Groundwater Sampling and Analysis Report

October 2013 Sampling Event

Former EMCA Site
Mamaroneck, New York

Prepared for:

Rohm and Haas Company, a wholly-owned subsidiary of The Dow Chemical Company

Prepared by:

URS
77 Goodell Street
Buffalo, New York 14203

January 2014

G4427U

FORMER EMCA SITE

SITE NO. 360025

MAMARONECK, NEW YORK

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OCTOBER 2013 SAMPLING EVENT

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JANUARY 2014

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1.0 INTRODUCTION

This report presents the results of groundwater monitoring conducted on October 22, 2013 at the former EMCA site located in Mamaroneck, New York (Figure 1) pursuant to the approved Site Management Plan ([SMP], URS, 2010) and to recommendations made in the *Groundwater Sampling and Analysis Report, September 2012 Sampling Event & Summary of 2012 Supplemental Injection Event and 2012 Post-Injection Groundwater Sampling Events* (URS, 2012b). The groundwater monitoring program generates data used to monitor the effectiveness of remedial actions performed at the site from 2003 to 2013.

Remedial actions were conducted at the site on the following occasions:

- Pilot program conducted in June 2003
- Interim remedial measure in November 2004
- Supplemental injection in August 2007
- Supplemental injection in September 2009
- Supplemental injection in October 2012
- Supplemental injection in June 2013

All involved the injections of food-grade emulsified soybean oil and sodium lactate into groundwater to stimulate anaerobic biodegradation and reductive dechlorination of 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113; CAS No. 76-13-1) in site groundwater. The 2012 and 2013 supplemental injections included the KB-1 Plus® bacteria culture, developed by SiREM Laboratory in Guelph, Ontario, Canada, as a biological amendment to the emulsified soybean oil and sodium lactate injections. The KB-1 Plus® bacteria culture contains a proprietary mixture of dehalobacter and dehalococcoides strains formulated by the laboratory to stimulate biological dechlorination of Freon. Soybean oil and sodium lactate were injected during the period of September 25 through October 4, 2012 followed by a KB-1 Plus® bacteria injection on November 1, 2012. The most recent injection of soybean oil, sodium lactate and KB-1 Plus® bacteria was performed during the period of June 4 to June 7, 2013.

The October 22, 2013 groundwater sampling event was the 18th site-wide sampling event since the interim remedial measure (IRM) began in November 2004, the 13th following the supplemental injection event in August 2007, the 12th following the September 2009 supplemental injection event, and the 2nd following the October 2012 supplemental injection event and the 1st following the June 2013 injection event. Groundwater sampling was performed

in April 2013 to serve as a baseline event to evaluate the results for the June 2013 supplemental injection event. Groundwater samples were also collected from well MW-02 in July, August, and September 2013 to further evaluate the localized impact of the June 2013 injection program in the MW-02 area.

2.0 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected on October 22, 2013 from the five monitoring wells (i.e., MW-02, MW-03, MW-04, MW-06 and MW-07R) using the low-flow sampling procedure. Groundwater samples were also collected from well MW-02 on July 11, August 7, and September 3, 2013. Groundwater level and field water quality parameter measurements of ferrous iron, dissolved oxygen, oxidation-reduction potential, pH, specific conductance, temperature, and turbidity were recorded prior to and during purging/sampling. A copy of the field purge/sample logs is presented in Appendix A.

The sample chain-of-custody (COC) was initiated immediately after the groundwater samples were collected and was maintained through shipment to the laboratory. Laboratory analyses were performed for the following parameters:

Parameter	Analytical Method
Freon 113	SW8260B
Freon 123a	SW8260B
Freon 1113	SW8260B
Methane	RSK-175
Sulfate	ASTM D516-90, 02

In addition, the following analyses were also performed on the groundwater samples to collect additional natural attenuation groundwater data and to evaluate bacteria concentrations:

Parameter	Analytical Method
Total Iron	200.7
Nitrate	SM4500-NO3 F
Hardness	SM2340C
Alkalinity	SM2320B
Total Organic Carbon	SM5310B
Dehalococcoides	SiREM Laboratories Gene-Trac® Dhc
Dehalobacter	SiREM Laboratories Gene-Trac® Dhb

Groundwater level data for the October 22, 2013 sampling event are presented in Table 1 and Figure 2. The Sheldrake River water surface level in was also measured. An upstream measurement was recorded at the Rockland Avenue bridge (Benchmark B) to the south of the site and a downstream measurement was recorder at the Fenimore Road bridge (Benchmark D) to the north of the site. The water surface level in Sheldrake River in the area west of the site, referred to as Benchmark C, was calculated by taking the average surface elevation of Benchmark B and Benchmark D. As found during previous sampling events, groundwater flow was generally north to northwest towards the Sheldrake River.

3.0 RESULTS

The analytical results for the five wells sampled during the October 2013 sampling event are provided in Table 2. Laboratory data sheets and a data usability summary report (DUSR) are provided in Appendix B.

The analytical results presented in Table 2 are compared to groundwater standards and guidance values presented in NYSDEC's Technical and Operational Guidance Series Memo 1.1.1 (TOGS 1.1.1). It is noted that there are no TOGS 1.1.1 groundwater standards or guidance values for Freon 1113 or Freon 123A. However, consistent with TOGS 1.1.1, the Freon 1113 and Freon 123A results are compared to the "principal organic contaminant" standard for groundwater of 5 micrograms per liter (µg/L).

The results presented in Table 2 and Figure 3 show that only the sample from MW-07R contained Freon 113 at a concentration above the 5 µg/L guidance value for this compound. Freon 113 was detected at 12 µg/L in MW-07R.

The results also show that Freon 1113 was detected at a concentration above the 5 µg/L groundwater standard in all five samples, with concentrations ranging from 12 µg/L in MW-04 to 390 µg/L in MW-07R.

Freon 123A was not detected at concentrations above the groundwater criterion in the five samples.

Iron was the only other parameter detected at a concentration above the TOGS 1.1.1 groundwater criteria. Iron was detected in all five wells at concentrations ranging from 17,700 µg/L to 78,400 µg/L, compared to the TOGS 1.1.1 groundwater standard of 300 µg/L.

Additional Post-Injection Sample Results for MW-02

Groundwater samples were collected from well MW-02 on a monthly basis following the June 2013 injection event. The analytical results, presented in Table 2 and illustrated in Figure 4, indicate the following notable observations:

- Dehalococcoides concentrations decreased significantly from a high of 1,000 colony equivalents per milliliter (CEQ/mL) in July 2013 to a low of 30 CEQ/mL in October 2013. The greatest decrease was from 800 CEQ/mL in August 2013 to 50 CEQ/mL in September 2013.
- The dehalobacter concentration of 6,000 gene copies per milliliter (GC/mL) in July 2013 decreased to 500 GC/mL in October 2013. However, the dehalobacter concentration had increased from July 2013 to a high of 10,000 GC/mL in August 2013 before dropping down to 500 GC/mL in September 2013.
- Freon 113 and 123A concentrations remained at non-detect during the four months following the June 2013 injection event.
- Freon 1113 decreased from a high concentration of 120 µg/L in July 2013 to 66 µg/L in August 2013 to 42 µg/L in September 2013. The Freon 1113 concentration rebounded slightly to 61 µg/L in October 2013.

4.0 DATA ASSESSMENT

The groundwater analytical data for October 2013 is the first site-wide set of data collected following the June 2013 supplemental injection. The previous round of site-wide groundwater sampling occurred on April 9, 2013. The April 9, 2013 results and a description of the June 2013 injection event were presented in the report titled *Groundwater Sampling and Analysis Report, April 2013 Sampling Event & Summary of 2013 Supplemental Injection Event*, dated June 2013 (URS, 2013a).

Attachment C presents the historical groundwater analytical data dating back to the pilot program in 2003. Using this data, Freon 113, 123a, and 1113 concentrations over time are shown in plan view in Figure 3. The historical data was also to create trend plots for the following parameters:

- Freon 113 - Figures 5 and 6
- Freon 123a - Figure 7

- Freon 1113 - Figure 8
- Sulfate - Figure 9
- Methane - Figure 10
- Dissolved oxygen - Figure 11
- Oxidation-reduction potential - Figure 12

The figures also show trendlines of parameter concentrations over time. The text below presents a discussion of the October 2013 data compared to the April 2013 data followed by an assessment of the historical results over time

Freon 113

In comparison with the April 2013 results, the analytical results for the October 2013 sampling event (see Figures 5 and 6) indicate that Freon 113 was:

- Not detected in MW-02, decreasing from 11 µg/L in April 2013;
- Not detected in MW-03, decreasing from 27 µg/L in April 2013;
- Not detected in MW-04, similar to April 2013;
- Not detected in MW-06 (method detection limit of 0.08 µg/L), decreasing from an estimated concentration of 0.19 µg/L in April 2013; and
- Detected at 12 µg/L in MW-07R, slightly increasing from a 5.5 µg/L in April 2013.

Wells MW-03 and MW-07/07R had the highest Freon 113 concentrations prior to the IRM and showed the greatest reduction in Freon 113 as a result of the IRM. In well MW-02, the Freon 113 concentration fluctuated over the course of the program, with concentrations as high as 2,400 µg/L in July 2001 prior to the treatment program, dropping significantly following the June 2003 pilot program to as low as 12 µg/L in December 2003, and then fluctuating between 21 µg/L and 1,300 µg/L between July 2004 and September 2012. Freon 113 concentrations have remained below 65 µg/L following the addition of dehalobacter and dehalococcoides to the injection program in October 2013.

Freon 123a

Freon 123a and Freon 1113 are the expected reductive dechlorination daughter products of Freon 113. Freon 123a holds one less chlorine than Freon 113, while Freon 1113 holds two less chlorines than Freon 113. With the reductive dechlorination of Freon 113, the concentrations of these daughter compounds are expected to increase and then eventually decline over time as

reductive dechlorination continues. The following text presents a discussion of the October 2013 Freon 123a results in comparison with results from April 2013.

Compared to the April 2013 data, the analytical results for the October 2013 sampling event (see Figure 7) indicate that Freon 123a was:

- Not detected in MW-02, decreasing from 11 µg/L in April 2013;
- Not detected in MW-03, decreasing from 30 µg/L in April 2013;
- Not detected in MW-04, similar to April 2013;
- Not detected in MW-06, decreasing from 4.9 µg/L in April 2013; and
- Detected at 1.1 µg/L in MW-07R, decreasing from 2.6 µg/L in April 2013.

Historically, with two exceptions, Freon 123a concentrations have been relatively low, below 165 µg/L. The two exceptions are an anomalously elevated concentration of 3,900 µg/L in MW-03 in July 2004 and an anomalous concentration of 940 µg/L in well MW-07 in December 2003.

Freon 1113

Compared to the April 2013 data, the analytical results for the October 2013 sampling event (see Figure 8) indicate that Freon 1113 was:

- Detected at 61 µg/L in MW-02, decreasing from an estimated concentration of 400 µg/L in April 2013;
- Detected at 58 µg/L in MW-03, decreasing from an estimated concentration of 160 µg/L in April 2013;
- Detected at 12 µg/L in MW-04, increasing from an estimated concentration of 4.4 µg/L in April 2013;
- Detected at 27 µg/L in MW-06, decreasing from an estimated concentration of 61 µg/L in April 2013; and
- Detected at 390 µg/L in MW-07R, increasing from an estimated concentration of 310 µg/L in April 2013.

Prior to and at the beginning of the IRM, Freon 1113 was either not detected or present at very low concentrations in the site groundwater wells. As the IRM progressed, Freon 1113 concentrations increased, indicating the successful reduction of Freon 113. As the MW-02 results indicate, where Freon 1113 was detected at a historically high concentration of 400 µg/L in January and April 2013 and then dropped to 120 µg/L in July 2013, the addition of dehlobacter

and dehalococoides in June 2013 appears to have had a direct impact on reducing Freon 1113 concentrations.

Sulfate

In comparison with the April 2013 data, the October 2013 sulfate concentrations increased slightly at MW-03 and MW-04 and decreased at MW-02, MW-06, and MW-07R (see Figure 9).

Studies have shown that the presence of sulfate in anaerobic environments slows the rates of dehalogenation reactions because sulfate competes with the halogenated compounds as electron acceptors (USGS). The site historic analytical data shows that sulfate concentrations increased during the IRM in wells MW-03, MW-4, and MW-06, slightly increased in MW-07/7R and slightly decreased in well MW-02. Sulfate concentrations decreased following the October 2012 injection event.

Methane

In comparison with the April 2013 data, the October 2013 methane concentrations (see Figure 10) increased in MW-02, MW-03, and MW-07R and decreased at MW-04 and MW-06.

Degradation of Freon is likely due to sulfate-reducing or methane forming microbes (Horneman). Consistent with these findings, historical site data, which show increased methane concentrations during the IRM, suggests that reduction of Freon concentrations may be due to contaminant degradation through methanogenesis as a result of the IRM injection program.

Dissolved-Oxygen

In comparison with the April 2013 data, the October 2013 dissolved oxygen concentrations (see Figure 11) decreased at wells MW-02, MW-03, and MW-04 and increased slightly at wells MW-06 and MW-07R. The dissolved oxygen concentrations measured in October 2013 ranged from 0.25 to 0.63 milligrams per liter (mg/L). Historically, dissolved oxygen concentrations have fluctuated significantly, from highs around 7 mg/L down to non-detect levels. Review of the graphical presentation of the data in Figure 11 indicates that dissolved oxygen concentrations decreased following most of the injection events.

Oxidation-Reduction Potential

In comparison with the April 2013 data, the October 2013 oxidation-reduction potential values (see Figure 12) increased at MW-02 and decreased at MW-03, MW-04, MW-06 and MW-07R. Like the April 2013 data, the October 2013 values were all negative, ranging from -94 millivolts (mV) to -125 mV. Historically, oxidation-reduction potential values have remained at negative values throughout most of the IRM program.

Dehalococcoides

The groundwater samples from MW-02 were analyzed for dehalococcoides in April 2013 and October 2013. The concentration detected in October was 30 CEQ/mL compared to the 60 CEQ/mL concentration detected in April 2013. However, as discussed below, the dehalococcoides concentration was significantly elevated, at 1,000 CEQ/mL, following the June 2013 injection event and steadily dropped off through October 2013 to 30 CEQ/mL.

Dehalobacter

Dehalobacter was analyzed for in all five wells sampled in April 2013 and October 2013. The October 2013 results ranged from non-detect at MW-04 to 500 GC/mL at MW-02. The concentration distribution in October 2013 was similar as in April 2013 with the highest dehalobacter concentrations present at wells MW-02 and MW-07R and the lowest concentrations in the other three wells located farther side- and/or down-gradient of the MW-02 injection area (i.e., MW-03, MW-04, and MW-06).

Iron

In October 2013, the total iron concentrations ranged from 17,700 µg/L to 78,400 µg/L. The iron concentration distribution in October 2013 was similar as in April 2013 with the highest iron concentrations at MW-02 and lowest at MW-04.

5.0 CONCLUSIONS

The October 2013 data shows that Freon 113 was not detected in the four of the five wells sampled (MW-02, MW-03, MW-04, and MW-06); the Freon 113 concentration in MW-07R was 12 µg/L, slightly above the groundwater criterion of 5 µg/L. These concentrations are significantly below the concentrations measured before the remedial action began in 2003, indicating the success of the bioremediation program. While it is expected that Freon 113

concentrations may rebound during a treatment program, the absence of such a rebound over the past year is favorable.

As expected, concentrations of Freon 123a and Freon 1113, daughter products of Freon 113 degradation, increased during the remediation program. The concentrations of these compounds have subsequently declined steadily in most wells as the Freon 113 source has become depleted. This, combined with the notable reduction of Freon 1113 in well MW-02 following the addition of dehalobacter and dehalococcoides suggests the successful treatment of Freon using these amendments.

6.0 CONTINGENCY TRIGGER EVALUATION

Contingency measures were triggered at the site by the April 2011 data collected at MW-02, in accordance with Section 4.0 of the SMP (URS, 2010). As a result, Rohm and Haas performed the 2012 supplemental injection event to stimulate and maintain anaerobic biological processes, targeting remaining areas of contamination. In an effort to maintain anaerobic conditions, a follow-up supplemental injection event was executed in June 2013. The details of the injection are presented in Section 5.0 of the June 2013 Groundwater Sampling and Analysis Report (URS 2013a). The subsequent monitoring data, presented in this report, indicates the successful treatment of Freon 113 in MW-02 to below criterion concentrations.

7.0 NEXT STEPS

In accordance with the SMP semi-annual sampling will be performed on the five long-term monitoring wells (i.e., MW-02, MW-03, MW-04, MW-06 and MW-07R). Each well will be sampled for Freon-113, Freon-123a, and Freon-1113 and other water quality and natural attenuation parameters as listed in Table 4. With the exception of the farthest down-gradient well MW-04, groundwater sampling will be discontinued at an individual well when the remediation goals (i.e., less than 5 µg/L for each of the three Freon compounds) are achieved at that well for three consecutive monitoring events.

REFERENCES

Horneman, A, et al, 2007. *Degradation rates of CFC-11, CFC-12 and CFC-113 in anoxic shallow aquifers of Araihazar, Bangladesh,* Journal of Contaminant Hydrology 97 (2008)

URS Inc., 2005. *Groundwater Sampling and Analysis Report, May 2005 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* August.

URS Inc., 2006a. *Groundwater Sampling and Analysis Report, December 2005 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* March.

URS Inc., 2006b. *Groundwater Sampling and Analysis Report, August 2006 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* October.

URS Inc., 2007a. *Groundwater Sampling and Analysis Report, February 2007 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* April.

URS Inc., 2007b. *Groundwater Sampling and Analysis Report, August 2007 Sampling Event & Summary of Supplemental Injection Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* October.

URS Inc., 2008. *Groundwater Sampling and Analysis Report, February 2008 Sampling Event, Former EMCA Site, Site No 360025, Mamaroneck, New York*. May.

URS Inc., 2008a. *Groundwater Sampling and Analysis Report, August 2008 Sampling Event, Former EMCA Site, Site No 360025, Mamaroneck, New York*. October.

URS Inc., 2009. *Groundwater Sampling and Analysis Report, February 2009 Sampling Event, Former EMCA Site, Site No 360025, Mamaroneck, New York*. April.

URS Inc., 2009b. *2009 Supplemental Injection Work Plan, Former EMCA Site, Site No 360025, Mamaroneck, New York*. July.

URS Inc., 2009c. *Groundwater Sampling and Analysis Report, October 2009 Sampling Event and Summary of 2009 Supplemental Injection Event, Former EMCA Site, Site No 360025, Mamaroneck, New York*. November.

URS Inc., 2010. *Site Management Plan, NYSDEC Site Number 360025, Former EMCA Site, Mamaroneck, New York*. October.

URS Inc., 2010a. *Groundwater Sampling and Analysis Report, February 2010 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York*. April.

URS Inc., 2010b. *Groundwater Sampling and Analysis Report, June 2010 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York*. August.

URS Inc., 2010c. *Groundwater Sampling and Analysis Report, October 2010 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York*. December.

URS Inc., 2011. *Groundwater Sampling and Analysis Report, April 2011 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York*. June.

URS Inc., 2011a. *Groundwater Sampling and Analysis Report, September 2011 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* December.

URS Inc., 2012. *2012 Supplemental Injection Work Plan, Former EMCA Site, Site No. 360025, Mamaroneck, New York*. February.

URS Inc., 2012a. *Groundwater Sampling and Analysis Report, April 2012 Sampling Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York*. June.

URS Inc., 2012b. *Groundwater Sampling and Analysis Report, September 2012 Sampling Event &Summary of 2012 Supplemental Injection Event and 2012 Post-Injection Groundwater Sampling Events, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* December.

URS Inc., 2013. *Proposed Lactate and Emulsified Vegetable Oil Supplemental Injections, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* April.

URS Inc., 2013a. *Groundwater Sampling and Analysis Report, April 2013 Sampling Event & Summary of 2013 Supplemental Injection Event, Former EMCA Site, Site No. 360025, Mamaroneck, New York.* June.

U.S. Geological Survey (USGS), 2009. *Chlorofluorocarbons Background*, L. N. Plummer and E. Busenberg, *water.usgs.gov/lab/chlorofluorocarbons/background*,November 2009.

TABLES

TABLE 1
GROUNDWATER ELEVATION MEASUREMENTS (October 22, 2013)
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location	Measuring Point Elevation[1] (ft.)	Depth to Water[2] (ft.)	Water Surface Elevation (ft.)
GZ-03[3]	26.16	7.25	18.91
GZ-06	28.02	8.56	19.46
MW-01	25.74	6.51	19.23
MW-02	25.63	6.77	18.86
MW-03	25.59	6.74	18.85
MW-04	25.31	6.59	18.72
MW-05	24.63	5.86	18.77
MW-06	25.77	6.92	18.85
MW-07R	25.63	6.85	18.78
Benchmark B (Sheldrake River - South [Rockaway Avenue] Bridge)	32.21	13.65	18.56
Benchmark C[4] (Sheldrake River - between North and South Bridges)	--	--	17.51
Benchmark D (Sheldrake River - North [Fenimore Road] Bridge)	27.41	10.95	16.46

Notes:

1) All of the monitoring well and benchmark locations were resurveyed on 6/25/2010.
2) Water elevations for all wells and benchmarks were collected on 10/22/2013
3) Monitoring well GZ-03 was modified from a stick-up well to a flush-mount well on 6/24/2010.
4) Benchmark C was originally established as a temporary benchmark off a tree branch overhanging the Sheldrake River between the North and South bridges. The approximate water surface elevation for this benchmark is now calculated by taking the average water surface elevation of Benchmark B and Benchmark D.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20130711MW-02V09N	20130807MW-02V09N	20130903MW-02V09N	20131022MW-02V09FD	20131022MW-02V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/11/13	08/07/13	09/03/13	10/22/13	10/22/13
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Volatiles							
Chlorotrifluoroethene (Freon-1113)	UG/L	5	120	66 J	42	64	61
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dissolved Gases							
Methane	UG/L	-	7,700	11,000	14,000	9,600	13,000
Total Metals							
Iron	UG/L	300	NA	NA	NA	77,200	78,400
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	230	233
Dehalococcoides ethenogenes	CEQ/mL	-	1,000	800 J	50 J	NA	30
Dehalobacter	GC/mL	-	6,000 J	10,000	3,000	NA	500
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	69.3	131
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	0.10 UJ	0.28 J
Sulfate	MG/L	250	5.0 U	5.0 U	2.5 J	3.9 J	3.9 J
Total Organic Carbon	MG/L	-	NA	NA	NA	9.5	9.5
Field Parameter							
Dissolved Oxygen	MG/L	-	3.32	0.98	1.64	NA	0.35
Ferrous Iron	MG/L	-	NA	NA	NA	NA	46.5
Oxidation-Reduction Potential	mV	-	-165	-146	-134	NA	-125
pH	S.U.	-	6.61	6.42	6.10	NA	6.41
Specific Conductance	MS/CM	-	2.60	2.22	2.06	NA	1.76
Temperature	DEG C	-	19.29	18.82	20.14	NA	19.68
Turbidity	NTU	-	0.0	0.0	1.0	NA	1.2

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J - Analyte is reported below the PQL at an estimated concentration. NA - Not Analyzed.

UG/L - Micrograms per Liter; MG/L - Milligrams per Liter; CEQ/mL - Count Equivalents per milliliter; GC/mL - Gene Copies per milliliter

S.U. - Standard Units; MS/CM - Microsiemens per Centimeter; DEG C - Degrees Celsius; NTU - Nephelometric Turbidity Units; mV - Millivolts

Detection Limits shown are PQL

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-04	MW-06	MW-07R
Sample ID			20131022MW-03V12N	20131022MW-04V09N	20131022MW-06V15N	20131022MW-07RV17N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-
Date Sampled			10/22/13	10/22/13	10/22/13	10/22/13
Parameter	**Units**	**Criteria***				
Volatiles						
Chlorotrifluoroethene (Freon-1113)	UG/L	5	58	12	27	390
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 U	1.0 U	1.0 U	12
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	1.0 U	1.0 U	1.1
Dissolved Gases						
Methane	UG/L	-	11,000	1,600	4,100	4,000
Total Metals						
Iron	UG/L	300	29,400	17,700	20,500	30,900
Miscellaneous Parameters						
Alkalinity, Total (as CaCO3)	MG/L	-	237	243	245	291
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA
Dehalobacter	GC/mL	-	100	3 U	2 J	5
Hardness (as CaCO3)	MG/L	-	65.3	73.3	99.0	208
Nitrogen, Nitrate	MG/L	10	0.23 J	0.10 UJ	0.10 UJ	0.36 J
Sulfate	MG/L	250	40.7	23.2	29.2	7.4
Total Organic Carbon	MG/L	-	5.6	7.0	5.6	12.3
Field Parameter						
Dissolved Oxygen	MG/L	-	0.63	0.25	0.37	0.36
Ferrous Iron	MG/L	-	16.9	13.9	3.6	15.3
Oxidation-Reduction Potential	mV	-	-119	-94	-108	-102
pH	S.U.	-	6.21	6.44	6.45	6.31
Specific Conductance	MS/CM	-	1.35	1.27	1.4	1.84
Temperature	DEG C	-	19.3	19.44	18.41	19.42
Turbidity	NTU	-	0.4	5.7	1.4	0.2

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J - Analyte is reported below the PQL at an estimated concentration. NA - Not Analyzed.

UG/L - Micrograms per Liter; MG/L - Milligrams per Liter; CEQ/mL - Count Equivalvents per milliliter; GC/mL - Gene Copies per milliliter

S.U. - Standard Units; MS/CM - Microsiemens per Centimeter; DEG C - Degrees Celsius; NTU - Nephelometric Turbidity Units; mV - Millivolts

Detection Limits shown are PQL

Table 3

Comparison of April 2013 to October 2013 Data

Location	Freon 113	Freon 123a	Freon 1113	Methane	Sulfate	ORP	DO
MW-02	↓	↓	↓	↑	↓	↓	↓
MW-03	↓	↓	↓	↔	↑	↓	↓
MW-04	↔	↔	↑	↓	↑	↓	↓
MW-06	↓	↓	↓	↓	↓	↓	↑
MW-07/07R	↑	↓	↑	↑	↓	↓	↑

Legend

↓ Decrease from previous event

↑ Increase from previous event

↔ No significant change from previous event

TABLE 4
SUMMARY OF GROUNDWATER MONITORING PARAMETERS

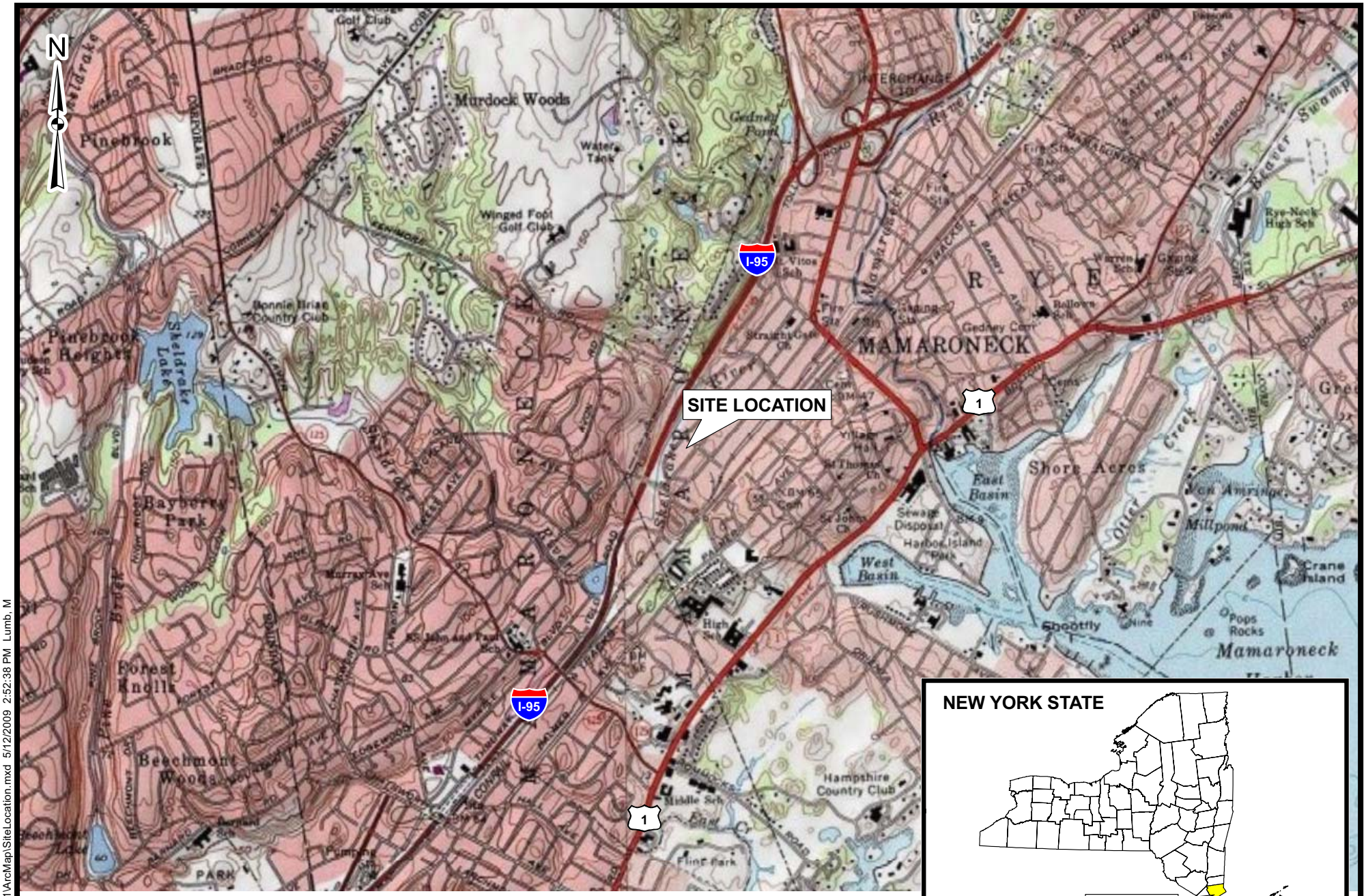
Date	Well	Sample Parameter or Parameter Group								
		Freon 113	Freon 123a	Freon1113	Methane	Sulfate	Dehalococcoides	Dehalobacter	Field Parameters	Natural Attenuation Parameters
April 2014	MW-02	x	x	x	x	x	x	x	x	x
	MW-03	x	x	x	x	x		x	x	x
	MW-04	x	x	x	x	x		x	x	x
	MW-06	x	x	x	x	x		x	x	x
	MW-07R	x	x	x	x	x		x	x	x

Notes:

* Field parameters include dissolved oxygen, oxidation-reduction potential, pH, specific conductance, temperature, and turbidity.

