750	780	630	540	768
cis-1,2-Dichloroethene	ug/L	240	180	230	220	190	140	260	290	380	470	490	661
Vinyl Chloride	ug/L	< 10	< 10	< 10	< 10	< 10	< 4.0	< 5.0	< 5.0	< 20	< 20	< 20	23.8
Ethene	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	0.49
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	0.028
Chloride	mg/L	25	25	25	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	1.00	0.41	0.42	0.53	0.89	0.52	0.92	0.21	0.21	0.39	0.31	0.47
Nitrogen, Nitrate	mg/L	< 0.10	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	0.6365	0.6900	0.6625	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	20.0	22.0	20.8	NA	NA	NA	NA	NA	NA	NA	NA	20
Sulfate	mg/L	64	67	61	NA	NA	NA	NA	NA	NA	NA	NA	56
Methane (dissolved gas)	ug/L	97.4	105	86.0	NA	NA	NA	NA	NA	NA	NA	NA	59
Oxidation Reduction Potential (ORP)	mV	-24	-140	-93	-81.7	-96.9	-77.5	-49.4	-11.4	-69.1	-84.2	-147	-157
Alkalinity, Total	mg/L	52	38	66	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	0.90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.9	5.3	6.7	6.9	6.8	7.0	6.9	6.8	6.8	6.8	6.7	6.8
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	0.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.07
Other													
Specific Conductivity	uS/cm	360	351	311	346	329	306	314	305	326	193	317	327
Hydrogen Sulfide Odor	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	N	N	N	N	N	N	N	N	N	N	N	N

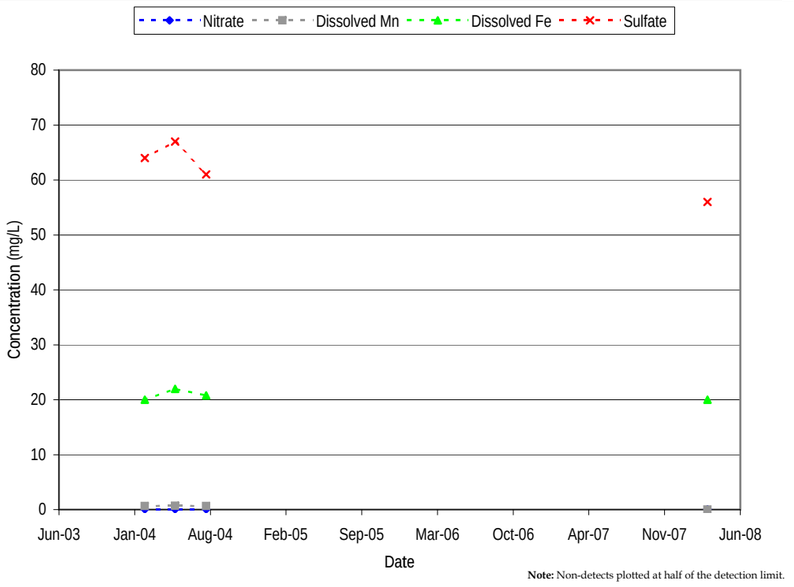
Substrate Injection Log:

	Feb-04	Apr-04	Jul-04	Dec-04	Apr-05	Oct-05	Apr-06	Jul-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Sodium Lactate (lb)												
Bromide (lb)												
TOC Concentration Range (mg/L)												
TOC Concentration Range (mg/L)												
Injection Dates												
Injection Well												
Injection Vol. (gal)												
Yeast Extract (lb)												
Phosphorus (lb)												

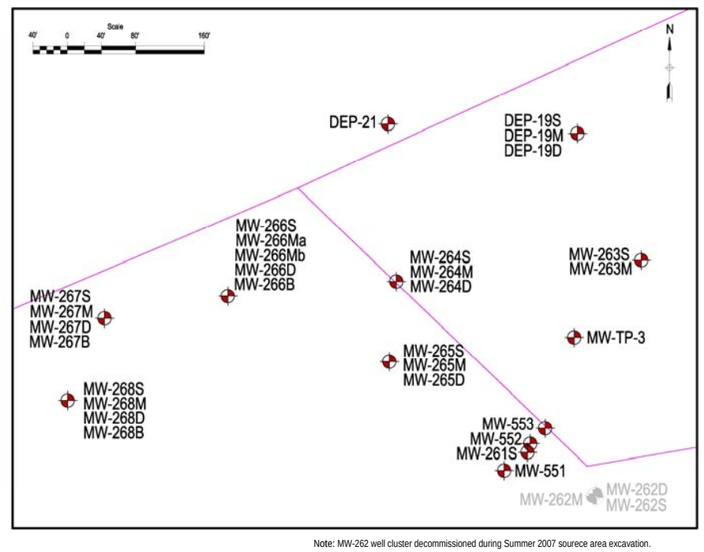




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

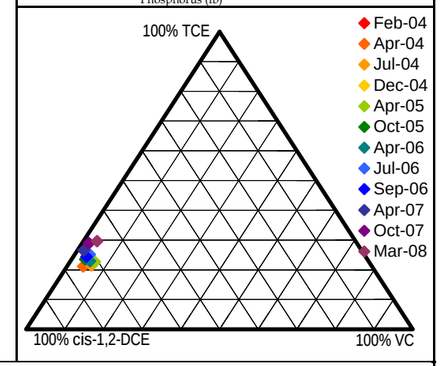
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

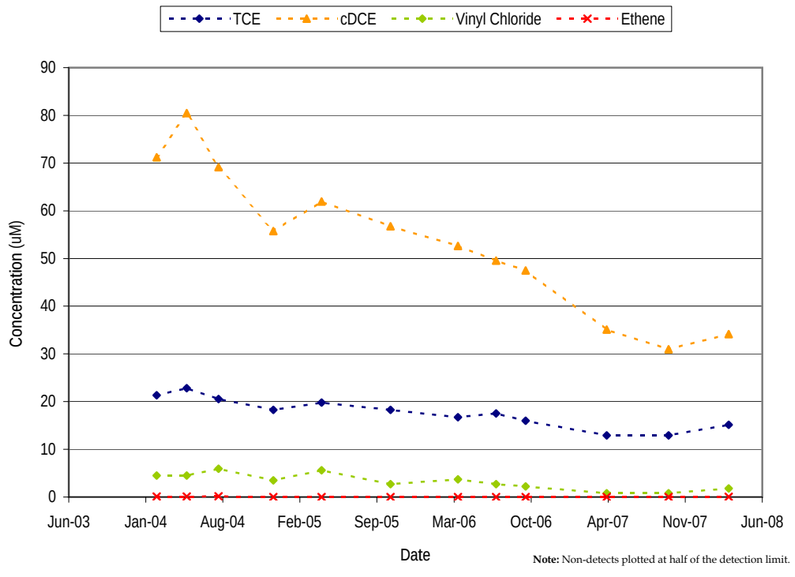
Well Identification:	Well Category:	Well Construction:	Notes:
MW-268M	Monitoring Well	Top of Casing Elevation (ft AMSL): 123.41 Screened Interval (ft BGS): 84.0-94.0 Well Screen Elevation (ft AMSL): 37.5 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

	Sample Date:	**11-Feb-04**	**29-Apr-04**	**21-Jul-04**	**10-Dec-04**	**14-Apr-05**	**10-Oct-05**	**3-Apr-06**	**11-Jul-06**	**26-Sep-06**	**24-Apr-07**	**2-Oct-07**	**6-Mar-08**
VOCs, Dissolved Gases & Chloride													
Tetrachloroethene	ug/L	< 100	< 100	57	< 100	66	58	51	84	61	59	< 50	57.6
Trichloroethene	ug/L	2,800	3,000	2,700	2,400	2,600	2,400	2,200	2,300	2,100	1,700	1,700	1,990
cis-1,2-Dichloroethene	ug/L	6,900	7,800	6,700	5,400	6,000	5,500	5,100	4,800	4,600	3,400	3,000	3,310
Vinyl Chloride	ug/L	280	280	370	220	350	170	230	170	140	< 100	< 100	112
Ethene	ug/L	3.55	3.34	3.81	NA	NA	NA	NA	NA	NA	NA	NA	1.8
Ethane	ug/L	< 0.500	< 0.500	< 0.500	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	30	32	30	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters													
Dissolved Oxygen (DO)	mg/L	0.90	0.56	1.34	0.46	0.36	0.16	0.28	5.40	0.20	NA	0.27	0.55
Nitrogen, Nitrate	mg/L	< 0.10	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	0.5605	0.4900	0.5685	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	26.5	26.0	26.5	NA	NA	NA	NA	NA	NA	NA	NA	21
Sulfate	mg/L	68	64	48	NA	NA	NA	NA	NA	NA	NA	NA	64
Methane (dissolved gas)	ug/L	65.6	58.3	61.2	NA	NA	NA	NA	NA	NA	NA	NA	37
Oxidation Reduction Potential (ORP)	mV	-77	-88	-33	-77.2	-78.8	-41.5	-90.3	-71.7	-72.3	-69.5	-148	-149
Alkalinity, Total	mg/L	88	81	81	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids													
Total Organic Carbon	mg/L	2.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4
Lactic Acid	mg/L	< 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	< 1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	6.45	6.19	6.00	6.60	6.69	6.77	6.72	6.62	6.75	6.70	6.60	6.55
Nutrients													
Nitrogen, Total Kjeldahl (TKN)	mg/L	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.84
Other													
Specific Conductivity	uS/cm	456	434	431	448	396	383	381	368	386	333	384	376
Hydrogen Sulfide Odor	(Y or N)	Y	N	N	N	N	N	N	N	N	N	N	N
Black Precipitate Presence	(Y or N)	Y	N	N	N	N	N	N	N	N	N	N	N

