2007 Fourth Quarter Groundwater Report - OECI Site

Work Assignment No. 003-LRLR-05M8 / Contract No. EP-S5-06-01

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Introduction

The Oconomowoc Electroplating Company, Inc. (OECI) site is undergoing quarterly groundwater monitoring in accordance with the quality assurance project plan (QAPP; CH2M HILL, 2004), QAPP changes letter (CH2M HILL, 2007a), and field sampling plan (FSP) (CH2M HILL, 2006).

Groundwater sampling was conducted at the OECI site during the week of September 24, 2007, at 26 monitoring wells, 10 private wells, and 1 onsite potable well. In addition, two surface water samples were collected, and water level measurements were obtained from the site monitoring wells. This report presents the results of the September 2007 fourth quarter sampling event and includes tables and figures to present these data.

Site Setting

The 10-acre OECI site comprises the former 4-acre OECI facility located at 2573 Oak Street in Ashippun, Wisconsin, and an additional 6 acres of wet, low-lying area located southwest of the facility (Figures 1 and 2). This low-lying area is referred to in historical and recent project plans as a wetland area. Davy Creek flows through this wetland area. Contaminants of concern (COCs) at this site are primarily chlorinated volatile organic compounds (CVOCs), including cis-1,2-dichloroethene (cis-1,2-DCE), trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and vinyl chloride. Recently, methyl tertiary-butyl ether (MTBE) and various xylene isomers have been detected in several site wells, but these detections do not appear to be related to historical site activities.

The local geology beneath the site is comprised of Ordovician shale and dolomite bedrock overlain by Quaternary and Holocene unconsolidated deposits of sand, silt, and clay (Figure 3). Groundwater monitoring wells are installed at the site in the shallow and deep portions of the unconsolidated deposits, and within the upper bedrock. Nested wells are installed in the unconsolidated deposits, with the shallow wells monitoring the upper "water table" portion of the aquifer (shallow unconsolidated aquifer) and deeper wells monitoring the lower portion of this aquifer (deep unconsolidated aquifer). Monitoring wells are also installed in the bedrock aquifer (Figure 3). Private wells located near the site are screened in the uppermost water-bearing portions of the underlying shale and dolomite bedrock. A more detailed description of the site's history and geology is in the 2007 *Annual Groundwater Report and Evaluation of Monitored Natural Attenuation* (CH2M HILL, 2007b).

Field Activities

The purpose of each groundwater sampling event is to monitor groundwater contaminant concentrations and natural attenuation parameters in order to assess the ongoing effectiveness of natural attenuation at the site. Parameters analyzed include alkalinity, ammonia (surface water only), chloride, dissolved gases (methane, ethane, and ethene), total and dissolved iron and manganese, nitrate, orthophosphate (surface water only), sulfate, sulfide, total organic carbon, and volatile organic compounds (VOCs). Groundwater level measurements were collected during this sampling event to assess groundwater flow directions in the shallow unconsolidated, deep unconsolidated, and bedrock aquifers.

Water Level Measurements

Depth to groundwater in 32 site monitoring wells was measured on June 25, 2007. Depth to groundwater could not be measured in wells MW-3S, MW-5, and MW-14D. Monitoring well MW-3S was found to have an obstruction at approximately 6.60 feet from the well's top of casing (TOC). Attempts to remove the obstruction were unsuccessful. Another attempt to remove the obstruction will be made during the next sampling event. Monitoring well MW-5 has a damaged surface completion and cannot be accessed. There are no plans to replace this well due to its proximity to monitoring wells MW-103S and MW-105S. Monitoring well MW-14D could not be located because recent road construction buried the well under several inches of gravel and clean fill. Attempts to locate MW-14D with a metal detector and shovels were again unsuccessful during this sampling event. CH2M HILL has now considered this well as destroyed, and a replacement well will be installed during Summer 2008.

All water levels were measured in accordance with the FSP field operating procedure (FOP) No. 2—*Groundwater Level Measurements* (CH2M HILL, 2006). Water levels at staff gage locations SG-2 and SG-3 along Davy Creek were not collected due to their present condition (posts supporting staff gages appear to sit at less than 90 degrees from horizontal). Staff gage SG-1 appears to have been washed away and is no longer present. While historical data collected from these staff gages assisted in site characterization, future information from these staff gage locations is not anticipated to enhance the characterization; therefore, staff gages SG-1, SG-2, and SG-3 will not be replaced/repaired unless site characteristics change. Table 1 contains a summary of the depth to groundwater measurements and groundwater elevations for this sampling event.