** Natural attenuation parameters include iron (total and ferrous), alkalinity, hardness, nitrogen-nitrate, and TOC.

FIGURES



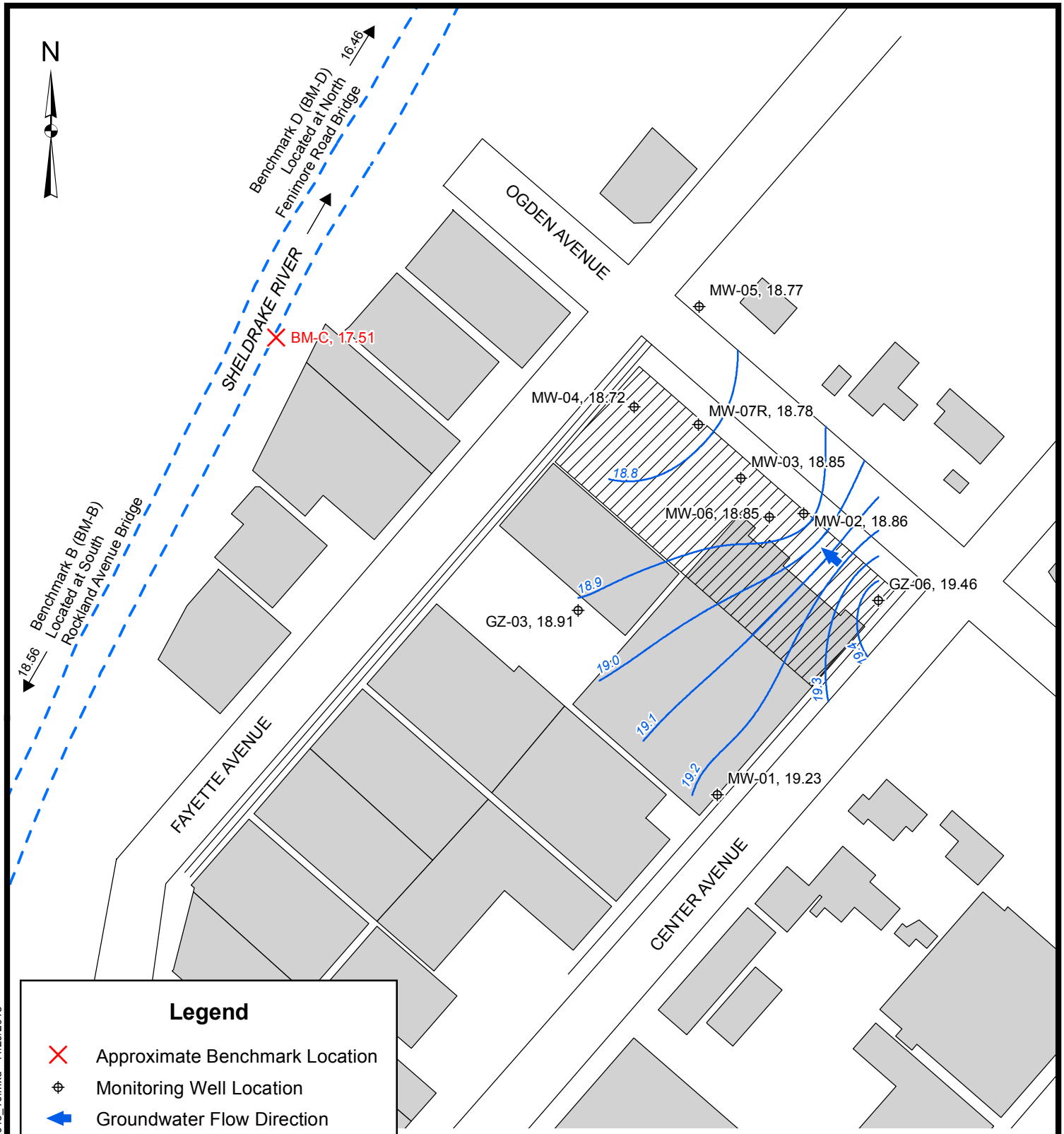
SOURCE: USGS Topographical Quadrangle Mount Vernon, New York, 1979 and Mamaroneck, New York, 1985.

URS

SITE LOCATION MAP

FIGURE 1

N:\11172730.00000\DB\GIS\2001\ArcMap\SiteLocation.mxd 5/12/2009 2:52:38 PM Lumb, M



Legend

- Approximate Benchmark Location
- Monitoring Well Location
- Groundwater Flow Direction
- 19.1 Groundwater Elevation Contour
- Former EMCA Site Boundary (Approximate)

MW-05, 18.77
Location ID
Groundwater Elevation
(based upon URS survey datum)

NOTES:
(1) Well MW-07 was replaced by well MW-07R on September 3, 2009.
(2) Benchmark C was originally established as a temporary benchmark off a tree branch overhanging the Sheldrake River between the north and south bridges. The approximate water surface elevation for this benchmark is now calculated by taking the average water surface elevation of Benchmark B and Benchmark D.

80 0 80 Feet

URS

GROUNDWATER ELEVATION MAP (OCTOBER 22, 2013)

FIGURE 2

N:\11172730.00000\DB\GIS\2001\ArcMap\GW_Elevation_2013_10.mxd 11/20/2013

N

SHELDRAKE RIVER

FAYETTE AVENUE

OGDEN AVENUE

CENTER AVENUE

MW-04	10/99	7/00	7/01	5/03	12/03	7/04	5/05	12/05	8/06	2/07	8/07	2/08	8/08	2/09	10/09	2/10	6/10	10/10	4/11	9/11	4/12	9/12	4/13	10/13
Freon-113	11	ND	ND	ND	ND	0.7J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon-123A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon-1113	ND	ND	ND	ND	ND	ND	1.0J	ND	0.7J	0.6J	ND	1.0J	ND	1.0J	15	7.7J	12	2.8	5J	1.2	7.2J	2.5	4.4J	12

MW-05	7/00	7/01	5/03	12/03	7/04
Freon-113	7	ND	ND	ND	0.5J
Freon-123A	ND	ND	ND	ND	ND
Freon-1113	ND	ND	ND	ND	ND

MW-03	10/99	7/00	7/01	5/03	7/03	9/03	12/03	7/04	5/05	12/05	8/06	2/07	8/07	2/08	8/08	2/09	10/09	2/10	6/10	10/10	4/11	9/11	4/12	9/12	4/13	10/13
Freon-113	17000	11000	13000	5800	68	26	150	4900J	2J	ND	ND	10	2.0J	0.5J	ND	5.0J	0.9J	ND	ND	ND	32	5.4	20J	1.1	27	ND
Freon-123A	ND	ND	ND	78J	43	180	170	3900	14	1.0J	0.8J	48	7.0J	4.0J	1.0J	40	2.1	ND	0.5J	ND	99J	9.4	36	3.2	30	ND
Freon-1113	ND	ND	ND	ND	7	6.2	ND	68J	83	2.0J	51	39	54	13J	10	38	20	17J	26	4.6	110J	82	150J	130	160J	58

MW-07/07R	6/03	7/03	9/03	12/03	7/04	5/05	12/05	8/06	2/07	8/07	2/08	8/08	2/09	10/09	2/10	6/10	10/10	4/11	9/11	4/12	9/12	4/13	10/13
Freon-113	5400	8500	6100	370	110J	ND	ND	ND	ND	6.0J	ND	3.0J	46	580	18J	1.1J	53J	18	1.6	67J	5.9J	5.5	12
Freon-123A	68J	130J	130J	940	50	2.0J	ND	1.0J	3.0J	10	0.9J	16	20	76	8.1	1.8	9.5	6.3J	0.9J	11	2.4J	2.6	1.1
Freon-1113	ND	ND	ND	ND	210	140	47	97	89	82	92	170	150	370	150J	390	350	370J	26	630J	430	310J	390

MW-02	10/99	7/00	7/01	5/03	7/03	9/03	12/03	7/04	5/05	12/05	8/06	11/06	2/07	8/07	2/08	8/08	2/09	10/09	2/10	6/10	10/10	4/11	9/11	4/12	9/12	11/12	1/13	2/13	4/13	7/13	8/13	9/13	10/13
Freon-113	740	1700	2400	880	1000	54	12	21J	1200	110	890	100	800	290	830J	700	1300	1200	76J	670	580	920	490	1200J	650	65	28	18	12	ND	ND	ND	ND
Freon-123A	ND	ND	ND	40	41J	7.8	3.3J	4J	86J	15	110	10	95	40	72	38J	34J	51	6.1	37	26	33J	26	57	26	29	52	30J	11	ND	ND	ND	ND
Freon-1113	ND	ND	ND	ND	ND	ND	ND	14	120	18	200	21	84	61	120J	160	81J	300	92J	240	180	110J	180	140J	98	380	400	330J	400J	120	66	42	61

GZ-03	8/07
Freon-113	ND
Freon-123A	ND
Freon-1113	ND

GZ-06	5/88	3/89	10/99	7/00	7/01	5/03	7/03	9/03	12/03	7/04	5/05	12/05	8/06	11/06	2/07	8/07	2/08	8/08	2/09
Freon-113	1274	200	49	900	250	100	230	74	ND	100J	9J	ND	74	2.0J	14	13	ND	ND	ND
Freon-123A	ND	ND	ND	ND	ND	20	41	26	0.7J	36	4.0J	2.0J	23	2.0J	4.0J	10	ND	ND	ND
Freon-1113	ND	ND	ND	ND	ND	ND	ND	5.4	ND	24	15	ND	13	2.0J	1.0J	2.0J	ND	ND	ND

MW-06	6/03	7/03	9/03	12/03	7/04	5/05	12/05	8/06	2/07	8/07	2/08	8/08	2/09	10/09	2/10	6/10	10/10	4/11	9/11	4/12	9/12	4/13	10/13
Freon-113	220	180	97	250	140J	1.0J	ND	ND	3J	ND	ND	ND	2.0J	ND	ND	ND	ND	33	ND	82J	3.3	0.19J	ND
Freon-123A	8.8J	9.5	8.6	14	23	16	ND	ND	8J	0.6J	ND	ND	35	ND	3.6	0.57J	ND	38J	4.4	28	3.6	4.9	ND
Freon-1113	ND	5.7	ND	ND	5J	6.0J	6.0J	ND	100	21	8.0J	4.0J	34	6.4	35J	68J	61	96J	30	230J	140	61J	27

MW-01	8/07
Freon-113	ND
Freon-123A	ND
Freon-1113	ND

Legend

- Existing Monitoring Well Location
- Generalized Groundwater Flow Direction
- Concentration Exceeds NYSDEC TOGS (1.1.1) Class GA Standards
- 7/00 - Pre-Pilot Injection Sampling Dates
- 12/03 - Post-Pilot Injection/Pre-IRM Injection Sampling Dates
- 12/05 - Post-IRM Injection Sampling Dates
- 2/08 - Post-2007 Supplemental Injection Sampling Dates
- 10/09 - Post-2009 Supplemental Injection Sampling Dates
- 11/12 - Post-2012 Supplemental Injection Sampling Dates
- 7/13 - Post-2013 Supplemental Injection Sampling Dates

NOTES:
All analytical results are reported in µg/L.
Well, MW-07, was replaced by well, MW-07R, on September 3, 2009.
ND = Not Detected
J = Estimated Value
Freon-113 = 1,1,2-Trichloro-1,2,2-trifluoroethane
Freon-123A = 1,2-Dichloro-1,1,2-trifluoroethane
Freon-1113 = Chlorotrifluoroethene

100 0 100 Feet

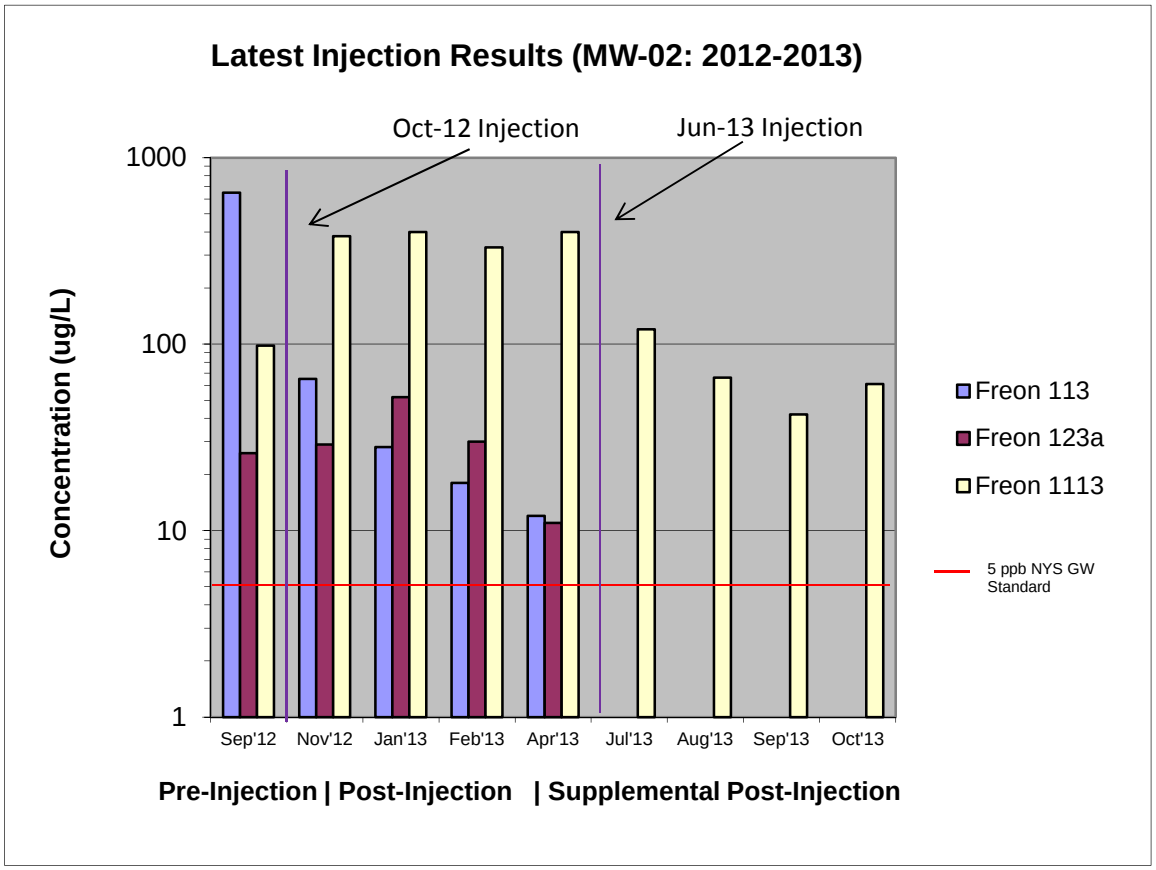
FORMER EMCA SITE
SUMMARY OF FREON DETECTIONS IN GROUNDWATER

URS

FIGURE 3

N:\11172730.00000\DB\GIS\2001\ArcMap\Chemical_Update_2013_10.mxd 12/4/2013

FIGURE 4
RESULTS TRACKING LATEST INJECTION
MW-02 (2012-2013)



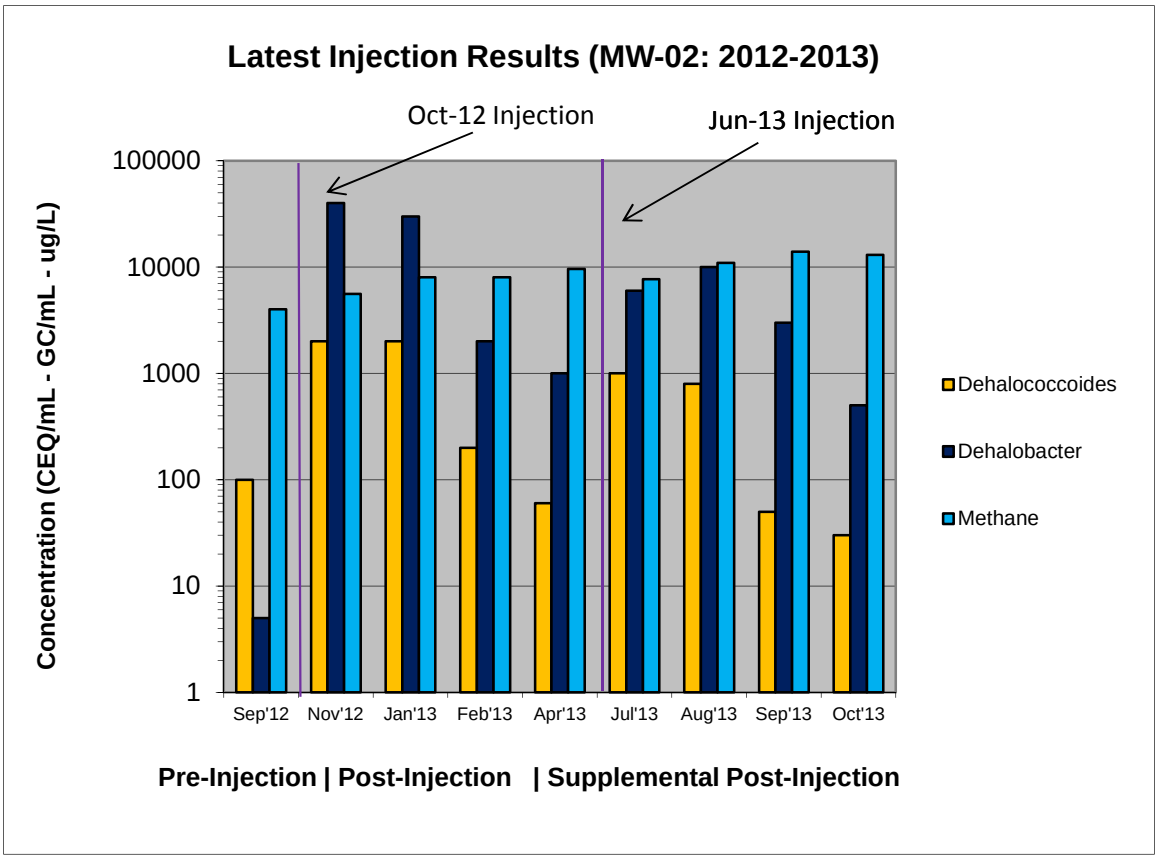


FIGURE 5
FORMER EMCA SITE
Freon 113 Concentrations, MW-03 , MW-04, and MW-07/07R

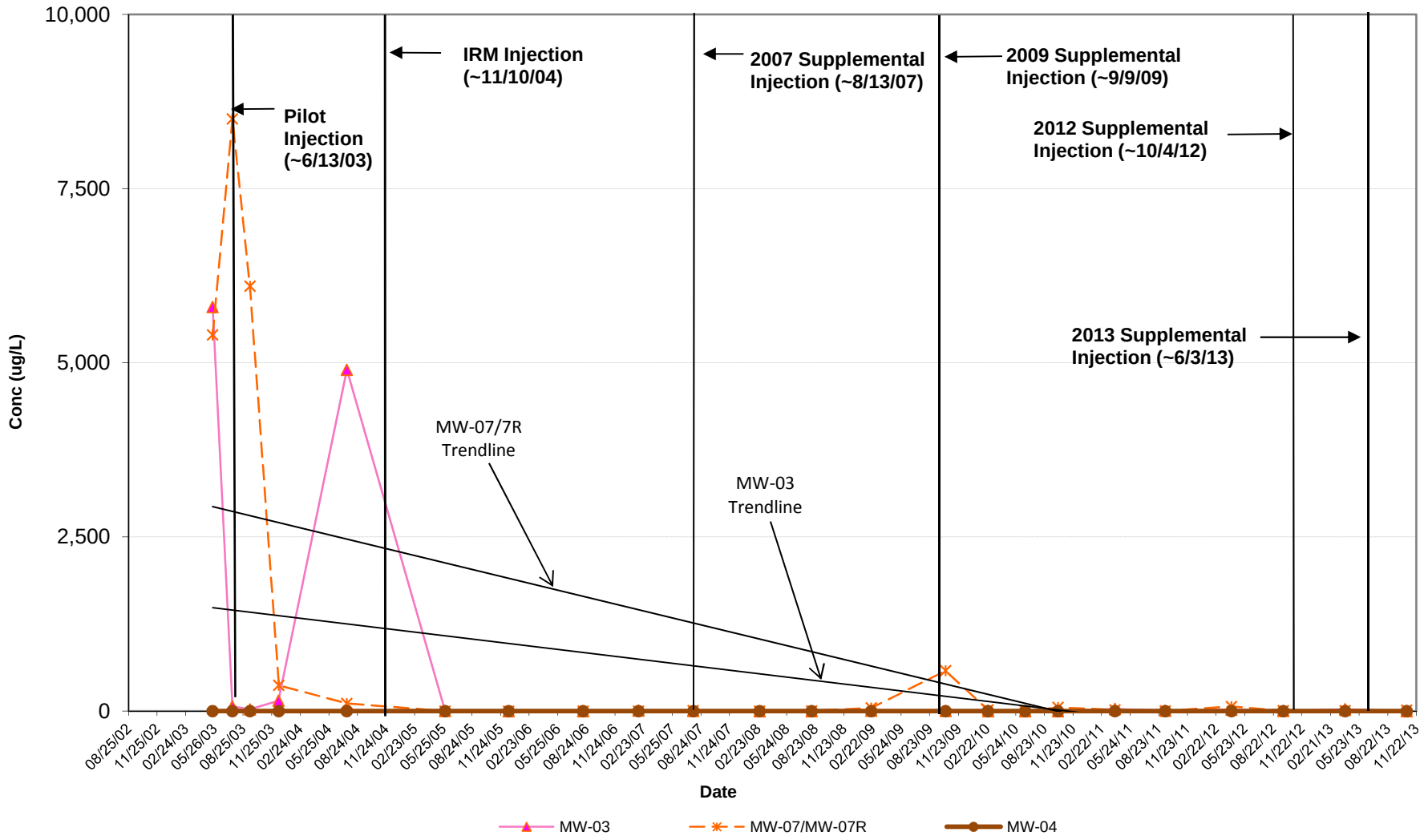
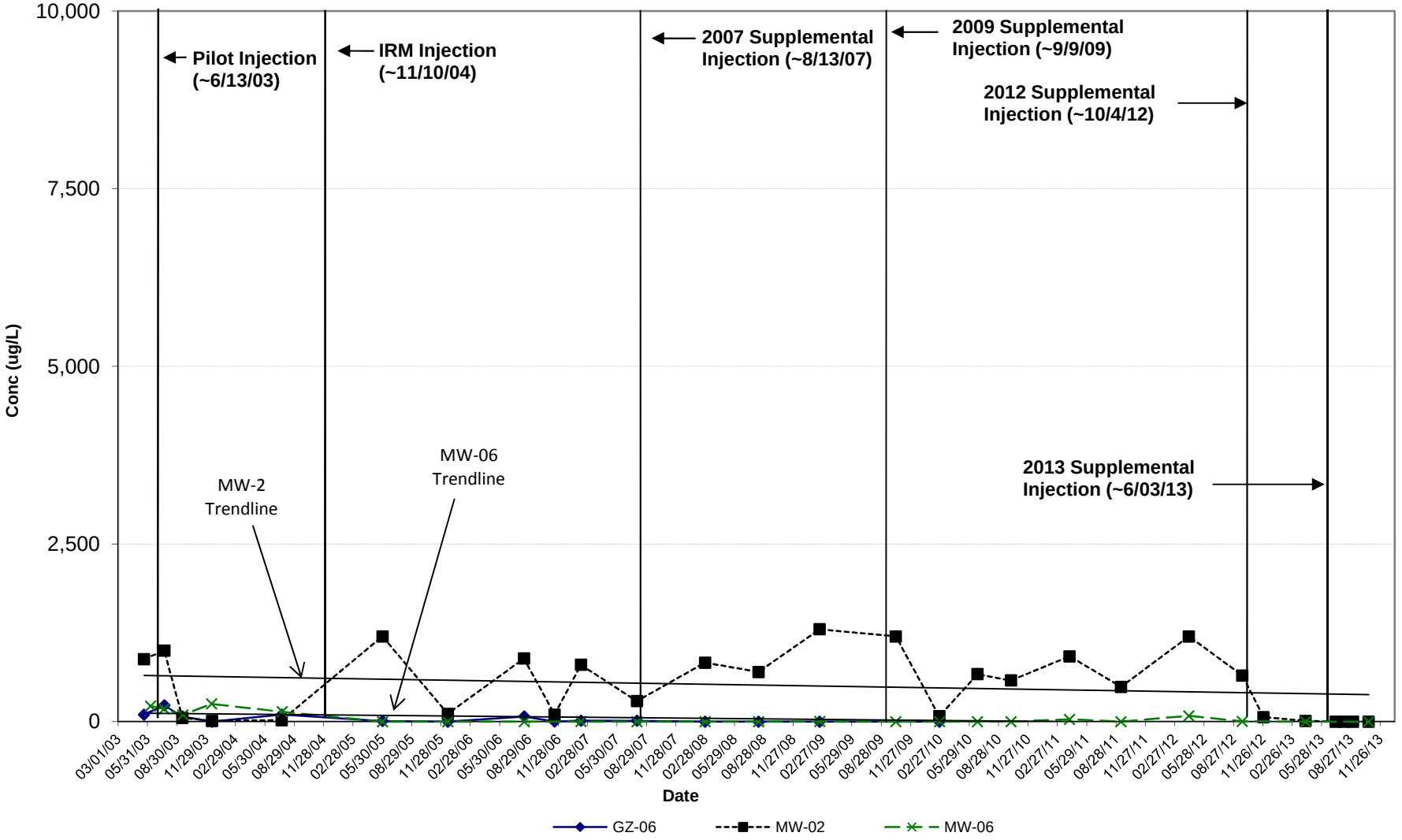
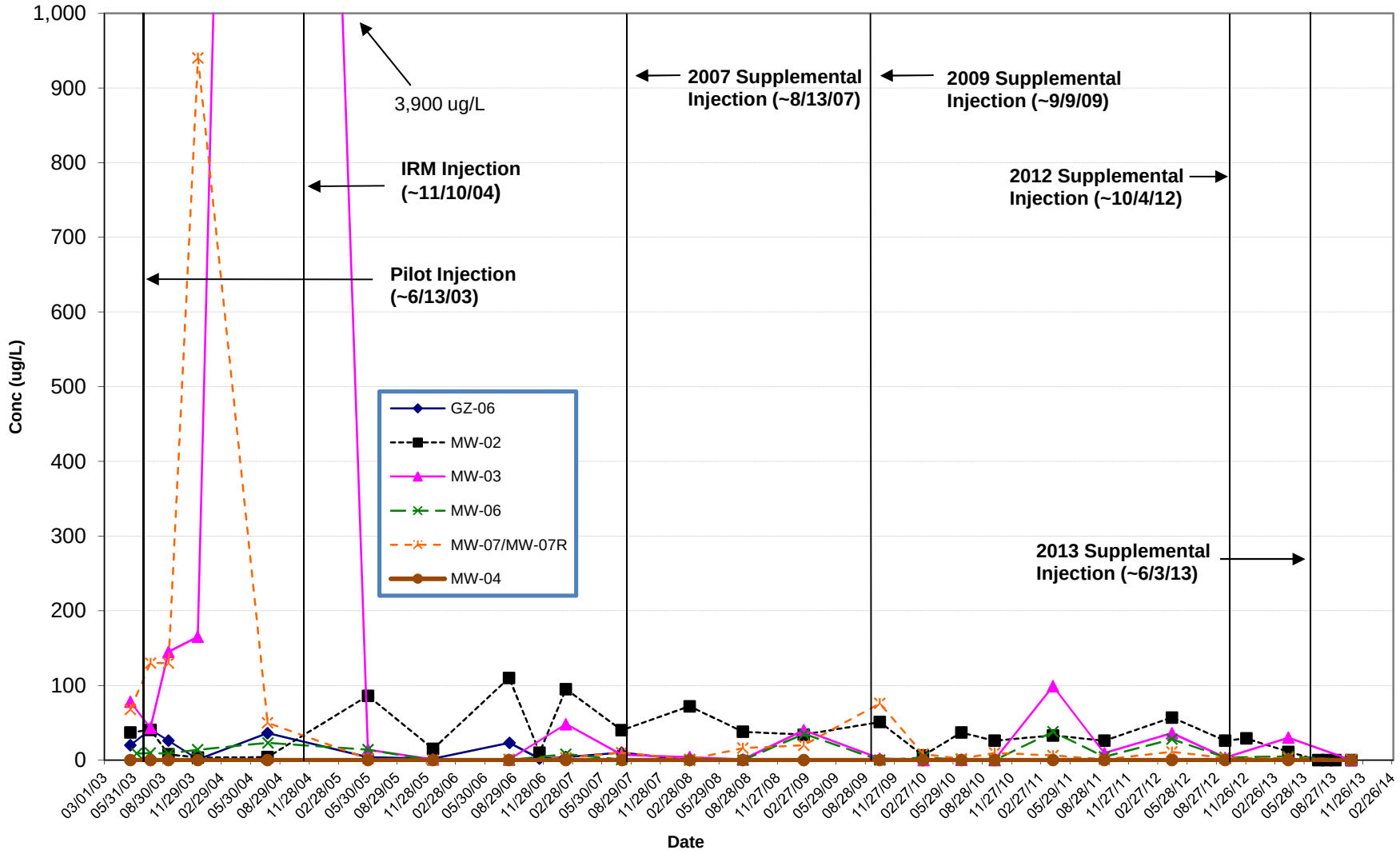