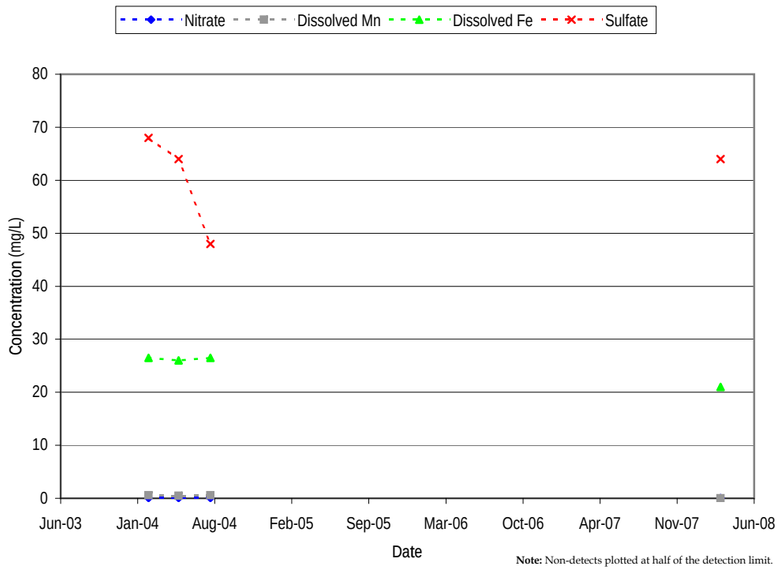
Substrate Injection Log:

Injection Dates	
Injection Well	
Injection Vol. (gal)	
Sodium Lactate (lb)	
Bromide (lb)	
TOC Concentration Range (mg/L)	
TOC Concentration Range (mg/L)	
Injection Dates	
Injection Well	
Injection Vol. (gal)	
Yeast Extract (lb)	
Phosphorus (lb)	

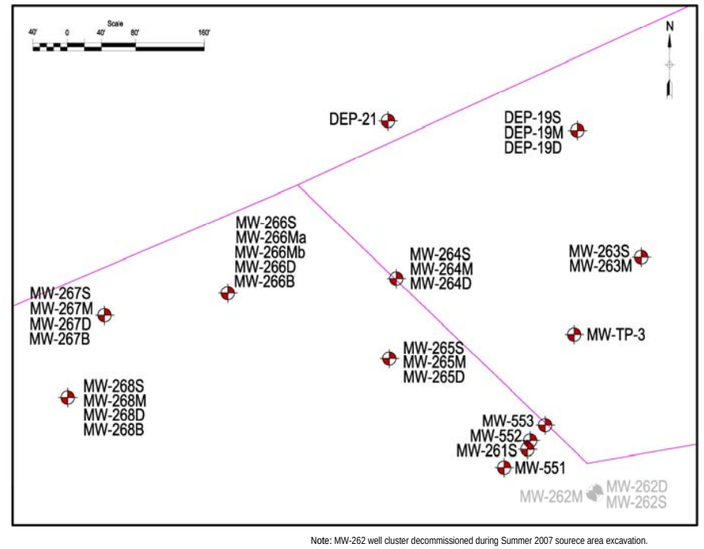




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

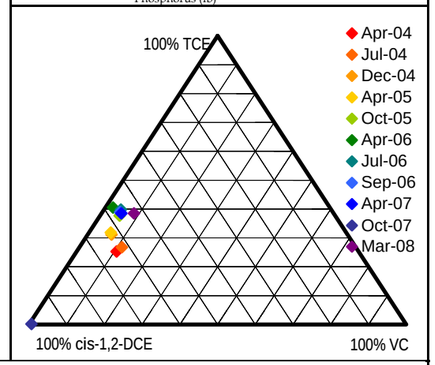
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

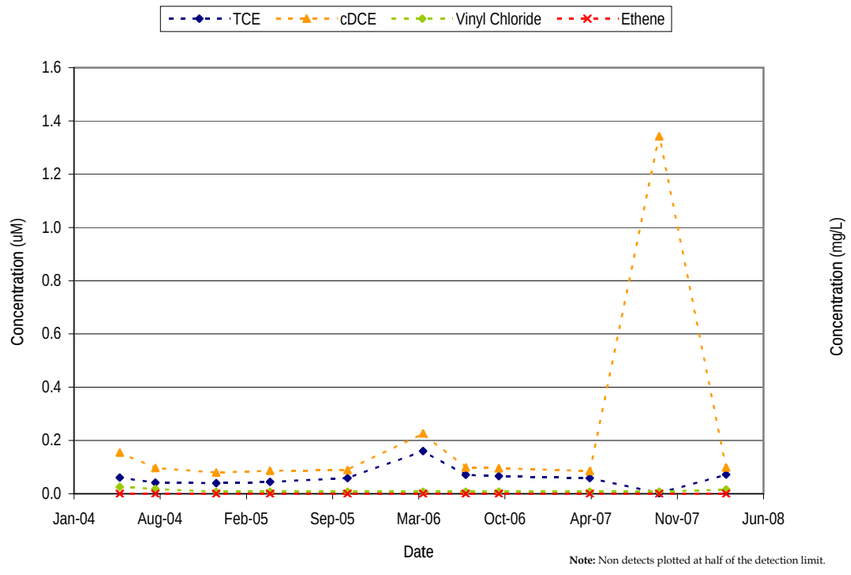
Well Identification:	Well Category:	Well Construction:	Notes:
MW-268D	Monitoring Well	Top of Casing Elevation (ft AMSL): 124.86 Screened Interval (ft BGS): 122.0-127.0 Well Screen Elevation (ft AMSL): 0.36 Screened Geologic Interval: Sand and Gravel	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

Sample Date:		**29-Apr-04**	**21-Jul-04**	**9-Dec-04**	**13-Apr-05**	**10-Oct-05**	**3-Apr-06**	**11-Jul-06**	**26-Sep-06**	**25-Apr-07**	**3-Oct-07**	**6-Mar-08**
VOCs, Dissolved Gases & Chloride												
Tetrachloroethene	ug/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	85	< 2.00
Trichloroethene	ug/L	8.0	5.5	5.2	5.8	7.7	21	9.3	8.7	7.7	< 0.50	9.41
cis-1,2-Dichloroethene	ug/L	15	9.4	7.7	8.4	8.6	22	9.6	9.3	8.3	130	9.55
Vinyl Chloride	ug/L	1.6	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.00
Ethene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Ethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters												
Dissolved Oxygen (DO)	mg/L	0.91	1.05	0.38	0.40	0.23	0.37	0.51	0.23	0.31	0.27	0.61
Nitrogen, Nitrate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.08
Sulfate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	36
Methane (dissolved gas)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23
Oxidation Reduction Potential (ORP)	mV	15.7	331	-134	317	-137	-156	-71.8	-79.4	-235	-171	-218
Alkalinity, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids												
Total Organic Carbon	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.55
Lactic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	8.34	7.87	8.21	7.74	8.29	8.19	8.11	8.21	8.11	7.95	7.97
Nutrients												
Nitrogen, Total Kjeldahl (TKN)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.04
Other												
Specific Conductivity	uS/cm	262	272	265	250	282	305	283	313	154	318	328
Hydrogen Sulfide Odor	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
Black Precipitate Presence	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N