Shallow Unconsolidated Aquifer

Groundwater elevations from 15 shallow monitoring wells were used to generate a water table elevation map for the shallow unconsolidated aquifer (Figure 4). The apparent groundwater flow direction in this aquifer is primarily toward Davy Creek to the south-southwest of the site. Table 2 contains a summary of the calculated vertical gradients. Vertical gradients between the shallow and deep unconsolidated aquifers are downward at well nests MW-15, MW-102, and MW-104, upland from the wetland area and Davy Creek, and upward at well nests located to the south and east of the site, within (or proximal to) the wetland area and near Davy Creek (MW-12, MW-13, MW-103, MW-105, MW-106, and MW-107). Vertical gradients between the shallow unconsolidated aquifer and bedrock vary across the site, with a downward gradient at well nests MW-3, MW-4, MW-15, and MW-105 and slight upward gradients at well nests MW-1, MW-12, and MW-101.

Deep Unconsolidated Aquifer

Groundwater elevations from 10 deep monitoring wells were used to generate a potentiometric surface map for the deep unconsolidated aquifer (Figure 5). The apparent groundwater flow direction in the deep unconsolidated aquifer is toward Davy Creek to the southwest. Vertical gradients between the deep unconsolidated aquifer and bedrock vary across the site, with downward gradients at the MW-15 nest, and an upward gradient at nests MW-12 and MW-105 (located within the wetland area near Davy Creek).

Bedrock Aquifer

Groundwater elevations from eight bedrock monitoring wells were used to generate a potentiometric surface map for the bedrock aquifer (Figure 6). The apparent groundwater flow direction in the bedrock is generally to the west and southwest. Bedrock groundwater elevations appear to be the highest directly beneath and upgradient from the former facility. The residential subdivision west of the site includes a number of actively pumped private wells that may contribute to the horizontal gradient toward the west.

Sampling Activities and Results

Sampling and analyses were completed in accordance with the FSP (CH2M HILL, 2006). All wells were purged and sampled as described in FOP No. 1—*Low Flow Groundwater Sampling Procedures* (CH2M HILL, 2006). Groundwater field parameters were monitored with a multimeter during well purging. The wells were purged continuously until monitored field parameters stabilized within the limits specified in FOP No. 1. Samples were collected immediately following the stabilization of groundwater field parameters. Procedures for field filtering groundwater samples were followed according to FOP No. 5—*Field Filtering Samples* (CH2M HILL, 2006). Samples were processed, packaged, and shipped to the laboratory on the day of collection. Between each sampling location, nondedicated sampling equipment was decontaminated following FOP No. 6—*Field Sampling Equipment Decontamination* (CH2M HILL, 2006).

Private well locations were sampled as part of the fourth quarter September 2007 compliance monitoring in accordance with FOP No. 10—*Private Residential Well Groundwater Sampling Procedures* (CH2M HILL, 2006), with the exception of field parameter collection.

Due to the variable nature of access points for private well sampling and the various treatment sequences of these wells, field parameters cannot be used as an indication of proper purging prior to sample collection. Private well taps were opened for 10 to 15 minutes prior to sampling. Whenever the configuration of the water system allowed, the sample was collected from a spigot before water-conditioning equipment was used.

Monitoring Well Results

Groundwater from 22 monitoring wells was collected and sampled for natural attenuation and regulatory compliance parameters (VOCs). Groundwater was collected from four monitoring "sentinel" wells (MW-106S/D and MW-107S/D) and analyzed for regulatory compliance parameters only (VOCs). Table 3 summarizes the results from the groundwater collected at these monitoring wells.

Figures 7 through 12 present the distribution and magnitude of site COC concentrations within each aquifer unit, relative to Wisconsin Administrative Code NR 140 preventive action limits (PAL) and enforcement standards (ES). Specifically, Figures 7, 9, and 11 depict concentrations of CVOC "parent" compounds—1,1,1-TCA; tetrachloroethene (PCE); and TCE. Figures 8, 10, and 12 depict common degradation products or "daughter" compounds for these parent compounds—cis-1,2-DCE and vinyl chloride.