FIGURE 6
FORMER EMCA SITE
Freon 113 Concentrations, GZ-06, MW-02, and MW-06



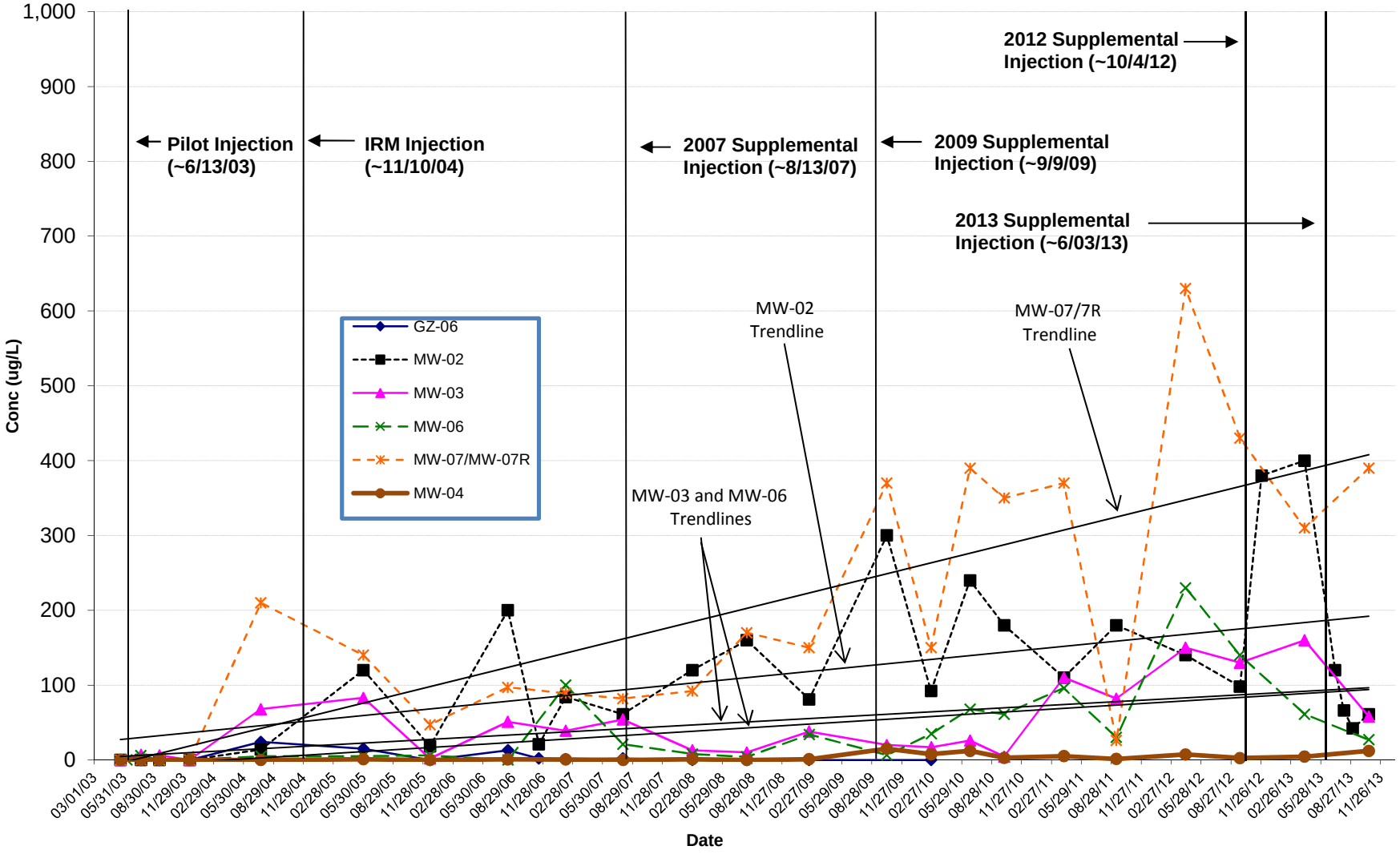
N:\11172730.00000\WORD\DRAFT\GW SAR Reports\Oct 2013 GW SAR\GW Data Plots_Time Scaled Long_Oct 2013 KC - Fig 6

FIGURE 7
FORMER EMCA SITE
Freon 123a Concentrations



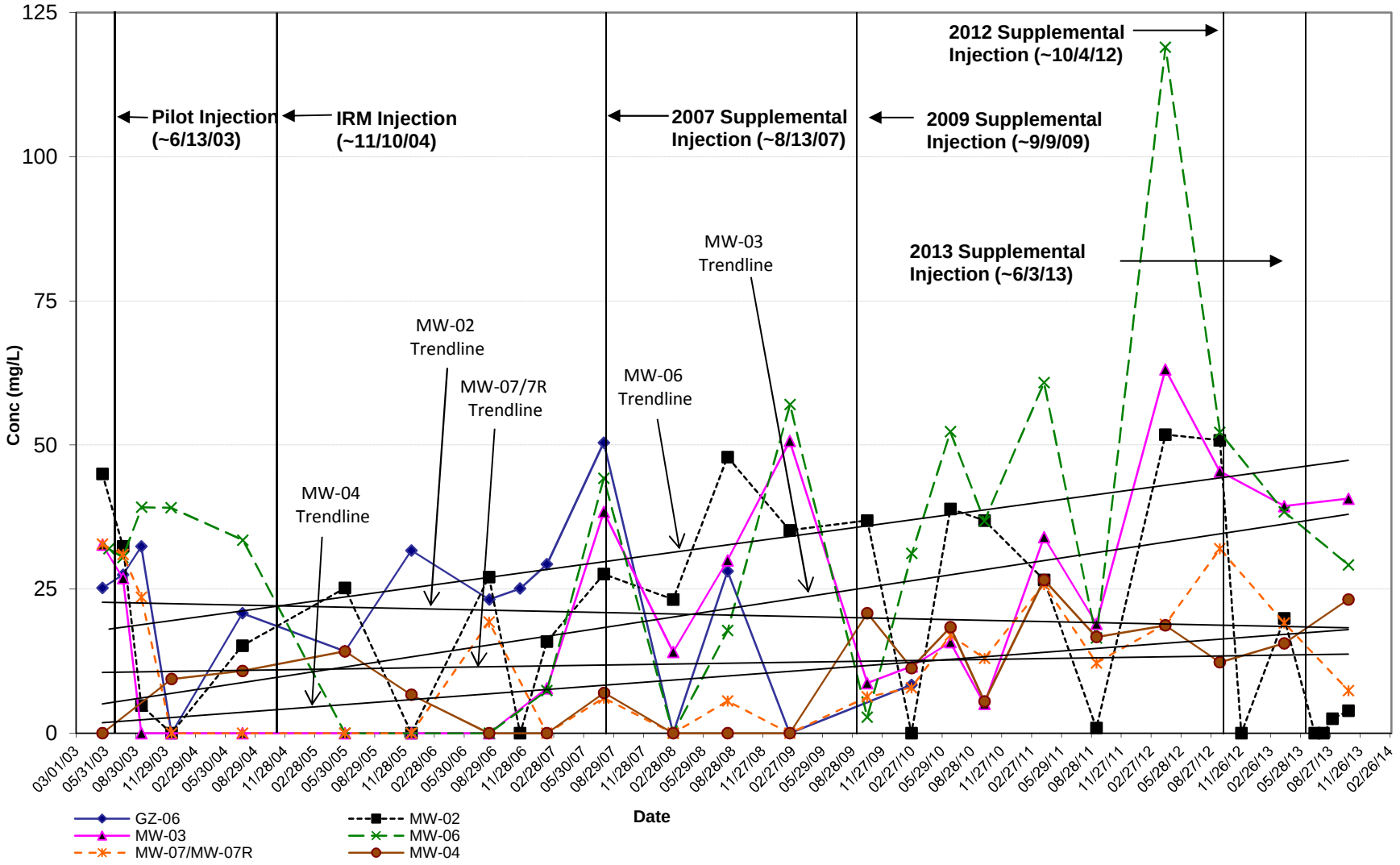
N:\11172730.00000\WORD\DRAFT\GW SAR Reports\Oct 2013 GW SAR\GW Data Plots_Time Scaled Long_Oct 2013 KC - Fig 7

FIGURE 8
FORMER EMCA SITE
Freon 1113 Concentrations



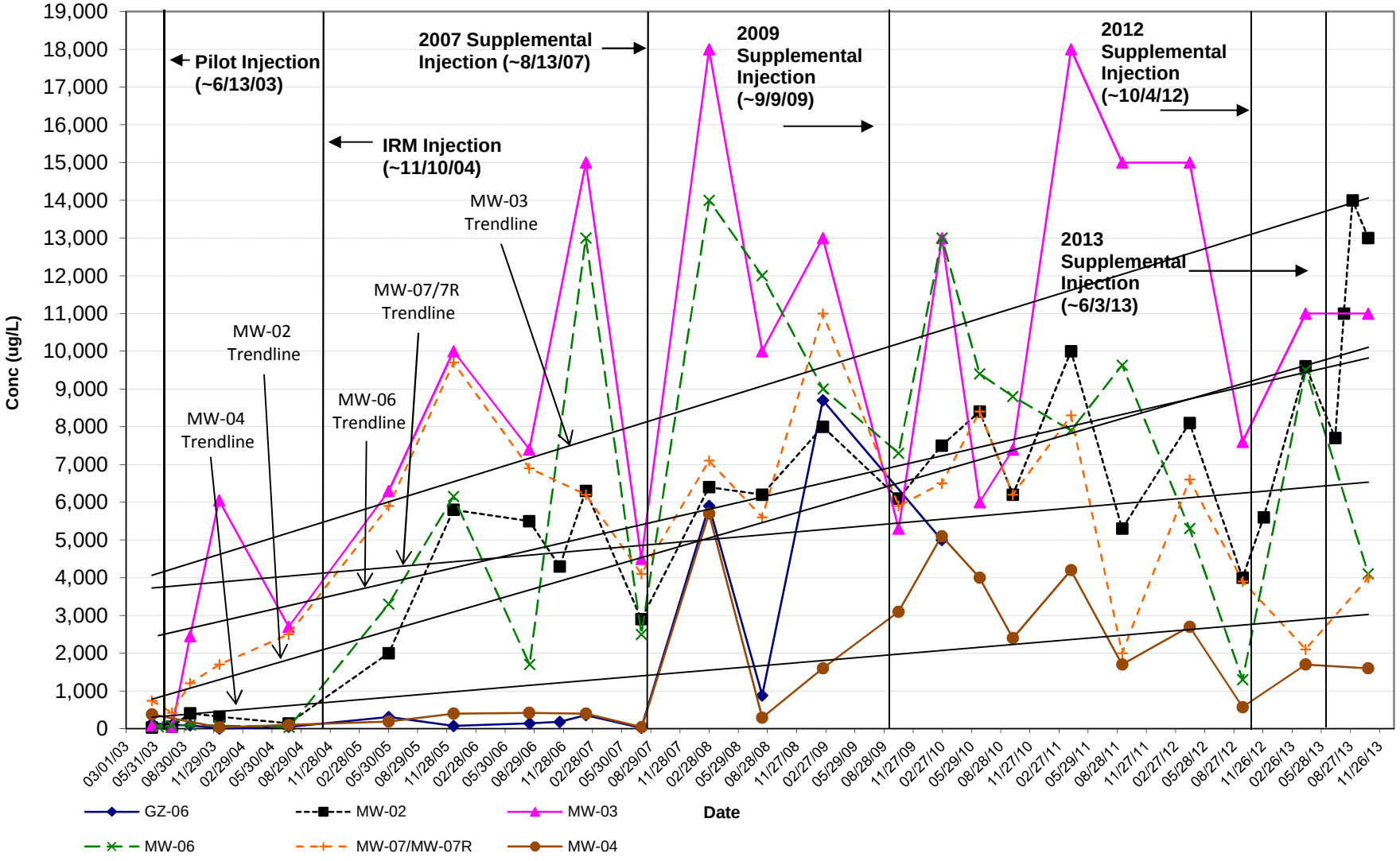
N:\11172730.00000\WORD\DRAFT\GW SAR Reports\Oct 2013 GW SAR\GW Data Plots_Time Scaled Long_Oct 2013 KC - Fig 8

FIGURE 9
FORMER EMCA SITE
Sulfate Concentrations



N:\11172730.00000\WORD\DRAFT\GW SAR Reports\Oct 2013 GW SAR\GW Data Plots_Time Scaled Long_Oct 2013 KC - Fig 9

FIGURE 10
FORMER EMCA SITE
Methane Concentrations



N:\11172730.00000\WORD\DRAFT\GW SAR Reports\Oct 2013 GW SAR\GW Data Plots_Time Scaled Long_Oct 2013 KC - Fig 10

FIGURE 11
FORMER EMCA SITE
Dissolved Oxygen Concentrations

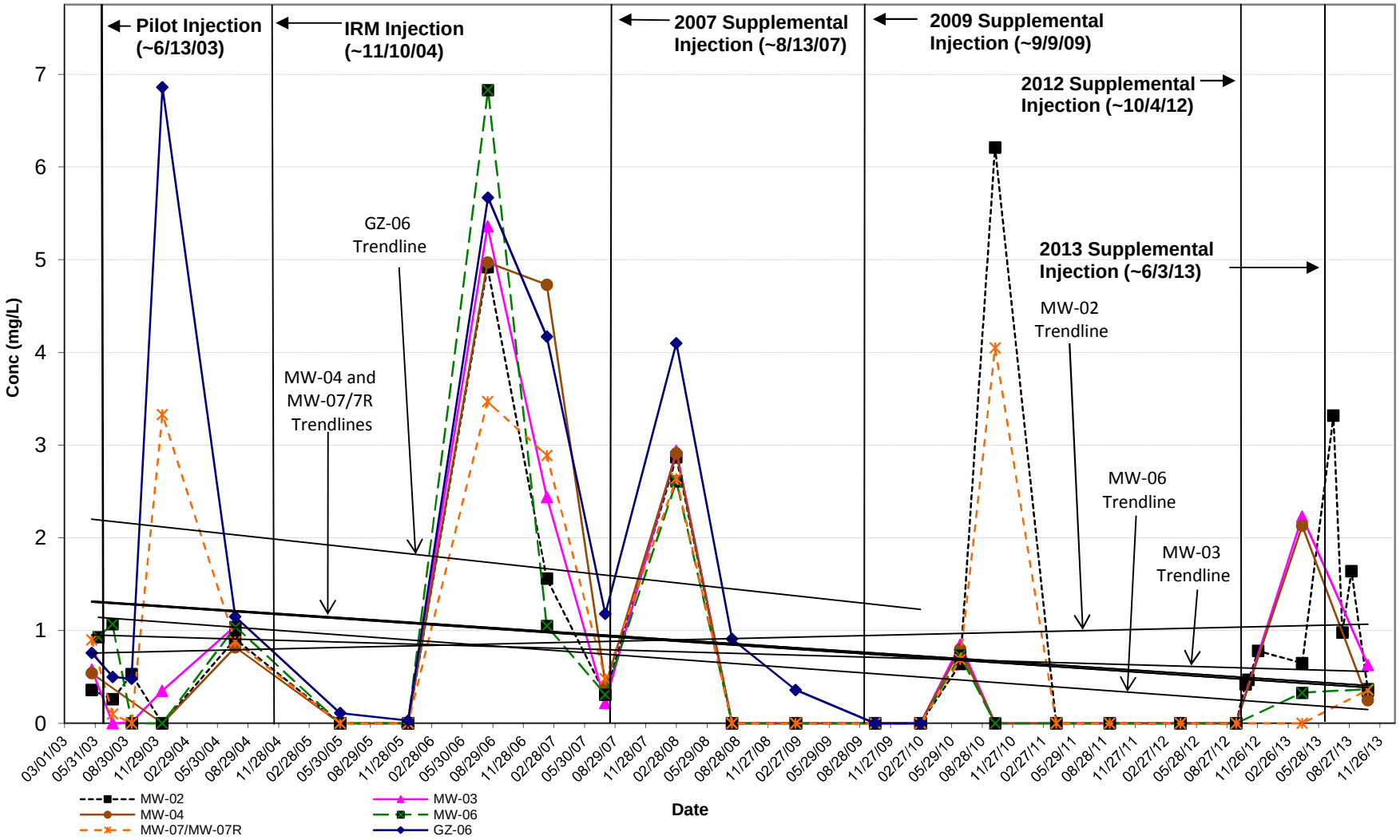


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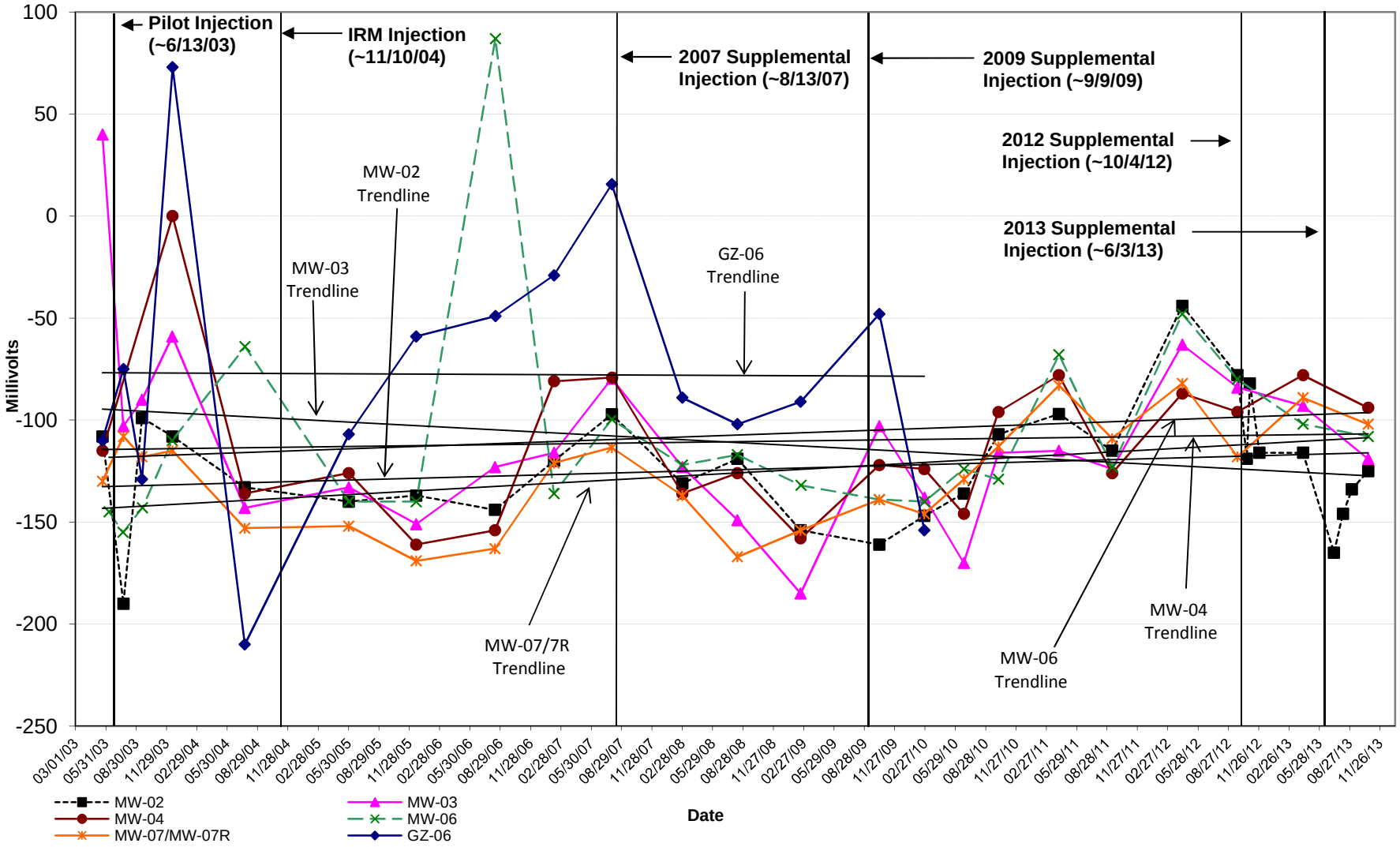
FIGURE 12
FORMER EMCA SITE
Oxidation-Reduction Potential



N:\11172730.00000\WORD\DRAFT\GW SAR Reports\Oct 2013 GW SAR\GW Data Plots_Time Scaled Long_Oct 2013 KC - Figure 12

APPENDIX A

LOW FLOW GROUNDWATER PURGING/SAMPLING LOGS

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: MW-02

Date: 7/11/2013 Sampling Personnel John Crespo Company: URS Corporation

Purging/Sampling Device: Geo pumpo Tubing Type: Disposable Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 5.72' Depth to Well Bottom: 11.81' Well Diameter: 1" Screen Length: 10'

Casing Type: PVC Volume in 1 Well Casing (liters): 0.9 Estimated Purge Volume (liters): 16.5

Sample ID: Sample Time: 12:07 QA/QC:

Sample Parameters: Freon 113, Freon 123 a, Freon 1113
Methan, Sulfate
Dehalobacter, Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
11:12	6.67	20.71	2.24	9.17	650	-155	400	5.85
11:17	6.65	19.44	2.36	7.66	615	-172	300	5.85
11:22	6.63	18.91	2.48	6.46	567	-173	300	5.86
11:27	6.62	18.86	2.50	6.04	558	-173	300	5.86
11:32	6.62	18.95	2.51	5.52	520	-171	300	5.85
11:37	6.61	19.10	2.52	5.07	395	-170	300	5.85
11:42	6.61	18.96	2.56	5.96	277	-169	300	5.85
11:47	6.61	19.30	2.55	4.50	116	-168	300	5.85
11:52	6.61	19.32	2.58	3.93	0.0	-167	300	5.85
11:57	6.60	19.26	2.59	3.73	0.0	-166	300	5.86
12:02	6.60	19.22	2.60	3.48	0.0	-166	300	5.86
12:07	6.61	19.29	2.60	3.32	0.0	-165	300	5.86
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks: Ground water had a slight brownish color and slight sheen.

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: MW-02

Date: 8/7/2013 Sampling Personnel John Crespo Company: URS Corporation

Purging/Sampling Device: Geo pumpo Tubing Type: Disposable Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 6.21' Depth to Well Bottom: 11.8' Well Diameter: 1.0" Screen Length: 10'

Casing Type: PVC Volume in 1 Well Casing (liters): 0.8 Estimated Purge Volume (liters): 13.5

Sample ID: MW-02 Sample Time: 10:48 QA/QC: TB080713 (1) and (2)

Sample Parameters: Freon 113, Freon 123 a, Freon 1113
Methane, Sulfate
Dehalobacter, Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
9:23	6.17	19.23	2.72	1.30	952	-138	450	6.33
9:28	6.30	18.86	2.48	0.93	235	-153	300	6.33
9:33	6.32	18.84	2.42	0.77	64.5	-155	300	6.28
9:38	6.34	18.80	2.36	0.67	15.4	-153	300	6.29
9:43	6.35	18.77	2.32	1.63	2.6	-155	300	6.29
9:48								
	STOPPED MOMENTARILY SO THAT GARBAGE DUMPSTER COULD BE TAKEN AWAY, DUMPED							
	AND RETURNED.							
10:22	6.39	19.24	2.36	1.06	16.1	-133	300	6.31
10:27	6.41	19.06	2.28	0.98	16.5	-141	300	6.32
10:32	6.41	18.81	2.26	1.04	0.0	-145	300	6.32
10:37	6.41	18.87	2.25	0.99	0.0	-145	300	6.33
10:42	6.42	18.89	2.24	1.03	0.0	-146	300	6.32
10:47	6.42	18.82	2.22	0.98	0.0	-146	300	6.33
	SAMPLE AT 10:48							
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks: Ground water had a slight brownish color and slight sheen.

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: MW-02

Date: 9/3/2013 Sampling Personnel: John Crespo Company: URS Corporation

Purging/Sampling Device: Geo pump Tubing Type: Disposable Pump/Tubing Inlet Location: Screen midpoint

Measuring Point: Below Top of Riser Initial Depth to Water: 6.46' Depth to Well Bottom: 11.77' Well Diameter: 1.0" Screen Length: 10 '

Casing Type: PVC Volume in 1 Well Casing (liters): 0.8 Estimated Purge Volume (liters): 8.7

Sample ID: MW-02 Sample Time: 9:40 QA/QC: TB

Sample Parameters: Total Sulfate, 8260B MOD Freon, RSK 175 Methane
Dehalococcoides and Dehalobacter

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
9:00	5.81	20.42	2,70	2,11	148	-102	350	6.55
9:05	5.84	20.19	2.42	1,92	55,2	-118	250	6.56
9:10	5.89	20.16	2,24	1.77	22,8	-124	250	6.56
9:15	5.93	20.15	2,19	1.75	9,4	-127	250	6.56
9:20	5.99	20.21	2,15	2,28	5.3	-128	250	6.56
9:25	6.02	20.18	2,13	1,71	2,3	-130	250	6.57
9:30	6.06	20.19	2,10	1,72	0.9	-132	250	6.57
9:35	6.09	20.15	2,08	1,66	1,1	-133	250	6.57
9:40	6.1	20.14	2,06	1,64	1,0	-134	250	6.57
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks:

Unable to calibrate pH sensor for Horiba U-52. Other sensors were working fine.

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling | Site: Mamaroneck, NY | Well I.D.: **MW-02**

Date: 10/22/2013 | Sampling Personnel: John Crespo | Company: URS Corporation

Purging/ Sampling Device:	Geo pump			Tubing Type:	Disposable		Pump/Tubing Inlet Location:	Screen midpoint	
Measuring Point:	Below Top of Riser	Initial Depth to Water:	6.77'	Depth to Well Bottom:	11.76'	Well Diameter:	1.0"	Screen Length:	10 '
Casing Type:	PVC			Volume in 1 Well Casing (liters):	0.7		Estimated Purge Volume (liters):	12	

Sample ID: 20131022MW-02V09N | Sample Time: 14:50 | QA/QC: 20131022MW-02V09FD

Sample Parameters: D516-Sulfate; SM4500_NO3_F-Nitrate; 200.7- Fe; 2340C- Hardness; SM5310b-TOC; 8260b (MOD) Freon; 2320B- Alkalinity; RSK_175 Methane; Dehalobacter; Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (ºC)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
14:07	6.35	20.26	2.09	1.27	160	-108	320	6.87
14:12	6.32	20.12	1.90	0.79	30.5	-117	300	6.87
14:17	6.38	20.08	1.85	0.62	11.9	-121	300	6.87
14:22	6.38	20.06	1.83	0.51	5.8	-122	300	6.87
14:27	6.40	20.03	1.81	0.44	3.1	-127	300	6.87
14:32	6.40	19.96	1.80	0.40	1.3	-125	300	6.87
14:37	6.42	19.80	1.78	0.39	1.2	-126	300	6.87
14:42	6.42	19.77	1.76	0.36	1.3	-127	300	6.87
14:47	6.41	19.68	1.76	0.35	1.2	-125	300	6.87
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks:

Fe (II) conc.= **0.93** mg/L

Dilution Ratio = 1 mL Sample to 49 mL of DI Water

Note This was accomplished by first combining 5 mL of solution with 45 mL of DI water, then taking 10 mL of this mix and further diluting it with 40 mL of DI water.

