July 25, 2014

Mr. Ronnie Lee, P.E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7016

Re: Former EMCA Site, Mamaroneck, New York
Site Number 3-60-025
July 2014 Groundwater Sampling Results

Dear Mr. Lee:

On behalf of Rohm and Haas Company (a wholly owned subsidiary of The Dow Chemical Company), URS Corporation (URS) is providing this letter report to present the results of a groundwater sampling event performed at the Former EMCA site located in Mamaroneck, New York. The Site Location Map and Site Plan are attached as Figures 1 and 2.

On June 17, 2014, URS submitted a Groundwater Sampling and Analysis Report (GSAR) which documented the semi-annual, site-wide groundwater sampling event conducted in April 2014. The report indicated the concentration of Freon-113 in the sample collected from well MW-03 (100 micrograms/liter [µg/L]) exceeded the trigger concentration level (40 µg/L) outlined in the Contingency Treatment Plan in Section 4 of the approved Site Management Plan (SMP).

In the June GSAR, URS recommended that an additional groundwater sampling event be performed in July 2014 to confirm the April 2014 results prior to performing additional remedial injections. The Department concurred with this recommendation in a letter dated July 10, 2014 to Mr. Robert Casselberry of Dow Engineering Solutions. In response to the Department's verbal concurrence preceding the letter, URS completed the site-wide groundwater sampling event on July 1, 2014. Groundwater sampling and analytical procedures were consistent with previous site-wide sampling events. The findings are presented below.

Groundwater Sampling and Analytical Results

Groundwater samples were collected from monitoring wells MW-02, MW-03, MW-04, MW-06 and MW-07R on July 1, 2014. A field duplicate sample was also collected at well MW-02 for quality assurance/quality control (QA/QC) purposes. Water level measurements recorded in each well prior to sampling are contained in Table 1. The water levels were used to generate the groundwater surface contour map illustrated on Figure 3. The estimated groundwater flow pattern shown on Figure 3 is to the northwest toward the Sheldrake River, which is typical for the site.

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The analytical results for the five wells sampled during the July 2014 sampling event are provided in Table 2 and Figure 4. Portions of the laboratory analytical reports are provided in Attachment A.

The analytical results presented in Table 2 are compared to groundwater standards and guidance values presented in New York State Department of Environmental Conservation's (NYSDEC's) Technical and Operational Guidance Series Memo 1.1.1 (TOGS 1.1.1). 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 µg/L.

The analytical results for the samples from collected from wells MW-02 and MW-03 indicate the presence of Freon 113 at concentrations above the 5 µg/L groundwater standard for this compound. Freon 113 was detected at 83 µg/L in MW-02 (78 µg/L in the duplicate) and at 120 µg/L in MW-03.

The results also show that Freon 1113 was detected at a concentration above the 5 µg/L groundwater standard in the samples from MW-02 (480 µg/L in the primary sample, 380 µg/L in the duplicate), MW-03 (170 µg/L), MW-06 (84 µg/L), and MW-07R (69 µg/L).

Freon 123A was detected at concentrations above the groundwater standard of 5 µg/L in the samples from MW-02 and MW-03. Freon 123A was detected at 62 µg/L in MW-02 (50 µg/L in the duplicate) and 100 µg/L in MW-03.

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 17,100 to 74,300 µg/L, compared to the TOGS 1.1.1 groundwater standard of 300 µg/L.

The groundwater samples collected from the five wells were analyzed for dehalobacter and the sample from MW-03 was also analyzed for dehalococcoides. The analytical results, presented in Table 2, indicate that the dehalobacter concentrations were very low, ranging from 100 gene copies per milliliter (GC/mL) in MW-02, 20 CG/mL in MW-03 and below detection in MW-04, MW-06, and MW-07R. Dehalcoccoides was detected at a low concentration of 500 colony equivalents per milliliter (CEQ/mL) in MW-03.

Conclusions

The results of the July 2014 groundwater sampling event show that concentrations of Freon-113 increased in wells MW-02 and MW-03. The Freon-113 concentrations in both wells exceed the trigger concentration of 40 µg/L contained in the SMP. As a result of these findings, URS will prepare a work plan for the implementation of a remedial action consistent with the Contingency Treatment Plan. The work plan will be submitted to NYSDEC for approval which will allow the remedial action to occur in the third quarter of 2014.

Please call me at 716-923-1215 if you have any questions or comments regarding this report.