Unconsolidated Monitoring Wells

Groundwater PAL and ES exceedances of COCs in groundwater from the shallow unconsolidated aquifer are present for both parent and daughter compounds at four monitoring well locations: MW-12S, MW-16S (ES only), MW-103S, and MW-105S (Figures 7 and 8). Groundwater PAL and ES exceedances of COCs in groundwater from the deep unconsolidated aquifer are slightly more widespread (Figures 9 and 10). PAL or ES exceedances are present for both parent and daughter compounds at MW-102D (PAL only) west of the site, and at MW-5D, MW-12D, MW-103D, and MW-105D immediately downgradient from the site. There is also a single ES exceedance for TCE at MW-15D, west of the site, and a downgradient PAL exceedance at MW-13D. A number of these exceedances are due to elevated laboratory detection limits caused by sample dilution.

Groundwater collected from sentinel well nests MW-106S/D and MW-107S/D contained no VOC detections during the September 2007 sampling event.

Bedrock Monitoring and Private Wells

The bedrock aquifer includes bedrock monitoring wells and private wells, screened at various depths. Bedrock monitoring wells at the site are screened in the upper 5 to 10 feet of the bedrock. Private wells are screened within a wider range of depths, as they are typically drilled to a depth where they intersect a water-bearing fracture or joint.

Groundwater collected at bedrock monitoring well MW-4D contained vinyl chloride concentrations that exceed the PAL. In all other bedrock monitoring wells, no other COCs were identified that exceed the PAL or ES. Figures 11 and 12 show the distribution and magnitude of the detections of site COCs in bedrock.

Groundwater from 10 private wells and 1 onsite potable well was collected and sampled for regulatory compliance parameters (VOCs). Table 4 contains a summary of the results from

the samples collected at these wells. Vinyl chloride was detected at concentrations exceeding the PAL (0.020 micrograms per liter [µg/L]) at two private wells (PW-07 and PW-09, with groundwater concentrations of 0.072 and 0.052 µg/L, respectively). TCE was detected at a concentration of 0.53 µg/L, exceeding the PAL of 0.5 µg/L in groundwater collected from PW-03. Wells PW-03, PW-07, and PW-09 are on the downgradient/western side of the OECI site. No other COCs were identified that exceed the PAL or ES in the private wells; however, 1,2-dichloroethane (1,2-DCA); cis-1,2-DCE; MTBE; trans-1,2-DCE; TCE; and ortho-xylene also were detected at low levels in several private wells at concentrations below the PAL. Over the past several sampling rounds, MTBE and various xylene isomers have been detected in several site wells, but these detections do not appear to be related to the site, because they have been previously detected in several upgradient wells and these compounds were not part of historic site activities.

Natural Attenuation Parameters

The concentrations of analytical natural attenuation and field parameters collected (favorable oxidation-reduction potential conditions and elevated concentrations of sulfate, chloride, dissolved gases, and total/dissolved iron and manganese) indicate that natural attenuation continues to occur most favorably in the shallow and deep unconsolidated wells located in or just upgradient of the wetland. A further assessment of the natural attenuation and VOC concentrations across the site will be provided in the next annual report, which will be generated following completion of the first quarter 2008 sampling round.

Surface Water Results

Surface water from two locations along Davy Creek (SG-01 and SG-03) was collected and analyzed for natural attenuation (including ammonia and orthophosphate) and regulatory compliance parameters (VOCs). Table 5 contains a summary of the results from the samples collected at these locations. No VOCs were detected in the surface water collected during the September 2007 sampling event.

A surface water sample could not be collected at location SG-02 because only a few inches of stagnant water was present at this location. Another attempt will be made to collect surface water at location SG-02 during the January 2008 sampling event.

Data Management

U.S. Environmental Protection Agency (USEPA) software Forms II Lite 5.1 was used in the field to enter field sample data and create chain-of-custody forms. The USEPA copies of the chain-of-custody forms were used to enter sample information into the sample tracking spreadsheet. Upon receipt of the samples, the laboratory transmitted an electronic sample receipt to CH2M HILL, which was then compared to the chain-of-custody and entered into the sample tracking spreadsheet. On October 15, 2007, the laboratory provided CH2M HILL with electronic data deliverables (EDD), including one hard copy package, and a portable document format (PDF) electronic file of the data package. This first set of laboratory data was sent to USEPA for validation on October 17, 2007. Following USEPA data validation, a CH2M HILL project chemist reviewed the validation summaries, and the qualifiers were

entered into the EQuIS database for use in this quarterly groundwater report. CH2M HILL's data usability memorandum for the September 2007 data is included in Appendix A.