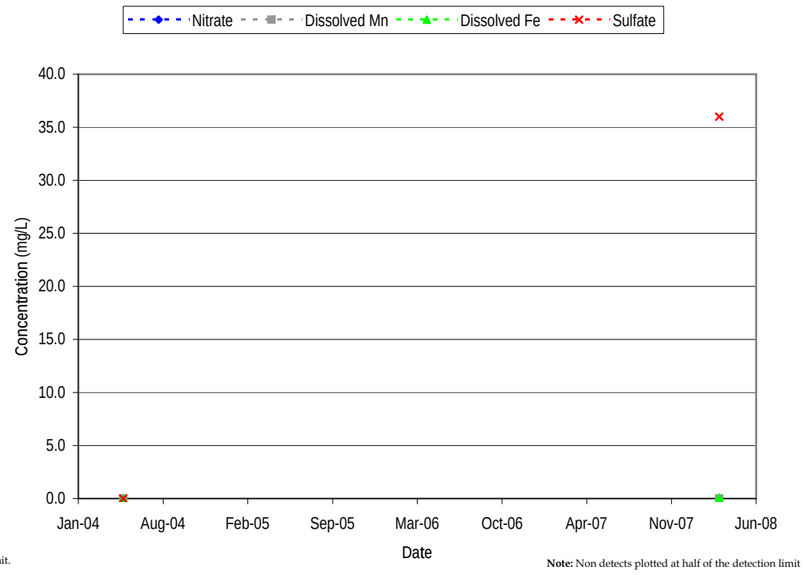
Substrate Injection Log:

	Apr-04	Jul-04	Dec-04	Apr-05	Oct-05	Apr-06	Jul-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates											
Injection Well											
Injection Vol. (gal)											
Sodium Lactate (lb)											
Bromide (lb)											
TOC Concentration Range (mg/L)											
TOC Concentration Range (mg/L)											
Injection Dates											
Injection Well											
Injection Vol. (gal)											
Yeast Extract (lb)											
Phosphorus (lb)											

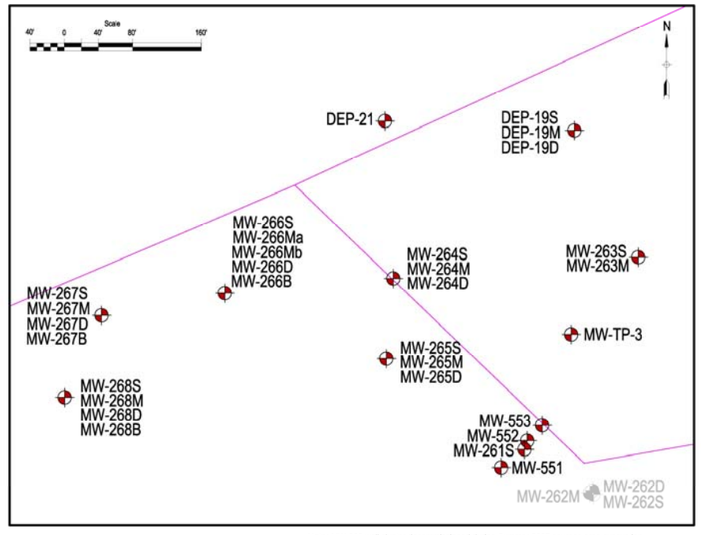




Note: Non detects plotted at half of the detection limit.



Note: Non detects plotted at half of the detection limit

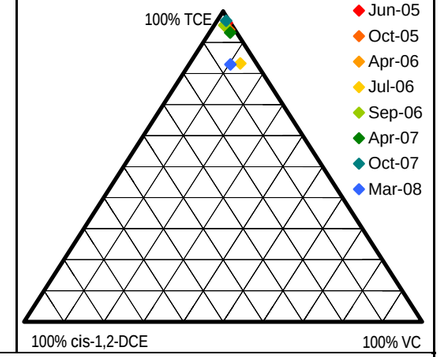


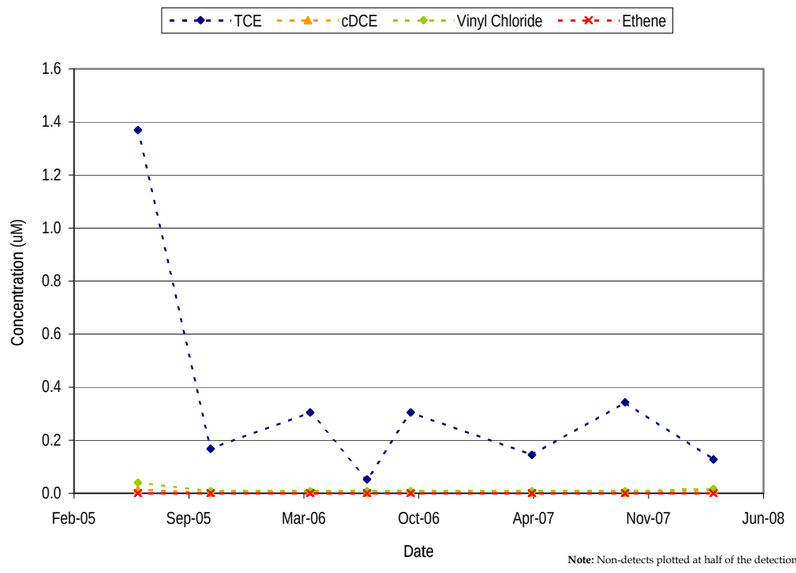
Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

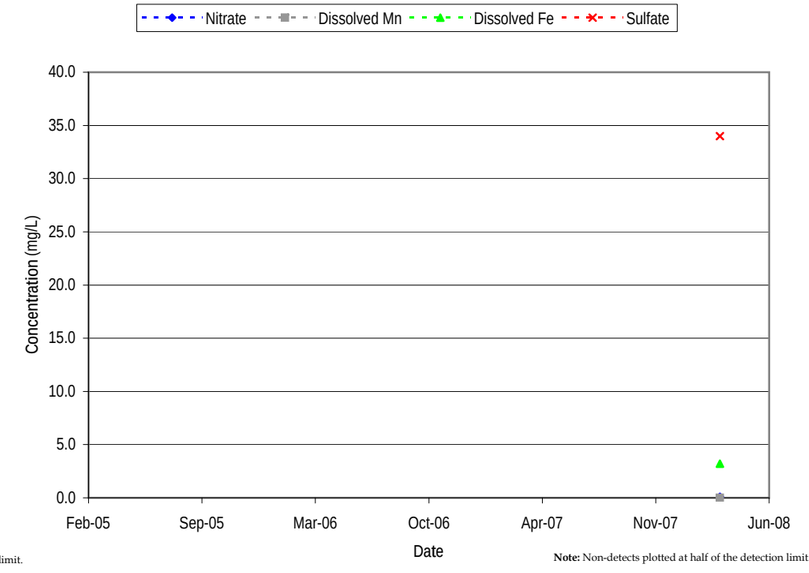
Well Identification:	Well Category:	Well Construction:	Notes:	Substrate Injection Log:
MW-551	Monitoring Well	Top of Casing Elevation (ft AMSL): 129.30 Screened Interval (ft BGS): 21.0-26.0 Well Screen Elevation (ft AMSL): 105.8 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable	Injection Dates Injection Well Injection Vol. (gal) Sodium Lactate (lb) Bromide (lb) TOC Concentration Range (mg/L) TOC Concentration Range (mg/L) Injection Dates Injection Well Injection Vol. (gal) Yeast Extract (lb) Phosphorus (lb)

	Sample Date:	8-Jun-05	13-Oct-05	4-Apr-06	12-Jul-06	26-Sep-06	25-Apr-07	4-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride									
Tetrachloroethene	ug/L	< 2.5	< 0.50	0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 2.00
Trichloroethene	ug/L	180	22	40	6.9	40	19	45	16.8
cis-1,2-Dichloroethene	ug/L	< 2.5	< 0.50	0.58	< 0.50	0.60	< 0.50	< 0.50	< 2.00
Vinyl Chloride	ug/L	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.00
Ethene	ug/L	NA	NA	NA	NA	NA	NA	NA	< 0.025
Ethane	ug/L	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters									
Dissolved Oxygen (DO)	mg/L	0.86	0.25	0.18	3.00	0.30	0.38	0.26	2.63
Nitrogen, Nitrate	mg/L	NA	NA	NA	NA	NA	NA	NA	0.10
Manganese, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	3.2
Sulfate	mg/L	NA	NA	NA	NA	NA	NA	NA	34
Methane (dissolved gas)	ug/L	NA	NA	NA	NA	NA	NA	NA	1.6
Oxidation Reduction Potential (ORP)	mV	18.8	44.5	-69.9	-91.2	-82.7	-190	-175	-141
Alkalinity, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids									
Total Organic Carbon	mg/L	NA	NA	NA	NA	NA	NA	NA	0.57
Lactic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	5.86	6.96	6.98	6.90	6.50	6.93	6.99	6.98
Nutrients									
Nitrogen, Total Kjeldahl (TKN)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	0.09
Other									
Specific Conductivity	uS/cm	208	227	159	202	189	201	205	194
Hydrogen Sulfide Odor	(Y or N)	NA	NA	NA	NA	NA	NA	NA	N
Black Precipitate Presence	(Y or N)	NA	NA	NA	NA	NA	NA	NA	N