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: **MW-03**

Date: 10/22/2013 Sampling Personnel: John Crespo Company: URS Corporation

Purging/ Sampling Device:	Geo pump			Tubing Type:	Disposable		Pump/Tubing Inlet Location:	Screen midpoint	
Measuring Point:	Below Top of Riser	Initial Depth to Water:	6.74'	Depth to Well Bottom:	14.32'	Well Diameter:	1.0"	Screen Length:	10 '
Casing Type:	PVC			Volume in 1 Well Casing (liters):	1.1		Estimated Purge Volume (liters):	7	

Sample ID: 20131022MW-03V12N Sample Time: 10:58 QA/QC:

Sample Parameters: D516-Sulfate; SM4500_NO3_F-Nitrate; 200.7- Fe; 2340C- Hardness; SM5310b-TOC; 8260b (MOD) Freon; 2320B- Alkalinity; RSK_175 Methane; Dehalobacter; Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (ºC)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
10:22	5.97	18.93	1.39	1.44	32.7	-93	280	6.85
10:27	6.08	19.10	1.38	0.97	17.3	-107	300	6.85
10:32	6.16	19.12	1.37	0.88	5.2	-112	300	6.85
10:37	6.16	19.13	1.36	0.82	1.5	-115	300	6.85
10:42	6.16	19.22	1.36	0.72	0.4	-116	300	6.86
10:47	6.17	19.24	1.36	0.66	0.4	-117	300	6.85
10:52	6.19	19.28	1.35	0.61	0.5	-118	300	6.85
10:57	6.21	19.30	1.35	0.63	0.4	-119	300	6.85
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks:

Fe (II) conc.= **1.69** mg/L

Dilution Ratio = 5 mL Sample to 45 mL of DI Water

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: **MW-04**

Date: 10/22/2013 Sampling Personnel: John Crespo Company: URS Corporation

Purging/ Sampling Device:	Geo pump			Tubing Type:	Disposable		Pump/Tubing Inlet Location:	Screen midpoint	
Measuring Point:	Below Top of Riser	Initial Depth to Water:	6.59'	Depth to Well Bottom:	11.87'	Well Diameter:	1.0"	Screen Length:	10 '
Casing Type:	PVC			Volume in 1 Well Casing (liters):	0.8		Estimated Purge Volume (liters):	9	

Sample ID: 20131022MW-04V09N Sample Time: 18:30 QA/QC:

Sample Parameters: D516-Sulfate; SM4500_NO3_F-Nitrate; 200.7- Fe; 2340C- Hardness; SM5310b-TOC; 8260b (MOD) Freon; 2320B- Alkalinity; RSK_175 Methane; Dehalobacter; Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
17:52	6.54	18.78	1.38	2.41	479	-77	200	6.88
17:57	6.47	18.48	1.33	0.56	203	-82	220	6.89
18:02	6.45	19.13	1.29	0.42	40.6	-84	250	6.89
18:07	6.44	19.16	1.28	0.42	16.1	-87	250	6.9
18:12	6.44	19.14	1.28	0.32	12.6	-90	250	6.86
18:17	6.44	19.46	1.27	0.28	20.1	-91	300	7.02
18:22	6.44	19.43	1.27	0.26	5.4	-95	300	7.01
18:27	6.44	19.44	1.27	0.25	5.7	-94	300	7.01
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks:

Fe (II) conc.= **2.77** mg/L

Dilution Ratio = 10 mL Sample to 40 mL of DI Water

18:15 Switched to power from car because portable battery was running low.

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: **MW-06**

Date: 10/22/2013 Sampling Personnel: John Crespo Company: URS Corporation

Purging/ Sampling Device:	Geo pump		Tubing Type:	Disposable		Pump/Tubing Inlet Location:	Screen midpoint
Measuring Point:	Below Top of Riser	Initial Depth to Water: 6.92'	Depth to Well Bottom:	18.71'	Well Diameter: 1.0"	Screen Length:	10 '
Casing Type:	PVC		Volume in 1 Well Casing (liters):	1.78		Estimated Purge Volume (liters):	10

Sample ID: 20131022MW-06V15N Sample Time: 16:40 QA/QC: 20131022MW-06V15MS 20131022MW-06V15MSD

Sample Parameters: D516-Sulfate; SM4500_NO3_F-Nitrate; 200.7- Fe; 2340C- Hardness; SM5310b-TOC; 8260b (MOD) Freon; 2320B- Alkalinity; RSK_175 Methane; Dehalobacter; Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (ºC)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
16:01	6.35	18.42	1.25	2.74	20.6	-90	280	7.01
16:06	6.37	18.44	1.23	1.34	12.5	-95	280	7.01
16:11	6.42	18.41	1.22	0.42	4.1	-101	280	7.02
16:16	6.43	18.42	1.21	0.4	2.6	-102	280	7.02
16:21	6.44	18.42	1.21	0.44	1.7	-104	280	7.02
16:26	6.41	18.41	1.20	0.34	1.7	-106	280	7.02
16:31	6.46	18.41	1.30	0.36	1.5	-107	280	7.02
16:36	6.45	18.41	1.40	0.37	1.4	-108	280	7.02
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks:

Fe (II) conc.= **0.71** mg/L

Dilution Ratio = 10 mL Sample to 40 mL of DI Water

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: EMCA Ground Water Sampling Site: Mamaroneck, NY Well I.D.: **MW-07R**

Date: 10/22/2013 Sampling Personnel: John Crespo Company: URS Corporation

Purging/ Sampling Device:	Geo pump			Tubing Type:	Disposable		Pump/Tubing Inlet Location:	Screen midpoint	
Measuring Point:	Below Top of Riser	Initial Depth to Water:	6.85'	Depth to Well Bottom:	20.01'	Well Diameter:	1.0"	Screen Length:	10 '
Casing Type:	PVC			Volume in 1 Well Casing (liters):	2.0		Estimated Purge Volume (liters):	12	

Sample ID: 20131022MW-07RV17N Sample Time: 13:05 QA/QC:

Sample Parameters: D516-Sulfate; SM4500_NO3_F-Nitrate; 200.7- Fe; 2340C- Hardness; SM5310b-TOC; 8260b (MOD) Freon; 2320B- Alkalinity; RSK_175 Methane; Dehalobacter; Dehalococcoides

PURGE PARAMETERS

TIME	pH	TEMP (ºC)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
12:20	6.31	19.76	1.75	1.49	4.9	-81	320	6.97
12:25	6.28	19.44	1.83	0.78	1.4	-89	320	6.97
12:30	6.28	19.43	1.85	0.55	0.8	-93	380	6.77
12:35	6.28	19.44	1.86	0.46	0.5	-95	300	6.95
12:40	6.29	19.44	1.85	0.46	0.3	-97	300	6.95
12:45	6.29	19.44	1.85	0.42	0.3	-98	300	6.95
12:50	6.30	19.42	1.85	0.40	0.2	-99	300	6.95
12:55	6.31	19.42	1.84	0.37	0.2	-101	300	6.95
13:00	6.31	19.42	1.84	0.36	0.2	-102	300	6.95
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 10**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Remarks:

Fe (II) conc.= **1.53** mg/L

Dilution Ratio = 5 mL Sample to 45 mL of DI Water

APPENDIX B

DATA USABILITY SUMMARY REPORT

APPENDIX B

DATA USABILITY SUMMARY REPORT

JULY - OCTOBER 2013 SAMPLING EVENTS

FORMER EMCA SITE
SITE NO. 360025
MAMARONECK, NEW YORK

Analyses Performed by:

TESTAMERICA LABORATORIES, INC.
777 New Durham Road
Edison, New Jersey 08817

Prepared for:

ROHM & HAAS Company
(A Wholly-Owned Subsidiary of The Dow Chemical Company)
3100 State Road
Croydon, PA 19021

Prepared by:

URS CORPORATION
77 Goodell Street
Buffalo, New York 14203

DECEMBER 2013

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TABLES
(Following Text)

ATTACHMENTS
(Following Tables)

I. INTRODUCTION

This Data Usability Summary Report (DUSR) has been prepared following the guidelines provided in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation *DER-10, Technical Guidance for Site Investigation and Remediation, Appendix 2B - Guidance for Data Deliverables and the Development of Data Usability Summary Reports*, May 2010. This DUSR discusses the analytical data for one (1) groundwater sample plus trip blank collected on July 11, 2013; one (1) groundwater sample plus trip blank collected on August 7, 2013; one (1) groundwater sample plus trip blank collected on September 3, 2013; and five (5) groundwater samples, one field duplicate, one matrix spike/matrix spike duplicate (MS/MSD) pair, and one trip blank collected on October 22, 2013, as summarized on Table B-1. The July-September samples were collected by URS personnel at the Former EMCA Site located in Mamaroneck, New York, as part of the post supplemental in-situ bioaugmentation monitoring program, while the October samples were collected as part of the semi-annual groundwater monitoring event.

II. ANALYTICAL METHODOLOGIES

The groundwater samples were analyzed for the following parameters by TestAmerica Laboratories, Inc., (TA) located in Edison, New Jersey and Amherst, New York; and SiREM Laboratory located in Guelph, Ontario, Canada. Note, not all groundwater samples were analyzed for all parameters, as shown on Table B-1.

Parameter	Method No.	References
Volatile Organic Compounds (VOCs)*	SW8260B	1
Methane	RSK-175	2
Sulfate	ASTM D516-90, 02	3
Alkalinity (total)	SM 2320 B	4
Hardness	SM 2340 C	4
Total Iron	200.7	5
Ferrous Iron (Fe^{+2})	Field colorimeter	6
Nitrate	SM 4500-NO3 F	4
Total Organic Carbon (TOC)	SM 5310 B	4
Bacteria [*Dehalococcoides ethenogenes (Dhc) and Dehalobacter (Dhb)*]	QPCR**	SiREM SOP

Notes:
* - VOCs include 1,1,2-trichloro-1,2,2-trifluoroethane (Freon-113), 1,2-dichloro-1,1,2-trifluoroethane (Freon-123A), and chlorotrifluoroethene (Freon-1113).
** - Quantitative Polymerase Chain Reaction.

References:
1 NYSDEC Analytical Services Protocol, July 2005.
2 USEPA, R.S. Kerr Environmental Research Laboratory, Rev. 0, August 11, 1994.
3 ASTM International, most recent version.
4 Standard Methods of Examination of Water and Wastewater, 20th Edition, 1998.
5 40 CFR Part 136, most recent version.
6 Hach Colorimeter using 1,10-Phenanthroline.

III. DATA VALIDATION PROCEDURES

A limited data validation was performed in accordance with the following USEPA Region II guidelines:

- *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B, SOP No. HW-24, Rev. #2*, August 2008; and

- *ICP-AES Data* Validation, SOP No. HW-2a, Revision 15, December 2012.

The validated groundwater and field quality control (QC) analytical results are presented in Tables B-2 and B-3, respectively. Copies of the validated laboratory results (i.e., Form 1's) are presented in Attachment A. Copies of the case narrative, chain-of-custody, and documentation supporting the qualification of data are presented in Attachment B. Only problems affecting data usability are discussed in this report.

IV. DATA DELIVERABLE COMPLETENESS

The laboratory deliverable data packages were in accordance with NYSDEC Analytical Services Protocol (ASP) Category B requirements.

V. PRESERVATION / SAMPLE RECEIPT / HOLDING TIMES

All samples were received by the laboratory intact, properly preserved, and under proper chain-of-custody (COC). All sample analyses were performed within method holding times, except for the nitrate analyses for all samples collected on 10/22/13. The samples were received by the laboratory outside the 48-hour hold time due to a field delivery error. Consequently, the nitrate and nitrite results for all samples collected on 10/22/13 were qualified 'J' or 'UJ'.

VI. NONCONFORMANCES

Instrument Calibration

The VOC continuing calibration (CCAL) associated with sample 20130711MW-02V09N

plus trip blank exhibited a percent difference (%D) exceedance (i.e., >20.0%) for 1,1,2-trichloro-1,2,2-trifluoroethane (Freon-113). The non-detect results for Freon-113 for the above referenced samples were qualified 'UJ'.

The VOC CCAL associated with sample 20130807MW-02V09N plus trip blank exhibited a %D exceedance (i.e., >20.0%) for chlorotrifluoroethene (Freon-1113). The detected results for Freon-1113 for the above referenced groundwater sample was qualified 'J', while the non-detect trip blank result was qualified 'UJ'.

Documentation supporting data qualification (i.e., Forms 5 and 7) are presented in Attachment B.

Laboratory Control Samples

The Dhb low-level laboratory control sample (LCS) associated with sample 20130711MW-02V09N, and the high-level Dhc LCSs associated with samples 20130807MW-02V09N and 20130903MW-02V09N exceeded QC limits (i.e., ±50%). The detected Dhb and Dhc results for the above referenced samples were qualified 'J', respectively.

Matrix Spike/Matrix Spike Duplicate Recoveries

The nitrate MS/MSD %Rs for sample 20131022MW-06V15N were below QC limits (>80%). Since the nitrate and nitrite results for all groundwater samples collected in 10/22/13 were previously qualified due to holding time exceedances, no further qualification of the data was necessary.

VII. SUMMARY

All sample analyses were found to be compliant with the method and validation criteria, except where previously noted. Those results qualified 'J' (estimated) or 'UJ' (estimated quantitation limit) during the data validation are considered conditionally usable.

DEFINITIONS OF USEPA REGION II DATA QUALIFIERS

U – The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J – The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R – The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

D – The sample results are reported from a separate secondary dilution analysis.

TABLE B-1
SAMPLE AND ANALYSIS SUMMARY - JULY TO OCTOBER 2013
FORMER EMCA SITE, MAMARONECK, NEW YORK

SDG Nos.	Sample ID	Matrix	Date of Collection	VOCs*	Methane	Sulfate	Alkalinity	Hardness	Total Iron	Nitrate	TOC	Dhc	Dhb	Comments
460-59323-1/ S-2903	20130711MW-02V09N	GW	07/11/13	X	X	X	---	---	---	---	---	X	X	
	TB20130711	Water		X	X	---	---	---	---	---	---	---	---	Trip Blank
460-60945-1/ S-2931	20130807MW-02V09N	GW	08/07/13	X	X	X	---	---	---	---	---	X	X	---
	TB20130807	Water		X	X	---	---	---	---	---	---	---	---	Trip Blank
460-62494-1/ S-2949	20130903MW-02V09N	GW	09/03/13	X	X	X	---	---	---	---	---	X	X	---
	TB20130903	Water		X	X	---	---	---	---	---	---	---	---	Trip Blank
460-65526-1/ S-3002	20131022MW-02V09N	GW	10/22/13	X	X	X	X	X	X	X	X	X	X	---
	20131022MW-02V09FD	GW		X	X	X	X	X	X	X	X	---	---	Field Duplicate of MW-02
	20131022MW-03V12N	GW		X	X	X	X	X	X	X	X	---	X	---
	20131022MW-04V09N	GW		X	X	X	X	X	X	X	X	---	X	---
	20131022MW-06V15N	GW		X	X	X	X	X	X	X	X	---	X	MS/MSD
	20131022MW-07RV17N	GW		X	X	X	X	X	X	X	X	---	X	---
	TB20131022	Water		X	X	---	---	---	---	---	---	---	---	Trip Blank

Notes:

* - Volatile Organic Compounds (VOCs) include 1,1,2-trichloro-1,2,2-trifluoroethane (Freon-113); 1,2-dichloro-1,1,2-trifluoroethane (Freon-123a); and chlorotrifluoroethene (Freon-1113).

X - Parameter requested.
--- - Parameter not requested/analyzed or no comment.
Dhc - Dehalococcoides ethenogenes
Dhb - Dehalobacter
GW - Groundwater
MS/MSD - Matrix Spike/Matrix Spike Duplicate
TOC - Total Organic Carbon

TABLE B-2
GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20130711MW-02V09N	20130807MW-02V09N	20130903MW-02V09N	20131022MW-02V09FD	20131022MW-02V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/11/13	08/07/13	09/03/13	10/22/13	10/22/13
Parameter	Units	Criteria*				Field Duplicate (1-1)	
Volatiles							
Chlorotrifluoroethene (Freon-1113)	UG/L	5	120	66 J	42	64	61
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dissolved Gases							
Methane	UG/L	-	7,700	11,000	14,000	9,600	13,000
Total Metals							
Iron	UG/L	300	NA	NA	NA	77,200	78,400
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	230	233
Dehalococcoides ethenogenes	CEQ/mL	-	1,000	800 J	50 J	NA	30
Dehalobacter	GC/mL	-	6,000 J	10,000	3,000	NA	500
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	69.3	131
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	0.10 UJ	0.28 J
Sulfate	MG/L	250	5.0 U	5.0 U	2.5 J	3.9 J	3.9 J
Total Organic Carbon	MG/L	-	NA	NA	NA	9.5	9.5
Field Parameter							
Dissolved Oxygen	MG/L	-	3.32	0.98	1.64	NA	0.35
Ferrous Iron	MG/L	-	NA	NA	NA	NA	42.3
Oxidation-Reduction Potential	mV	-	-165	-146	-134	NA	-125
pH	S.U.	-	6.61	6.42	6.10	NA	6.41
Specific Conductance	MS/CM	-	2.60	2.22	2.06	NA	1.76
Temperature	DEG C	-	19.29	18.82	20.14	NA	19.68
Turbidity	NTU	-	0.0	0.0	1.0	NA	1.2

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J - Analyte is reported below the PQL at an estimated concentration. NA - Not Analyzed.

NA - Not Analyzed

MADE BY: __PRF_11/12/13___ CHKD BY: __AMK_11/13/13___

Detection Limits shown are PQL

N:\111172730.00000\DB\PROGRAM\EDMS.mdb
Printed: 12/2/2013 2:32:44 PM
[LOGDATE] >= #7/11/2013# AND [MATRIX] = 'WG' AND [PARNAME] <> 'Nitrogen, Nitrat

TABLE B-2
GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-04	MW-06	MW-07R
Sample ID			20131022MW-03V12N	20131022MW-04V09N	20131022MW-06V15N	20131022MW-07RV17N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-
Date Sampled			10/22/13	10/22/13	10/22/13	10/22/13
Parameter	**Units**	**Criteria***				
Volatiles						
Chlorotrifluoroethene (Freon-1113)	UG/L	5	58	12	27	390
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 U	1.0 U	1.0 U	12
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	1.0 U	1.0 U	1.1
Dissolved Gases						
Methane	UG/L	-	11,000	1,600	4,100	4,000
Total Metals						
Iron	UG/L	300	29,400	17,700	20,500	30,900
Miscellaneous Parameters						
Alkalinity, Total (as CaCO3)	MG/L	-	237	243	245	291
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA
Dehalobacter	GC/mL	-	100	3 U	2 J	5
Hardness (as CaCO3)	MG/L	-	65.3	73.3	99.0	208
Nitrogen, Nitrate	MG/L	10	0.23 J	0.10 UJ	0.10 UJ	0.36 J
Sulfate	MG/L	250	40.7	23.2	29.2	7.4
Total Organic Carbon	MG/L	-	5.6	7.0	5.6	12.3
Field Parameter						
Dissolved Oxygen	MG/L	-	0.63	0.25	0.37	0.36
Ferrous Iron	MG/L	-	16.9	13.9	3.6	15.3
Oxidation-Reduction Potential	mV	-	-119	-94	-108	-102
pH	S.U.	-	6.21	6.44	6.45	6.31
Specific Conductance	MS/CM	-	1.35	1.27	1.4	1.84
Temperature	DEG C	-	19.3	19.44	18.41	19.42
Turbidity	NTU	-	0.4	5.7	1.4	0.2

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J - Analyte is reported below the PQL at an estimated concentration. NA - Not Analyzed.

NA - Not Analyzed

MADE BY: __PRF_11/12/13___ CHKD BY: __AMK_11/13/13___

Detection Limits shown are PQL

N:\11172730.00000\DB\PROGRAM\EDMS.mdb
Printed: 12/2/2013 2:32:44 PM
[LOGDATE] >= #7/11/2013# AND [MATRIX] = 'WG' AND [PARNAME] <> 'Nitrogen, Nitrat

TABLE B-3
FIELD QC ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID		FIELDQC	FIELDQC	FIELDQC	FIELDQC
Sample ID		TB	TB	TB	20131022TB01
Matrix		Water	Water	Water	Water
Depth Interval (ft)		-	-	-	-
Date Sampled		07/11/13	08/07/13	09/03/13	10/22/13
Parameter	Units	Trip Blank (1-1)	Trip Blank (1-1)	Trip Blank (1-1)	Trip Blank (1-1)
Volatiles					
Chlorotrifluoroethene (Freon-1113)	UG/L	1.0 U	1.0 UJ	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	1.0 UJ	1.0 U	1.0 U	1.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	1.0 U	1.0 U	1.0 U	1.0 U
Dissolved Gases					
Methane	UG/L	4.0 U	4.0 U	4.0 U	4.0 U

Flags assigned during chemistry validation are shown.

U - Non-Detect UJ - Not detected above the estiamted quantitation limit

MADE BY: __PRF_11/12/13___ CHKD BY: __AMK___11/13/13

Detection Limits shown are PQL

N:\11172730.00000\DB\PROGRAM\EDMS.mdb
Printed: 11/12/2013 11:25:37 AM
[LOGDATE] >= #7/11/2013# AND [MATRIX] = 'WQ

ATTACHMENT A

VALIDATED ANALYTICAL RESULTS (FORM 1's)

Client: URS Corporation

Job Number: 460-59323-1

Client Sample ID: **MW-02**

Lab Sample ID: 460-59323-1
Client Matrix: Water

Date Sampled: 07/11/2013 1207
Date Received: 07/12/2013 0915

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-172375	Instrument ID:	CVOAMS2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	B58605.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/24/2013 2332			Final Weight/Volume:	5 mL
Prep Date:	07/24/2013 2332				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U J	0.080	1.0
Chlorotrifluoroethene	120		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	99		70 - 130
Toluene-d8 (Surr)	100		70 - 130
Bromofluorobenzene	97		70 - 130
Dibromofluoromethane (Surr)	101		70 - 130

10/7/13

Client: URS Corporation

Job Number: 460-59323-1

Client Sample ID: **TB**

Lab Sample ID: 460-59323-2TB
Client Matrix: Water

Date Sampled: 07/11/2013 1207
Date Received: 07/12/2013 0915

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-172375	Instrument ID:	CVOAMS2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	B58604.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/24/2013 2309			Final Weight/Volume:	5 mL
Prep Date:	07/24/2013 2309				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U J	0.080	1.0
Chlorotrifluoroethene	0.18	U	0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	98		70 - 130
Toluene-d8 (Surr)	100		70 - 130
Bromofluorobenzene	96		70 - 130
Dibromofluoromethane (Surr)	99		70 - 130

1/7/13

Client: URS Corporation

Job Number: 460-59323-1

Client Sample ID: **MW-02**

Lab Sample ID: 460-59323-1
Client Matrix: Water

Date Sampled: 07/11/2013 1207
Date Received: 07/12/2013 0915

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-128793	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	500			Final Weight/Volume:	
Analysis Date:	07/15/2013 1153			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	7700		110	2000

Client: URS Corporation

Job Number: 460-59323-1

Client Sample ID: **TB**

Lab Sample ID: 460-59323-3
Client Matrix: Water

Date Sampled: 07/11/2013 1207
Date Received: 07/12/2013 0915

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-128793	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	1.0			Final Weight/Volume:	
Analysis Date:	07/15/2013 1136			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	0.22	U	0.22	4.0

General Chemistry

Client Sample ID: **MW-02**

Lab Sample ID: 460-59323-1
Client Matrix: Water

Date Sampled: 07/11/2013 1207
Date Received: 07/12/2013 0915

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	2.2	U	mg/L	2.2	5.0	1.0	D516-90, 02

Analysis Batch: 460-171614 Analysis Date: 07/19/2013 1659

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(519) 822-2265

Certificate of Analysis: Gene-Trac® *Dehalococcoides* Assay

Customer: Tim Ifkovich, URS
Project: Rohm & Haas - Former EMCA Site
Customer Reference: Not provided

SiREM Reference: S-2903
Report Date: 25-Jul-13
Data Files: MyiQ-DHC-QPCR-1026
MyiQ-DB-DHC-QPCR-0392

Table 1a: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhc *	*Dehalococcoides* Enumeration/Liter **
MW-02	DHC-9524	11-Jul-13	Groundwater	0.05 - 0.2 %	1×10^6 or 1,000 CEQ/mL

Notes:

* Percent *Dehalococcoides* (Dhc) in microbial population. This value is calculated by dividing the number of Dhc 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhc enumeration.

** Based on quantitation of Dhc 16S rRNA gene copies. Dhc are generally reported to contain one 16S rRNA gene copy per cell; therefore, this number is often interpreted to represent the number of Dhc cells present in the sample.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalococcoides* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

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130 Research Lane, Ste 2
Guelph ON N1G 5G3
(519) 822-2265

Certificate of Analysis: Gene-Trac® *Dehalobacter* Assay

Customer: Tim Ifkovich, URS
Project: Rohm & Haas - Former EMCA Site
Customer Reference: Not provided

SiREM Reference: S-2903
Report Date: 25-Jul-13
Data Files: iQ5-DHB-QPCR-0252
iQ5-DB-DHB-QPCR-0071

Table 1b: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhb*	*Dehalobacter* 16S rRNA Gene Copies/Liter
MW-02	DHB-0839	11-Jul-13	Groundwater	0.3 - 0.8 %	6×10^6 J

or 6,000 J GC/mL
12/7/13

Notes:

* Percent Dehalobacter (Dhb) in microbial population. This value is calculated by dividing the number of Dhb 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhb enumeration.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalobacter* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

Client: URS Corporation

Job Number: 460-60945-1

Client Sample ID: **MW-02**

Lab Sample ID: 460-60945-1
Client Matrix: Water

Date Sampled: 08/07/2013 1048
Date Received: 08/09/2013 1000

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-176779	Instrument ID:	CVOAMS2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	B59720.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	08/19/2013 1125			Final Weight/Volume:	5 mL
Prep Date:	08/19/2013 1125				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	66	J	0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	108		70 - 130
Toluene-d8 (Surr)	99		70 - 130
Bromofluorobenzene	109		70 - 130
Dibromofluoromethane (Surr)	105		70 - 130

10/2/13

Client: URS Corporation

Job Number: 460-60945-1

Client Sample ID: TB

Lab Sample ID: 460-60945-2TB
Client Matrix: Water

Date Sampled: 08/07/2013 1048
Date Received: 08/09/2013 1000

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-176779	Instrument ID:	CVOAMS2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	B59719.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	08/19/2013 1103			Final Weight/Volume:	5 mL
Prep Date:	08/19/2013 1103				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	0.18	U J	0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	106		70 - 130
Toluene-d8 (Surr)	98		70 - 130
Bromofluorobenzene	109		70 - 130
Dibromofluoromethane (Surr)	104		70 - 130

10/7/13

Client: URS Corporation

Job Number: 460-60945-1

Client Sample ID: **MW-02**

Lab Sample ID: 460-60945-1
Client Matrix: Water

Date Sampled: 08/07/2013 1048
Date Received: 08/09/2013 1000

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-133846	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	100			Final Weight/Volume:	
Analysis Date:	08/14/2013 1344			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	11000		22	400

Client: URS Corporation

Job Number: 460-60945-1

Client Sample ID: **TB**

Lab Sample ID: 460-60945-3TB
Client Matrix: Water

Date Sampled: 08/07/2013 1048
Date Received: 08/09/2013 1000

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-133846	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	1.0			Final Weight/Volume:	
Analysis Date:	08/14/2013 1401			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	0.22	U	0.22	4.0

General Chemistry

Client Sample ID: **MW-02**

Lab Sample ID: 460-60945-1
Client Matrix: Water

Date Sampled: 08/07/2013 1048
Date Received: 08/09/2013 1000

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	2.2	U	mg/L	2.2	5.0	1.0	D516-90, 02

Analysis Batch: 460-176343 Analysis Date: 08/15/2013 0835

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Certificate of Analysis: Gene-Trac® *Dehalococcoides* Assay

Customer: Tim Ifkovich, URS
Project: Rohm & Haas - Former EMCA Site
Customer Reference: 46004368

SiREM Reference: S-2931
Report Date: 21-Aug-13
Data Files: MyiQ-DHC-QPCR-1032
MyiQ-DB-DHC-QPCR-0398

Table 1a: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhc *	*Dehalococcoides* Enumeration/Liter **
MW-02	DHC-9584	7-Aug-13	Groundwater	0.04 - 0.1 %	8×10^5 J cr

800 J CEQ/mL
10/7/13

Notes:

* Percent *Dehalococcoides* (Dhc) in microbial population. This value is calculated by dividing the number of Dhc 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhc enumeration.