Summary and Recommendations

The 2007 fourth quarter sampling event was conducted at the OECI site during the week of September 24, 2007. Twenty-six monitoring wells, ten private wells, one onsite potable well, and surface water from two locations were sampled during this event. Groundwater elevations determined from water level measurements collected at site monitoring wells indicate that the apparent groundwater flow direction in the shallow and deep unconsolidated aquifers is toward Davy Creek to the southwest. Groundwater elevations in the bedrock aquifer indicate that the apparent groundwater flow direction is to the west and southwest, toward the residential subdivision where the upper bedrock aquifer is actively pumped by private wells.

Groundwater analytical results indicate that COCs are present across the site at concentrations exceeding the PAL and/or ES, and that natural attenuation conditions remain favorable. PAL and ES exceedances of COCs in the shallow and deep unconsolidated aquifers are located directly adjacent to the facility (MW-5D, MW-103S, and MW-103D), immediately downgradient to the southwest (MW-12S, MW-12D, MW-13D, MW-16S, MW-105S, and MW-105D), or crossgradient to the west (MW-15D and MW-102D). In the bedrock aquifer, groundwater at two monitoring well and two private well locations contains vinyl chloride concentrations that exceed the PAL (down/cross gradient well MW-4D, and private wells PW-07 and PW-09). In the bedrock monitoring wells, no other COCs were identified that exceed the PAL or ES. Groundwater from private well PW-03 exceeds the PAL for TCE. No other COCs were identified that exceed the PAL or ES in the bedrock private wells; however, 1,2-DCA; cis-1,2-DCE; chloromethane; ortho-xylene; MTBE; trans-1,2-DCE; and TCE also were detected in several private wells at concentrations below the PAL. Over the past several sampling rounds, MTBE and various xylene isomers have been detected in several site wells, but these detections do not appear to be related to the site, because they have been found previously in several upgradient wells and these compounds were not part of historic site activities.

Surface water from two locations along Davy Creek (SG-01 and SG-03) was collected during the September 2007 sampling event. No VOCs were detected in surface water samples.

Monitoring well MW-14D was again inaccessible due to impacts resulting from local road construction activities. CH2M HILL has now considered this well as destroyed, and a replacement well will be installed during Summer 2008.

CH2M HILL recommends that site monitoring continue under the current sampling plan for natural attenuation and regulatory compliance parameters at the selected monitoring wells, private wells, and surface water sampling points. The next quarterly monitoring event is scheduled for January 2008.

References

CH2M HILL. 2004. *Quality Assurance Project Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin.* WA No. 236-RALR-05M8, Contract No. 68-W6-0025.

CH2M HILL. 2006. *Field Sampling Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin.* WA No. 003-LRLR-05MS, Contract No. EP-SS-06-01. December.

CH2M HILL. 2007a. *Quality Assurance Project Plan Changes, Oconomowoc Electroplating, Ashippun, Wisconsin, Long Term Remedial Action.* WA No. 003-LRLR-05MS, Contract No. EP-SS-06-01. January.

CH2M HILL. 2007b. *Annual Groundwater Report and Evaluation of Monitored Natural Attenuation.* WA No. 003-LRLR-05MS, Contract No. EP-SS-06-01. May.