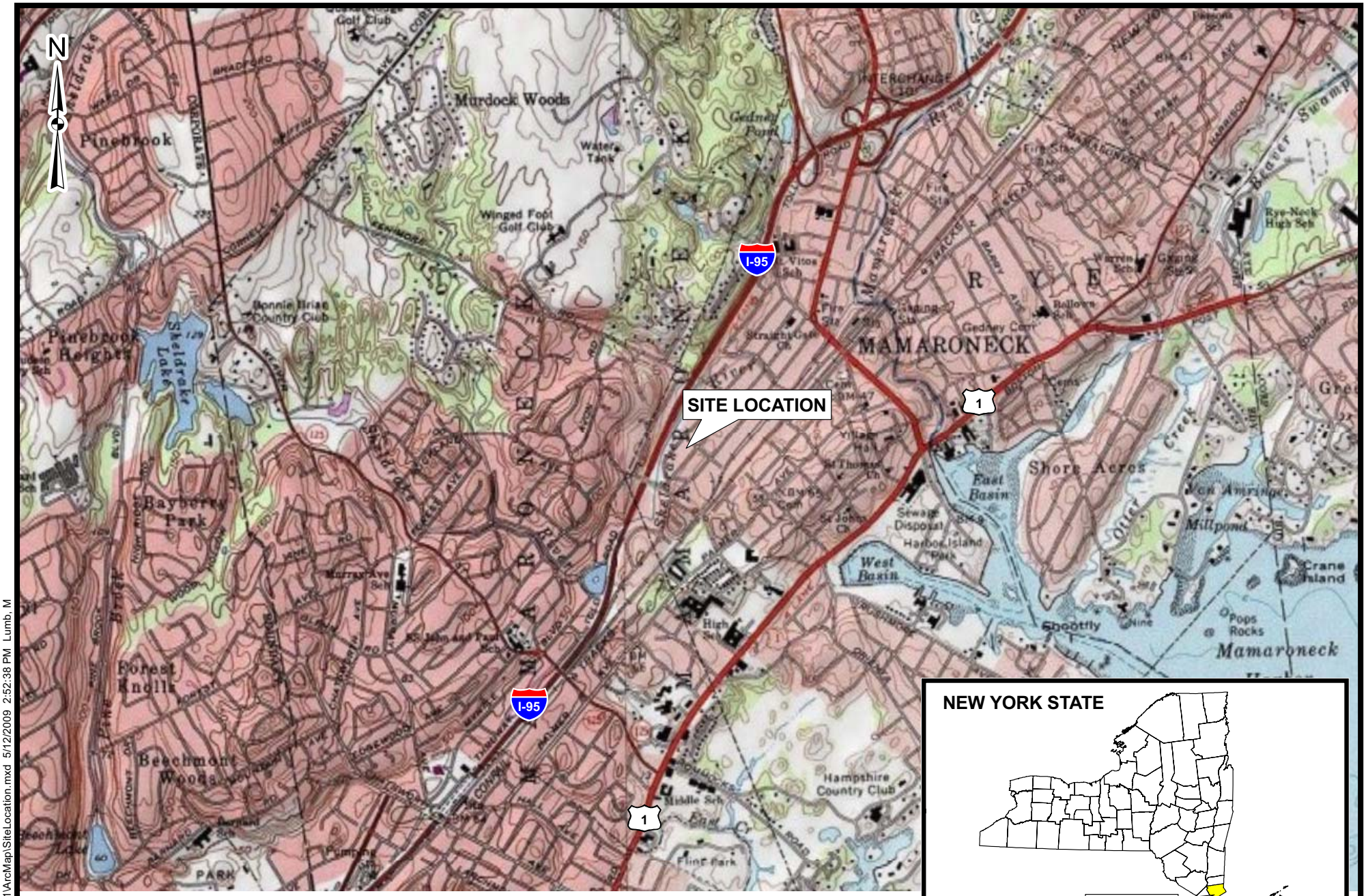
Sincerely,

URS Corporation

Kevin J. Shanahan
Project Manager

cc: Mr. Nathan Walz, NYSDOH (1 – CD)
Mr. Robert L.Casselberry, Dow (1 – Hard Copy, 1 - CD)
Mr. Louis Vetere, Cablevision (1 – Hard Copy)
Mr. Doug Gray, URS (1 – Hard Copy)
Mr. James Moras, NYSDEC (e-mail of Letter)
Ms. Margie Banzani, Dow (e-mail of PDF)
File: 11172730/C-1

FIGURES



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

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SITE LOCATION MAP

FIGURE 1

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N

MW-05

FAYETTE AVENUE

OGDEN AVENUE

MW-04

MW-07R

GATE

GATE

UTILITY POLE

ASPHALT PARKING LOT

MW-03

GATE

MW-06

MW-02

DUMPSTER

HVAC UNIT

EMERGENCY GENERATOR

COMMUNICATION TOWER

ASPHALT PARKING LOT

FORMER EMCA SITE BOUNDARY (APPROXIMATE)

GZ-06

CABLEVISION BUILDING

GZ-03

CENTER AVENUE

Legend

- Monitoring Well
- Overhead Utility
- Underground Utility

20 0 20 Feet

FORMER EMCA SITE PLAN

URS

FIGURE 2

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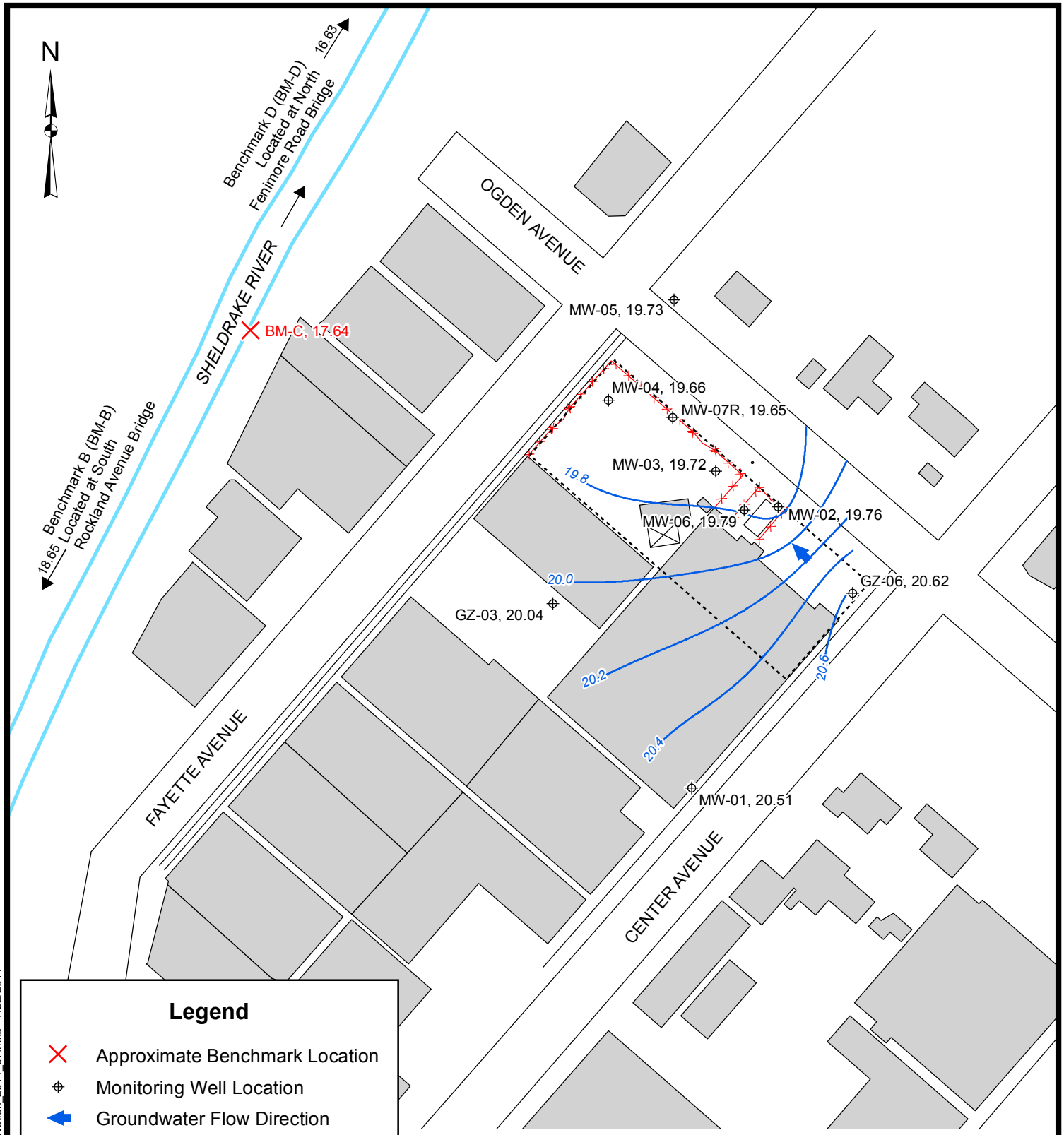

Legend

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

MW-05, 19.73

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 (JULY 1, 2014)

FIGURE 3

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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	4/14	7/14
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	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	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	ND	ND

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	4/14	7/14
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	100	120
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	62	100
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	96	170

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	4/14	7/14
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	ND	ND
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	ND	1.2
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	2.1	69

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	4/14	7/14
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	3.1	83
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	10	62
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	210	480

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	4/14	7/14
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	26	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	33	2.7
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	75	84