** Based on quantification of Dhc 16S rRNA gene copies. Dhc are generally reported to contain one 16S rRNA gene copy per cell; therefore, this number is often interpreted to represent the number of Dhc cells present in the sample.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalococcoides* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

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Certificate of Analysis: Gene-Trac® *Dehalobacter* Assay

Customer: Tim Ifkovich, URS
Project: Rohm & Haas - Former EMCA Site
Customer Reference: 46004368

SiREM Reference: S-2931
Report Date: 21-Aug-13
Data Files: iQ5-DHB-QPCR-0255
iQ5-DB-DHB-QPCR-0073

Table 1b: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhb*	*Dehalobacter* 16S rRNA Gene Copies/Liter
MW-02	DHB-0861	7-Aug-13	Groundwater	0.5 - 1 %	1×10^7 gc

10,000 GC/mL

10/7/13

Notes:

* Percent Dehalobacter (Dhb) in microbial population. This value is calculated by dividing the number of Dhb 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhb enumeration.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalobacter* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

Client: URS Corporation

Job Number: 460-62494-1

Client Sample ID: **MW-02**

Lab Sample ID: 460-62494-1
Client Matrix: Water

Date Sampled: 09/03/2013 0940
Date Received: 09/06/2013 0930

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-181639	Instrument ID:	CVOAMS2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	B60544.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	09/17/2013 0004			Final Weight/Volume:	5 mL
Prep Date:	09/17/2013 0004				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	42		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	110		70 - 130
Toluene-d8 (Surr)	92		70 - 130
Bromofluorobenzene	122		70 - 130
Dibromofluoromethane (Surr)	101		70 - 130

Client: URS Corporation

Job Number: 460-62494-1

Client Sample ID: **TB**

Lab Sample ID: 460-62494-2TB
Client Matrix: Water

Date Sampled: 09/03/2013 0940
Date Received: 09/06/2013 0930

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-181639	Instrument ID:	CVOAMS2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	B60541.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	09/16/2013 2255			Final Weight/Volume:	5 mL
Prep Date:	09/16/2013 2255				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	0.18	U	0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	106		70 - 130
Toluene-d8 (Surr)	90		70 - 130
Bromofluorobenzene	117		70 - 130
Dibromofluoromethane (Surr)	98		70 - 130

Client: URS Corporation

Job Number: 460-62494-1

Client Sample ID: **MW-02**

Lab Sample ID: 460-62494-1
Client Matrix: Water

Date Sampled: 09/03/2013 0940
Date Received: 09/06/2013 0930

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-137904	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	100			Final Weight/Volume:	
Analysis Date:	09/09/2013 1124			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	14000		22	400

Client: URS Corporation

Job Number: 460-62494-1

Client Sample ID: **TB**

Lab Sample ID: 460-62494-2TB
Client Matrix: Water

Date Sampled: 09/03/2013 0940
Date Received: 09/06/2013 0930

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-137904	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	1.0			Final Weight/Volume:	
Analysis Date:	09/09/2013 1141			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	0.22	U	0.22	4.0

General Chemistry

Client Sample ID: **MW-02**

Lab Sample ID: 460-62494-1
Client Matrix: Water

Date Sampled: 09/03/2013 0940
Date Received: 09/06/2013 0930

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	2.5	J	mg/L	2.2	5.0	1.0	D516-90, 02

Analysis Batch: 460-181210 Analysis Date: 09/13/2013 1141

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Certificate of Analysis: Gene-Trac® *Dehalococcoides* Assay

Customer: Tim Ifkovich, URS Corp.
Project: Rohm and Haas - Former EMCA Site
Customer Reference: 46004368

SiREM Reference: S-2949
Report Date: 18-Sep-13
Data Files: MyiQ-DHC-QPCR-1037
MyiQ-DB-DHC-QPCR-0403

Table 1a: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhc *	*Dehalococcoides* Enumeration/Liter **
MW-02	DHC-9629	3-Sep-13	Groundwater	0.005 - 0.01 %	5×10^4 J or 505 CEQ/mL

Notes:

* Percent *Dehalococcoides* (Dhc) in microbial population. This value is calculated by dividing the number of Dhc 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhc enumeration.

** Based on quantitation of Dhc 16S rRNA gene copies. Dhc are generally reported to contain one 16S rRNA gene copy per cell; therefore, this number is often interpreted to represent the number of Dhc cells present in the sample.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalococcoides* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

SiREM
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Guelph ON N1G 5G3
(519) 822-2265

Certificate of Analysis: Gene-Trac® *Dehalobacter* Assay

Customer: Tim Ifkovich, URS Corp.
Project: Rohm and Haas - Former EMCA Site
Customer Reference: 46004368

SiREM Reference: S-2949
Report Date: 18-Sep-13
Data Files: iQ5-DHB-QPCR-0258
iQ-DB-DHB-QPCR-0076

Table 1b: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhb*	*Dehalobacter* 16S rRNA Gene Copies/Liter
MW-02	DHB-0869	3-Sep-13	Groundwater	0.3 - 1 %	3×10^6

3,000 GC/mL or =
10/7/13

Notes:

* Percent Dehalobacter (Dhb) in microbial population. This value is calculated by dividing the number of Dhb 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhb enumeration.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalobacter* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-04 V09 N**

Lab Sample ID: 460-65526-1
Client Matrix: Water

Date Sampled: 10/22/2013 1830
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19320.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1730			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1730				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	12		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	95		70 - 130
Toluene-d8 (Surr)	98		70 - 130
Bromofluorobenzene	97		70 - 130
Dibromofluoromethane (Surr)	97		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-07R V17 N**

Lab Sample ID: 460-65526-2
Client Matrix: Water

Date Sampled: 10/22/2013 1305
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19322.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1818			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1818				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	12		0.080	1.0
Chlorotrifluoroethene	390		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	1.1		0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	94		70 - 130
Toluene-d8 (Surr)	98		70 - 130
Bromofluorobenzene	99		70 - 130
Dibromofluoromethane (Surr)	97		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-03 V12 N**

Lab Sample ID: 460-65526-3
Client Matrix: Water

Date Sampled: 10/22/2013 1058
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19323.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1841			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1841				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	58		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	95		70 - 130
Toluene-d8 (Surr)	97		70 - 130
Bromofluorobenzene	97		70 - 130
Dibromofluoromethane (Surr)	97		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-06 V15 N**

Lab Sample ID: 460-65526-4
Client Matrix: Water

Date Sampled: 10/22/2013 1640
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19324.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1905			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1905				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	27		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	94		70 - 130
Toluene-d8 (Surr)	97		70 - 130
Bromofluorobenzene	96		70 - 130
Dibromofluoromethane (Surr)	98		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-02 V09 N**

Lab Sample ID: 460-65526-5
Client Matrix: Water

Date Sampled: 10/22/2013 1450
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19321.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1754			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1754				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	61		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	93		70 - 130
Toluene-d8 (Surr)	98		70 - 130
Bromofluorobenzene	97		70 - 130
Dibromofluoromethane (Surr)	96		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-02 V09 FD**

Lab Sample ID: 460-65526-6FD
Client Matrix: Water

Date Sampled: 10/22/2013 1450
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19325.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1929			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1929				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	64		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	96		70 - 130
Toluene-d8 (Surr)	98		70 - 130
Bromofluorobenzene	97		70 - 130
Dibromofluoromethane (Surr)	99		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **20131022TB01**

Lab Sample ID: 460-65526-7TB
Client Matrix: Water

Date Sampled: 10/22/2013 1830
Date Received: 10/25/2013 1450

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	460-189314	Instrument ID:	CVOAMS9
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	K19319.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	10/30/2013 1706			Final Weight/Volume:	5 mL
Prep Date:	10/30/2013 1706				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	0.18	U	0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	0.84	U	0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	96		70 - 130
Toluene-d8 (Surr)	99		70 - 130
Bromofluorobenzene	99		70 - 130
Dibromofluoromethane (Surr)	99		70 - 130

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-04 V09 N**

Lab Sample ID: 460-65526-1
Client Matrix: Water

Date Sampled: 10/22/2013 1830
Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	50			Final Weight/Volume:	
Analysis Date:	11/01/2013 1057			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	1600		11	200

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-07R V17 N**

Lab Sample ID: 460-65526-2
Client Matrix: Water

Date Sampled: 10/22/2013 1305
Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	50			Final Weight/Volume:	
Analysis Date:	11/01/2013 1123			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	4000		11	200

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-03 V12 N**

Lab Sample ID: 460-65526-3
Client Matrix: Water

Date Sampled: 10/22/2013 1058
Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	200			Final Weight/Volume:	
Analysis Date:	11/01/2013 1223			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	11000		44	800

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-06 V15 N**

Lab Sample ID: 460-65526-4
Client Matrix: Water

Date Sampled: 10/22/2013 1640
Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	50			Final Weight/Volume:	
Analysis Date:	11/01/2013 1342			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	4100		11	200

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-02 V09 N**

Lab Sample ID: 460-65526-5
Client Matrix: Water

Date Sampled: 10/22/2013 1450
Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	200			Final Weight/Volume:	
Analysis Date:	11/01/2013 1514			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	13000		44	800

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-02 V09 FD**

Lab Sample ID: 460-65526-6FD

Client Matrix: Water

Date Sampled: 10/22/2013 1450

Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	200			Final Weight/Volume:	
Analysis Date:	11/01/2013 1531			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	9600		44	800

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **20131022TB02**

Lab Sample ID: 460-65526-8
Client Matrix: Water

Date Sampled: 10/22/2013 1830
Date Received: 10/25/2013 1450

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-149090	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	1.0			Final Weight/Volume:	
Analysis Date:	11/01/2013 1240			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	0.22	U	0.22	4.0

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-04 V09 N**

Lab Sample ID: 460-65526-1
Client Matrix: Water

Date Sampled: 10/22/2013 1830
Date Received: 10/25/2013 1450

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-189968	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-189790	Lab File ID:	11022013A.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	11/02/2013 2105			Final Weight/Volume:	100 mL
Prep Date:	11/01/2013 0954				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	17700		80.9	150

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-07R V17 N**

Lab Sample ID: 460-65526-2
Client Matrix: Water

Date Sampled: 10/22/2013 1305
Date Received: 10/25/2013 1450

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-189968	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-189790	Lab File ID:	11022013A.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	11/02/2013 2108			Final Weight/Volume:	100 mL
Prep Date:	11/01/2013 0954				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	30900		80.9	150

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-03 V12 N**

Lab Sample ID: 460-65526-3
Client Matrix: Water

Date Sampled: 10/22/2013 1058
Date Received: 10/25/2013 1450

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-189968	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-189790	Lab File ID:	11022013A.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	11/02/2013 2112			Final Weight/Volume:	100 mL
Prep Date:	11/01/2013 0954				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	29400		80.9	150

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-06 V15 N**

Lab Sample ID: 460-65526-4
Client Matrix: Water

Date Sampled: 10/22/2013 1640
Date Received: 10/25/2013 1450

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-189968	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-189790	Lab File ID:	11022013A.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	11/02/2013 2017			Final Weight/Volume:	100 mL
Prep Date:	11/01/2013 0954				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	20500		80.9	150

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-02 V09 N**

Lab Sample ID: 460-65526-5
Client Matrix: Water

Date Sampled: 10/22/2013 1450
Date Received: 10/25/2013 1450

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-189968	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-189790	Lab File ID:	11022013A.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	11/02/2013 2116			Final Weight/Volume:	100 mL
Prep Date:	11/01/2013 0954				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	78400		80.9	150

Client: URS Corporation

Job Number: 460-65526-1

Client Sample ID: **2013 1022 MW-02 V09 FD**

Lab Sample ID: 460-65526-6FD

Client Matrix: Water

Date Sampled: 10/22/2013 1450

Date Received: 10/25/2013 1450

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-189968	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-189790	Lab File ID:	11022013A.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	11/02/2013 2128			Final Weight/Volume:	100 mL
Prep Date:	11/01/2013 0954				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	77200		80.9	150

General Chemistry

Client Sample ID: **2013 1022 MW-04 V09 N**

Lab Sample ID: 460-65526-1
Client Matrix: Water

Date Sampled: 10/22/2013 1830
Date Received: 10/25/2013 1450

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	23.2		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-189228	Analysis Date: 10/29/2013 1636						
Alkalinity	243		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-189476	Analysis Date: 10/30/2013 1504						
Hardness as calcium carbonate	73.3		mg/L	1.6	5.0	1.0	SM 2340C
Analysis Batch: 460-189664	Analysis Date: 10/31/2013 1655						
Nitrate as N	0.047	U J	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1127						
Nitrite as N	0.014	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1127						
Total Organic Carbon	7.0		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-189343	Analysis Date: 10/29/2013 2027						

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General Chemistry

Client Sample ID: **2013 1022 MW-07R V17 N**

Lab Sample ID: 460-65526-2
Client Matrix: Water

Date Sampled: 10/22/2013 1305
Date Received: 10/25/2013 1450

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	7.4		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-189228	Analysis Date: 10/29/2013 1636						
Alkalinity	291		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-189476	Analysis Date: 10/30/2013 1509						
Hardness as calcium carbonate	208		mg/L	1.6	5.0	1.0	SM 2340C
Analysis Batch: 460-189664	Analysis Date: 10/31/2013 1655						
Nitrate as N	0.36	~~H~~ J	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1121						
Nitrite as N	0.015	J ~~H~~	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1121						
Total Organic Carbon	12.3		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-189343	Analysis Date: 10/29/2013 2047						

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General Chemistry

Client Sample ID: **2013 1022 MW-03 V12 N**

Lab Sample ID: 460-65526-3
Client Matrix: Water

Date Sampled: 10/22/2013 1058
Date Received: 10/25/2013 1450

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	40.7		mg/L	4.3	10.0	2.0	D516-90, 02
Analysis Batch: 460-189765	Analysis Date: 10/31/2013 0647						
Alkalinity	237		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-189476	Analysis Date: 10/30/2013 1515						
Hardness as calcium carbonate	65.3		mg/L	1.6	5.0	1.0	SM 2340C
Analysis Batch: 460-189664	Analysis Date: 10/31/2013 1655						
Nitrate as N	0.23	J	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1120						
Nitrite as N	0.025	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1120						
Total Organic Carbon	5.6		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-189343	Analysis Date: 10/29/2013 2107						

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General Chemistry

Client Sample ID: **2013 1022 MW-06 V15 N**

Lab Sample ID: 460-65526-4
Client Matrix: Water

Date Sampled: 10/22/2013 1640
Date Received: 10/25/2013 1450

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	29.2		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-189228	Analysis Date: 10/29/2013 1639						
Alkalinity	245		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-189476	Analysis Date: 10/30/2013 1521						
Hardness as calcium carbonate	99.0		mg/L	1.6	5.0	1.0	SM 2340C
Analysis Batch: 460-189664	Analysis Date: 10/31/2013 1655						
Nitrate as N	0.047	U H J	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1125						
Nitrite as N	0.017	J H	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1125						
Total Organic Carbon	5.6		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-189343	Analysis Date: 10/29/2013 2127						

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General Chemistry

Client Sample ID: **2013 1022 MW-02 V09 N**

Lab Sample ID: 460-65526-5
Client Matrix: Water

Date Sampled: 10/22/2013 1450
Date Received: 10/25/2013 1450

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	3.9	J	mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-189228	Analysis Date: 10/29/2013 1639						
Alkalinity	233		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-189476	Analysis Date: 10/30/2013 1533						
Hardness as calcium carbonate	131		mg/L	1.6	5.0	1.0	SM 2340C
Analysis Batch: 460-189664	Analysis Date: 10/31/2013 1655						
Nitrate as N	0.28	~~J~~	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1122						
Nitrite as N	0.036	~~J~~	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1122						
Total Organic Carbon	9.5		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-189343	Analysis Date: 10/29/2013 2147						

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General Chemistry

Client Sample ID: **2013 1022 MW-02 V09 FD**

Lab Sample ID: 460-65526-6FD
Client Matrix: Water

Date Sampled: 10/22/2013 1450
Date Received: 10/25/2013 1450

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	3.9	J	mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-189228	Analysis Date: 10/29/2013 1639						
Alkalinity	230		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-189476	Analysis Date: 10/30/2013 1540						
Hardness as calcium carbonate	69.3		mg/L	1.6	5.0	1.0	SM 2340C
Analysis Batch: 460-189664	Analysis Date: 10/31/2013 1657						
Nitrate as N	0.047	U J	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1124						
Nitrite as N	0.078	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-188695	Analysis Date: 10/26/2013 1124						
Total Organic Carbon	9.5		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-189343	Analysis Date: 10/29/2013 2207						

11/11/13

SiREM
Leading Science · Lasting Solutions

130 Research Lane, Ste 2
Guelph ON N1G 5G3
(519) 822-2265

Certificate of Analysis: Gene-Trac® *Dehalococcoides* Assay

Customer: Kevin Shanahan, URS
Project: Rohm & Haas - Former EMCA
Customer Reference: Not provided

SiREM Reference: S-3002
Report Date: 7-Nov-13
Data Files: MyiQ-DHC-QPCR-1050
MyiQ-DB-DHC-QPCR-0415

Table 1a: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhc *	*Dehalococcoides* Enumeration/Liter **
20131022MW-02V09N	DHC-9752	22-Oct-13	Groundwater	0.003 - 0.008 %	3×10^4

30 CEQ/mL

Notes:

* Percent *Dehalococcoides* (Dhc) in microbial population. This value is calculated by dividing the number of Dhc 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhc enumeration.

** Based on quantification of Dhc 16S rRNA gene copies. Dhc are generally reported to contain one 16S rRNA gene copy per cell; therefore, this number is often interpreted to represent the number of Dhc cells present in the sample.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalococcoides* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

SiREM
Leading Science · Lasting Solutions

130 Research Lane, Ste 2
Guelph ON N1G 5G3
(519) 822-2265

Certificate of Analysis: Gene-Trac® *Dehalobacter* Assay

Customer: Kevin Shanahan, URS
Project: Rohm & Haas - Former EMCA
Customer Reference: Not provided

SiREM Reference: S-3002
Report Date: 7-Nov-13
Data Files: MyiQ-DHB-QPCR-0264
MyiQ-DB-DHB-QPCR-0082
iQ5-TBA-QPCR-0014

Table 1b: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhb*	*Dehalobacter* 16S rRNA Gene Copies/Liter
20131022MW-04V09N	DHB-0910	22-Oct-13	Groundwater	NA	3×10^3 U
20131022MW-07RV17N	DHB-0911	22-Oct-13	Groundwater	0.0003 - 0.001 %	5×10^3
20131022MW-03V12N	DHB-0912	22-Oct-13	Groundwater	0.007 - 0.02 %	1×10^5
20131022MW-02V09N	DHB-0913	22-Oct-13	Groundwater	0.04 - 0.1 %	5×10^5
20131022MW-06V15N	DHB-0914	22-Oct-13	Groundwater	0.0001 - 0.0003 %	2×10^3 J

GC/mL
3UU
5
100
500
2J

Notes:

* Percent Dehalobacter (Dhb) in microbial population. This value is calculated by dividing the number of Dhb 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhb enumeration.

J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was also detected in the method blank.
NA Not applicable as *Dehalobacter* not detected and/or quantifiable DNA not extracted from the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
E Extracted genomic DNA was not detected in the sample.

Analyst: Jen Wilkinson
Jen Wilkinson
Senior Laboratory Technician

Approved: Ximena Druar
Ximena Druar, B.Sc.
Genetic Testing Coordinator

ATTACHMENT B

SUPPORT DOCUMENTATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTC

460-59323 Chain of Custody

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

Name (for report and invoice): TIM IFKOVITZ	Samplers Name (Printed): JOHN CRESPO	Site/Project Identification: ROHM AND HAAS - FORMER OMCA SITE
Company: URS CORP.	P.O. #: 46004363	State (Location of site): NJ: ☐ NY: ☒ Other:
Address: 77 GOODELL ST.		Regulatory Program:
City: BUFFALO State: N.Y.		
Phone: 716-856-5636 Fax:		

Analysis Turnaround Time: Standard ☒
Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐

ANALYSIS REQUESTED (ENTER 'X' BELOW TO INDICATE REQUEST)

LAB USE ONLY — Project No: — Job No: 59323

Sample Identification	Date	Time	Matrix	No. of Cont.	D516 SULFATE	8260B MOD FREON	RSK-175 METHANE	Sample Numbers
MW-02	7/11/13	12:07	GW	7	1	3	3	-1
TB	7/11/13	12:07	GW	2		2		-2
TB	7/11/13	12:07	GW	2			2	-3

SUB Work

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other ______, 7 = Other ______

Soil: ~~1 1,2 1,2~~
Water: 1 | 1,2 | 1,2

Special Instructions

Water Metals Filtered (Yes/No)? ______

Relinquished by	Company	Date / Time	Received by	Company
1) John Crespo	URS CORP	7/11/13 14:20	1) Jen Capece	TA Shelton
2) Jen Capece	TA Shelton	7/11/13 16:30	2) [illegible] (Fedex)	TA Ed 7/12/13 9:45
3)			3)	IR#5 2.2/2.4°C
4)			4)	CS#482225

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132), Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0408)

S-2903

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): TIM IFKOVICH
Company: VRS CORP.
Address: 77 GOODELL ST.
City: BUFFALO State: NY
Phone: 716-856-5636 Fax:

Samplers Name (Printed): JOHN CRESPO
P. O. #

Site/Project Identification: ROHM AND HAAS - FORMER EMCA SITE
State (Location of site): NJ: ☐ NY: ☐ Other:
Regulatory Program:

Analysis Turnaround Time
Standard ☐
Rush Chrages Authorized For:
2 Week ☐
1 Week ☐
Other ☐

ANALYSIS REQUESTED (ENTER 'X' BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:
Sample Numbers

Sample Identification	Date	Time	Matrix	No. of. Cont.	DEHALOCOCCOIDES AND DEHALOBACTER										Sample Numbers
MW-02	7/11/13	12:07	GW	1	X										

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other ______, 7 = Other ______
Soil:
Water: 1

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
John Crespo	VRS Corp	7/11/13 | 14:55	1) J. Wilkinson	SiREM 7/12/13 1350
2)		|	2)	
3)		|	3)	
4)		|	4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).
Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0408)

CASE NARRATIVE

Client: URS Corporation

Project: Rohm and Haas - Former EMCA Site

Report Number: 460-59323-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 07/12/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.4 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples 460-59323-1 and 460-59323-2 were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/24/2013.

The matrix spike (MS) recoveries for batch 172375 were outside control limits for Chlorotrifluoroethene. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Chlorotrifluoroethene failed the recovery criteria low for the MS of sample 460-59323-1 in batch .

Refer to the QC report for details.

No other difficulties were encountered during the volatiles analyses.

All other quality control parameters were within the acceptance limits.

SULFATE
Sample 460-59323-1 was analyzed for sulfate in accordance with ASTM Method D516-90. The samples were analyzed on 07/19/2013.

No difficulties were encountered during the sulfate analysis.

All quality control parameters were within the acceptance limits.

DISSOLVED GASES
Samples 460-59323-1 and 460-59323-3 were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 07/15/2013.

The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-02 (460-59323-1). Elevated reporting limits (RLs) are provided.

Sample 460-59323-1(500X) required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the dissolved gases analyses.

All quality control parameters were within the acceptance limits.

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Edison Job No.: 460-59323-1

SDG No.:

Lab File ID: B58597.D BFB Injection Date: 07/24/2013

Instrument ID: CVOAMS2 BFB Injection Time: 20:06

Analysis Batch No.: 172375

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	28.6	
75	30.0 - 60.0 % of mass 95	57.5	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	7.4	
173	Less than 2.0 % of mass 174	0.8	(0.9)1
174	50.0 - 120.00 % of mass 95	83.0	
175	5.0 - 9.0 % of mass 174	7.3	(8.8)1
176	95.0 - 101.0 % of mass 174	80.8	(97.3)1
177	5.0 - 9.0 % of mass 176	5.1	(6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 460-172375/3	B58598.D	07/24/2013	20:29
	LCS 460-172375/4	B58599.D	07/24/2013	20:52
	MB 460-172375/8	B58603.D	07/24/2013	22:46
TB	460-59323-2	B58604.D	07/24/2013	23:09
MW-02	460-59323-1	B58605.D	07/24/2013	23:32
MW-02 MS	460-59323-1 MS	B58613.D	07/25/2013	02:36
MW-02 MSD	460-59323-1 MSD	B58614.D	07/25/2013	02:59

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Edison Job No.: 460-59323-1

SDG No.:

Lab Sample ID: CCVIS 460-172375/3 Calibration Date: 07/24/2013 20:29

Instrument ID: CVOAMS2 Calib Start Date: 07/23/2013 20:45

GC Column: Rtx-624 ID: 0.25(mm) Calib End Date: 07/23/2013 22:41

Lab File ID: B58598.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorotrifluoroethene	Lin2		0.0846		19.4	20.0	-2.9	50.0
Dichlorodifluoromethane	Ave	0.3800	0.2962		15.6	20.0	-22.1	50.0
Chloromethane	Ave	0.4015	0.3201	0.1000	15.9	20.0	-20.3	50.0
Vinyl chloride	Lin2		0.2785		16.6	20.0	-17.1	20.0
Butadiene	Ave	0.2349	0.1794		15.3	20.0	-23.6	50.0
Bromomethane	Ave	0.2189	0.1877		17.1	20.0	-14.3	50.0
Chloroethane	Ave	0.1571	0.1202		15.3	20.0	-23.5	50.0
Trichlorofluoromethane	Ave	0.3558	0.3379		19.0	20.0	-5.1	50.0
Dichlorofluoromethane	Ave	0.4648	0.3863		16.6	20.0	-16.9	50.0
Ethanol	Lin2		0.0877		1040	1000	4.0	50.0
Ethyl ether	Ave	0.2443	0.2192		17.9	20.0	-10.3	50.0
1,2-Dichloro-1,1,2-trifluoro ethane	Ave	0.5531	0.4784		17.3	20.0	-13.5	50.0
Isopropene	Ave	0.5518	0.4958		18.0	20.0	-10.1	50.0
Acrolein	Lin2		1.325		43.2	40.0	8.0	50.0
Freon TF	Qua		0.1664		12.7	20.0	-36.4	50.0
1,1-Dichloroethene	Qua		0.1490		16.9	20.0	-15.6	20.0
Acetone	Ave	0.1654	0.1199		72.5	100	-27.5	50.0
Iodomethane	Qua		0.3677		21.3	20.0	6.4	50.0
Carbon disulfide	Ave	0.7027	0.5878		16.7	20.0	-16.4	50.0
Isopropanol	Ave	0.9060	0.8054		178	200	-11.1	50.0
Allyl chloride	Qua		0.1039		17.5	20.0	-12.3	50.0
Cyclopentene	Ave	0.5493	0.5030		18.3	20.0	-8.4	50.0
Methyl acetate	Ave	0.3472	0.3044		87.7	100	-12.3	50.0
Acetonitrile	Ave	0.0402	0.0350		174	200	-12.8	50.0
Methylene Chloride	Ave	0.2729	0.2494		18.3	20.0	-8.6	50.0
TBA	Ave	1.534	1.387		181	200	-9.6	50.0
MTBE	Ave	0.5850	0.4989		17.1	20.0	-14.7	50.0
trans-1,2-Dichloroethene	Ave	0.2535	0.2140		16.9	20.0	-15.6	50.0
Acrylonitrile	Ave	0.1561	0.1321		169	200	-15.4	50.0
Hexane	Qua		0.2356		18.5	20.0	-7.7	50.0
1,1-Dichloroethane	Ave	0.5699	0.5089	0.1000	17.9	20.0	-10.7	50.0
DIPE	Ave	1.012	0.9330		18.4	20.0	-7.8	50.0
Vinyl acetate	Ave	1.016	0.9370		36.9	40.0	-7.8	50.0
2-Chloro-1,3-butadiene	Ave	0.2321	0.2108		18.2	20.0	-9.2	50.0
Allyl alcohol	Qua		0.1380		508	500	1.6	50.0
Tert-butyl ethyl ether	Ave	0.5897	0.5459		18.5	20.0	-7.4	50.0
2,2-Dichloropropane	Ave	0.2825	0.2424		17.2	20.0	-14.2	50.0
cis-1,2-Dichloroethene	Ave	0.3159	0.2684		17.0	20.0	-15.1	50.0
2-Butanone	Lin2		1.555		103	100	3.2	50.0
Ethyl acetate	Ave	0.0391	0.0286		29.3	40.0	-26.8	50.0

Table 4: Gene-Trac Dhb Control Results, Test Reference S-2903

Laboratory Control	Analysis Date	Control Description	Spiked Dhb 16S rRNA Gene Copies per Liter	Recovered Dhb 16S rRNA Gene Copies per Liter	Comments
Positive Control Low Concentration	24-Jul-13	qPCR with ACT3 genomic DNA (CSLDB-0212)	1.3×10^6	8.7×10^4	See Note 1
Positive Control High Concentration	24-Jul-13	qPCR with ACT3 genomic DNA (CSHDB-0212)	1.3×10^7	1.6×10^7	--
DNA Extraction Blank	24-Jul-13	DNA extraction sterile water (FB-1985)	0	2.6×10^3 U	--
Negative Control	24-Jul-13	Tris Reagent Blank	0	2.6×10^3 U	--

Notes:

qPCR = quantitative PCR

Dhb = *Dehalobacter*

DNA = Deoxyribonucleic acid

16S rRNA = 16S ribosomal ribonucleic acid

U Not detected, associated value is the quantitation limit.

[1]Outside recovery limit guideline of +/- 50%.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page 1 of 1

Name (for report and invoice): TIM IFKOVICH	Samplers Name (Printed): JOHN CRESPO	Site/Project Identification: ROHM AND HAAS-FORMER EMCA SITE
Company: URS CORP.	P.O. #: 46004368	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program:
Address: 77 GOODELL ST.	Analysis Turnaround Time: Standard ☒; Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	LAB USE ONLY — Project No: ; Job No: 60945
City: BUFFALO State: N.Y.		
Phone: 716-856-5636 Fax:		

ANALYSIS REQUESTED (ENTER 'X' BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	DISSOLVED SULFATE	8260B-MOD FREON	RSK-175 METHANE	Sample Numbers
MW-02	8/7/13	10:48	GW	7	1	3	3	1
TB	8/7/13	↓	GW	2		2		2
TB	8/7/13	↓	GW	2			2	3

SUB Work

460-60945 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other ______, 7 = Other ______

	DISSOLVED SULFATE	8260B-MOD FREON	RSK-175 METHANE
Soil:			
Water:	1	1,2	1,2

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) John Crespo	URS CORP	8/7/13 11:50	via Fedex 8/8/13 1) Ian Capece 10:30AM	TA Shelton
2) Ian Capece	TA Shelton	8/8/13 15:45	2) Fed Ex	
3)			3) [signature]	[signature] 8/9/13 10:00
4)	CSE 8661 88		4)	5.3 / 5.5°

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).
Massachusetts (M-NJ312), North Carolina (No. 578)

TAL-0016 (0408)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

5-2931

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): TIM IFKOVICH

Samplers Name (Printed): JOHN CRESPO

Site/Project Identification: ROHM AND HAAS - FORMER EMCA SITE

Company: URS CORP.