Tables

TABLE 1
Groundwater Elevations–September 2007
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Well ID	Hydrostratigraphic Unit Screened	Top of Casing (TOC) Elevation (ft amsl[1])	Groundwater Depth (feet measured from TOC[2])	Groundwater Elevation September 2007 (ft amsl[1])
MW-1S	Shallow Unconsolidated	853.42	5.74	847.68
MW-1D	Bedrock	853.14	5.59	847.55
MW-2D	Bedrock	852.36	5.22	847.14
MW-3S	Shallow Unconsolidated	853.39	Well Obstructed	--
MW-3D	Bedrock	853.51	7.34	846.17
MW-4S	Shallow Unconsolidated	854.58	7.01	847.57
MW-4D	Bedrock	854.63	7.85	846.78
MW-5	Shallow Unconsolidated	849.07	Broken	--
MW-5D	Deep Unconsolidated	848.80	2.78	846.02
MW-9S	Shallow Unconsolidated	851.57	4.93	846.64
MW-12S	Shallow Unconsolidated	849.17	3.96	845.21
MW-12D	Deep Unconsolidated	848.31	2.49	845.82
MW-12B	Bedrock	849.40	3.53	845.87
MW-13S	Shallow Unconsolidated	850.91	5.20	845.71
MW-13D	Deep Unconsolidated	850.02	4.24	845.78
MW-14D	Deep Unconsolidated	850.58	Buried-inaccessible	--
MW-15S	Shallow Unconsolidated	854.68	8.26	846.42
MW-15D	Deep Unconsolidated	855.30	9.25	846.05
MW-15B	Bedrock	854.35	17.75	836.60
MW-16S	Shallow Unconsolidated	847.90	2.85	845.05
MW-101S	Shallow Unconsolidated	851.24	3.95	847.29
MW-101B	Bedrock	851.08	4.60	846.48
MW-102S	Shallow Unconsolidated	853.65	7.26	846.39
MW-102D	Deep Unconsolidated	853.70	7.69	846.01
MW-103S	Shallow Unconsolidated	851.84	5.54	846.30
MW-103D	Deep Unconsolidated	851.97	5.62	846.35
MW-104S	Shallow Unconsolidated	850.56	4.39	846.17
MW-104D	Deep Unconsolidated	850.57	4.61	845.96
MW-105S	Shallow Unconsolidated	849.01	3.59	845.42
MW-105D	Deep Unconsolidated	848.90	3.09	845.81
MW-105B	Bedrock	848.90	3.03	845.87
MW-106S	Shallow Unconsolidated	848.92	3.92	845.00
MW-106D	Deep Unconsolidated	849.01	3.16	845.85
MW-107S	Shallow Unconsolidated	848.66	3.49	845.17
MW-107D	Deep Unconsolidated	848.64	2.95	845.69

[1]ft amsl = feet above mean sea level

[2]TOC = Top of casing

TABLE 2
Vertical Gradient Summary - September 2007
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Well Nest	Screen Midpoint Shallow	Screen Midpoint Deep	Screen Midpoint Bedrock	Groundwater Elev. Shallow - September 2007	Groundwater Elev. Deep - September 2007	Unconsolidated (Shallow to Deep) Vertical Gradient	Groundwater Elev. Unconsolidated - September 2007	Groundwater Elev. Bedrock - September 2007	Unconsolidated to Bedrock Vertical Gradient
1	842.62		806.04				847.68	847.55	0.004
3	844.59		810.51				Well Obstructed	846.17	NA
4	844.78		809.73				847.57	846.78	0.023
5	841.07	825.30		Well Broken	846.02	NA			
12	841.17	827.81	810.90	845.21	845.82	-0.046	845.82	845.87	-0.003
13	842.91	823.52		845.71	845.78	-0.004			
15	843.18	818.30	799.35	846.42	846.05	0.015	846.05	836.60	0.499
101	843.24		804.58				847.29	846.48	-0.001
102	842.65	807.20		846.39	846.01	0.011			
103	842.84	830.47		846.30	846.35	-0.004			
104	840.56	825.07		846.17	845.96	0.014			
105	841.01	824.40	807.40	845.42	845.81	-0.023	845.81	845.87	-0.004
106	838.92	797.51		845.00	845.85	-0.021			
107	835.62	818.24		845.17	845.69	-0.030			

Note: Negative values for vertical gradients indicate upward movement. Positive values indicate downward movement.
NA = Not Available
All elevations in feet above mean sea level.