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 4

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TABLES

TABLE 1
GROUNDWATER ELEVATION MEASUREMENTS (July 1, 2014)
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	6.12	20.04
GZ-06	28.02	7.40	20.62
MW-01	25.74	5.23	20.51
MW-02	25.63	5.87	19.76
MW-03	25.59	5.87	19.72
MW-04	25.31	5.65	19.66
MW-05	24.63	5.90	18.73
MW-06	25.77	5.98	19.79
MW-07R	25.63	5.98	19.65
Benchmark B (Sheldrake River - South [Rockaway Avenue] Bridge)	32.21	13.56	18.65
Benchmark C[4] (Sheldrake River - between North and South Bridges)	--	--	17.39
Benchmark D (Sheldrake River - North [Fenimore Road] Bridge)	27.41	11.29	16.12

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 4/28/2014
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
JULY 2014
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-03	MW-04	MW-06
Sample ID			20140701MW-02V09N	Dup20140701	20140701MW-03V012N	20140701MW-04V09N	20140701MW-06V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/01/14	07/01/14	07/01/14	07/01/14	07/01/14
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatiles							
Chlorotrifluoroethene (Freon-1113)	UG/L	5	480	380	170	1.0 U	84
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	83	78	120	1.0 U	1.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	62	50	100	1.0 U	2.7
Dissolved Gases							
Methane	UG/L	-	12,000	8,000	15,000	1,300	11,000
Total Metals							
Iron	UG/L	300	73,100	74,300	26,800	17,900	17,100
Miscellaneous Parameters							
Alkalinity, Total (as CaCO3)	MG/L	-	254	292	253	295	259
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	254	292	253	295	259
Alkalinity, Carbonate (as CaCO3)	MG/L	-	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Alkalinity, Hydroxide	MG/L	-	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dehalococcoides ethenogenes	CEQ/mL	-	NA	NA	500	NA	NA
Dehalobacter	GC/mL	-	100	NA	20	3 U	3 U
Hardness (as CaCO3)	MG/L	-	436	356	337	614	317
Nitrogen, Nitrate	MG/L	10	0.10 U	0.11	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	MG/L	1	0.038 J	0.049 J	0.017 J	0.013 J	0.0092 J
Sulfate	MG/L	250	10.8	10.5	52.0	9.1	38.8
Total Organic Carbon	MG/L	-	9.2	10	7.0	11.4	6.0
Field Parameter							
Dissolved Oxygen	MG/L	-	2.38	NA	1.47	1.72	1.82
Ferrous Iron	MG/L	-	3.0	NA	4.5	6.5	5.0

*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

Detection Limits shown are PQL

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TABLE 2
GROUNDWATER ANALYTICAL RESULTS
JULY 2014
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-02	MW-02	MW-03	MW-04	MW-06
Sample ID			20140701MW-02V09N	Dup20140701	20140701MW-03V012N	20140701MW-04V09N	20140701MW-06V15N
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/01/14	07/01/14	07/01/14	07/01/14	07/01/14
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Field Parameter							
Oxidation-Reduction Potential	mV	-	-85	NA	-72	-67	-80
pH	S.U.	-	6.49	NA	6.69	6.62	6.78
Specific Conductance	MS/CM	-	2.13	NA	1.26	2.47	1.33
Temperature	DEG C	-	15.87	NA	19.59	21.90	19.20
Turbidity	NTU	-	2.7	NA	5.4	52.9	7.3

*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

Detection Limits shown are PQL

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TABLE 2
GROUNDWATER ANALYTICAL RESULTS
JULY 2014
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R
Sample ID			20140701MW-07RV17N
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			07/01/14
Parameter	**Units**	**Criteria***	
Volatiles			
Chlorotrifluoroethene (Freon-1113)	UG/L	5	69
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	UG/L	5	1.0 U
1,2-Dichloro-1,1,2-trifluoroethane (Freon-123A)	UG/L	5	1.2
Dissolved Gases			
Methane	UG/L	-	4,400
Total Metals			
Iron	UG/L	300	28,700
Miscellaneous Parameters			
Alkalinity, Total (as CaCO3)	MG/L	-	399
Alkalinity, Bicarbonate (as CaCO3)	MG/L	-	399
Alkalinity, Carbonate (as CaCO3)	MG/L	-	5.0 U
Alkalinity, Hydroxide	MG/L	-	5.0 U
Dehalococcoides ethenogenes	CEQ/mL	-	NA
Dehalobacter	GC/mL	-	4 U
Hardness (as CaCO3)	MG/L	-	545
Nitrogen, Nitrate	MG/L	10	0.076 J
Nitrogen, Nitrite	MG/L	1	0.014 J
Sulfate	MG/L	250	13.8
Total Organic Carbon	MG/L	-	11.4
Field Parameter			
Dissolved Oxygen	MG/L	-	1.74
Ferrous Iron	MG/L	-	6.0

*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

Detection Limits shown are PQL

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TABLE 2
GROUNDWATER ANALYTICAL RESULTS
JULY 2014
FORMER EMCA SITE, MAMARONECK, NEW YORK

Location ID			MW-07R
Sample ID			20140701MW-07RV17N
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			07/01/14
Parameter	**Units**	**Criteria***	
Field Parameter			
Oxidation-Reduction Potential	mV	-	-68
pH	S.U.	-	6.64
Specific Conductance	MS/CM	-	2.58
Temperature	DEG C	-	19.41
Turbidity	NTU	-	20.7

*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

Detection Limits shown are PQL

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ATTACHMENT A

PORTIONS OF ANALYTICAL REPORTS

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 460-78754-1

Job Description: Rohm and Haas - Former EMCA Site

For:
URS Corporation
257 W. Genesee Street
Buffalo, NY 14203

Attention: Kevin Shanahan

Approved for release.
Shalini Isaac
Project Management Assistant II
7/16/2014 12:55 PM

Designee for
Kristin M Beebe, Project Manager II
777 New Durham Road, Edison, NJ, 08817
(732)593-2555
kristin.beebe@testamericainc.com
07/16/2014

cc: Mr. Peter R Fairbanks

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Edison Project Manager.

TestAmerica Edison Certifications and Approvals: Connecticut: CTDOH #PH-0200, New Jersey: NJDEP (NELAP) #12028, New York: NYDOH (NELAP) #11452, NYDOH (ELAP) #11452, Pennsylvania: PADEP (NELAP) 68-00522 and Rhode Island: RIDOH LAO00132

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CASE NARRATIVE

Client: URS Corporation

Project: Rohm and Haas - Former EMCA Site

Report Number: 460-78754-1

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 7/1/2014 6:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.4º C and 3.4º 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 ORGANICS

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5), TB20140701 (460-78754-7) and Dup20140701 (460-78754-8) were analyzed for Volatile organics in accordance with EPA SW-846 Methods 8260C. The samples were analyzed on 07/12/2014 and 07/15/2014.

Freon TF failed the recovery criteria low for the MS/MSD of sample 20140701MW-03V012NMS (460-78754-2) in batch 460-235885. The presence of the '4' qualifier in the data 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 Volatile organics analysis.

All other quality control parameters were within the acceptance limits.

DISSOLVED GASES

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5), TB20140701 (460-78754-7) and Dup20140701 (460-78754-8) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 07/05/2014.