P. O. #: 41004368

State (Location of site): NJ: ☐ NY: ☒ Other:

Regulatory Program:

Address: 77 GOODELL ST.

City: BUFFALO State: N.Y.

Phone: 716-856-5636 Fax:

Analysis Turnaround Time: Standard ☒

Rush Chrages Authorized For: 2 Week ☐ 1 Week ☐ Other ☐ ______

ANALYSIS REQUESTED (ENTER 'X' BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:
Sample Numbers

Sample Identification	Date	Time	Matrix	No. of. Cont.	DEHALOCOCCOIDES AND DEHALO BACTER											Sample Numbers
MW-02	8/7/13	10:48	GW	1	1											

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other ______, 7 = Other ______

Soil:
Water: 1

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) John Crespo	URS CORP.	8/7/13 11:50	1) [signature]	SiREM AUG 8 '13 1:30 pm
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). Massachusetts (M-NJ312), North Carolina (No. 578)

CASE NARRATIVE

Client: URS Corporation

Project: Rohm and Haas - Former EMCA Site

Report Number: 460-60945-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 08/09/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.5 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples 460-60945-1 and 460-60945-2 were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 08/19/2013.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries and /or precision for batch 176779 was outside control limits for Chlorotirfluoroethene and 1,2-Dichloro-1,1,2-Triflouroethane. The associated laboratory control sample(LCS) met acceptance criteria.

Refer to the QC report for details.

No other difficulties were encountered during the volatiles analyses.

All other quality control parameters were within the acceptance limits.

SULFATE
Sample 460-60945-1 was analyzed for sulfate in accordance with ASTM Method D516-90. The samples were analyzed on 08/15/2013.

No difficulties were encountered during the sulfate analysis.

All quality control parameters were within the acceptance limits.

DISSOLVED GASES
Samples 460-60945-1 and 460-60945-3 were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 08/14/2013.

The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-02 (460-60945-1). Elevated reporting limits (RLs) are provided.

Sample 460-60945-1(100X) required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the dissolved gases analyses.

All quality control parameters were within the acceptance limits.

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Edison Job No.: 460-60945-1

SDG No.:

Lab File ID: B59713.D BFB Injection Date: 08/19/2013

Instrument ID: CVOAMS2 BFB Injection Time: 07:15

Analysis Batch No.: 176779

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	25.2	
75	30.0 - 60.0 % of mass 95	55.1	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	7.0	
173	Less than 2.0 % of mass 174	1.3	(1.5)1
174	50.0 - 120.00 % of mass 95	87.3	
175	5.0 - 9.0 % of mass 174	7.0	(8.1)1
176	95.0 - 101.0 % of mass 174	85.0	(97.3)1
177	5.0 - 9.0 % of mass 176	5.7	(6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 460-176779/2	B59714.D	08/19/2013	07:38
	LCS 460-176779/4	B59716.D	08/19/2013	09:35
	MB 460-176779/6	B59718.D	08/19/2013	10:37
TB	460-60945-2	B59719.D	08/19/2013	11:03
MW-02	460-60945-1	B59720.D	08/19/2013	11:25
MW-02 MS	460-60945-1 MS	B59724.D	08/19/2013	12:54
MW-02 MSD	460-60945-1 MSD	B59725.D	08/19/2013	13:17

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Edison Job No.: 460-60945-1

SDG No.:

Lab Sample ID: CCVIS 460-176779/2 Calibration Date: 08/19/2013 07:38

Instrument ID: CVOAMS2 Calib Start Date: 07/23/2013 20:45

GC Column: Rtx-624 ID: 0.25(mm) Calib End Date: 07/23/2013 22:41

Lab File ID: B59714.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Chlorotrifluoroethene	Lin2		0.0585		13.1	20.0	-34.5	50.0
Dichlorodifluoromethane	Ave	0.3800	0.3326		17.5	20.0	-12.5	50.0
Chloromethane	Ave	0.4015	0.4250	0.1000	21.2	20.0	5.9	50.0
Vinyl chloride	Lin2		0.2867		17.1	20.0	-14.5	20.0
Butadiene	Ave	0.2349	0.1696		14.4	20.0	-27.8	50.0
Bromomethane	Ave	0.2189	0.1908		17.4	20.0	-12.8	50.0
Chloroethane	Ave	0.1571	0.1118		14.2	20.0	-28.9	50.0
Trichlorofluoromethane	Ave	0.3558	0.3336		18.7	20.0	-6.3	50.0
Dichlorofluoromethane	Ave	0.4648	0.3856		16.6	20.0	-17.0	50.0
Ethyl ether	Ave	0.2443	0.2316		19.0	20.0	-5.2	50.0
Ethanol	Lin2		0.0710		834	1000	-16.6	50.0
1,2-Dichloro-1,1,2-trifluoro ethane	Ave	0.5531	0.5546		20.1	20.0	0.3	50.0
Isopropene	Ave	0.5518	0.4955		18.0	20.0	-10.2	50.0
Acrolein	Lin2		1.048		34.4	40.0	-13.9	50.0
Freon TF	Qua		0.2234		19.2	20.0	-4.0	50.0
1,1-Dichloroethene	Qua		0.1619		18.1	20.0	-9.5	20.0
Acetone	Ave	0.1654	0.1296		78.4	100	-21.6	50.0
Iodomethane	Qua		0.5527		35.2	20.0	76.0*	50.0
Carbon disulfide	Ave	0.7027	0.7354		20.9	20.0	4.6	50.0
Isopropanol	Ave	0.9060	0.7792		172	200	-14.0	50.0
Allyl chloride	Qua		0.1024		17.4	20.0	-13.2	50.0
Cyclopentene	Ave	0.5493	0.6032		22.0	20.0	9.8	50.0
Methyl acetate	Ave	0.3472	0.3786		109	100	9.0	50.0
Acetonitrile	Ave	0.0402	0.0297		148	200	-26.1	50.0
Methylene Chloride	Ave	0.2729	0.2725		20.0	20.0	-0.1	50.0
TBA	Ave	1.534	1.733		226	200	12.9	50.0
MTBE	Ave	0.5850	0.5601		19.1	20.0	-4.3	50.0
trans-1,2-Dichloroethene	Ave	0.2535	0.2471		19.5	20.0	-2.5	50.0
Acrylonitrile	Ave	0.1561	0.1495		192	200	-4.2	50.0
Hexane	Qua		0.1595		12.7	20.0	-36.6	50.0
DIPE	Ave	1.012	0.9041		17.9	20.0	-10.7	50.0
1,1-Dichloroethane	Ave	0.5699	0.6131	0.1000	21.5	20.0	7.6	50.0
2-Chloro-1,3-butadiene	Ave	0.2321	0.1904		16.4	20.0	-18.0	50.0
Vinyl acetate	Ave	1.016	0.7024		27.6	40.0	-30.9	50.0
Allyl alcohol	Qua		0.1649		577	500	15.4	50.0
Tert-butyl ethyl ether	Ave	0.5897	0.5318		18.0	20.0	-9.8	50.0
2,2-Dichloropropane	Ave	0.2825	0.3283		23.2	20.0	16.2	50.0
cis-1,2-Dichloroethene	Ave	0.3159	0.3275		20.7	20.0	3.7	50.0
2-Butanone	Lin2		1.519		101	100	0.8	50.0
Ethyl acetate	Ave	0.0391	0.0315		32.3	40.0	-19.3	50.0

Table 3: Gene-Trac Dhc Control Results, Test Reference S-2931

Laboratory Control	Analysis Date	Control Description	Spiked Dhc 16S rRNA Gene Copies per Liter	Recovered Dhc 16S rRNA Gene Copies per Liter	Comments
Positive Control Low Concentration	14-Aug-13	qPCR with KB1 genomic DNA (CSLD-0670)	8.4×10^4	1.3×10^5	--
Positive Control High Concentration	14-Aug-13	qPCR with KB1 genomic DNA (CSHD-0670)	1.2×10^7	2.0×10^7	See Note 1
DNA Extraction Blank	14-Aug-13	DNA extraction sterile water (FB-2002)	0	2.6×10^3 U	--
Negative Control	14-Aug-13	Tris Reagent Blank (TBD-0629)	0	2.6×10^3 U	--

Notes:

Dhc = *Dehalococcoides*

DNA = Deoxyribonucleic acid

qPCR = quantitative PCR

16S rRNA = 16S ribosomal ribonucleic acid

U Not detected, associated value is the quantitation limit.

[1]Outside recovery limit guideline of +/- 50%.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN C 460-62494 Chain of Custody EST

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

Page 1 of 1

Name (for report and invoice): TIM IFKOVICH	Samplers Name (Printed): JOHN CRESPO	Site/Project Identification: ROHM AND HAAS - FORMER EMCA SITE
Company: URS CORP.	P. O. #: 46004318	State (Location of site): NJ: ☐ NY: ☒ Other:
Address: 77 GOODELL ST.		Regulatory Program:
City: BUFFALO State: NY	Analysis Turnaround Time: Standard ☒; Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	LAB USE ONLY — Project No: ; Job No: 62494
Phone: 716-856-5636 Fax:		

ANALYSIS REQUESTED (ENTER 'X' BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	D-516 SULFATE	8260B-(MOD) FREON	RSK 175-METHANE	Sample Numbers
MW-02	9/3/13	9:40	GW	7	1	3	3	-1
TB	↓	↓	↓	2		2		-2
TB	↓	↓	↓	2			2	-2

SUB Work

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other ______, 7 = Other ______

	D-516 SULFATE	8260B-(MOD) FREON	RSK 175-METHANE
Soil:			
Water:	1	1,2	1,2

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) John Crespo	URS CORP	9/3/13 11:30	1) [signature]	[signature]
2) [signature]	TACT	9/4/13 1450	2) [signature] (Fedex)	TA Ed 9/6/13 9:30
3) Fed EX	9/6/13	930	3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). Massachusetts (M-NJ312), North Carolina (No. 578)

0.6-1.2°C IR #5

TAL-0016 (0408)

BY FEDEX
CS#855215
RCD. BY WR.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

S-2949

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): TIM IKKOVICH

Company: URS CORP

Address: 77 GOODELL ST.

City: BUFFALO State: NY

Phone: 716-856-5636 Fax:

Samplers Name (Printed): JOHN CRESPO

P.O. #: 46004368

Site/Project Identification: ROHM AND HAAS - FORMER EMCA SITE

State (Location of site): NJ: ☐ NY: ☒ Other:

Regulatory Program:

Analysis Turnaround Time: Standard ☒

Rush Chrages Authorized For: 2 Week ☐ 1 Week ☐ Other ☐ ______

ANALYSIS REQUESTED (ENTER 'X' BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

Sample Identification	Date	Time	Matrix	No. of. Cont.	DEHALOCOCCOIDES AND DEHALOBACTER											Sample Numbers
MW-02	9/3/13	9:40	GW	1	1											

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other ______, 7 = Other ______

Soil:

Water: 1

Special Instructions

Water Metals Filtered (Yes/No)? ______

Relinquished by	Company	Date / Time	Received by	Company
1) John Crespo	URS CORP	9/3/13 11:30	1) J. Wilkinson	S-REM
2)		9/4/13 14:05	2) J. Wilkinson	S.REM
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0408)

277390

CASE NARRATIVE

Client: URS Corporation

Project: Rohm and Haas - Former EMCA Site

Report Number: 460-62494-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 09/06/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.2 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples 460-62494-1 and 460-62494-2 were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 09/16/2013 and 09/17/2013.

The matrix spike duplicate (MSD) recoveries and %RPD for batch 181639 were outside control limits for 1,1,2-Trichloro-1,2,2-trifluoroethane. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Freon TF failed the recovery criteria high for the MSD of sample 460-62776-1 in batch . Freon TF exceeded the rpd limit.

Refer to the QC report for details.

No other difficulties were encountered during the volatiles analyses.

All other quality control parameters were within the acceptance limits.

SULFATE
Sample 460-62494-1 was analyzed for sulfate in accordance with ASTM Method D516-90. The samples were analyzed on 09/13/2013.

No difficulties were encountered during the sulfate analysis.

All quality control parameters were within the acceptance limits.

DISSOLVED GASES
Samples 460-62494-1 and 460-62494-2 were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 09/09/2013.

The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-02 (460-62494-1). Elevated reporting limits (RLs) are provided.

Sample 460-62494-1(100X) required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the dissolved gases analyses.

All quality control parameters were within the acceptance limits.

Table 3: Gene-Trac Dhc Control Results, Test Reference S-2949

Laboratory Control	Analysis Date	Control Description	Spiked Dhc 16S rRNA Gene Copies per Liter	Recovered Dhc 16S rRNA Gene Copies per Liter	Comments
Positive Control Low Concentration	16-Sep-13	qPCR with KB1 genomic DNA (CSLD-0675)	8.7×10^4	6.1×10^4	--
Positive Control High Concentration	16-Sep-13	qPCR with KB1 genomic DNA (CSHD-0675)	1.4×10^7	6.5×10^6	See Note 1
DNA Extraction Blank	16-Sep-13	DNA extraction sterile water (FB-2020)	0	2.6×10^3 U	--
Negative Control	16-Sep-13	Tris Reagent Blank (TBD-0634)	0	2.6×10^3 U	--

Notes:

Dhc = *Dehalococcoides*

DNA = Deoxyribonucleic acid

qPCR = quantitative PCR

16S rRNA = 16S ribosomal ribonucleic acid

U Not detected, associated value is the quantitation limit.

[1] Exceeds recovery limit guideline of +/-50%.

Chain of Custody Record

460-65526 Chain of Custody

TAL-4142 (0408)

Client: URS Corporation	Project Manager: Kevin Shanahan	10/22/13	Chain of Custody Number: 010845
Address: 77 Goodell St.	Telephone Number (Area Code)/Fax Number: 716-856-5636	Lab Number	Page 1 of 1
City: Buffalo · State: NY · Zip Code: 14203	Site Contact: J. Crisero · Lab Contact	Analysis (Attach list if more space is needed)	65526
Project Name and Location (State): Rohm and Haas Former EMCA	Carrier/Waybill Number: Fed Ex		
Contract/Purchase Order/Quote No.			Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	SW 9056 Sulfate SM 4500 N Nitrate	200.7 Fe 2340C-Hardness	SM 5310B-TOC	8260B-Mod Fresh	2320B-Alkalinity	RSK 175 Methane	Special Instructions/ Conditions of Receipt
20131022MW-04V09N	10/22/13	18:30		X			2	1	1	6			X	X	X	X	X	X	1
20131022MW-07RV17N	↓	13:05		X			2	1	1	6			X	X	X	X	X	X	2
20131022MW-03V12N	↓	10:58		X			2	1	1	6			X	X	X	X	X	X	3
20131022MW-06V15N	↓	16:40		X			2	1	1	6			X	X	X	X	X	X	4
20131022MW-06V15MS	↓	16:40		X			1	1	1	6			X	X	X	X		X	~~5~~ 4
20131022MW-06V15MSD	↓	16:40		X			1	1	1	6			X	X	X	X		X	~~6~~ 4
20131022MW-02V09N	↓	14:50		X			2	1	1	6			X	X	X	X	X	X	~~7~~ 5
20131022MW-02V09FD	↓	14:50		X			2	1	1	6			X	X	X	X	X	X	~~8~~ 6
20131022TB01	↓	—		X						3						X			~~9~~ 7
20131022TB02	↓	—		X						3								X	~~10~~ 8

SUB Work

SHORT HOLD

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other Standard

QC Requirements (Specify): Call Peter Fairbanks 716-923-1121 if questions

	Date	Time		Date	Time
1. Relinquished By: John Wright	10/23/13	9:00A	1. Received By: Jen Capece	10/24/13	10:20AM
2. Relinquished By: Jen Capece	10/24/13	14:45	2. Received By: FedEx		
3. Relinquished By			3. Received By: [illegible signature]		

Comments: 2.3/2.9 · 1.1/1.7 · C.S# 263952/263951 · 10/25/2013 9:00

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

S-3002

TAL-4142 (0408)

Client	Project Manager	Date	Chain of Custody Number
URS CORPORATION	KEVIN SHANAHAN	10/22/13	010846
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
77 GOODELL ST.	716-856-5636		
City	**State** / **Zip Code**	**Site Contact**	**Lab Contact**
BUFFALO	NY / 14203	J-CROSBO	
Project Name and Location (State)	**Carrier/Waybill Number**		
ROHM AND HAAS - FORMER EMCA	FED EX		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H_2SO_4	HNO_3	HCl	NaOH	$ZnAc/NaOH$	Analysis: Dissolved Barium	Dissolved Cadmium
20131022MW-04V09N	10/22/13	10:30		X			1						X	
20131022MW-07RV17N		13:05		X			1						X	
20131022MW-03V12N		10:58		X			1						X	
20131022MW-02V09N				X			1						X	X
20131022MW-06V15N		16:40		X			1						X	

Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other STANDARD

QC Requirements (Specify) CALL PETER FAIRBANKS AT 716-923-1121 IF QUESTIONS

	Date	Time		Date	Time
1. Relinquished By: John Lupo	10/23/13	9:00 AM	1. Received By: J. Wilpersen SIREM	10/24/13	1405
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

CASE NARRATIVE

Client: URS Corporation

Project: Rohm and Haas - Former EMCA Site

Report Number: 460-65526-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/25/2013 2:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.7° C and 2.9° C.

Except:

The following sample(s) was received outside of holding time, all Nitrates samples

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

TOTAL RECOVERABLE METALS
Samples 460-65526-1 through 460-65526-6 were analyzed for total recoverable metals in accordance with EPA Method 200.7 (ICP). The samples were prepared on 11/01/2013 and analyzed on 11/02/2013.

No difficulties were encountered during the metals analyses.

All quality control parameters were within the acceptance limits.

ALKALINITY
Samples 460-65526-1 through 460-65526-6 were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 10/30/2013.

No difficulties were encountered during the alkalinity analyses.

All quality control parameters were within the acceptance limits.

HARDNESS
Samples 460-65526-1 through 460-65526-6 were analyzed for hardness in accordance with SM 2340C. The samples were analyzed on 10/31/2013.

No difficulties were encountered during the hardness analyses.

All quality control parameters were within the acceptance limits.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples 460-65526-1 through 460-65526-7 were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/30/2013.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 189314 were outside control limits for Chlorotrifluoroethene. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Refer to the QC report for details.

No other difficulties were encountered during the volatiles analyses.

All quality control parameters were within the acceptance limits.

SULFATE
Samples 460-65526-1 through 460-65526-6 were analyzed for sulfate in accordance with ASTM Method D516-90. The samples were analyzed on 10/29/2013 and 10/31/2013.

Sample 460-65526-3(2X) required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the sulfate analyses.

All quality control parameters were within the acceptance limits.

DISSOLVED GASES
Samples 460-65526-1 through 460-65526-6 and 460-65526-8 were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 11/01/2013.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 149090 were outside control limits due to inconsistency between sample vials. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Refer to the QC report for details.

Samples 460-65526-1(50X), 460-65526-2(50X), 460-65526-3(200X), 460-65526-4(50X), 460-65526-5 and 460-65526-6(200X) required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following samples were diluted to bring the concentration of target analytes within the calibration range: 2013 1022 MW-02 V09 FD (460-65526-6), 2013 1022 MW-02 V09 N (460-65526-5), 2013 1022 MW-03 V12 N (460-65526-3), 2013 1022 MW-04 V09 N (460-65526-1), 2013 1022 MW-06 V15 MS (460-65526-4 MS), 2013 1022 MW-06 V15 MSD (460-65526-4 MSD), 2013 1022 MW-06 V15 N (460-65526-4), 2013 1022 MW-07R V17 N (460-65526-2). Elevated reporting limits (RLs) are provided.

No other difficulties were encountered during the dissolved gases analyses.

All other quality control parameters were within the acceptance limits.

NITROGEN-NITRATE
Samples 460-65526-1 through 460-65526-6 were analyzed for Nitrogen-Nitrate in accordance with SM 4500 NO3 F. The samples were analyzed on 10/26/2013.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 188695 were outside control limits for NO3, NO2+NO3 and NO2. The associated laboratory control sample (LCS) recovery met acceptance criteria.

The presence of the '4' qualifier in the report indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

No other difficulties were encountered during the Niitrate analyses.

All other quality control parameters were within the acceptance limits.

TOTAL ORGANIC CARBON
Samples 460-65526-1 through 460-65526-6 were analyzed for total organic carbon in accordance with SM 5310B. The samples were analyzed on 10/29/2013.

No difficulties were encountered during the TOC analyses.

All quality control parameters were within the acceptance limits.

APPENDIX C

HISTORICAL ANALYTICAL DATA SUMMARY

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-03	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			20070801GZ-03V11N	GZ06_52103	GZ06	GZ06-091703	GZ-06-121803
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/07	05/21/03	07/23/03	09/17/03	12/18/03
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	5.0 U	10 U	5.0 U	5.0 U
Benzene	UG/L	1	NA	5.0 U	10 U	5.0 U	5.0 U
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	R	R	R	R
Chlorotrifluoroethene (Freon-1113)	UG/L	5	10 U	0 U	0 U	5.4 NJ	0 U
1,1-Dichloroethene	UG/L	5	NA	0.8 J	1.5 J	2.0 U	2.0 U
cis-1,2-Dichloroethene	UG/L	5	NA	5.0 U	10 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	UG/L	5	NA	5.0 U	10 U	5.0 U	5.0 U
Ethylbenzene	UG/L	5	NA	4.0 U	8 U	4.0 U	4.0 U
2-Hexanone	UG/L	50	NA	5.0 U	10 U	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	-	NA	5.0 U	10 U	5.0 U	5.0 U
Tetrachloroethene	UG/L	5	NA	0.6 J	2 U	0.5 J	1.0 U
Trichloroethene	UG/L	5	NA	1.0 U	2 U	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	10 U	100	230	74	5.0 U
Vinyl Chloride	UG/L	2	NA	5.0 U	10 U	5.0 U	5.0 U
Xylene (total)	UG/L	5	NA	5.0 U	10 U	5.0 U	5.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10 U	20	41	26	0.7 J
Dissolved Gases							
Methane	UG/L	-	5.0 U	140	98	89	5.9
Total Metals							
Iron	UG/L	300	NA	2,390	866	517 J	173
Dissolved Metals							
Iron	UG/L	300	NA	2,290	778	583 J	85.3 B

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-03	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			20070801GZ-03V11N	GZ06_52103	GZ06	GZ06-091703	GZ-06-121803
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/07	05/21/03	07/23/03	09/17/03	12/18/03
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	559	474	477 J	218
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrogen, Kjeldahl, Total	MG/L	-	NA	0.5 U	0.7	1.3	0.57
Nitrogen, Nitrate	MG/L	10	NA	0.1 U	NA	0.58	0.1 U
Nitrogen, Nitrite	MG/L	1	NA	0.1 U	NA	0.1 U	0.1 U
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	0.12 J	NA	NA
Sulfate	MG/L	250	15.8	25.2	27.5	32.4	5.0 U
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	2.8	9.6	0.25	0.03
Ferric Iron (lab)	MG/L	-	NA	0.1 U	0.1 U	0.52	0.143
Fluoride	MG/L	1.5	NA	0.1 U	0.1 U	0.1 U	0.32
Oil & Grease	MG/L	-	NA	NA	NA	R	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-03	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			20070801GZ-03V11N	GZ06_52103	GZ06	GZ06-091703	GZ-06-121803
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/07	05/21/03	07/23/03	09/17/03	12/18/03
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.52	0.76	0.5	0.48	6.86
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	98.5	-110	-75	-129	73
pH	S.U.	-	6.05	NA	NA	NA	NA
Specific Conductance	MS/CM	-	0.599	2.27	1.99	1.98	1.11
Temperature	DEG C	-	21.6	NA	NA	NA	NA
Turbidity	NTU	-	28	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			GZ06	GZ-06	MW-GZ-06V08N	GZ-0608N	20061117GZ-0608
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/15/06	11/17/06
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	24	15	10 U	13	2.0 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	100 J	9.0 J	10 U	74	2.0 J
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	36	4.0 J	2.0 J	23	2.0 J
Dissolved Gases							
Methane	UG/L	-	48	310	74	140	180
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			GZ06	GZ-06	MW-GZ-06V08N	GZ-0608N	20061117GZ-0608
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/15/06	11/17/06
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	1,610	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	20.8	14.2	31.7	23.2	25.1
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	1.00 U	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			GZ06	GZ-06	MW-GZ-06V08N	GZ-0608N	20061117GZ-0608
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/15/06	11/17/06
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	1.15	0.11	0.03	5.67	NA
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-210	-107	-59	-49	NA
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	5.25	1.43	1.16	1.28	NA
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			20061117GZ0608FD	20070207GZ-06V08N	20070731GZ-06V08	20080228GZ06V08	20080812GZ06V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/17/06	02/07/07	07/31/07	02/28/08	08/12/08
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	2.0 J	1.0 J	2.0 J	10 U	10 U
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	2.0 J	14	13	10 UJ	10 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	2.0 J	4.0 J	10	10 U	10 U
Dissolved Gases							
Methane	UG/L	-	210	360	23	5,900	880
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			20061117GZ0608FD	20070207GZ-06V08N	20070731GZ-06V08	20080228GZ06V08	20080812GZ06V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/17/06	02/07/07	07/31/07	02/28/08	08/12/08
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	25.4	29.3	50.4	5 U	28.1
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	GZ-06	GZ-06	GZ-06
Sample ID			20061117GZ0608FD	20070207GZ-06V08N	20070731GZ-06V08	20080228GZ06V08	20080812GZ06V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			11/17/06	02/07/07	07/31/07	02/28/08	08/12/08
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Field Parameter							
Dissolved Oxygen	MG/L	-	NA	4.17	1.18	4.1	0.91
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	NA	-29	15.6	-89.0	-102
pH	S.U.	-	NA	NA	6.22	6.15	6.31
Specific Conductance	MS/CM	-	NA	3.06	1.671	0.89	1.59
Temperature	DEG C	-	NA	NA	NA	8.91	17.5
Turbidity	NTU	-	NA	NA	NA	1,000	18

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	MW-01	MW-02	MW-02
Sample ID			20090218GZ-06V10N	20100225GZ-06V14N	20070801MW-01V08N	MW02-5-20-03	MW02-5-20-03DUP
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/18/09	02/25/10	08/01/07	05/20/03	05/20/03
Parameter	**Units**	**Criteria***					Field Duplicate (1-1)
Volatiles							
Acetone	UG/L	50	NA	NA	NA	140 J	130 J
Benzene	UG/L	1	NA	NA	NA	50 U	25 U
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	R	R
Chlorotrifluoroethene (Freon-1113)	UG/L	5	10 U	1 UJ	20 U	0 U	0 U
1,1-Dichloroethene	UG/L	5	NA	NA	20 U	4.4 J	5.1 J
cis-1,2-Dichloroethene	UG/L	5	NA	NA	250	50 U	25 U
trans-1,2-Dichloroethene	UG/L	5	NA	NA	4.0 J	50 U	25 U
Ethylbenzene	UG/L	5	NA	NA	NA	40 U	20 U
2-Hexanone	UG/L	50	NA	NA	NA	50 U	25 U
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	50 U	25 U
Tetrachloroethene	UG/L	5	NA	NA	8.0 J	10 U	5.0 U
Trichloroethene	UG/L	5	NA	NA	5.0 J	10 U	5.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	10 U	1 UJ	20 U	710	880
Vinyl Chloride	UG/L	2	NA	NA	5.0 J	50 U	25 U
Xylene (total)	UG/L	5	NA	NA	NA	50 U	25 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10 U	1 U	20 U	34 J	40
Dissolved Gases							
Methane	UG/L	-	8,700	5,000	98	26	32
Total Metals							
Iron	UG/L	300	NA	NA	NA	27,800	28,300
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	27,900	28,200