TABLE 3

Monitoring Well Field and Analytical Results - September 2007

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Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-1S	MW-1D	MW-3D	MW-4S	MW-4D	MW-5D	MW-12B	MW-12S	MW-12D	MW-13S	MW-13D	MW-15B
Field Parameters															
Dissolved Oxygen (DO)	mg/L			0.58	0.82	0.72	1.04	2.30	0.52	4.84	4.51	0.34	4.95	2.40	1.83
Oxidation Reduction Potential (ORP)	millivolts			148.2	-125.9	-98.9	16.7	-36.6	-66.9	-113.1	6.2	-53.6	145.2	-73.7	-85.5
pH	pH units			6.79	7.16	7.23	6.66	7.66	7.11	7.30	7.15	7.16	7.10	7.18	7.26
Specific Conductivity	mmhos/cm			0.955	0.654	1.062	1.497	1.077	1.236	1.290	1.448	1.322	0.737	1.069	0.856
Temperature	deg C			17.65	16.94	15.02	17.92	17.73	15.55	12.52	13.37	11.51	15.37	11.87	18.13
Depth to water	feet			5.74	5.59	7.34	7.01	7.85	2.78	3.53	3.96	2.49	5.20	4.24	17.75
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	390	360	370	770	310	410	340	400	420	320	380	390
Chloride (as Cl)	mg/L	125	250	60	6.8	**130**	34	**150**	**140**	**230**	**210**	**160**	36	120	21
Ethane	µg/L	N/A	N/A	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Iron, total[1]	µg/L	150	300	**260 J**	3,100	1,600	650	39 UJ	2,100	1,600 J	1,400	950	57 J	1,100	560
Iron, dissolved[1]	µg/L	150	300	10 U	2,500	1,200	450	10 U	1,900	1,800	39 J	860 J	10 UJ	740	370 J
Manganese, total[1]	µg/L	25	50	170 J	47 J	53 J	290 J	110 J	71 J	59	140	33	0.88 J+	32 J	820
Manganese, dissolved[1]	µg/L	25	50	150	38	48	260	100	62	64 J	110 J	30 J	0.4 UJ	31	860 J
Methane	µg/L	N/A	N/A	5.6 J	2,800	81	1.4 U	3.8 J	21 J	44	12	6.1 J	1.4 U	8.5 J	650
Nitrogen, nitrate (as N)	mg/L	2	10	0.11 U	0.11 U	0.11 U	0.11 U	0.39	0.11 U	0.11 U	0.31 J	0.11 U	**8.4**	0.11 U	0.11 U
Sulfate (as SO4)[1]	mg/L	125	250	56	1.2 J	52	100	60	52	38	53	78	23	71	62
Sulfide	mg/L	N/A	N/A	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	0.51 J+	0.5 UJ	0.84 J+	9.7 J	0.86 J+	0.81 J+	0.82 J+	2.8 J+	2.6 J+	1.9 J+	1.4 J+	0.67 J+
VOCs															
1,1,1-Trichloroethane	µg/L	40	200	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	1.3 U	0.05 U	**95**	2.5 J	0.1 J	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.019 U	0.48 U	0.019 UJ	0.38 UJ	**0.038 UJ**	0.019 UJ	0.019 UJ	0.019 UJ
1,1,2-Trichloroethane	µg/L	0.5	5	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	**1.5 U**	0.06 U	**1.2 U**	0.12 UJ	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	7.7	0.06 U	55	14 J	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	**1.8 J**	0.05 U	14	0.26 J	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene[2]	µg/L	N/A	N/A	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	1.8 U	0.07 U	1.4 U	0.14 UJ	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene[2]	µg/L	14	70	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	1.5 U	0.06 U	1.2 U	0.12 UJ	0.06 U	0.06 U	0.06 U
1,2-Dibromo-3-chloropropane[2]	µg/L	0.02	0.2	**0.05 U**	**0.05 UJ**	**0.05 U**	**0.05 U**	**0.05 U**	1.3 U	**0.05 U**	1 U	**0.1 UJ**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane[2]	µg/L	0.5	5	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	**1.3 U**	0.05 U	**1 U**	0.1 UJ	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene[2]	µg/L	60	600	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	1.3 U	0.05 U	1 U	0.1 UJ	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	**0.75 U**	0.03 U	**0.6 U**	0.06 UJ	0.03 U	0.03 U	0.03 UJ
1,2-Dichloropropane	µg/L	0.5	5	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	**1.3 U**	0.05 U	**1 U**	0.1 UJ	0.05 U	0.05 U	0.05 U
1,3-Dichlorobenzene[2]	µg/L	125	1,250	0.027 U	0.027 UJ	0.027 U	0.027 U	0.027 U	0.68 U	0.027 U	0.54 U	0.054 UJ	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene[2]	µg/L	15	75	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	1 U	0.04 U	0.8 U	0.08 UJ	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	15 U	0.6 U	12 U	1.2 UJ	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	40 U	1.6 U	32 U	3.2 UJ	1.6 U	1.6 U	1.6 UJ