Samples 20140701MW-02V09N (460-78754-1)[500X], 20140701MW-03V012N (460-78754-2)[100X], 20140701MW-04V09N (460-78754-3)[50X], 20140701MW-06V15N (460-78754-4)[200X], 20140701MW-07RV17N (460-78754-5)[50X] and Dup20140701 (460-78754-8)[100X] 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: 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-03V012N (460-78754-2 MS), 20140701MW-03V012N (460-78754-2 MSD), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5), Dup20140701 (460-78754-8). Elevated reporting limits (RLs) are provided.

No other difficulties were encountered during the dissolved gases analysis.

All quality control parameters were within the acceptance limits.

TOTAL RECOVERABLE METALS

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5) and Dup20140701 (460-78754-8) were analyzed for total recoverable metals in accordance with EPA Method 200.7 (ICP). The samples were prepared and analyzed on 07/03/2014 and 07/07/2014.

No difficulties were encountered during the metals analysis.

All quality control parameters were within the acceptance limits.

ALKALINITY

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5) and Dup20140701 (460-78754-8) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 07/03/2014.

No difficulties were encountered during the alkalinity analysis.

All quality control parameters were within the acceptance limits.

HARDNESS

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5) and Dup20140701 (460-78754-8) were analyzed for hardness in accordance with SM 2340C. The samples were analyzed on 07/15/2014.

No difficulties were encountered during the hardness analysis.

All quality control parameters were within the acceptance limits.

SULFATE

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5) and Dup20140701 (460-78754-8) were analyzed for sulfate in accordance with ASTM Method D516-90. The samples were analyzed on 07/09/2014.

Sample 20140701MW-03V012N (460-78754-2)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the sulfate analysis.

All quality control parameters were within the acceptance limits.

NITROGEN-NITRATE

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5) and Dup20140701 (460-78754-8) were analyzed for Nitrogen-Nitrate in accordance with SM 4500 NO3 F. The samples were analyzed on 07/03/2014.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch234464 were outside control limits for NO2. Sample matrix interference and/or non-homogeneity are suspected because the associated l.aboratory control sample (LCS) recovery was within acceptance limits.

Nitrite as N failed the recovery criteria low for the MS/MSD of sample 20140701MW-03V012NMS (460-78754-2) in batch 460-234464.

Refer to the QC report for details.

No other difficulties were encountered during the Niitrate analysis.

All other quality control parameters were within the acceptance limits.

TOTAL ORGANIC CARBON

Samples 20140701MW-02V09N (460-78754-1), 20140701MW-03V012N (460-78754-2), 20140701MW-04V09N (460-78754-3), 20140701MW-06V15N (460-78754-4), 20140701MW-07RV17N (460-78754-5) and Dup20140701 (460-78754-8) were analyzed for total organic carbon in accordance with SM 5310B. The samples were analyzed on 07/10/2014.

No difficulties were encountered during the TOC analysis.

All quality control parameters were within the acceptance limits.

SAMPLE SUMMARY

Client: URS Corporation

Job Number: 460-78754-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
460-78754-1	20140701MW-02V09N	Water	07/01/2014 0845	07/01/2014 1810
460-78754-2	20140701MW-03V012N	Water	07/01/2014 1155	07/01/2014 1810
460-78754-2MS	20140701MW-03V012N	Water	07/01/2014 1210	07/01/2014 1810
460-78754-2MSD	20140701MW-03V012N	Water	07/01/2014 1210	07/01/2014 1810
460-78754-2DU	20140701MW-03V012N	Water	07/01/2014 1155	07/01/2014 1810
460-78754-3	20140701MW-04V09N	Water	07/01/2014 1345	07/01/2014 1810
460-78754-4	20140701MW-06V15N	Water	07/01/2014 1035	07/01/2014 1810
460-78754-5	20140701MW-07RV17N	Water	07/01/2014 1450	07/01/2014 1810
460-78754-7TB	TB20140701	Water	07/01/2014 1450	07/01/2014 1810
460-78754-8	Dup20140701	Water	07/01/2014 1200	07/01/2014 1810

EXECUTIVE SUMMARY - Detections

Client: URS Corporation

Job Number: 460-78754-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
460-78754-1	**20140701MW-02V09N**					
Freon TF		83		1.0	ug/L	8260C
Chlorotrifluoroethene		480		1.0	ug/L	8260C
1,2-Dichloro-1,1,2-trifluoroethane		62		1.0	ug/L	8260C
Methane		12000		2000	ug/L	RSK-175
Sulfate		10.8		5.0	mg/L	D516-90, 02
Bicarbonate Alkalinity as CaCO3		254		5.0	mg/L	SM 2320B
Alkalinity		254		5.0	mg/L	SM 2320B
Hardness as calcium carbonate		436		25.0	mg/L	SM 2340C
Nitrite as N		0.038	J	0.10	mg/L	SM 4500 NO3 F
Total Organic Carbon		9.2		1.0	mg/L	SM 5310B
Total Recoverable						
Iron		73100		150	ug/L	200.7 Rev 4.4
460-78754-2	**20140701MW-03V012N**					
Freon TF		120		1.0	ug/L	8260C
Chlorotrifluoroethene		170		1.0	ug/L	8260C
1,2-Dichloro-1,1,2-trifluoroethane		100		1.0	ug/L	8260C
Methane		15000		400	ug/L	RSK-175
Sulfate		52.0		10.0	mg/L	D516-90, 02
Bicarbonate Alkalinity as CaCO3		253		5.0	mg/L	SM 2320B
Alkalinity		253		5.0	mg/L	SM 2320B
Hardness as calcium carbonate		337		25.0	mg/L	SM 2340C
Nitrite as N		0.017	J	0.10	mg/L	SM 4500 NO3 F
Total Organic Carbon		7.0		1.0	mg/L	SM 5310B
Total Recoverable						
Iron		26800		150	ug/L	200.7 Rev 4.4
460-78754-3	**20140701MW-04V09N**					
Methane		1300		200	ug/L	RSK-175
Sulfate		9.1		5.0	mg/L	D516-90, 02
Bicarbonate Alkalinity as CaCO3		295		5.0	mg/L	SM 2320B
Alkalinity		295		5.0	mg/L	SM 2320B
Hardness as calcium carbonate		614		25.0	mg/L	SM 2340C
Nitrite as N		0.013	J	0.10	mg/L	SM 4500 NO3 F
Total Organic Carbon		11.4		1.0	mg/L	SM 5310B
Total Recoverable						
Iron		17900		150	ug/L	200.7 Rev 4.4