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	MW-01	MW-02	MW-02
Sample ID			20090218GZ-06V10N	20100225GZ-06V14N	20070801MW-01V08N	MW02-5-20-03	MW02-5-20-03DUP
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/18/09	02/25/10	08/01/07	05/20/03	05/20/03
Parameter	**Units**	**Criteria***					Field Duplicate (1-1)
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	338	338
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	3.3	3.4
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	6.6	6.2
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	0.15	0.16
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	0.1 U	0.1 U
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	5 UJ	8.4	39.2	44.0	46.0
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	25.3	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	2.5	3
Fluoride	MG/L	1.5	NA	NA	NA	0.28	0.3
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			GZ-06	GZ-06	MW-01	MW-02	MW-02
Sample ID			20090218GZ-06V10N	20100225GZ-06V14N	20070801MW-01V08N	MW02-5-20-03	MW02-5-20-03DUP
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/18/09	02/25/10	08/01/07	05/20/03	05/20/03
Parameter	**Units**	**Criteria***					Field Duplicate (1-1)
Field Parameter							
Dissolved Oxygen	MG/L	-	0.36	0.0	0.99	0.36	NA
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-91	-154	95.4	-108	NA
pH	S.U.	-	6.12	6.73	6.25	NA	NA
Specific Conductance	MS/CM	-	2.13	5.49	1.755	1.68	NA
Temperature	DEG C	-	9.24	7.23	NA	NA	NA
Turbidity	NTU	-	16	300	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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Only Detected Results Reported.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			DUP-7_22_03	MW02-7_22_03	MW02-091803	MW-02-121803	MW-02
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/03	07/22/03	09/18/03	12/18/03	07/22/04
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Volatiles							
Acetone	UG/L	50	R	R	5.0 U	5.0 U	NA
Benzene	UG/L	1	50 U	50 U	5.0 U	5.0 U	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	R	R	R	R	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	0 U	0 U	0 U	0 U	14
1,1-Dichloroethene	UG/L	5	8.2 J	7.5 J	2.0 U	2.0 U	NA
cis-1,2-Dichloroethene	UG/L	5	50 U	50 U	5.0 U	5.0 U	NA
trans-1,2-Dichloroethene	UG/L	5	50 U	50 U	5.0 U	5.0 U	NA
Ethylbenzene	UG/L	5	40 U	3.4 J	4.0 U	4.0 U	NA
2-Hexanone	UG/L	50	50 U	50 U	5.0 U	5.0 U	NA
4-Methyl-2-Pentanone	UG/L	-	50 U	50 U	5.0 U	5.0 U	NA
Tetrachloroethene	UG/L	5	10 U	10 U	1.0 U	1.0 U	NA
Trichloroethene	UG/L	5	10 U	10 U	1.0 U	1.0 U	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1,000	1,000	54	12	21 J
Vinyl Chloride	UG/L	2	50 U	50 U	5.0 U	5.0 U	NA
Xylene (total)	UG/L	5	7.1 J	11 J	5.0 U	5.0 U	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	40 J	41 J	7.8	3.3 J	4 J
Dissolved Gases							
Methane	UG/L	-	54	52	410	320	140
Total Metals							
Iron	UG/L	300	30,100	30,900	63,800 J	69,000	NA
Dissolved Metals							
Iron	UG/L	300	30,500	30,500	60,900 J	69,300	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			DUP-7_22_03	MW02-7_22_03	MW02-091803	MW-02-121803	MW-02
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/03	07/22/03	09/18/03	12/18/03	07/22/04
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	307	283	839	769	238
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	4.1	3.8	11.5	11.9	NA
Nitrogen, Kjeldahl, Total	MG/L	-	6.6	6.1	17.1	16.9	NA
Nitrogen, Nitrate	MG/L	10	0.1 U	0.1	0.1 U	0.1 U	NA
Nitrogen, Nitrite	MG/L	1	0.1 U	0.1 U	0.1 U	0.1 U	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	32.3	32.5	4.80	5.0 U	15.2
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	25.7	28.0	49.3	6.3	NA
Ferric Iron (lab)	MG/L	-	4.4	2.9	48.3	62.7	NA
Fluoride	MG/L	1.5	0.37	0.39	0.3	0.31	0.294
Oil & Grease	MG/L	-	NA	NA	5 U	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			DUP-7_22_03	MW02-7_22_03	MW02-091803	MW-02-121803	MW-02
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/03	07/22/03	09/18/03	12/18/03	07/22/04
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Field Parameter							
Dissolved Oxygen	MG/L	-	NA	0.26	0.53	0 U	0.91
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	NA	-190	-99	-108	-133
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	NA	1.65	3.17	3.28	2.34
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			MW-02	MW-02V06N	MW-02V15N	20061117MW02VISN	20070207MW-02V06N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/31/05	12/20/05	08/14/06	11/17/06	02/07/07
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	120	18	200	21	84
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1,200	110	890	100	800
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	86 J	15	110	10	95
Dissolved Gases							
Methane	UG/L	-	2,000	5,800	5,500	4,300	6,300
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			MW-02	MW-02V06N	MW-02V15N	20061117MW02VISN	20070207MW-02V06N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/31/05	12/20/05	08/14/06	11/17/06	02/07/07
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	25.2	5.0 U	27.1	5.0 U	15.9
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			MW-02	MW-02V06N	MW-02V15N	20061117MW02VISN	20070207MW-02V06N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/31/05	12/20/05	08/14/06	11/17/06	02/07/07
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0 U	0 U	4.92	NA	1.56
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-140	-137	-144	NA	-120
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	1.19	2.51	1.55	NA	1.77
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20070731MW-02V15N	20080228MW02V15N	20080812MW02V10N	20090218MW-02V10N	20091013MW-02V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	02/18/09	10/13/09
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	61	120 J	160	81 J	300
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	290	830 J	700	1,300	1,200 D
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	40	72	38 J	34 J	51
Dissolved Gases							
Methane	UG/L	-	2,900	6,400	6,200	8,000	6,100
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20070731MW-02V15N	20080228MW02V15N	20080812MW02V10N	20090218MW-02V10N	20091013MW-02V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	02/18/09	10/13/09
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	27.6	23.2	47.9	35.2 J	36.9
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20070731MW-02V15N	20080228MW02V15N	20080812MW02V10N	20090218MW-02V10N	20091013MW-02V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	02/18/09	10/13/09
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.31	2.87	0 U	0 U	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-97.2	-131	-119	-154	-161
pH	S.U.	-	6.39	6.38	6.40	6.26	6.16
Specific Conductance	MS/CM	-	2.357	2.18	2.14	2.55	2.09
Temperature	DEG C	-	NA	10.5	18.9	11.23	18.88
Turbidity	NTU	-	NA	28	3	5	9.4

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20100225MW-02V08N	20100624MW-02V08N	20101006MW-02V08N	20110406MW-02V08N	20110913MW02V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/25/10	06/24/10	10/06/10	04/06/11	09/13/11
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	92 J	240	180	110 J	180
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	76 J	670	580	920	490
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	6.1	37	26	33 J	26
Dissolved Gases							
Methane	UG/L	-	7,500	8,400	6,200	10,000	5,300
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	60,400
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20100225MW-02V08N	20100624MW-02V08N	20101006MW-02V08N	20110406MW-02V08N	20110913MW02V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/25/10	06/24/10	10/06/10	04/06/11	09/13/11
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	361
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	1.79
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	726
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	0.1 U
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	5 U	38.9	36.9 J	26.6	5 U
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	19.1
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20100225MW-02V08N	20100624MW-02V08N	20101006MW-02V08N	20110406MW-02V08N	20110913MW02V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/25/10	06/24/10	10/06/10	04/06/11	09/13/11
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	0.64	6.21	0.0	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	50.6
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	9.8
Oxidation-Reduction Potential	mV	-	-147	-136	-107	-97	-115
pH	S.U.	-	6.57	8.91	6.76	6.36	6.80
Specific Conductance	MS/CM	-	4.48	1.70	1.91	3.34	3.24
Temperature	DEG C	-	9.33	16.71	19.45	10.98	22.1
Turbidity	NTU	-	0.0	3.0	11.9	3.9	0.1

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20120411MW-02V08N	20120924MW-02V10N	20121022MW-02V10N	MW-02	20121129MW-02V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/11/12	09/24/12	10/22/12	10/31/12	11/29/12
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	140 J	98	NA	NA	380
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1,200 J	650	NA	NA	65
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	57	26	NA	NA	29
Dissolved Gases							
Methane	UG/L	-	8,100	4,000	NA	NA	5,600
Total Metals							
Iron	UG/L	300	NA	32,900	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20120411MW-02V08N	20120924MW-02V10N	20121022MW-02V10N	MW-02	20121129MW-02V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/11/12	09/24/12	10/22/12	10/31/12	11/29/12
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	245	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	245	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	100	NA	NA	2,000
Dehalobacter	GC/mL	-	NA	5	NA	NA	40,000
Hardness (as CaCO3)	MG/L	-	NA	388	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	0.10 U	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	51.8	50.8	NA	NA	2.2 U
Total Organic Carbon	MG/L	-	NA	8.4	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20120411MW-02V08N	20120924MW-02V10N	20121022MW-02V10N	MW-02	20121129MW-02V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/11/12	09/24/12	10/22/12	10/31/12	11/29/12
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	0.0	0.42	0.47	0.78
Ferrous Iron	MG/L	-	NA	9.0	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-44	-78	-119	-82	-116
pH	S.U.	-	6.56	6.62	6.38	6.35	6.40
Specific Conductance	MS/CM	-	1.86	1.69	2.53	2.52	2.39
Temperature	DEG C	-	13.45	24.07	19.21	19.42	14.75
Turbidity	NTU	-	0.0	0.0	0.0	9.3	0.0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20130115MW-02V10N	20130219MW-02V10N	20130409MW-02V09FD	20130409MW-02V09N	20130711MW-02V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/15/13	02/19/13	04/09/13	04/09/13	07/11/13
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	400	330 J	400 J	280 J	120
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	28	18	12	11	1.0 UJ
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	52	30 J	11	11	1.0 U
Dissolved Gases							
Methane	UG/L	-	8,000	8,000	9,600	9,000	7,700
Total Metals							
Iron	UG/L	300	NA	NA	56,600	58,100	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20130115MW-02V10N	20130219MW-02V10N	20130409MW-02V09FD	20130409MW-02V09N	20130711MW-02V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/15/13	02/19/13	04/09/13	04/09/13	07/11/13
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	510	249	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	510	249	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	2,000	200	NA	60	1,000
Dehalobacter	GC/mL	-	30,000	2,000	NA	1,000	6,000 J
Hardness (as CaCO3)	MG/L	-	NA	NA	673	653	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	0.10 UJ	0.10 UJ	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	14.4	13 J	9.2	19.9	5.0 U
Total Organic Carbon	MG/L	-	NA	NA	31.1	31.1	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	1 U	NA	29.3 J	NA
n-Butyric Acid	MG/L	-	NA	0.19 J	NA	1.0 U	NA
Pyruvic Acid	MG/L	-	NA	1 U	NA	4.4	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-02
Sample ID			20130115MW-02V10N	20130219MW-02V10N	20130409MW-02V09FD	20130409MW-02V09N	20130711MW-02V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			01/15/13	02/19/13	04/09/13	04/09/13	07/11/13
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Field Parameter							
Dissolved Oxygen	MG/L	-	1.36	4.57	NA	0.65	3.32
Ferrous Iron	MG/L	-	NA	NA	NA	44.3	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-121	-140	NA	-116	-165
pH	S.U.	-	6.58	6.82	NA	6.27	6.61
Specific Conductance	MS/CM	-	2.43	2.61	NA	8.18	2.60
Temperature	DEG C	-	13.05	10.18	NA	13.29	19.29
Turbidity	NTU	-	0.0	0.0	NA	0.0	0.0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-03
Sample ID			20130807MW-02V09N	20130903MW-02V09N	20131022MW-02V09FD	20131022MW-02V09N	MW03_52103
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/07/13	09/03/13	10/22/13	10/22/13	05/21/03
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	250 U
Benzene	UG/L	1	NA	NA	NA	NA	250 U
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	R
Chlorotrifluoroethene (Freon-1113)	UG/L	5	66 J	42	64	61	0 U
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	33 J
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	250 U
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	250 U
Ethylbenzene	UG/L	5	NA	NA	NA	NA	200 U
2-Hexanone	UG/L	50	NA	NA	NA	NA	250 U
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	250 U
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	50 U
Trichloroethene	UG/L	5	NA	NA	NA	NA	50 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 U	1.0 U	1.0 U	1.0 U	5,800
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	250 U
Xylene (total)	UG/L	5	NA	NA	NA	NA	250 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	1.0 U	1.0 U	1.0 U	78 J
Dissolved Gases							
Methane	UG/L	-	11,000	14,000	9,600	13,000	86
Total Metals							
Iron	UG/L	300	NA	NA	77,200	78,400	1,170
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	267

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-03
Sample ID			20130807MW-02V09N	20130903MW-02V09N	20131022MW-02V09FD	20131022MW-02V09N	MW03_52103
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/07/13	09/03/13	10/22/13	10/22/13	05/21/03
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	230	233	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	113
Dehalococcoides ethenogenes	CEQ/mL	-	800 J	50 J	NA	30	NA
Dehalobacter	GC/mL	-	10,000	3,000	NA	500	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	69.3	131	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	0.36
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	1.3
Nitrogen, Nitrate	MG/L	10	NA	NA	0.10 UJ	0.28 J	2
Nitrogen, Nitrite	MG/L	1	NA	NA	0.078 J	0.036 J	0.1 U
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	5.0 U	2.5 J	3.9 J	3.9 J	32.7
Total Organic Carbon	MG/L	-	NA	NA	9.5	9.5	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	0.5
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	0.67
Fluoride	MG/L	1.5	NA	NA	NA	NA	0.28
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-02	MW-02	MW-03
Sample ID			20130807MW-02V09N	20130903MW-02V09N	20131022MW-02V09FD	20131022MW-02V09N	MW03_52103
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/07/13	09/03/13	10/22/13	10/22/13	05/21/03
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Field Parameter							
Dissolved Oxygen	MG/L	-	0.98	1.64	NA	0.35	0.58
Ferrous Iron	MG/L	-	NA	NA	NA	46.5	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-146	-134	NA	-125	40
pH	S.U.	-	6.42	6.10	NA	6.41	NA
Specific Conductance	MS/CM	-	2.22	2.06	NA	1.76	0.638
Temperature	DEG C	-	18.82	20.14	NA	19.68	NA
Turbidity	NTU	-	0.0	1.0	NA	1.2	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			MW03	DUP-91703	MW03-091703	DUP1_121703	MW-03_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/03	09/17/03	09/17/03	12/17/03	12/17/03
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Volatiles							
Acetone	UG/L	50	78	110	110	130 J	120 J
Benzene	UG/L	1	2.3	2.2	1.8	10 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/L	50	130 J	69 J	65 J	39 J	38 J
Chlorotrifluoroethene (Freon-1113)	UG/L	5	7.0 NJ	6.2 NJ	0 U	0 U	0 U
1,1-Dichloroethene	UG/L	5	2.0 U	2.0 U	2.0 U	4.0 U	4 U
cis-1,2-Dichloroethene	UG/L	5	5.0 U	5.0 U	5.0 U	10 U	10 U
trans-1,2-Dichloroethene	UG/L	5	5.0 U	5.0 U	5.0 U	10 U	10 U
Ethylbenzene	UG/L	5	0.3 J	4.0 U	4.0 U	8.0 U	8 U
2-Hexanone	UG/L	50	5.0 U	19	16	10 U	10 U
4-Methyl-2-Pentanone	UG/L	-	5.0 U	11	11	10 U	10 U
Tetrachloroethene	UG/L	5	1.0 U	1.0 U	1.0 U	4.9	4.6
Trichloroethene	UG/L	5	1.0 U	1.0 U	1.0 U	2.0 U	2 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	68	26	16	150	150
Vinyl Chloride	UG/L	2	5.0 U	5.0 U	5.0 U	10 U	10 U
Xylene (total)	UG/L	5	1.1 J	5.0 U	5.0 U	10 U	10 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	43	180	110	170	160
Dissolved Gases							
Methane	UG/L	-	56	2,400	2,500	7,200	4,900
Total Metals							
Iron	UG/L	300	150,000	174,000 J	178,000 J	156,000	164,000
Dissolved Metals							
Iron	UG/L	300	152,000	187,000 J	186,000 J	167,000	176,000

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

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[LOGDATE] >= #5/1/2003# AND [MATRIX] = 'WG

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			MW03	DUP-91703	MW03-091703	DUP1_121703	MW-03_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/03	09/17/03	09/17/03	12/17/03	12/17/03
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	143	99.2 J	91.5 J	224	192
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	2.7	0.86	0.95	1.4	1.2
Nitrogen, Kjeldahl, Total	MG/L	-	10.8	4.5	4.4	4.0	4.0
Nitrogen, Nitrate	MG/L	10	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrogen, Nitrite	MG/L	1	NA	0.1 U	0.1 U	0.1 U	0.1 U
Nitrogen, Nitrate-Nitrite	MG/L	10	0.1 UJ	NA	NA	NA	NA
Sulfate	MG/L	250	26.9	5.0 U	5.0 U	5.0 U	5.0 U
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	3.7	25.5	27.9	23.5	30.0
Ferric Iron (lab)	MG/L	-	146	67.0	93.0	132	134
Fluoride	MG/L	1.5	0.44	0.27	0.2	0.22	0.25
Oil & Grease	MG/L	-	NA	R	R	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			MW03	DUP-91703	MW03-091703	DUP1_121703	MW-03_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/03	09/17/03	09/17/03	12/17/03	12/17/03
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Field Parameter							
Dissolved Oxygen	MG/L	-	0 U	NA	0.01	NA	0.35
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-103	NA	-90	NA	-59
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	4.35	NA	1.64	NA	1.99
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			MW-03	MW-03	MW-03VION	MW-03V15N	20070207MW-03V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	68 J	83	2.0 J	51	39
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	4,900 J	2.0 J	10 U	10 U	10
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	3,900	14	1.0 J	0.8 J	48
Dissolved Gases							
Methane	UG/L	-	2,700	6,300	10,000	7,400	15,000
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

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[LOGDATE] >= #5/1/2003# AND [MATRIX] = 'WG

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			MW-03	MW-03	MW-03VION	MW-03V15N	20070207MW-03V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	71.7	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	5.0 U	5.0 U	5.0 U	5.0 U	7.80
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	0.397	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			MW-03	MW-03	MW-03VION	MW-03V15N	20070207MW-03V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	1.05	1.24	0 U	5.36	2.44
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-143	-133	-151	-123	-116
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	2.40	3.19	1.20	0.946	0.91
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20070731MW-03V10N	20080228MW03V10N	20080812MW03V10FD	20080812MW03V10N	20090218MW-03V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	08/12/08	02/18/09
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	54	13 J	10	10	38
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	2.0 J	0.5 J	10 U	10 U	5.0 J
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	7.0 J	4.0 J	1.0 J	1.0 J	40
Dissolved Gases							
Methane	UG/L	-	4,500	18,000	10,000	8,400	13,000
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20070731MW-03V10N	20080228MW03V10N	20080812MW03V10FD	20080812MW03V10N	20090218MW-03V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	08/12/08	02/18/09
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	38.4	14.1	30.0	28.1	50.7 J
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20070731MW-03V10N	20080228MW03V10N	20080812MW03V10FD	20080812MW03V10N	20090218MW-03V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	08/12/08	02/18/09
Parameter	**Units**	**Criteria***			Field Duplicate (1-1)		
Field Parameter							
Dissolved Oxygen	MG/L	-	0.22	2.94	NA	0 U	0 U
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-79.7	-123	NA	-149	-185
pH	S.U.	-	6.15	6.15	NA	6.36	6.06
Specific Conductance	MS/CM	-	1.309	1.36	NA	1.69	2.08
Temperature	DEG C	-	NA	11.6	NA	17.8	12.87
Turbidity	NTU	-	NA	41	NA	2	5

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20091013MW-03V10FD	20091013MW-03V10N	20100226MW-03V09N	20100624MW-03V09N	20101006MW-03V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	10/13/09	02/26/10	06/24/10	10/06/10
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	20	19	17 J	26	4.6
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	0.92 J	0.82 J	1 UJ	1 U	1 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	2.1	1.9	1 U	0.5 J	1 U
Dissolved Gases							
Methane	UG/L	-	5,300	4,800	13,000	6,000	7,400
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20091013MW-03V10FD	20091013MW-03V10N	20100226MW-03V09N	20100624MW-03V09N	20101006MW-03V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	10/13/09	02/26/10	06/24/10	10/06/10
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	4.6 J	8.7	11.6	15.8	5.1 J
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20091013MW-03V10FD	20091013MW-03V10N	20100226MW-03V09N	20100624MW-03V09N	20101006MW-03V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	10/13/09	02/26/10	06/24/10	10/06/10
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				
Field Parameter							
Dissolved Oxygen	MG/L	-	NA	0.0	0.0	0.85	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	NA	-103	-138	-170	-116
pH	S.U.	-	NA	5.87	6.32	9.28	6.73
Specific Conductance	MS/CM	-	NA	1.85	3.39	1.50	1.68
Temperature	DEG C	-	NA	18.68	8.95	16.51	20.19
Turbidity	NTU	-	NA	8.7	94	5.1	6.3

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20110406MW-03V09N	20110913MW03V09FD	20110913MW03V09N	20120411MW-03V09N	20120924MW-03V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	09/13/11	09/13/11	04/11/12	09/24/12
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	110 J	69	82	150 J	130
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	32	4.2	5.4	20 J	1.1
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	99 J	8.3	9.4	36	3.2
Dissolved Gases							
Methane	UG/L	-	18,000	12,000	15,000	15,000	7,600
Total Metals							
Iron	UG/L	300	NA	35,300	35,700	NA	21,800
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20110406MW-03V09N	20110913MW03V09FD	20110913MW03V09N	20120411MW-03V09N	20120924MW-03V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	09/13/11	09/13/11	04/11/12	09/24/12
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	596	596	NA	292
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	292
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	1,820	3,780	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	700
Hardness (as CaCO3)	MG/L	-	NA	520	510	NA	248
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	0.1 U	0.1 U	NA	0.10 U
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	34.0	19	18.2	63.1	45.4
Total Organic Carbon	MG/L	-	NA	27.1	26.7	NA	7.2
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-03	MW-03	MW-03
Sample ID			20110406MW-03V09N	20110913MW03V09FD	20110913MW03V09N	20120411MW-03V09N	20120924MW-03V09N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	09/13/11	09/13/11	04/11/12	09/24/12
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	NA	0.0	0.0	0.0
Ferrous Iron	MG/L	-	NA	29.8	29.8	NA	3.5
Ferric Iron (calculated)	MG/L	-	NA	5.5	5.9	NA	NA
Oxidation-Reduction Potential	mV	-	-115	NA	-124	-63	-84
pH	S.U.	-	6.38	NA	6.85	6.64	6.64
Specific Conductance	MS/CM	-	1.55	NA	1.99	1.02	0.697
Temperature	DEG C	-	11.90	NA	20.7	13.35	23.57
Turbidity	NTU	-	3.6	NA	21.8	0.0	0.0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-04	MW-04	MW-04
Sample ID			20130409MW-03V10N	20131022MW-03V12N	MW04-5-20-03	MW-04_121703	Dup1
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/09/13	10/22/13	05/20/03	12/17/03	07/22/04
Parameter	**Units**	**Criteria***					Field Duplicate (1-1)
Volatiles							
Acetone	UG/L	50	NA	NA	5.0 U	5.0 U	NA
Benzene	UG/L	1	NA	NA	5.0 U	5.0 U	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	R	R	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	160 J	58	0 U	0 U	10 U
1,1-Dichloroethene	UG/L	5	NA	NA	2.0 U	2.0 U	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	5.0 U	5.0 U	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	5.0 U	5.0 U	NA
Ethylbenzene	UG/L	5	NA	NA	4.0 U	4.0 U	NA
2-Hexanone	UG/L	50	NA	NA	5.0 U	5.0 U	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	5.0 U	5.0 U	NA
Tetrachloroethene	UG/L	5	NA	NA	1.0 U	1.0 U	NA
Trichloroethene	UG/L	5	NA	NA	1.0 U	1.0 U	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	27	1.0 U	5.0 U	5.0 U	10 UJ
Vinyl Chloride	UG/L	2	NA	NA	5.0 U	5.0 U	NA
Xylene (total)	UG/L	5	NA	NA	5.0 U	5.0 U	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	30	1.0 U	5.0 U	5.0 U	10 U
Dissolved Gases							
Methane	UG/L	-	11,000	11,000	380	35	69
Total Metals							
Iron	UG/L	300	27,900	29,400	18,400	3,640	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	18,500	3,760	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Only Detected Results Reported.

Detection Limits shown are PQL

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-04	MW-04	MW-04
Sample ID			20130409MW-03V10N	20131022MW-03V12N	MW04-5-20-03	MW-04_121703	Dup1
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/09/13	10/22/13	05/20/03	12/17/03	07/22/04
Parameter	**Units**	**Criteria***					Field Duplicate (1-1)
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	367	237	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	367	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	238	294	158
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	40	100	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	396	65.3	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	1.6	1.2	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	6.2	1.9	NA
Nitrogen, Nitrate	MG/L	10	0.21 J	0.23 J	0.1 U	0.1 U	NA
Nitrogen, Nitrite	MG/L	1	NA	0.025 J	0.1 U	0.1 U	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	39.4	40.7	5.0 U	9.40	10.8
Total Organic Carbon	MG/L	-	8.7	5.6	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	17.6	2.2	NA
Ferric Iron (lab)	MG/L	-	NA	NA	0.76	1.3	NA
Fluoride	MG/L	1.5	NA	NA	0.27	0.19	0.304
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-03	MW-03	MW-04	MW-04	MW-04
Sample ID			20130409MW-03V10N	20131022MW-03V12N	MW04-5-20-03	MW-04_121703	Dup1
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/09/13	10/22/13	05/20/03	12/17/03	07/22/04
Parameter	**Units**	**Criteria***					Field Duplicate (1-1)
Field Parameter							
Dissolved Oxygen	MG/L	-	2.23	0.63	0.54	0 U	NA
Ferrous Iron	MG/L	-	26.0	16.9	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-93	-119	-115	0 U	NA
pH	S.U.	-	6.39	6.21	NA	NA	NA
Specific Conductance	MS/CM	-	3.37	1.35	1.61	0.99	NA
Temperature	DEG C	-	15.42	19.3	NA	NA	NA
Turbidity	NTU	-	17.9	0.4	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			MW-04	MW-04	MW-04VION	MW-04V15N	20070207MW-04V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	10 U	1.0 J	10 U	0.7 J	0.6 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	0.7 J	10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10 U	10 U	10 U	10 U	10 U
Dissolved Gases							
Methane	UG/L	-	99	190	400	420	400
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			MW-04	MW-04	MW-04VION	MW-04V15N	20070207MW-04V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	161	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	10.8	14.2	6.66	5.0 U	5.0 U
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	0.302	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			MW-04	MW-04	MW-04VION	MW-04V15N	20070207MW-04V10N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.82	0 U	0 U	4.97	4.73
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-136	-126	-161	-154	-81
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	1.05	1.85	1.47	1.14	0.804
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20070801MW-04V10N	20080228MW04V10N	20080812MW04V08N	20090218MW-04V08FD	20090218MW-04V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/07	02/28/08	08/12/08	02/18/09	02/18/09
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	10 U	1.0 J	10 U	1.0 J	1.0 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	10 U	10 UJ	10 U	10 U	10 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10 U	10 U	10 U	10 U	10 U
Dissolved Gases							
Methane	UG/L	-	43	5,700	290	1,600	1,600
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20070801MW-04V10N	20080228MW04V10N	20080812MW04V08N	20090218MW-04V08FD	20090218MW-04V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/07	02/28/08	08/12/08	02/18/09	02/18/09
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	7.0	5 U	5 U	5 UJ	5 UJ
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20070801MW-04V10N	20080228MW04V10N	20080812MW04V08N	20090218MW-04V08FD	20090218MW-04V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/01/07	02/28/08	08/12/08	02/18/09	02/18/09
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Field Parameter							
Dissolved Oxygen	MG/L	-	0.41	2.91	0 U	NA	0 U
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-79.2	-136	-126	NA	-158
pH	S.U.	-	6.59	6.45	6.65	NA	6.33
Specific Conductance	MS/CM	-	1.241	1.16	0.531	NA	1.75
Temperature	DEG C	-	NA	9.19	21.3	NA	9.36
Turbidity	NTU	-	NA	9	2	NA	4

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20091013MW-04V08N	20100225MW04V08FD	20100225MW-04V08N	20100624MW-04V08N	20101006MW-04V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	02/25/10	02/25/10	06/24/10	10/06/10
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	15	6.6 J	7.7 J	12	2.8
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1 U	1 UJ	1 UJ	1 U	1 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1 U	1 U	1 U	1 U	1 U
Dissolved Gases							
Methane	UG/L	-	3,100	5,200	5,100	4,000	2,400
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20091013MW-04V08N	20100225MW04V08FD	20100225MW-04V08N	20100624MW-04V08N	20101006MW-04V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	02/25/10	02/25/10	06/24/10	10/06/10
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	20.8	13	11.3	18.4	5.5 J
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20091013MW-04V08N	20100225MW04V08FD	20100225MW-04V08N	20100624MW-04V08N	20101006MW-04V08N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	02/25/10	02/25/10	06/24/10	10/06/10
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	NA	0.0	0.80	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-122	NA	-124	-146	-96
pH	S.U.	-	6.43	NA	6.50	8.99	6.86
Specific Conductance	MS/CM	-	1.83	NA	2.14	1.84	1.48
Temperature	DEG C	-	19.37	NA	8.34	18.45	21.38
Turbidity	NTU	-	4.6	NA	1.5	1.9	3.7

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20110406MW-04V08ED	20110406MW-04V08N	20110913MW04V08N	20120411MW-04V08N	20120924MW-04V08ED
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	04/06/11	09/13/11	04/11/12	09/24/12
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				Field Duplicate (1-1)
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	5 J	4.3 J	1.2	7.2 J	2.1
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1 U	1 U	1 U	1 UJ	1.0 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1 UJ	1 UJ	1 U	1 U	1.0 U
Dissolved Gases							
Methane	UG/L	-	4,200	4,300	1,700	2,700	570
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	7,430
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

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[LOGDATE] >= #5/1/2003# AND [MATRIX] = 'WG