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.8 U	0.8 UJ	0.8 U	0.8 U	0.8 U	20 U	0.8 U	16 U	1.6 UJ	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	38 UJ	1.5 U	30 U	3 UJ	1.5 U	1.5 U	1.5 UJ
Benzene	µg/L	0.5	5	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	**1.3 U**	0.05 U	**1 U**	0.1 UJ	0.05 U	0.05 U	0.05 U
Bromochloromethane[2]	µg/L	N/A	N/A	0.028 U	0.028 UJ	0.028 U	0.028 U	0.028 U	0.7 U	0.028 U	0.56 U	0.056 UJ	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.75 U	0.03 U	0.6 U	**0.06 UJ**	0.03 U	0.03 U	0.03 UJ
Bromoform	µg/L	0.44	4.4	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	**1 U**	0.04 UJ	**0.8 UJ**	0.08 UJ	0.04 UJ	0.04 UJ	0.04 U
Bromomethane	µg/L	1	10	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	**1.8 U**	0.07 U	**1.4 U**	0.14 UJ	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.09 U	0.09 UJ	0.09 U	0.09 U	0.09 U	2.3 UJ	0.09 U	1.8 U	0.18 UJ	0.09 U	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.022 U	0.022 UJ	0.022 U	0.022 U	0.022 U	**0.55 U**	0.022 U	0.44 U	0.044 UJ	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	1 U	0.066 J	0.8 U	0.08 UJ	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.07 UJ	0.07 UJ	0.07 U	0.07 UJ	0.07 UJ	1.8 UJ	0.07 U	1.4 U	0.14 UJ	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.022 U	0.022 UJ	0.022 U	0.022 U	0.022 U	0.55 U	0.022 U	0.44 U	0.044 UJ	0.58 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.18 U	0.24 UJ	**0.54 U**	0.22 U	**0.33 UJ**	**1.3 UJ**	**0.49 U**	**1 U**	**0.45 UJ**	0.15 U	**0.74 U**	**0.51 U**
cis-1,2-Dichloroethene	µg/L	7	70	0.11 J	0.05 UJ	0.28	0.05 U	0.05 U	83	0.05 U	**29**	5.1 J	0.05 U	0.74	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.43 U	0.017 U	0.34 U	**0.034 UJ**	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.026 U	0.026 UJ	0.026 U	0.026 U	0.026 U	0.65 U	0.026 U	0.52 U	0.052 UJ	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane[2]	µg/L	200	1,000	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.75 U	0.03 U	0.6 U	0.06 UJ	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.024 U	0.024 UJ	0.024 U	0.024 U	0.024 U	0.6 U	0.024 U	0.48 U	0.048 UJ	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.04 U	0.06 J	0.04 U	0.04 U	0.04 U	1 U	0.04 U	0.8 U	0.08 UJ	0.04 U	0.04 U	0.04 U
m,p,-Xylene (sum of isomers)	µg/L	1,000	10,000	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	2 U	0.08 U	1.6 U	0.16 UJ	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.08 J	0.08 UJ	0.39	0.08 U	1.6	2 U	0.08 U	1.6 U	0.16 UJ	0.08 U	0.4	0.08 UJ
Methylene chloride	µg/L	0.5	5	0.18 UJ	0.18 UJ	**0.57 UJ**	0.18 UJ	0.18 UJ	26 J	0.33 UJ	**3.6 UJ**	**2.4 J**	0.18 UJ	0.18 UJ	**1.1 UJ**
o-Xylene	µg/L	N/A	N/A	0.023 U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.58 U	0.023 U	0.46 U	0.046 UJ	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.022 U	0.022 UJ	0.022 U	0.022 U	0.022 U	0.55 U	0.022 U	0.44 U	0.044 UJ	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	**1.3 U**	0.05 U	**1 U**	0.1 UJ	0.073 J	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	1.5 U	0.06 U	1.2 U	0.12 UJ	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	5.3	0.06 U	17	0.89 J	0.06 U	0.06 U	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.43 U	0.017 U	0.34 U	**0.034 UJ**	0.017 U	0.017 U	0.017 UJ
Trichloroethene	µg/L	0.5	5	0.13 J	0.05 UJ	0.05 U	0.05 U	0.05 U	110	0.05 U	110	**1.3 J**	0.077 J	0.05 U	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.013 U	0.013 UJ	0.013 U	0.013 U	**0.063**	3	0.013 U	1.1	0.48 J	0.013 U	**0.038 J**	0.013 U