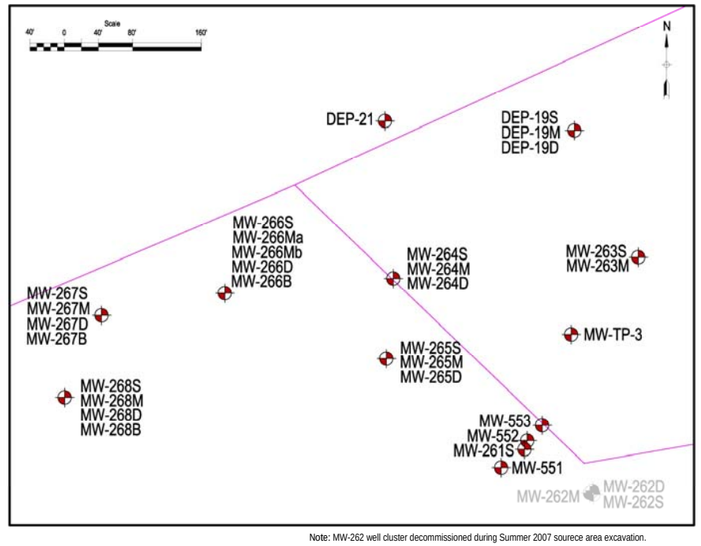




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

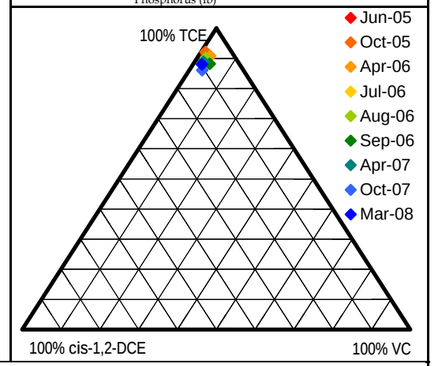
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

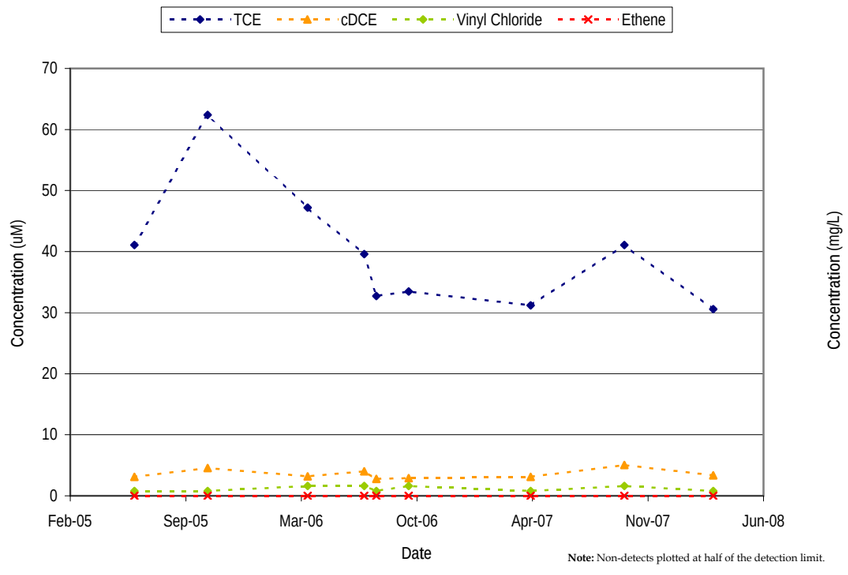
Well Identification:	Well Category:	Well Construction:	Notes:
MW-552	Monitoring Well	Top of Casing Elevation (ft AMSL): 130.09 Screened Interval (ft BGS): 19.0-24.0 Well Screen Elevation (ft AMSL): 108.6 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

Sample Date:		8-Jun-05	13-Oct-05	4-Apr-06	11-Jul-06	1-Aug-06	26-Sep-06	25-Apr-07	4-Oct-07	6-Mar-08
VOCs, Dissolved Gases & Chloride										
Tetrachloroethene	ug/L	280	350	230	280	240	190	180	260	170
Trichloroethene	ug/L	5,400	8,200	6,200	5,200	4,300	4,400	4,100	5,400	4,020
cis-1,2-Dichloroethene	ug/L	300	440	310	390	270	280	300	490	325
Vinyl Chloride	ug/L	< 100	< 100	< 200	< 200	< 100	< 200	< 100	< 200	< 100
Ethene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	0.30
Ethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters										
Dissolved Oxygen (DO)	mg/L	0.55	0.54	0.44	3.90	0.37	0.21	0.84	0.39	0.78
Nitrogen, Nitrate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	0.07
Sulfate	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	38
Methane (dissolved gas)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	27
Oxidation Reduction Potential (ORP)	mV	273	289	21.9	29.3	211	69.2	-60.9	408	27.1
Alkalinity, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids										
Total Organic Carbon	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	1.9
Lactic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	9.98	8.33	7.22	7.05	6.62	6.96	6.90	5.00	6.78
Nutrients										
Nitrogen, Total Kjeldahl (TKN)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	0.04
Other										
Specific Conductivity	uS/cm	632	295	258	266	295	283	247	273	259
Hydrogen Sulfide Odor	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA	N
Black Precipitate Presence	(Y or N)	NA	NA	NA	NA	NA	NA	NA	NA	N

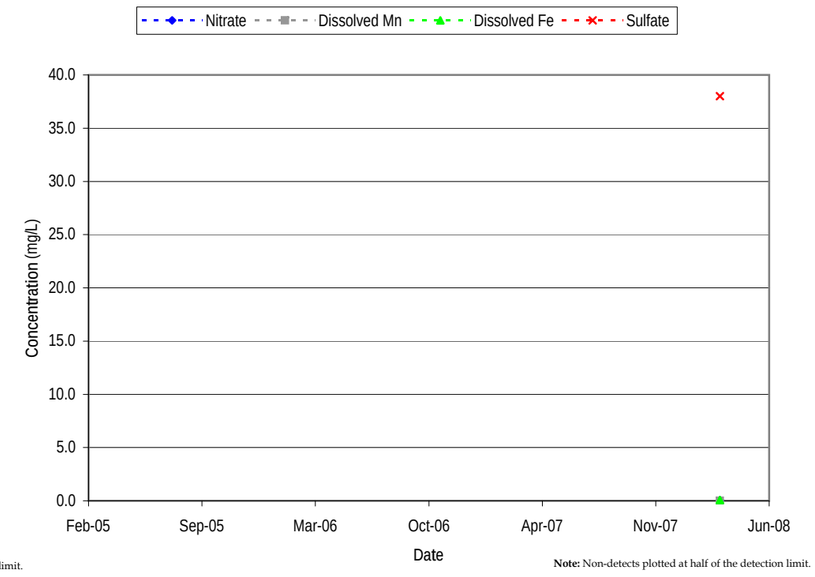
Substrate Injection Log:

	Jun-05	Oct-05	Apr-06	Jul-06	Aug-06	Sep-06	Apr-07	Oct-07	Mar-08
Injection Dates									
Injection Well									
Injection Vol. (gal)									
Sodium Lactate (lb)									
Bromide (lb)									
TOC Concentration Range (mg/L)									
TOC Concentration Range (mg/L)									
Injection Dates									
Injection Well									
Injection Vol. (gal)									
Yeast Extract (lb)									
Phosphorus (lb)									

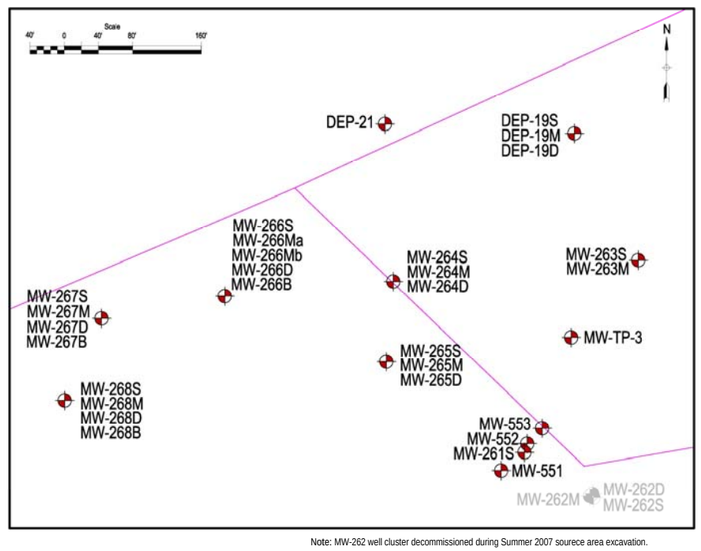




Note: Non-detects plotted at half of the detection limit.



Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

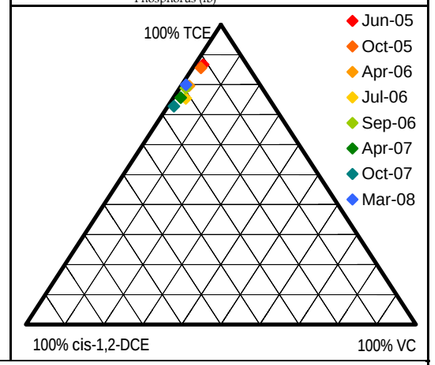
DRAFT Table 3
Northern Area Groundwater Quality Summary
Former Raytheon Facility
Wayland, Massachusetts

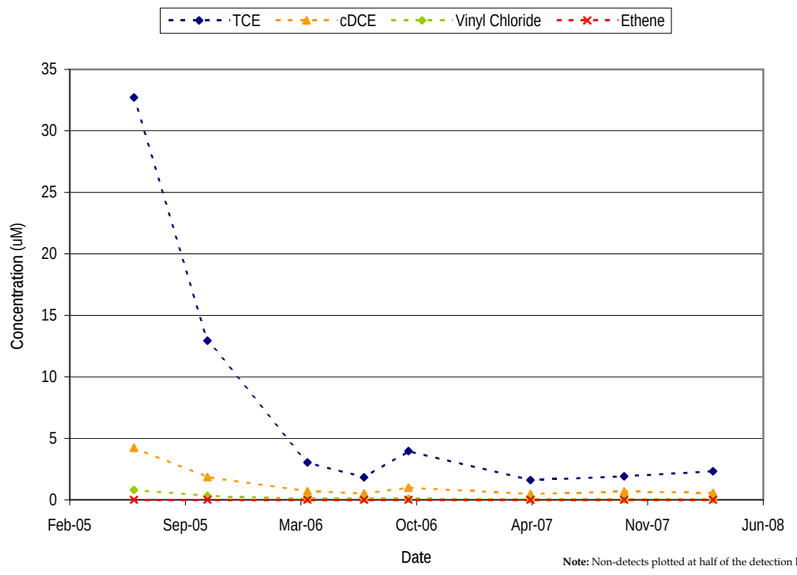
Well Identification:	Well Category:	Well Construction:	Notes:
MW-553	Monitoring Well	Top of Casing Elevation (ft AMSL): 130.33 Screened Interval (ft BGS): 15.0-20.0 Well Screen Elevation (ft AMSL): 112.8 Screened Geologic Interval: Fine Sand and Silt	*Values were obtained by field analyses and should only be used qualitatively. NA = Not Analyzed/ Not Applicable

	Sample Date:	**8-Jun-05**	**13-Oct-05**	**4-Apr-06**	**11-Jul-06**	**26-Sep-06**	**25-Apr-07**	**4-Oct-07**	**6-Mar-08**
VOCs, Dissolved Gases & Chloride									
Tetrachloroethene	ug/L	260	140	24	22	33	19	22	29.5
Trichloroethene	ug/L	4,300	1,700	400	240	520	210	250	305
cis-1,2-Dichloroethene	ug/L	410	180	68	50	95	46	65	53.5
Vinyl Chloride	ug/L	< 100	< 40	< 10	< 10	< 10	< 5.0	< 5.0	< 4.00
Ethene	ug/L	NA	NA	NA	NA	NA	NA	NA	0.17
Ethane	ug/L	NA	NA	NA	NA	NA	NA	NA	< 0.025
Chloride	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Redox Parameters									
Dissolved Oxygen (DO)	mg/L	0.55	0.52	0.19	1.87	0.16	1.05	0.76	0.55
Nitrogen, Nitrate	mg/L	NA	NA	NA	NA	NA	NA	NA	< 0.10
Manganese, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved	mg/L	NA	NA	NA	NA	NA	NA	NA	< 0.05
Sulfate	mg/L	NA	NA	NA	NA	NA	NA	NA	25
Methane (dissolved gas)	ug/L	NA	NA	NA	NA	NA	NA	NA	0.94
Oxidation Reduction Potential (ORP)	mV	313	42.4	-72.1	65.2	62.8	-194	-107	-87.3
Alkalinity, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
TOC & Volatile Fatty Acids									
Total Organic Carbon	mg/L	NA	NA	NA	NA	NA	NA	NA	1.1
Lactic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Acetic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
pH	standard units	9.85	11.40	11.08	10.21	11.11	11.22	10.68	11.41
Nutrients									
Nitrogen, Total Kjeldahl (TKN)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total	mg/L	NA	NA	NA	NA	NA	NA	NA	0.07
Other									
Specific Conductivity	uS/cm	732	418	269	188	251	348	248	388
Hydrogen Sulfide Odor	(Y or N)	NA	NA	NA	NA	NA	NA	NA	N
Black Precipitate Presence	(Y or N)	NA	NA	NA	NA	NA	NA	NA	Orange Floc

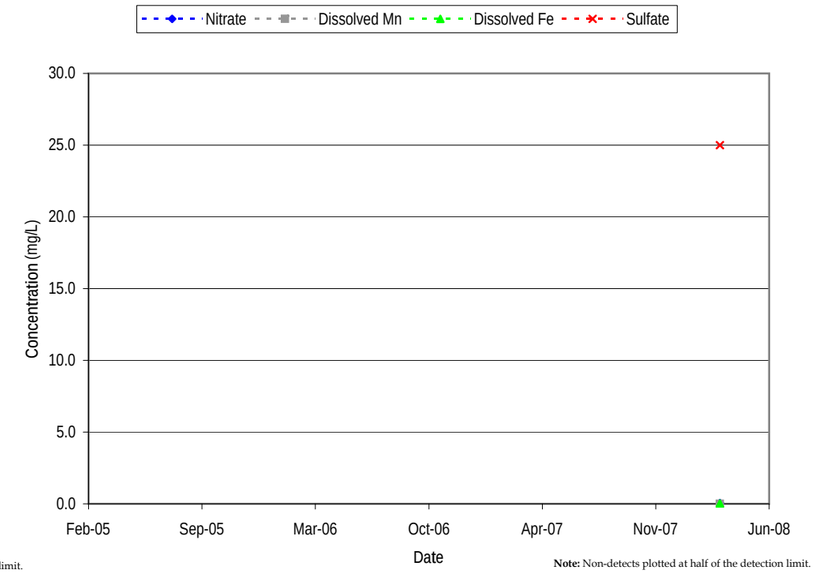
Substrate Injection Log:

Injection Dates								
Injection Well								
Injection Vol. (gal)								
Sodium Lactate (lb)								
Bromide (lb)								
TOC Concentration Range (mg/L)								
TOC Concentration Range (mg/L)								
Injection Dates								
Injection Well								
Injection Vol. (gal)								
Yeast Extract (lb)								
Phosphorus (lb)								

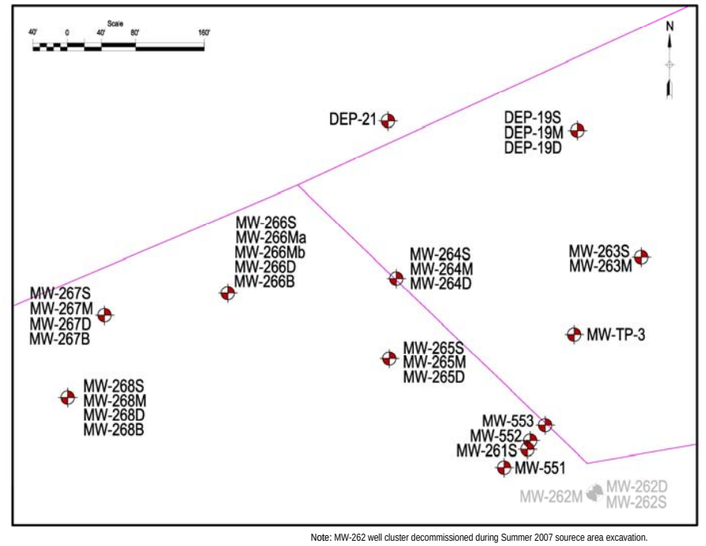




Note: Non-detects plotted at half of the detection limit.