EXECUTIVE SUMMARY - Detections

Client: URS Corporation Job Number: 460-78754-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
460-78754-4	**20140701MW-06V15N**					
Chlorotrifluoroethene		84		1.0	ug/L	8260C
1,2-Dichloro-1,1,2-trifluoroethane		2.7		1.0	ug/L	8260C
Methane		11000		800	ug/L	RSK-175
Sulfate		38.8		5.0	mg/L	D516-90, 02
Bicarbonate Alkalinity as CaCO3		259		5.0	mg/L	SM 2320B
Alkalinity		259		5.0	mg/L	SM 2320B
Hardness as calcium carbonate		317		25.0	mg/L	SM 2340C
Nitrite as N		0.0092	J	0.10	mg/L	SM 4500 NO3 F
Total Organic Carbon		6.0		1.0	mg/L	SM 5310B
Total Recoverable						
Iron		17100		150	ug/L	200.7 Rev 4.4
460-78754-5	**20140701MW-07RV17N**					
Chlorotrifluoroethene		69		1.0	ug/L	8260C
1,2-Dichloro-1,1,2-trifluoroethane		1.2		1.0	ug/L	8260C
Methane		4400		200	ug/L	RSK-175
Sulfate		13.8		5.0	mg/L	D516-90, 02
Bicarbonate Alkalinity as CaCO3		399		5.0	mg/L	SM 2320B
Alkalinity		399		5.0	mg/L	SM 2320B
Hardness as calcium carbonate		545		25.0	mg/L	SM 2340C
Nitrate as N		0.076	J	0.10	mg/L	SM 4500 NO3 F
Nitrite as N		0.014	J	0.10	mg/L	SM 4500 NO3 F
Total Organic Carbon		11.4		1.0	mg/L	SM 5310B
Total Recoverable						
Iron		28700		150	ug/L	200.7 Rev 4.4
460-78754-8	**DUP20140701**					
Freon TF		78		1.0	ug/L	8260C
Chlorotrifluoroethene		380		1.0	ug/L	8260C
1,2-Dichloro-1,1,2-trifluoroethane		50		1.0	ug/L	8260C
Methane		8000		400	ug/L	RSK-175
Sulfate		10.5		5.0	mg/L	D516-90, 02
Bicarbonate Alkalinity as CaCO3		292		5.0	mg/L	SM 2320B
Alkalinity		292		5.0	mg/L	SM 2320B
Hardness as calcium carbonate		356		25.0	mg/L	SM 2340C
Nitrate as N		0.11		0.10	mg/L	SM 4500 NO3 F
Nitrite as N		0.049	J	0.10	mg/L	SM 4500 NO3 F
Total Organic Carbon		10		1.0	mg/L	SM 5310B
Total Recoverable						
Iron		74300		150	ug/L	200.7 Rev 4.4

METHOD SUMMARY

Client: URS Corporation

Job Number: 460-78754-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS	TAL EDI	SW846 8260C	
Purge and Trap	TAL EDI		SW846 5030C
Metals (ICP)	TAL EDI	EPA 200.7 Rev 4.4	
Preparation, Total Recoverable Metals	TAL EDI		EPA 200.7
Sulfate	TAL EDI	ASTM D516-90, 02	
Alkalinity	TAL EDI	SM SM 2320B	
Hardness, Total (mg/l as CaC03)	TAL EDI	SM SM 2340C	
Nitrogen, Nitrate	TAL EDI	SM SM 4500 NO3 F	
Organic Carbon, Total (TOC)	TAL EDI	SM SM 5310B	
Dissolved Gases (GC)	TAL BUF	RSK RSK-175	

Lab References:

TAL BUF = TestAmerica Buffalo

TAL EDI = TestAmerica Edison

Method References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: URS Corporation

Job Number: 460-78754-1

Method	Analyst	Analyst ID
SW846 8260C	Tupayachi, Audberto	AAT
RSK RSK-175	Neary, Mary A	MAN
EPA 200.7 Rev 4.4	Chang, Churn Der	CDC
EPA 200.7 Rev 4.4	Patel, Purva H	PHP
ASTM D516-90, 02	Cabanganan, Maria	MCC
SM SM 2320B	Cabanganan, Maria	MCC
SM SM 2340C	Kamenetskaya, Raisa	RAK
SM SM 4500 NO3 F	Kamenetskaya, Raisa	RAK
SM SM 5310B	Vu, Huan	HTV

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-02V09N**

Lab Sample ID: 460-78754-1
Client Matrix: Water

Date Sampled: 07/01/2014 0845
Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-235885	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70698.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/12/2014 1535			Final Weight/Volume:	5 mL
Prep Date:	07/12/2014 1535				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	83		0.080	1.0
Chlorotrifluoroethene	480		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	62		0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	110		70 - 130
Toluene-d8 (Surr)	99		70 - 130
Bromofluorobenzene	90		64 - 135
Dibromofluoromethane (Surr)	101		72 - 137

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-03V012N**

Lab Sample ID: 460-78754-2
Client Matrix: Water

Date Sampled: 07/01/2014 1155
Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-235885	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70691.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/12/2014 1254			Final Weight/Volume:	5 mL
Prep Date:	07/12/2014 1254				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	120		0.080	1.0
Chlorotrifluoroethene	170		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	100		0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	105		70 - 130
Toluene-d8 (Surr)	97		70 - 130
Bromofluorobenzene	92		64 - 135
Dibromofluoromethane (Surr)	102		72 - 137

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-04V09N**

Lab Sample ID: 460-78754-3
Client Matrix: Water

Date Sampled: 07/01/2014 1345
Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-235885	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70699.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/12/2014 1558			Final Weight/Volume:	5 mL
Prep Date:	07/12/2014 1558				

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)	115		70 - 130
Toluene-d8 (Surr)	96		70 - 130
Bromofluorobenzene	90		64 - 135
Dibromofluoromethane (Surr)	104		72 - 137

Client: URS Corporation Job Number: 460-78754-1

Client Sample ID: **20140701MW-06V15N**

Lab Sample ID: 460-78754-4 Date Sampled: 07/01/2014 1035
Client Matrix: Water Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-235885	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70700.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/12/2014 1621			Final Weight/Volume:	5 mL
Prep Date:	07/12/2014 1621				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	84		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	2.7		0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	125		70 - 130
Toluene-d8 (Surr)	107		70 - 130
Bromofluorobenzene	100		64 - 135
Dibromofluoromethane (Surr)	116		72 - 137

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-07RV17N**

Lab Sample ID: 460-78754-5
Client Matrix: Water

Date Sampled: 07/01/2014 1450
Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-235885	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70692.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/12/2014 1317			Final Weight/Volume:	5 mL
Prep Date:	07/12/2014 1317				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	0.080	U	0.080	1.0
Chlorotrifluoroethene	69		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	1.2		0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	110		70 - 130
Toluene-d8 (Surr)	96		70 - 130
Bromofluorobenzene	91		64 - 135
Dibromofluoromethane (Surr)	103		72 - 137

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **TB20140701**

Lab Sample ID: 460-78754-7TB
Client Matrix: Water

Date Sampled: 07/01/2014 1450
Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-235885	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70679.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/12/2014 0815			Final Weight/Volume:	5 mL
Prep Date:	07/12/2014 0815				

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)	108		70 - 130
Toluene-d8 (Surr)	98		70 - 130
Bromofluorobenzene	89		64 - 135
Dibromofluoromethane (Surr)	102		72 - 137