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20110406MW-04V08ED	20110406MW-04V08N	20110913MW04V08N	20120411MW-04V08N	20120924MW-04V08ED
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	04/06/11	09/13/11	04/11/12	09/24/12
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				Field Duplicate (1-1)
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	211
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	211
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	188
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	0.10 U
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	26.6	22.3	16.7	18.7	12.3
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	10.2
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-04	MW-04
Sample ID			20110406MW-04V08FD	20110406MW-04V08N	20110913MW04V08N	20120411MW-04V08N	20120924MW-04V08FD
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	04/06/11	09/13/11	04/11/12	09/24/12
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)				Field Duplicate (1-1)
Field Parameter							
Dissolved Oxygen	MG/L	-	NA	0.0	0.0	0.0	NA
Ferrous Iron	MG/L	-	NA	NA	14.3	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	NA	-78	-126	-87	NA
pH	S.U.	-	NA	6.40	6.83	6.80	NA
Specific Conductance	MS/CM	-	NA	2.19	2.29	1.38	NA
Temperature	DEG C	-	NA	12.86	22.5	14.07	NA
Turbidity	NTU	-	NA	0.0	0.2	8.9	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Concentration Exceeds Criteria

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-05	MW-05
Sample ID			20120924MW-04V08N	20130409MW-04V09N	20131022MW-04V09N	MW05_52103	MW-05-121803
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/24/12	04/09/13	10/22/13	05/21/03	12/18/03
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	5.0 U	5.0 U
Benzene	UG/L	1	NA	NA	NA	5.0 U	5.0 U
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	R	R
Chlorotrifluoroethene (Freon-1113)	UG/L	5	2.5	4.4 J	12	0 U	0 U
1,1-Dichloroethene	UG/L	5	NA	NA	NA	2.0 U	2.0 U
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	5.0 U	5.0 U
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	5.0 U	5.0 U
Ethylbenzene	UG/L	5	NA	NA	NA	4.0 U	4.0 U
2-Hexanone	UG/L	50	NA	NA	NA	5.0 U	5.0 U
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	5.0 U	5.0 U
Tetrachloroethene	UG/L	5	NA	NA	NA	0.4 J	1.0 U
Trichloroethene	UG/L	5	NA	NA	NA	1.0 U	1.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Vinyl Chloride	UG/L	2	NA	NA	NA	5.0 U	5.0 U
Xylene (total)	UG/L	5	NA	NA	NA	5.0 U	5.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Dissolved Gases							
Methane	UG/L	-	550	1,700	1,600	27	6.7
Total Metals							
Iron	UG/L	300	7,280	16,100	17,700	2,110	15,500
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	1,670	39.7 U

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Concentration Exceeds Criteria

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R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-05	MW-05
Sample ID			20120924MW-04V08N	20130409MW-04V09N	20131022MW-04V09N	MW05_52103	MW-05-121803
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/24/12	04/09/13	10/22/13	05/21/03	12/18/03
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	210	5.0 U	243	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	210	5.0 U	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	49.8	27.5
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	4 U	3 U	3 U	NA	NA
Hardness (as CaCO3)	MG/L	-	185	426	73.3	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	0.25	0.1 U
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	3.6	0.61
Nitrogen, Nitrate	MG/L	10	0.10 U	0.10 UJ	0.10 UJ	0.22	0.18
Nitrogen, Nitrite	MG/L	1	NA	NA	0.014 J	0.1 U	0.1 U
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	12.0	15.6	23.2	50.1	61.4
Total Organic Carbon	MG/L	-	10	7.2	7.0	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	1.7	0.07
Ferric Iron (lab)	MG/L	-	NA	NA	NA	0.43	15.4
Fluoride	MG/L	1.5	NA	NA	NA	0 U	0.12
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-04	MW-04	MW-04	MW-05	MW-05
Sample ID			20120924MW-04V08N	20130409MW-04V09N	20131022MW-04V09N	MW05_52103	MW-05-121803
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/24/12	04/09/13	10/22/13	05/21/03	12/18/03
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	2.13	0.25	0.37	0 U
Ferrous Iron	MG/L	-	27.7	14.9	13.9	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-96	-78	-94	26	121
pH	S.U.	-	6.91	6.43	6.44	NA	NA
Specific Conductance	MS/CM	-	0.519	3.98	1.27	0.426	0.629
Temperature	DEG C	-	25.40	16.39	19.44	NA	NA
Turbidity	NTU	-	8.0	1.7	5.7	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-05	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-05	MW06-6-10-03	MW06-7_22_03	MW06-091803	MW-06_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	06/10/03	07/22/03	09/18/03	12/17/03
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	10 U	5.0 U	5.0 U	10 U
Benzene	UG/L	1	NA	10 U	5.0 U	5.0 U	10 U
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	R	R	R	R
Chlorotrifluoroethene (Freon-1113)	UG/L	5	10 U	0 U	5.7 NJ	0 U	0 U
1,1-Dichloroethene	UG/L	5	NA	4 U	1.2 J	2.0 U	4 U
cis-1,2-Dichloroethene	UG/L	5	NA	10 U	1.7 J	1.4 J	1.3 J
trans-1,2-Dichloroethene	UG/L	5	NA	10 U	5.0 U	5.0 U	10 U
Ethylbenzene	UG/L	5	NA	8 U	4.0 U	4.0 U	8 U
2-Hexanone	UG/L	50	NA	10 U	5.0 U	5.0 U	10 U
4-Methyl-2-Pentanone	UG/L	-	NA	10 U	5.0 U	5.0 U	10 U
Tetrachloroethene	UG/L	5	NA	2 U	1.0 U	1.0 U	2 U
Trichloroethene	UG/L	5	NA	2 U	1.0 U	1.0 U	2 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	0.5 J	220	180	97	250
Vinyl Chloride	UG/L	2	NA	10 U	1.2 J	5.0 U	10 U
Xylene (total)	UG/L	5	NA	10 U	5.0 U	5.0 U	10 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10 U	8.8 J	9.5	8.6	14
Dissolved Gases							
Methane	UG/L	-	47	49	81	99	78
Total Metals							
Iron	UG/L	300	NA	14,400	10,500	8,370 J	7,690
Dissolved Metals							
Iron	UG/L	300	NA	14,300	10,300	8,470 J	7,670

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

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[LOGDATE] >= #5/1/2003# AND [MATRIX] = 'WG

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-05	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-05	MW06-6-10-03	MW06-7_22_03	MW06-091803	MW-06_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	06/10/03	07/22/03	09/18/03	12/17/03
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	63.9	184	82.3	74.6	84.0
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	0.19	0.33	0.31	0.36
Nitrogen, Kjeldahl, Total	MG/L	-	NA	0.72	1.1	0.88	0.79
Nitrogen, Nitrate	MG/L	10	NA	0.33	0.1 U	0.1 U	0.1 UJ
Nitrogen, Nitrite	MG/L	1	NA	0.1 U	0.1 U	0.1 U	0.1 UJ
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	42.3	32.0	30.5	39.2	39.1
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	14.3	8.6	6.0	8.7
Ferric Iron (lab)	MG/L	-	NA	0.12	1.9	8.4	1.0 U
Fluoride	MG/L	1.5	0.103	0.46	0.56	0.37	0.42
Oil & Grease	MG/L	-	NA	NA	NA	5 U	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-05	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-05	MW06-6-10-03	MW06-7_22_03	MW06-091803	MW-06_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	06/10/03	07/22/03	09/18/03	12/17/03
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.97	0.93	1.07	0 U	0 U
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	46	-145	-155	-143	-110
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	0.463	0.741	0.866	0.581	0.602
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-06	Field-Dup	MW-06	MW-06V15FD	MW-06V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	05/31/05	05/31/05	12/20/05	12/20/05
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	5 J	6.0 J	5.0 J	6.0 J	6.0 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	140 J	1.0 J	1.0 J	10 U	10 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	23	16	14	10 UJ	10 UJ
Dissolved Gases							
Methane	UG/L	-	40	3,600	3,300	6,700	5,600
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-06	Field-Dup	MW-06	MW-06V15FD	MW-06V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	05/31/05	05/31/05	12/20/05	12/20/05
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	60.5	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	33.5	5.0 U	5.0 U	5.0 U	5.0 U
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	0.467	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-06	Field-Dup	MW-06	MW-06V15FD	MW-06V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/23/04	05/31/05	05/31/05	12/20/05	12/20/05
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Field Parameter							
Dissolved Oxygen	MG/L	-	1.04	NA	0 U	NA	0 U
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-64	NA	-140	NA	-140
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	0.513	NA	1.13	NA	1.29
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-06V15FD	MW-06V15N	20070207MW-06V15FD	20070207MW-06V15N	20070731MW-06V15FD
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/15/06	08/15/06	02/07/07	02/07/07	07/31/07
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)		Field Duplicate (1-1)		Field Duplicate (1-1)
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	10 U	10 U	100	100	18
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	10 U	10 U	3.0 J	3.0 J	10 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10 U	10 U	8.0 J	8.0 J	0.5 J
Dissolved Gases							
Methane	UG/L	-	1,600	1,700	12,000	13,000	3,800
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-06V15FD	MW-06V15N	20070207MW-06V15FD	20070207MW-06V15N	20070731MW-06V15FD
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/15/06	08/15/06	02/07/07	02/07/07	07/31/07
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)		Field Duplicate (1-1)		Field Duplicate (1-1)
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	5.0 U	5.0 U	7.40	7.00	41.8
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			MW-06V15FD	MW-06V15N	20070207MW-06V15FD	20070207MW-06V15N	20070731MW-06V15FD
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			08/15/06	08/15/06	02/07/07	02/07/07	07/31/07
Parameter	**Units**	**Criteria***	Field Duplicate (1-1)		Field Duplicate (1-1)		Field Duplicate (1-1)
Field Parameter							
Dissolved Oxygen	MG/L	-	NA	6.83	NA	1.05	NA
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	NA	87	NA	-136	NA
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	NA	0.033	NA	0.79	NA
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20070731MW-06V15N	20080228MW06V15FD	20080228MW06V15N	20080812MW06V13N	20090219MW-06V13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	02/28/08	08/12/08	02/19/09
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	21	8.0 J	8.0 J	4.0 J	34
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	10 U	10 UJ	10 U	10 U	2.0 J
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	0.6 J	10 U	10 U	10 U	35
Dissolved Gases							
Methane	UG/L	-	2,500	12,000	14,000	12,000	9,000
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20070731MW-06V15N	20080228MW06V15FD	20080228MW06V15N	20080812MW06V13N	20090219MW-06V13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	02/28/08	08/12/08	02/19/09
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	44.2	5 U	5 U	17.8	57.0 J
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20070731MW-06V15N	20080228MW06V15FD	20080228MW06V15N	20080812MW06V13N	20090219MW-06V13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	02/28/08	08/12/08	02/19/09
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Field Parameter							
Dissolved Oxygen	MG/L	-	0.31	NA	2.61	0 U	0 U
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-99.7	NA	-122	-117	-132
pH	S.U.	-	6.38	NA	6.24	6.37	6.30
Specific Conductance	MS/CM	-	1.050	NA	1.21	1.47	0.84
Temperature	DEG C	-	NA	NA	12.2	17.0	13.23
Turbidity	NTU	-	NA	NA	9	5	8

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20091013MW-06V13N	20100226MW-06V13N	20100624MW-06V13N	20101006MW-06V13FD	20101006MW-06V13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	02/26/10	06/24/10	10/06/10	10/06/10
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	6.4	35 J	68 J	61	57
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1 U	1 UJ	1 U	1 U	1 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1 U	3.6	0.57 J	1 U	1 U
Dissolved Gases							
Methane	UG/L	-	7,300	13,000	9,400	8,300	8,800
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20091013MW-06V13N	20100226MW-06V13N	20100624MW-06V13N	20101006MW-06V13FD	20101006MW-06V13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	02/26/10	06/24/10	10/06/10	10/06/10
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	2.8 J	31.2	52.3	36.8 J	34.5 J
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Concentration Exceeds Criteria

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D - Diluted analysis

Only Detected Results Reported.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20091013MW-06V13N	20100226MW-06V13N	20100624MW-06V13N	20101006MW-06V13FD	20101006MW-06V13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/13/09	02/26/10	06/24/10	10/06/10	10/06/10
Parameter	**Units**	**Criteria***				Field Duplicate (1-1)	
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	0.0	0.73	NA	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-139	-140	-124	NA	-129
pH	S.U.	-	6.57	6.46	8.81	NA	6.97
Specific Conductance	MS/CM	-	1.79	2.48	0.958	NA	0.879
Temperature	DEG C	-	17.80	11.80	17.79	NA	18.25
Turbidity	NTU	-	2.2	39	0.45	NA	0.0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20110406MW-06V13N	20110913MW06V13N	20120411MW-06V13N	20120924MW-06V13N	20130409MW-06V12N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	09/13/11	04/11/12	09/24/12	04/09/13
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	96 J	30	230 J	140	61 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	33	1 U	82 J	3.3	0.19 J
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	38 J	4.4	28	3.6	4.9
Dissolved Gases							
Methane	UG/L	-	7,900	1,800	5,300	1,300	9,500
Total Metals							
Iron	UG/L	300	NA	9,630	NA	12,100	24,700
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20110406MW-06V13N	20110913MW06V13N	20120411MW-06V13N	20120924MW-06V13N	20130409MW-06V12N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	09/13/11	04/11/12	09/24/12	04/09/13
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	388	NA	304	244
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	304	244
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	353,000 J	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	1 J	3 U
Hardness (as CaCO3)	MG/L	-	NA	235	NA	308	337
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	0.1 U	NA	0.10 U	0.25 J
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	60.8	16.5	119	52.2	38.4
Total Organic Carbon	MG/L	-	NA	10.9	NA	6.9	5.9
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-06	MW-06	MW-06	MW-06
Sample ID			20110406MW-06V13N	20110913MW06V13N	20120411MW-06V13N	20120924MW-06V13N	20130409MW-06V12N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			04/06/11	09/13/11	04/11/12	09/24/12	04/09/13
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	0.0	0.0	0.0	0.33
Ferrous Iron	MG/L	-	NA	7.4	NA	9.9	23.7
Ferric Iron (calculated)	MG/L	-	NA	2.23	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-68	-123	-48	-80	-102
pH	S.U.	-	7.08	7.08	6.81	6.82	6.47
Specific Conductance	MS/CM	-	1.61	0.801	1.06	0.636	2.91
Temperature	DEG C	-	12.46	22.4	14.04	22.01	16.34
Turbidity	NTU	-	0.0	5.3	0.0	0.0	0.2

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-07	MW-07	MW-07	MW-07
Sample ID			20131022MW-06V15N	MW07-6-10-03	MW07	MW07-91703	MW-07_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/22/13	06/10/03	07/23/03	09/17/03	12/17/03
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	250 U	500 U	250 U	50 U
Benzene	UG/L	1	NA	250 U	500 U	250 U	14
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	R	R	R	R
Chlorotrifluoroethene (Freon-1113)	UG/L	5	27	0 U	0 U	0 U	0 U
1,1-Dichloroethene	UG/L	5	NA	100 U	68 J	100 U	20 U
cis-1,2-Dichloroethene	UG/L	5	NA	250 U	500 U	250 U	50 U
trans-1,2-Dichloroethene	UG/L	5	NA	250 U	500 U	250 U	50 U
Ethylbenzene	UG/L	5	NA	200 U	400 U	200 U	49
2-Hexanone	UG/L	50	NA	250 U	500 U	250 U	50 U
4-Methyl-2-Pentanone	UG/L	-	NA	250 U	500 U	250 U	50 U
Tetrachloroethene	UG/L	5	NA	50 U	100 U	50 U	10 U
Trichloroethene	UG/L	5	NA	50 U	100 U	50 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 U	5,400	8,500	6,100	370
Vinyl Chloride	UG/L	2	NA	250 U	500 U	250 U	50 U
Xylene (total)	UG/L	5	NA	250 U	500 U	250 U	50 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.0 U	68 J	130 J	130 J	940
Dissolved Gases							
Methane	UG/L	-	4,100	740	420	1,200	1,700
Total Metals							
Iron	UG/L	300	20,500	21,300	21,200	32,700 J	38,900
Dissolved Metals							
Iron	UG/L	300	NA	20,800	20,800	32,500 J	38,900

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-07	MW-07	MW-07	MW-07
Sample ID			20131022MW-06V15N	MW07-6-10-03	MW07	MW07-91703	MW-07_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/22/13	06/10/03	07/23/03	09/17/03	12/17/03
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	245	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	140	168	300 J	328
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	2 J	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	99.0	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	0.39	0.6	0.66	0.99
Nitrogen, Kjeldahl, Total	MG/L	-	NA	1.2	1.8	2.1	2.8
Nitrogen, Nitrate	MG/L	10	0.10 UJ	0.1 U	NA	0.1 U	0.1 U
Nitrogen, Nitrite	MG/L	1	0.017 J	0.1 U	NA	0.1 U	0.1 U
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	0.1 UJ	NA	NA
Sulfate	MG/L	250	29.2	32.8	31.0	23.6	5.0 U
Total Organic Carbon	MG/L	-	5.6	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	20.2	19.8	33.8	19.5
Ferric Iron (lab)	MG/L	-	NA	1	1.4	14.1	19.4
Fluoride	MG/L	1.5	NA	0.33	0.25	0.24	0.19
Oil & Grease	MG/L	-	NA	NA	NA	5.44 U	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-06	MW-07	MW-07	MW-07	MW-07
Sample ID			20131022MW-06V15N	MW07-6-10-03	MW07	MW07-91703	MW-07_121703
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			10/22/13	06/10/03	07/23/03	09/17/03	12/17/03
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.37	0.9	0.1	0 U	3.33
Ferrous Iron	MG/L	-	3.6	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-108	-130	-108	-118	-115
pH	S.U.	-	6.45	NA	NA	NA	NA
Specific Conductance	MS/CM	-	1.4	0.93	1.11	1.44	1.94
Temperature	DEG C	-	18.41	NA	NA	NA	NA
Turbidity	NTU	-	1.4	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07	MW-07	MW-07	MW-07	MW-07
Sample ID			MW-07	MW-07	MW-07V15N	MW-07V15N	20070207MW-07V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	210	140	47	97	89
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	110 J	10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	50	2.0 J	10 U	1.0 J	3.0 J
Dissolved Gases							
Methane	UG/L	-	2,500	5,900	9,700	6,900	6,200
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07	MW-07	MW-07	MW-07	MW-07
Sample ID			MW-07	MW-07	MW-07V15N	MW-07V15N	20070207MW-07V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	303	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	5.0 U	5.0 U	5.0 U	19.3	5.0 U
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	0.190	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07	MW-07	MW-07	MW-07	MW-07
Sample ID			MW-07	MW-07	MW-07V15N	MW-07V15N	20070207MW-07V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/22/04	05/31/05	12/20/05	08/14/06	02/07/07
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.88	0 U	0 U	3.47	2.89
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-153	-152	-169	-163	-121
pH	S.U.	-	NA	NA	NA	NA	NA
Specific Conductance	MS/CM	-	1.69	1.75	1.65	1.44	2.02
Temperature	DEG C	-	NA	NA	NA	NA	NA
Turbidity	NTU	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07	MW-07	MW-07	MW-07	MW-07R
Sample ID			20070731MW-07V15N	20080228MW07V15N	20080812MW07V09N	20090218MW-07V09N	20091013MW-07RV15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	02/18/09	10/13/09
Parameter	**Units**	**Criteria***					
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	82	92	170	150	370 D
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	6.0 J	10 UJ	3.0 J	46	580 D
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	10	0.9 J	16	20	76
Dissolved Gases							
Methane	UG/L	-	4,100	7,100	5,600	11,000	5,900
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07	MW-07	MW-07	MW-07	MW-07R
Sample ID			20070731MW-07V15N	20080228MW07V15N	20080812MW07V09N	20090218MW-07V09N	20091013MW-07RV15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	02/18/09	10/13/09
Parameter	**Units**	**Criteria***					
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	6.1	5 U	5.6	5 UJ	6.3
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07	MW-07	MW-07	MW-07	MW-07R
Sample ID			20070731MW-07V15N	20080228MW07V15N	20080812MW07V09N	20090218MW-07V09N	20091013MW-07RV15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/31/07	02/28/08	08/12/08	02/18/09	10/13/09
Parameter	**Units**	**Criteria***					
Field Parameter							
Dissolved Oxygen	MG/L	-	0.48	2.64	0 U	0 U	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-113.5	-137	-167	-154	-139
pH	S.U.	-	6.78	6.32	6.48	6.18	6.45
Specific Conductance	MS/CM	-	2.182	1.62	1.99	2.01	2.74
Temperature	DEG C	-	NA	9.03	17.3	12.11	18.36
Turbidity	NTU	-	NA	54	25	21	1.1

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R	MW-07R	MW-07R	MW-07R	MW-07R
Sample ID			20100225MW-07RV15N	20100624MW-07RV15FD	20100624MW-07RV15N	20101006MW-07RV15N	20110406MW-07RV15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/25/10	06/24/10	06/24/10	10/06/10	04/06/11
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	150 J	350 J	390	350	370 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	18 J	1.1 J	1	53 J	18
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	8.1	1.7 J	1.8	9.5	6.3 J
Dissolved Gases							
Methane	UG/L	-	6,500	8,100	8,400	6,200	8,300
Total Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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[LOGDATE] >= #5/1/2003# AND [MATRIX] = 'WG

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R	MW-07R	MW-07R	MW-07R	MW-07R
Sample ID			20100225MW-07RV15N	20100624MW-07RV15FD	20100624MW-07RV15N	20101006MW-07RV15N	20110406MW-07RV15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/25/10	06/24/10	06/24/10	10/06/10	04/06/11
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	NA	NA
Hardness (as CaCO3)	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	NA	NA	NA	NA	NA
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	7.9	17	11.2	13 J	25.8
Total Organic Carbon	MG/L	-	NA	NA	NA	NA	NA
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R	MW-07R	MW-07R	MW-07R	MW-07R
Sample ID			20100225MW-07RV15N	20100624MW-07RV15FD	20100624MW-07RV15N	20101006MW-07RV15N	20110406MW-07RV15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			02/25/10	06/24/10	06/24/10	10/06/10	04/06/11
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	NA	0.69	4.05	0.0
Ferrous Iron	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (calculated)	MG/L	-	NA	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-146	NA	-129	-113	-83
pH	S.U.	-	6.52	NA	8.83	6.82	6.39
Specific Conductance	MS/CM	-	2.79	NA	2.09	2.03	3.40
Temperature	DEG C	-	10.69	NA	16.45	21.42	12.08
Turbidity	NTU	-	1.1	NA	0.35	14.3	0.0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R	MW-07R	MW-07R	MW-07R	MW-07R
Sample ID			20110913MW07RV15N	20120411MW-07RV15FD	20120411MW-07RV15N	20120924MW-07RV15N	20130409MW-07RV13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/13/11	04/11/12	04/11/12	09/24/12	04/09/13
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatiles							
Acetone	UG/L	50	NA	NA	NA	NA	NA
Benzene	UG/L	1	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA	NA	NA	NA	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	26	630 J	540 J	430	310 J
1,1-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	UG/L	5	NA	NA	NA	NA	NA
Ethylbenzene	UG/L	5	NA	NA	NA	NA	NA
2-Hexanone	UG/L	50	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	UG/L	-	NA	NA	NA	NA	NA
Tetrachloroethene	UG/L	5	NA	NA	NA	NA	NA
Trichloroethene	UG/L	5	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.6	67 J	59 J	5.9 J	5.5
Vinyl Chloride	UG/L	2	NA	NA	NA	NA	NA
Xylene (total)	UG/L	5	NA	NA	NA	NA	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	0.94 J	11	9.7	2.4 J	2.6
Dissolved Gases							
Methane	UG/L	-	2,000	6,400	6,600	3,900	2,100
Total Metals							
Iron	UG/L	300	23,600	NA	NA	29,900	29,000
Dissolved Metals							
Iron	UG/L	300	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R	MW-07R	MW-07R	MW-07R	MW-07R
Sample ID			20110913MW07RV15N	20120411MW-07RV15FD	20120411MW-07RV15N	20120924MW-07RV15N	20130409MW-07RV13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/13/11	04/11/12	04/11/12	09/24/12	04/09/13
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	406	NA	NA	335	263
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA	NA	NA	335	263
Chloride	MG/L	250	NA	NA	NA	NA	NA
Dehalococcoides ethenogenes	CEQ/mL	-	248	NA	NA	NA	NA
Dehalobacter	GC/mL	-	NA	NA	NA	10	4
Hardness (as CaCO3)	MG/L	-	637	NA	NA	414	515
Nitrogen, Ammonia (as N)	MG/L	2	NA	NA	NA	NA	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA	NA	NA	NA	NA
Nitrogen, Nitrate	MG/L	10	0.1 U	NA	NA	0.10 U	0.066 J
Nitrogen, Nitrite	MG/L	1	NA	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite	MG/L	10	NA	NA	NA	NA	NA
Sulfate	MG/L	250	12.2	18.9	17.7	32.0	19.1
Total Organic Carbon	MG/L	-	11.3	NA	NA	11.8	9.3
Ferrous Iron (field)	MG/L	-	NA	NA	NA	NA	NA
Ferric Iron (lab)	MG/L	-	NA	NA	NA	NA	NA
Fluoride	MG/L	1.5	NA	NA	NA	NA	NA
Oil & Grease	MG/L	-	NA	NA	NA	NA	NA
Volatile Fatty Acids							
Acetic Acid	MG/L	-	NA	NA	NA	NA	NA
n-Butyric Acid	MG/L	-	NA	NA	NA	NA	NA
Pyruvic Acid	MG/L	-	NA	NA	NA	NA	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

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APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R	MW-07R	MW-07R	MW-07R	MW-07R
Sample ID			20110913MW07RV15N	20120411MW-07RV15FD	20120411MW-07RV15N	20120924MW-07RV15N	20130409MW-07RV13N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			09/13/11	04/11/12	04/11/12	09/24/12	04/09/13
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Field Parameter							
Dissolved Oxygen	MG/L	-	0.0	NA	0.0	0.0	0.0
Ferrous Iron	MG/L	-	20.1	NA	NA	30.4	27.5
Ferric Iron (calculated)	MG/L	-	3.5	NA	NA	NA	NA
Oxidation-Reduction Potential	mV	-	-109	NA	-82	-118	-89
pH	S.U.	-	6.86	NA	6.72	6.69	6.35
Specific Conductance	MS/CM	-	3.28	NA	2.10	1.78	4.84
Temperature	DEG C	-	22.4	NA	13.63	22.35	17.93
Turbidity	NTU	-	0.1	NA	8.2	0.0	53.9

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R
Sample ID			20131022MW-07RV17N
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			10/22/13
Parameter	**Units**	**Criteria***	
Volatiles			
Acetone	UG/L	50	NA
Benzene	UG/L	1	NA
Methyl ethyl ketone (2-Butanone)	UG/L	50	NA
Chlorotrifluoroethene (Freon-1113)	UG/L	5	390
1,1-Dichloroethene	UG/L	5	NA
cis-1,2-Dichloroethene	UG/L	5	NA
trans-1,2-Dichloroethene	UG/L	5	NA
Ethylbenzene	UG/L	5	NA
2-Hexanone	UG/L	50	NA
4-Methyl-2-Pentanone	UG/L	-	NA
Tetrachloroethene	UG/L	5	NA
Trichloroethene	UG/L	5	NA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	12
Vinyl Chloride	UG/L	2	NA
Xylene (total)	UG/L	5	NA
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.1
Dissolved Gases			
Methane	UG/L	-	4,000
Total Metals			
Iron	UG/L	300	30,900
Dissolved Metals			
Iron	UG/L	300	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

U - Non-Detect UJ - Not detected above the estimated quantitation limit

J (or B for Inorganics) - Analyte is reported below the PQL at an estimated concentration. NJ - Presumptive evidence that compound is present.

R - Rejected result NA - Not Analyzed

D - Diluted analysis

Only Detected Results Reported.

Detection Limits shown are PQL

APPENDIX C
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R
Sample ID			20131022MW-07RV17N
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			10/22/13
Parameter	**Units**	**Criteria***	
Miscellaneous Parameters			
Alkalinity, Total (as CaCO3)	MG/L	-	291
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	NA
Chloride	MG/L	250	NA
Dehalococcoides ethenogenes	CEQ/mL	-	NA
Dehalobacter	GC/mL	-	5
Hardness (as CaCO3)	MG/L	-	208
Nitrogen, Ammonia (as N)	MG/L	2	NA
Nitrogen, Kjeldahl, Total	MG/L	-	NA
Nitrogen, Nitrate	MG/L	10	0.36 J
Nitrogen, Nitrite	MG/L	1	0.015 J
Nitrogen, Nitrate-Nitrite	MG/L	10	NA
Sulfate	MG/L	250	7.4
Total Organic Carbon	MG/L	-	12.3
Ferrous Iron (field)	MG/L	-	NA
Ferric Iron (lab)	MG/L	-	NA
Fluoride	MG/L	1.5	NA
Oil & Grease	MG/L	-	NA
Volatile Fatty Acids			
Acetic Acid	MG/L	-	NA
n-Butyric Acid	MG/L	-	NA
Pyruvic Acid	MG/L	-	NA

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R
Sample ID			20131022MW-07RV17N
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			10/22/13
Parameter	**Units**	**Criteria***	
Field Parameter			
Dissolved Oxygen	MG/L	-	0.36
Ferrous Iron	MG/L	-	15.3
Ferric Iron (calculated)	MG/L	-	NA
Oxidation-Reduction Potential	mV	-	-102
pH	S.U.	-	6.31
Specific Conductance	MS/CM	-	1.84
Temperature	DEG C	-	19.42
Turbidity	NTU	-	0.2

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Class GA, Revised April 2000.

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