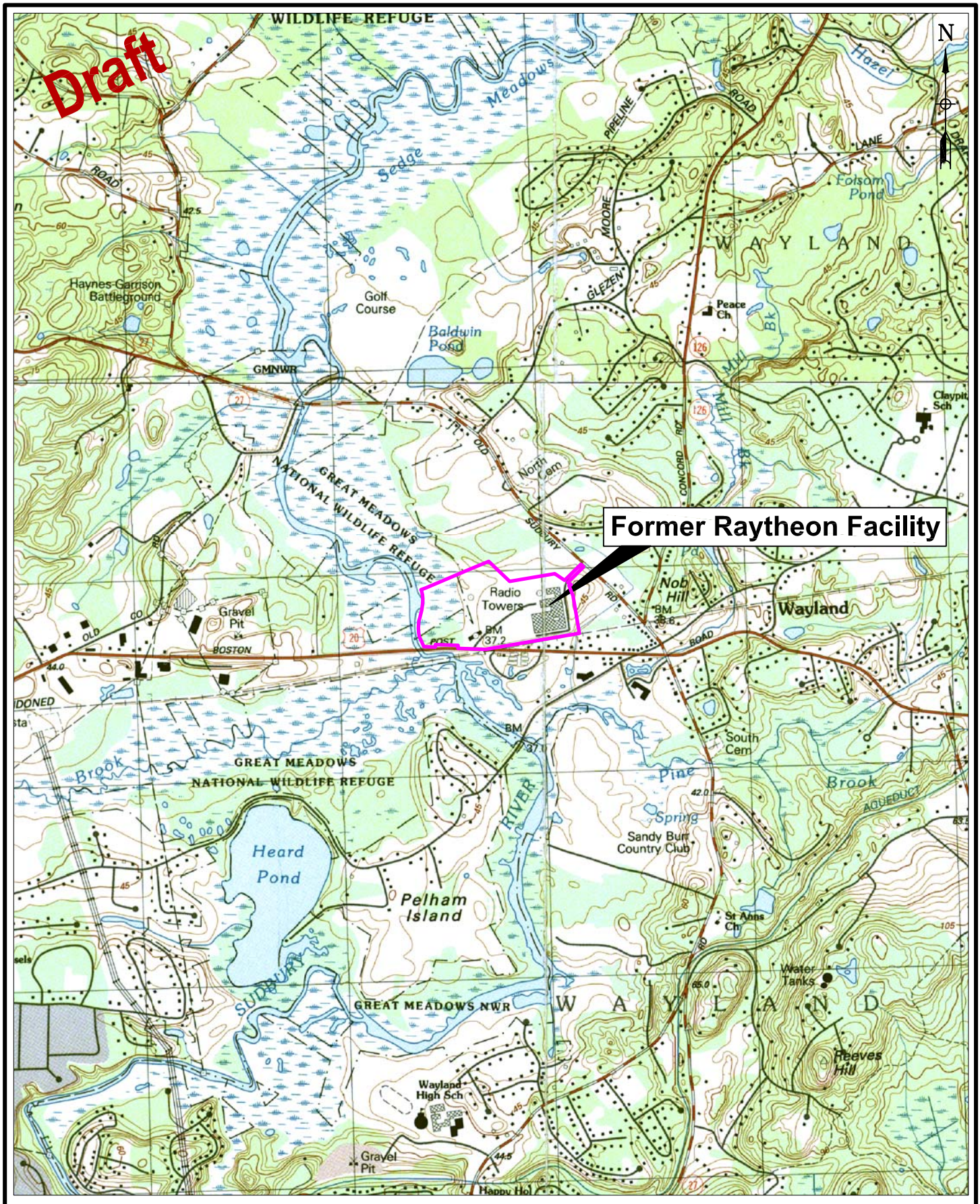


Note: Non-detects plotted at half of the detection limit.



Note: MW-262 well cluster decommissioned during Summer 2007 sourece area excavation.

Figures



Scale 1:25,000

0.5 km 0 500 m

0.5 mi 0 1,000 ft

Legend
Subject Property Line

Figure 1 - Site Locus Map
Former Raytheon Facility - Wayland, MA

ERM

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Draft

N

Northern Area
(CVOCs)

Infiltration
Gallery Area

Sudbury River

UNNAMED BROOK

UNNAMED

Legend

- Existing Building
- Property Line
- Standing Water Based on 2001 Aerial
- Delineated Wetland Boundary
- 100' Wetland Buffer Zone
- Monitoring Well/ Cluster Location
- Decommissioned Well Location
- OHM Investigation Area

SCALE (1"=220')

110' 0 110' 220' 440'

Figure 2- Site Plan
Former Raytheon Facility - Wayland, MA

ERM

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N

Sudbury River

UNNAMED BROOK

MW-556S 107.94
MW-554S 109.29
MW-555S Not Measured
MW-307 112.88
MW-269S 112.76
MW-266S 115.22
MW-264S 116.09
MW-265S 116.40
MW-TP-3 117.82
MW-533 117.79
MW-1S 119.62
MW-32 Not Accessible
HA-101 117.81
MW-10 119.96
MW-34 122.60
MW-44S 117.83
MW-104 116.01
MW-212 118.14
MW-105 118.47
MW-211 118.86
MW-42S 118.7
MW-209 117.49
MW-210 116.77
MW-43S 117.71
MW-106 117.59
MW-40 118.55
MW-40S 118.32
MW-216M 118.49
MW-46S 115.88
MW-103 117.16
MW-213 117.14
MW-215S 118.03
MW-405S 116.34
MW-102 114.52
MW-201S 113.53
MW-214 113.96
MW-108 114.84
MW-38 117.83
MW-203S 113.01
MW-47S 113.45
MW-101 114.08
MW-37 116.78
MW-204S 113.88
HA-104 Dry
MW-114 114.67
MW-110 Obstructed
MW-116 114.82
MW-112 114.78
MW-33S 114.63
MW-202S Not Measured
MW-205S 113.13
MW-208S 113.41
MW-45S 112.84
MW-41 112.02
HA-102 111.72
MW-207S 112.86
MW-206S 112.73
MW-217S 114.47
MW-218S 113.90
MW-220S 111.78
MW-219S 112.23

109 111 113 115 117 119 121

Scale (1"=200')
100' 0 100' 200' 400'

Legend
- Existing Building
- Monitoring Well Location
- 118.64 Groundwater Elevation (Feet ASL)
- Groundwater Elevation Contour (Feet ASL) Dashed Where Inferred

Figure 3 -Upper Potentiometric Surface Map – October 2007
Former Raytheon Facility - Wayland, MA

ERM

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N

MW-554Ma
113.61

MW-556M
113.56

MW-555Ma
Not Measured

MW-268M
114.40

MW-267M
115.01

MW-266Mb
116.20

MW-264M
117.09

MW-263S
117.90

MW-265M
117.01

MW-261S
117.77

MW-1D
117.50

MW-269Mb
114.10

MW-44D
118.48

MW-43D
116.68

MW-46M
113.39

MW-216D
117.57

MW-215D
117.62

MW-201D
114.36

MW-403
114.60

MW-203D
114.30

MW-204D
114.56

MW-37M
115.69

MW-208D
114.33

MW-202D
114.42

MW-33D
114.36

MW-207D
113.65

MW-45D
114.97

MW-206D
113.81

MW-217D
115.11

MW-218D
114.89

MW-221D
115.17

MW-220D
Not Measured

MW-219D
113.67

Sudbury River

UNNAMED BROOK

114

115

116

117

118

Scale (1"=200')

100' 0 100' 200' 400'

Legend

- Existing Building
- Monitoring Well Location — 119.07
- Groundwater Elevation (Feet ASL)
- Groundwater Elevation Contour (Feet ASL) Dashed Where Inferred