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **Dup20140701**

Lab Sample ID: 460-78754-8
Client Matrix: Water

Date Sampled: 07/01/2014 1200
Date Received: 07/01/2014 1810

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	460-236286	Instrument ID:	CVOAMS2
Prep Method:	5030C	Prep Batch:	N/A	Lab File ID:	B70807.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	07/15/2014 1220			Final Weight/Volume:	5 mL
Prep Date:	07/15/2014 1220				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Freon TF	78		0.080	1.0
Chlorotrifluoroethene	380		0.18	1.0
1,2-Dichloro-1,1,2-trifluoroethane	50		0.84	1.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	102		70 - 130
Toluene-d8 (Surr)	94		70 - 130
Bromofluorobenzene	94		64 - 135
Dibromofluoromethane (Surr)	102		72 - 137

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-02V09N**

Lab Sample ID: 460-78754-1
Client Matrix: Water

Date Sampled: 07/01/2014 0845
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	500			Final Weight/Volume:	
Analysis Date:	07/05/2014 1155			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	12000		500	2000

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-03V012N**

Lab Sample ID: 460-78754-2
Client Matrix: Water

Date Sampled: 07/01/2014 1155
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	100			Final Weight/Volume:	
Analysis Date:	07/05/2014 1109			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	15000		100	400

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-04V09N**

Lab Sample ID: 460-78754-3
Client Matrix: Water

Date Sampled: 07/01/2014 1345
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	50			Final Weight/Volume:	
Analysis Date:	07/05/2014 0942			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	1300		50	200

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-06V15N**

Lab Sample ID: 460-78754-4
Client Matrix: Water

Date Sampled: 07/01/2014 1035
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	200			Final Weight/Volume:	
Analysis Date:	07/05/2014 1212			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	11000		200	800

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-07RV17N**

Lab Sample ID: 460-78754-5
Client Matrix: Water

Date Sampled: 07/01/2014 1450
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	50			Final Weight/Volume:	
Analysis Date:	07/05/2014 1026			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	4400		50	200

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **TB20140701**

Lab Sample ID: 460-78754-7TB
Client Matrix: Water

Date Sampled: 07/01/2014 1450
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	1.0			Final Weight/Volume:	
Analysis Date:	07/05/2014 1138			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	1.0	U	1.0	4.0

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **Dup20140701**

Lab Sample ID: 460-78754-8
Client Matrix: Water

Date Sampled: 07/01/2014 1200
Date Received: 07/01/2014 1810

RSK-175 Dissolved Gases (GC)

Analysis Method:	RSK-175	Analysis Batch:	480-191318	Instrument ID:	HP5890-21
	N/A		N/A	Initial Weight/Volume:	1 mL
Dilution:	100			Final Weight/Volume:	
Analysis Date:	07/05/2014 1052			Injection Volume:	1 uL
Prep Date:	N/A			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Methane	8000		100	400

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-02V09N**

Lab Sample ID: 460-78754-1
Client Matrix: Water

Date Sampled: 07/01/2014 0845
Date Received: 07/01/2014 1810

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-234438	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-234408	Lab File ID:	07032014.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	07/03/2014 1424			Final Weight/Volume:	100 mL
Prep Date:	07/03/2014 1019				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	73100		77.9	150

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-03V012N**

Lab Sample ID: 460-78754-2
Client Matrix: Water

Date Sampled: 07/01/2014 1155
Date Received: 07/01/2014 1810

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-234438	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-234408	Lab File ID:	07032014.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	07/03/2014 1307			Final Weight/Volume:	100 mL
Prep Date:	07/03/2014 1019				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	26800		77.9	150

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-04V09N**

Lab Sample ID: 460-78754-3
Client Matrix: Water

Date Sampled: 07/01/2014 1345
Date Received: 07/01/2014 1810

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-234438	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-234408	Lab File ID:	07032014.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	07/03/2014 1428			Final Weight/Volume:	100 mL
Prep Date:	07/03/2014 1019				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	17900		77.9	150

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-06V15N**

Lab Sample ID: 460-78754-4
Client Matrix: Water

Date Sampled: 07/01/2014 1035
Date Received: 07/01/2014 1810

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-234438	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-234408	Lab File ID:	07032014.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	07/03/2014 1432			Final Weight/Volume:	100 mL
Prep Date:	07/03/2014 1021				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	17100		77.9	150

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **20140701MW-07RV17N**

Lab Sample ID: 460-78754-5
Client Matrix: Water

Date Sampled: 07/01/2014 1450
Date Received: 07/01/2014 1810

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-234870	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-234805	Lab File ID:	07072014.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	07/07/2014 2130			Final Weight/Volume:	100 mL
Prep Date:	07/07/2014 1452				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	28700		77.9	150

Client: URS Corporation

Job Number: 460-78754-1

Client Sample ID: **Dup20140701**

Lab Sample ID: 460-78754-8
Client Matrix: Water

Date Sampled: 07/01/2014 1200
Date Received: 07/01/2014 1810

200.7 Rev 4.4 Metals (ICP)-Total Recoverable

Analysis Method:	200.7 Rev 4.4	Analysis Batch:	460-234870	Instrument ID:	ICP5
Prep Method:	200.7	Prep Batch:	460-234805	Lab File ID:	07072014.asc
Dilution:	1.0			Initial Weight/Volume:	100 mL
Analysis Date:	07/07/2014 2134			Final Weight/Volume:	100 mL
Prep Date:	07/07/2014 1452				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Iron	74300		77.9	150

General Chemistry

Client Sample ID: **20140701MW-02V09N**

Lab Sample ID: 460-78754-1 Date Sampled: 07/01/2014 0845
Client Matrix: Water Date Received: 07/01/2014 1810

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	10.8		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-235348	Analysis Date: 07/09/2014 1334						
Bicarbonate Alkalinity as CaCO3	254		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1046						
Carbonate Alkalinity as CaCO3	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1046						
Alkalinity	254		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1046						
Hydroxide Alkalinity	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1046						
Hardness as calcium carbonate	436		mg/L	25.0	25.0	1.0	SM 2340C
Analysis Batch: 460-236442	Analysis Date: 07/15/2014 1603						
Nitrate as N	0.047	U	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0741						
Nitrite as N	0.038	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0741						
Total Organic Carbon	9.2		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-235511	Analysis Date: 07/10/2014 0123						

General Chemistry

Client Sample ID: **20140701MW-03V012N**

Lab Sample ID: 460-78754-2 Date Sampled: 07/01/2014 1155
Client Matrix: Water Date Received: 07/01/2014 1810

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	52.0		mg/L	4.3	10.0	2.0	D516-90, 02
Analysis Batch: 460-235348	Analysis Date: 07/09/2014 1349						
Bicarbonate Alkalinity as CaCO3	253		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1035						
Carbonate Alkalinity as CaCO3	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1035						
Alkalinity	253		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1035						
Hydroxide Alkalinity	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1035						
Hardness as calcium carbonate	337		mg/L	25.0	25.0	1.0	SM 2340C
Analysis Batch: 460-236442	Analysis Date: 07/15/2014 1603						
Nitrate as N	0.047	U	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0745						
Nitrite as N	0.017	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0745						
Total Organic Carbon	7.0		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-235511	Analysis Date: 07/10/2014 0019						