Figure 4 - Lower Potentiometric Surface Map – October 2007

Former Raytheon Facility - Wayland, MA

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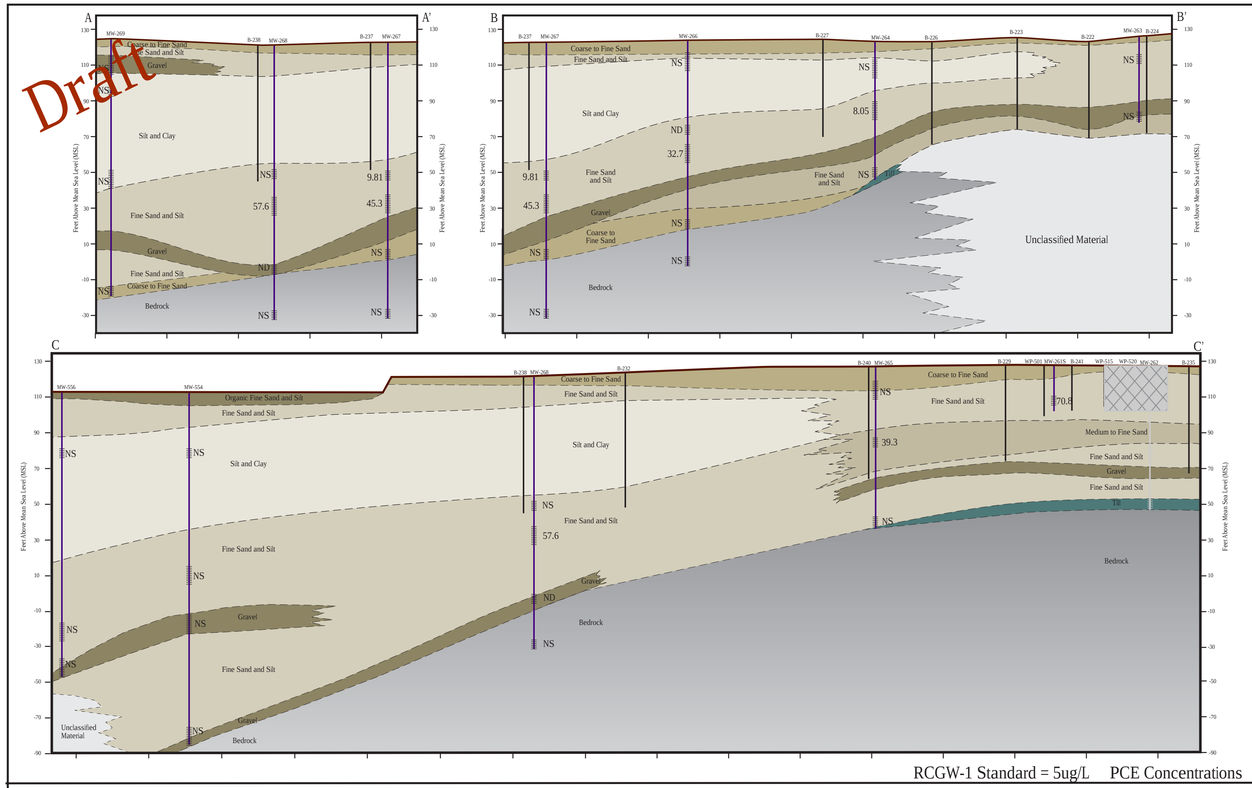
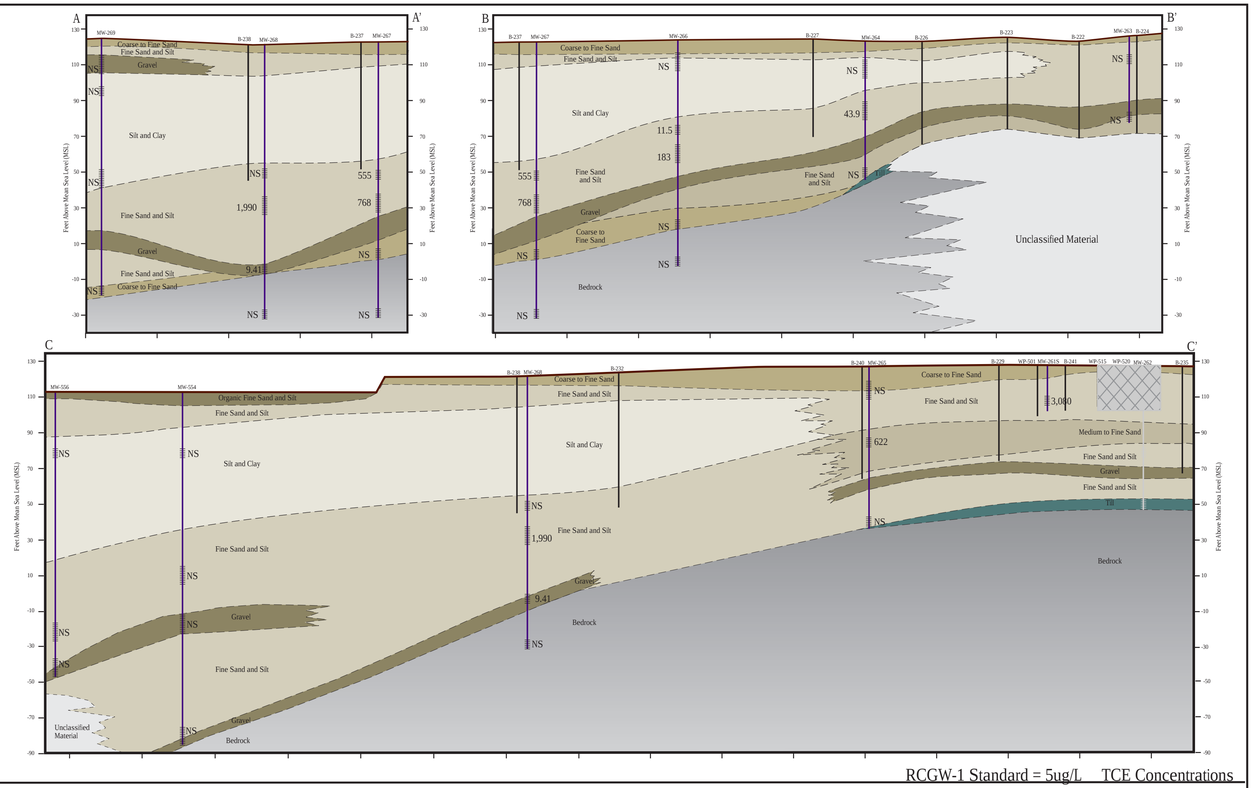
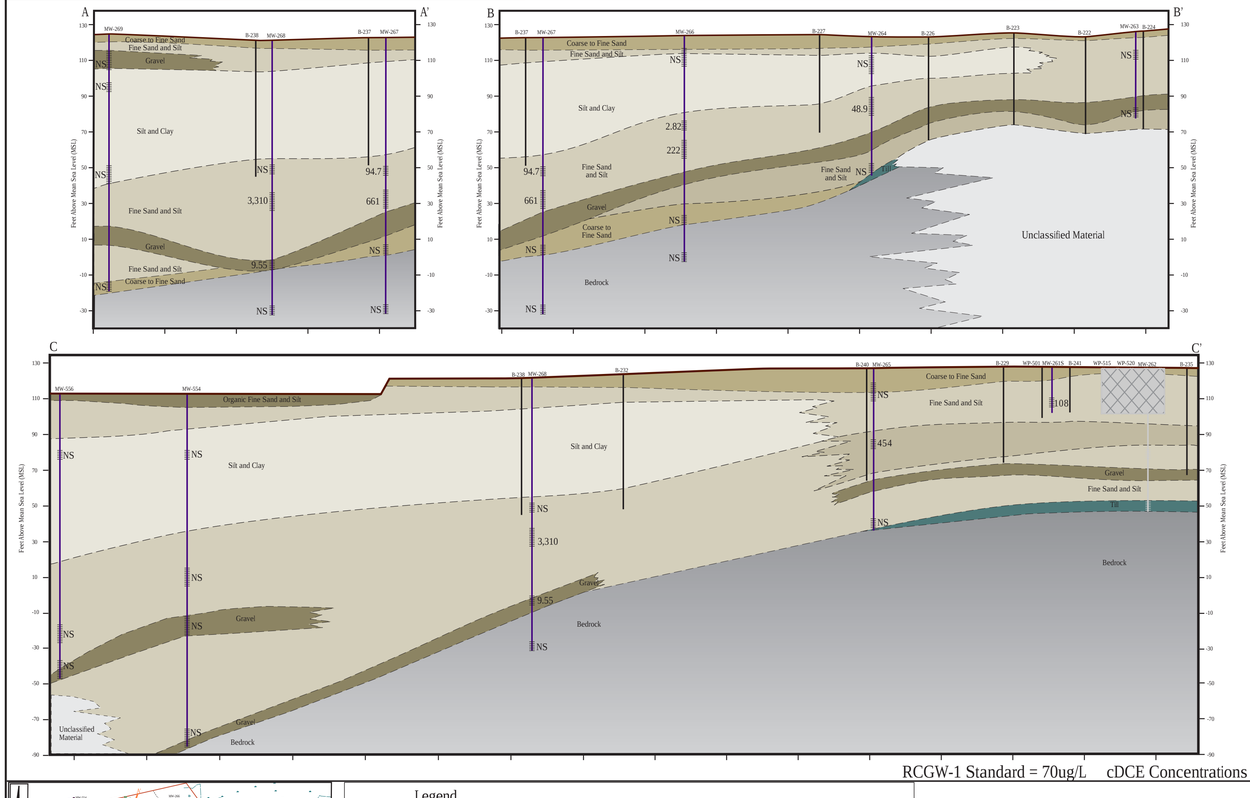
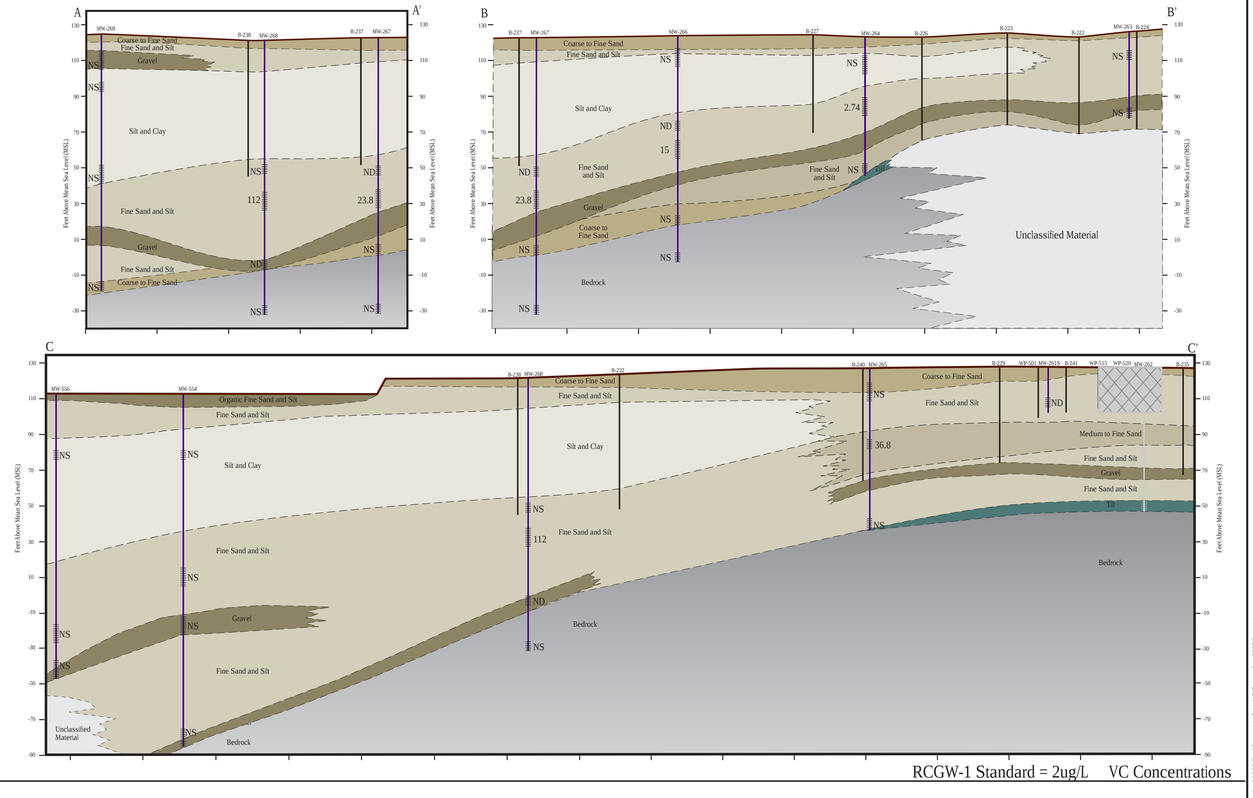
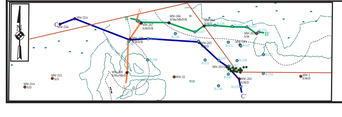
Figure 5 - Northern Area CVOC Concentrations - March 2008
Former Raytheon Facility - Wayland, MA