General Chemistry

Client Sample ID: **20140701MW-04V09N**

Lab Sample ID: 460-78754-3 Date Sampled: 07/01/2014 1345
Client Matrix: Water Date Received: 07/01/2014 1810

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	9.1		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-235348	Analysis Date: 07/09/2014 1336						
Bicarbonate Alkalinity as CaCO3	295		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1052						
Carbonate Alkalinity as CaCO3	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1052						
Alkalinity	295		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1052						
Hydroxide Alkalinity	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1052						
Hardness as calcium carbonate	614		mg/L	25.0	25.0	1.0	SM 2340C
Analysis Batch: 460-236442	Analysis Date: 07/15/2014 1603						
Nitrate as N	0.047	U	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0804						
Nitrite as N	0.013	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0804						
Total Organic Carbon	11.4		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-235511	Analysis Date: 07/10/2014 0144						

General Chemistry

Client Sample ID: **20140701MW-06V15N**

Lab Sample ID: 460-78754-4 Date Sampled: 07/01/2014 1035
Client Matrix: Water Date Received: 07/01/2014 1810

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	38.8		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-235348	Analysis Date: 07/09/2014 1336						
Bicarbonate Alkalinity as CaCO3	259		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1058						
Carbonate Alkalinity as CaCO3	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1058						
Alkalinity	259		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1058						
Hydroxide Alkalinity	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1058						
Hardness as calcium carbonate	317		mg/L	25.0	25.0	1.0	SM 2340C
Analysis Batch: 460-236442	Analysis Date: 07/15/2014 1603						
Nitrate as N	0.047	U	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0744						
Nitrite as N	0.0092	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0744						
Total Organic Carbon	6.0		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-235511	Analysis Date: 07/10/2014 0204						

General Chemistry

Client Sample ID: **20140701MW-07RV17N**

Lab Sample ID: 460-78754-5 Date Sampled: 07/01/2014 1450
Client Matrix: Water Date Received: 07/01/2014 1810

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	13.8		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-235348	Analysis Date: 07/09/2014 1336						
Bicarbonate Alkalinity as CaCO3	399		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1103						
Carbonate Alkalinity as CaCO3	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1103						
Alkalinity	399		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1103						
Hydroxide Alkalinity	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1103						
Hardness as calcium carbonate	545		mg/L	25.0	25.0	1.0	SM 2340C
Analysis Batch: 460-236442	Analysis Date: 07/15/2014 1603						
Nitrate as N	0.076	J	mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0806						
Nitrite as N	0.014	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0806						
Total Organic Carbon	11.4		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-235511	Analysis Date: 07/10/2014 0225						

General Chemistry

Client Sample ID: **Dup20140701**

Lab Sample ID: 460-78754-8 Date Sampled: 07/01/2014 1200
Client Matrix: Water Date Received: 07/01/2014 1810

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	10.5		mg/L	2.2	5.0	1.0	D516-90, 02
Analysis Batch: 460-235348	Analysis Date: 07/09/2014 1336						
Bicarbonate Alkalinity as CaCO3	292		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1109						
Carbonate Alkalinity as CaCO3	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1109						
Alkalinity	292		mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1109						
Hydroxide Alkalinity	5.0	U	mg/L	5.0	5.0	1.0	SM 2320B
Analysis Batch: 460-234490	Analysis Date: 07/03/2014 1109						
Hardness as calcium carbonate	356		mg/L	25.0	25.0	1.0	SM 2340C
Analysis Batch: 460-236442	Analysis Date: 07/15/2014 1603						
Nitrate as N	0.11		mg/L	0.047	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0803						
Nitrite as N	0.049	J	mg/L	0.0041	0.10	1.0	SM 4500 NO3 F
Analysis Batch: 460-234464	Analysis Date: 07/03/2014 0803						
Total Organic Carbon	10		mg/L	0.30	1.0	1.0	SM 5310B
Analysis Batch: 460-235511	Analysis Date: 07/10/2014 0246						

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CHAIN OF CUSTODY / ANALYSIS REQUEST

Page 1 of 1

Name (for report and invoice): Peter Fairbanks
Company: VRS Corp
Address: 257 West Genesee St
City: Buffalo State: NY 14202
Phone: 716-856-5636 Fax:

Samplers Name (Printed): Megan Dascoli
P.O. #: 4569901.10000

Analysis Turnaround Time: Standard [X]
Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]

Site/Project Identification: Dow, Former EMCA, Mamaroneck, NY
State (Location of site): NJ: [ ] NY: [X] Other:
Regulatory Program:

LAB USE ONLY
Project No:
Job No: 78754

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

Sample Identification	Date	Time	Matrix	No. of Cont.	D516 Sulfate	SM4500-NO3-E-local method	200.7 Iron	2340C Hardness as CaCarbonate	SM5310B TOC	8260C-Freon	2320B-Alkalinity Local Method	RSK-175 Methane				Sample Numbers
20140701MW-02V09N	7/1/14	0845	GW	10	X	X	X	X	X	X	X	X			1	
20140701MW-03V12N	↓	1155	↓	10	X	X	X	X	X	X	X	X			2	
20140701MW-04V09N	↓	1345	↓	10	X	X	X	X	X	X	X	X			3	
20140701MW-06V15N	↓	1035	↓	10	X	X	X	X	X	X	X	X			4	
20140701MW-07RV17N	↓	1450	↓	10	X	X	X	X	X	X	X	X			5	
20140701MW-03V12N MS/MSD	↓	1210	↓	20	X	X	X	X	X	X	X	X			6	2 ms/msd
TB20140701	↓	1450	W	8						X		X			7	
DUP20140701	↓	1200	GW	10	X	X	X	X	X	X	X	X			8	
Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:												
6 = Other ______, 7 = Other ______				Water:	1	1	1,4	1,4	1,3	1,2	1	1,2				

SHORT HOLD

Special Instructions ______ Water Metals Filtered (Yes/No)? ______

Relinquished by	Company	Date / Time	Received by	Company
Megan Dascoli	VRS Corp	7/1/14 16:00	1) B. Sommi T.A.	07-01-14-16:00
2) [signature]	T.A. N.Y.C.	7/1/14 18:10	2) [signature] 1810 TA	7/1/14
3)			3)	
4)			4)	

460-78754 Chain of Custody

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Ri
Massachusetts (M-NJ312), North Carolina (No. 578) 1.5 / 3.4 1.5 / 3.4 IR6 Wet

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: Peter Fairbanks, URS. Corp
Project: Dow, Former EMCA, Mamaroneck, NY
Customer Reference: 41569901.10000

SiREM Reference: S-3263
Report Date: 15-July-14
Data Files: MyiQ-DHC-QPCR-1130
MyiQ-DB-DHC-QPCR-0486

Table 1a: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhc *	*Dehalococcoides* Enumeration/Liter **
20140701MW-03V12N	DHC-10609	1-Jul-14	Groundwater	0.1 - 0.4 %	5×10^5

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 quantification limit.
B Analyte was detected in the method blank within an order of magnitude of the test sample
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 sample.