Legend

Monitoring Well
- MW-14 — Well ID
- 3,000 — Compound Concentration (ug/L)
- Screened Interval/ Sample Point

Soil Boring
- B-230 — Boring ID
- 10 Foot Well Screen
- 5 Foot Well Screen

Decommissioned Monitoring Well
- MW-262

Scale:
Horizontal Scale 1" =80'
Verticle Scale 1"=40'

Note: Concentration Values from March 2008 Sample Analyses

Figure 6 - Northern Area CVOC Concentration Cross-Section – March 2008
Former Raytheon Facility - Wayland, MA

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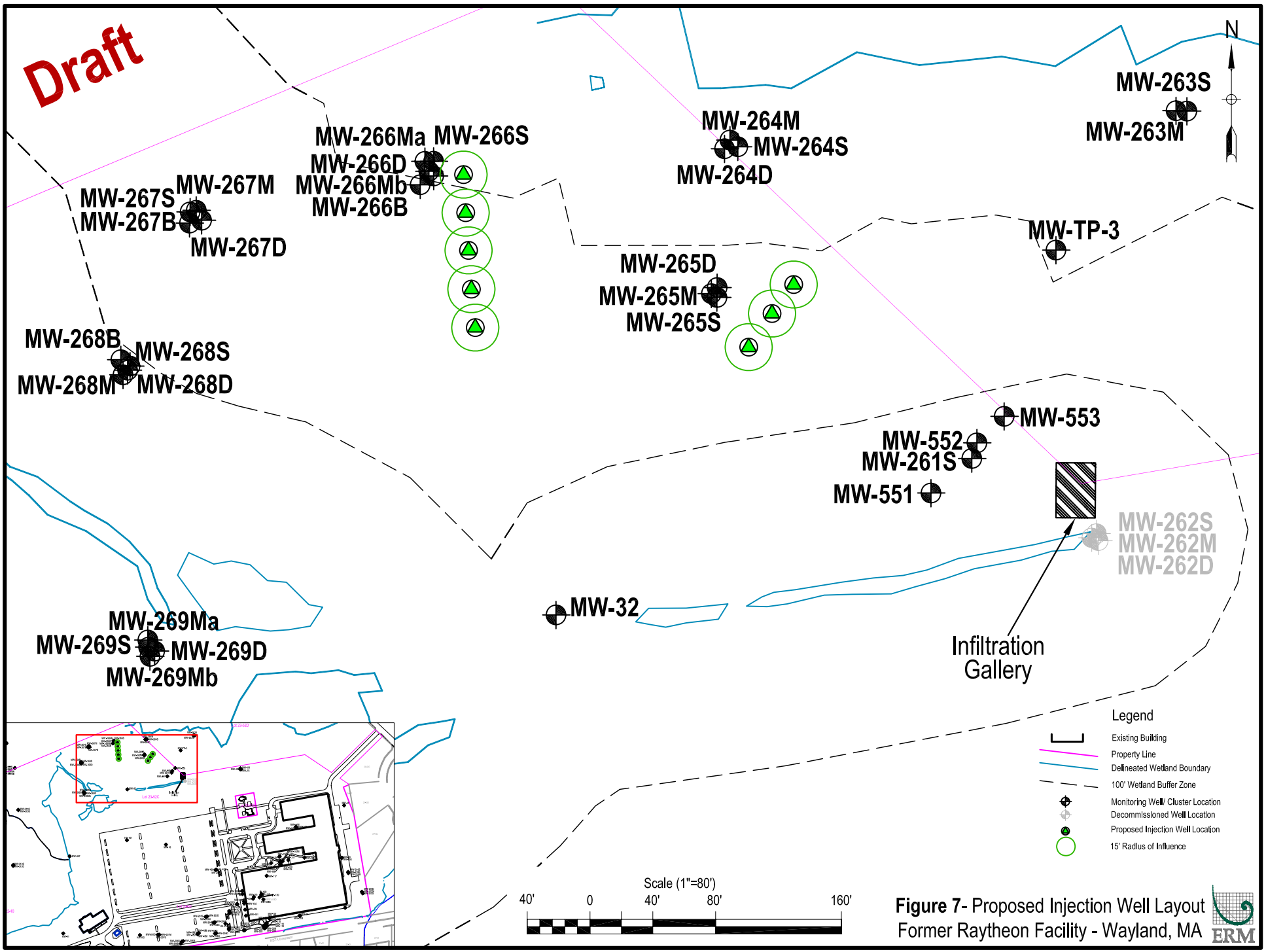

Figure 7- Proposed Injection Well Layout
Former Raytheon Facility - Wayland, MA

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ERM's Boston Office

399 Boylston Street, 6th Floor
Boston, MA 02116
(617) 646-7800
(617) 267-6447 (fax)