Analyst: **Ben Reside**
Laboratory Technician

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

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

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

Customer: Peter Fairbanks, URS. Corp
Project: Dow, Former EMCA, Mamaroneck, NY
Customer Reference: 41569901.10000

SiREM Reference: S-3263
Report Date: 15-July-14
Data Files: iQ5-DHB-QPCR-0305
iQ5-DB-DHB-QPCR-0119
MyiQ-DB-DHB-QPCR-0120

Table 1b: Test Results

Customer Sample ID	SiREM Sample ID	Sample Collection Date	Sample Matrix	Percent Dhb *	*Dehalobacter* 16S rRNA Gene Copies/Liter
20140701MW-02V09N	DHB-1148	1-Jul-14	Groundwater	0.02 - 0.05 %	1×10^5
20140701MW-03V12N	DHB-1149	1-Jul-14	Groundwater	0.004 - 0.01 %	2×10^4
20140701MW-04V09N	DHB-1150	1-Jul-14	Groundwater	NA	3×10^3 U
20140701MW-06V15N	DHB-1151	1-Jul-14	Groundwater	NA	3×10^3 U
20140701MW-07RV17N	DHB-1152	1-Jul-14	Groundwater	NA	4×10^3 U

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 detected in the method blank within an order of magnitude of the test sample.
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: _____
Ben Reside
Laboratory Technician

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

Table 2.1 Detailed Test Parameters, Test Reference S-3263

Customer Sample ID	20140701MW-02V09N	20140701MW-03V12N	20140701MW-04V09N
SiREM Dhc Sample ID	NA	DHC-10609	NA
SiREM Dhb Sample ID	DHB-1148	DHB-1149	DHB-1150
Date Received	2-Jul-14	2-Jul-14	2-Jul-14
Sample Temperature	4°C	4°C	4°C
Filtration Date	7-Jul-14	7-Jul-14	7-Jul-14
Volume Used for DNA Extraction	500 mL	500 mL	500 mL
DNA Extraction Date	7-Jul-14	7-Jul-14	7-Jul-14
DNA Concentration in Sample (extractable)	1188 ng/L	884 ng/L	1625 ng/L
PCR Amplifiable DNA	Detected	Detected	Detected
Dhc qPCR Date Analyzed	NA	11-Jul-14	NA
Dhb qPCR Date Analyzed	15-Jul-14	15-Jul-14	15-Jul-14
qPCR Controls (see Tables 3 & 4)	Passed	Passed	Passed
Comments	--	--	--

Notes:

Refer to Tables 3 & 4 for detailed results of controls.
°C = degrees Celsius
Dhc = *Dehalococcoides*
Dhb = *Dehalobacter*
DNA = Deoxyribonucleic acid
mL = milliliters
NA = Not applicable
ng/L = nanograms per liter
PCR = polymerase chain reaction
qPCR = quantitative PCR

Table 2.2: Detailed Test Parameters, Test Reference S-3263

Customer Sample ID	20140701MW-06V15N	20140701MW-07V17N
SiREM Dhc Sample ID	NA	NA
SiREM Dhb Sample ID	DHB-1151	DHB-1152
Date Received	2-Jul-14	2-Jul-14
Sample Temperature	4°C	4°C
Filtration Date	8-Jul-14	8-Jul-14
Volume Used for DNA Extraction	500 mL	300 ml
DNA Extraction Date	9-Jul-14	9-Jul-14
DNA Concentration in Sample (extractable)	653 ng/L	<1000 ng/L [1]
PCR Amplifiable DNA	Detected	Detected
Dhc qPCR Date Analyzed	NA	NA
Dhb qPCR Date Analyzed	15-Jul-14	15-Jul-14
qPCR Controls (see Tables 3 & 4)	Passed	Passed
Comments	--	--

Notes:

Refer to Tables 3 & 4 for detailed results of controls.

[1] Detected below stated detection limit.

°C = degrees Celsius

Dhc = *Dehalococcoides*

Dhb = *Dehalobacter*

DNA = Deoxyribonucleic acid

mL = milliliters

NA = Not applicable

ng/L = nanograms per liter

PCR = polymerase chain reaction

qPCR = quantitative PCR

Table 3: Gene-Trac Dhc Control Results, Test Reference S-3263

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	11-Jul-14	qPCR with KB1 genomic DNA (CSLD-0768)	1.4×10^5	1.6×10^5	--
Positive Control High Concentration	11-Jul-14	qPCR with KB1 genomic DNA (CSHD-0768)	1.5×10^7	8.7×10^6	--
DNA Extraction Blank	9-Jul-14	DNA extraction sterile water (FB-2218)	0	2.6×10^3 U	--
DNA Extraction Blank	11-Jul-14	DNA extraction sterile water (FB-2222)	0	2.6×10^3 U	--
Negative Control	11-Jul-14	Tris Reagent Blank (TBD-0727)	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 quantification limit.

Table 4: Gene-Trac Dhb Control Results, Test Reference S-3263

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	15-Jul-14	qPCR with SC05 genomic DNA (CSLDB-0264)	1.8×10^6	1.3×10^6	- -
Positive Control High Concentration	15-Jul-14	qPCR with SC05 genomic DNA (CSHDB-0264)	2.8×10^7	2.1×10^7	- -
DNA Extraction Blank	15-Jul-14	DNA extraction sterile water (FB-2218)	0	2.6×10^3 U	--
DNA Extraction Blank	16-Jul-14	DNA extraction sterile water (FB-2222)	0	2.6×10^3 U	--
Negative Control	15-Jul-14	Tris Reagent Blank (TBDB-0256)	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 quantification limit.

5-3263

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Edison, New Jersey 08817
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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page 1 of 1

Name (for report and invoice) Peter Fairbanks	Samplers Name (Printed) Megan Dascoli	Site/Project Identification Dow, Former EMCA, Mamaroneck, NY
Company URS Corp	P. O. # 41569901.10000	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program:
Address 257 Genesee St	Analysis Turnaround Time: Standard ☒	
City Buffalo, State NY 14202	Rush Chrages Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 716-856-5636 Fax		

Sample Identification	Date	Time	Matrix	No. of Cont.	Dehalobacter	Dehalococcoides								LAB USE ONLY Sample Numbers
20140701MW-02V09N	7/1/14	0845	GW	1	X									
20140701MW-03V12N		1155	GW	2	X	X								
20140701MW-04V09N		1345	GW	1	X									
20140701MW-06V15N		1035	GW	1	X									
20140701MW-07RV17N		1450	GW	1	X									
Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:										
6 = Other _____, 7 = Other _____				Water:	1	1								

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

LAB USE ONLY
Project No:
Job No:

Special Instructions Analyzed by SIREM lab, Shipped Via FedEx

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
Megan Dascoli	URS Corp.	7/1/14 17:00	1)	
~~Relinquished by~~ Received 2) Mdascoli	SIREM	7/2/14 15:00	2)	
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

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)