Bolded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Preventative Action Limit (PAL).

Shaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

[1]WAC NR 140 PAL and ES exceedances for iron, manganese, and sulfate are based on public welfare groundwater quality standards.

[2]Analysis not validated by USEPA, as it is not a part of the QAPP/SAS.

mg/L = milligrams per liter; µg/L = micrograms per liter; mmhos/cm = millimhos per centimeter

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.

U indicates that the constituent was not detected above the method detection limit.

UJ indicates that the constituent was not detected above the estimated method detection limit.

UB indicates that the constiuent is considered to be below the detection limit listed due to blank contamination.

TABLE 3

Monitoring Well Field and Analytical Results - September 2007

2007 4th Quarter Groundwater Report

OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-15S	MW-15D	MW-16S	MW-101B	MW-102D	MW-103S	MW-103D	MW-105B	MW-105S	MW-105D	MW-106S	MW-106D
Field Parameters															
Dissolved Oxygen (DO)	mg/L			8.32	0.52	0.45	1.53	0.54	0.70	0.49	2.48	0.36	1.63	2.55	0.41
Oxidation Reduction Potential (ORP)	millivolts			180.7	108.1	-116.2	63.6	-71.8	125.7	140.9	-118.0	-66.4	-72.4	-84.4	-46.0
pH	pH units			6.85	6.98	6.65	6.98	6.98	6.77	6.56	7.14	7.00	7.09	7.21	7.19
Specific Conductivity	mmhos/cm			0.556	1.324	4.305	0.238	1.759	1.504	1.308	1.066	1.694	1.319	0.922	1.248
Temperature	deg C			18.3	16.75	12.88	14.76	13.87	17.32	15.52	11.99	13.06	12.37	12.37	11.42
Depth to water	feet			8.26	9.25	2.85	4.60	7.69	5.54	5.62	3.03	3.59	3.09	3.92	3.16
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	290	370	850	120	460	500	400	400	470	430		
Chloride (as Cl)	mg/L	125	250	12	1.1 R	**290**	9.6	**240**	1.1 J+	**170**	**130**	**270**	**160**		
Ethane	µg/L	N/A	N/A	0.4 U	0.4 U	1.4 J	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	1.2 J	0.4 U	Sentinel Well - VOCs only	Sentinel Well - VOCs only
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		
Iron, total[1]	µg/L	150	300	45 J	39 J	**9,400**	39 UJ	**1,900**	39 UJ	88 J	**880**	**1,300**	**1,500**		
Iron, dissolved[1]	µg/L	150	300	10 U	10 U	**9,200**	17 J	**1,800**	16 J	13 J	**830 J**	**1,300 J**	**1,400 J**		
Manganese, total[1]	µg/L	25	50	7 J	**350 J**	**89**	**50 J**	**48 J**	**440 J**	**270 J**	**1,000**	**200**	**62**		
Manganese, dissolved[1]	µg/L	25	50	0.4 U	**340**	**82**	**52**	**46**	**440**	**260**	**940 J**	**180 J**	**60 J**		
Methane	µg/L	N/A	N/A	0.68 U	1.6 U	6 J	16	4.7 J	23	36	810	170 J	18		
Nitrogen, nitrate (as N)	mg/L	2	10	1.5	1.8	0.11 U	0.48	0.11 U	0.48 J+	0.11 U	0.11 U	0.11 U	0.11 U		
Sulfate (as SO4)[1]	mg/L	125	250	17	48	**1,600**	7.4 J	**140**	85	37	11	52	55		
Sulfide	mg/L	N/A	N/A	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		
Total Organic Carbon	mg/L	N/A	N/A	1 J+	1.5 J+	3.8 J+	3.1 J+	2 J+	6.4 J+	2.6 J+	0.97 J+	2.2 J+	3.7 J+		
VOCs															
1,1,1-Trichloroethane	µg/L	40	200	0.05 U	0.05 U	10 U	0.05 U	0.25 UJ	**120**	**110**	0.05 U	5 U	0.25 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.019 U	0.019 U	**3.8 U**	0.019 UJ	**0.095 UJ**	0.019 U	0.019 U	0.019 U	**1.9 UJ**	**0.095 U**	0.019 U	0.019 UJ
1,1,2-Trichloroethane	µg/L	0.5	5	0.06 U	0.06 U	**12 U**	0.06 U	0.3 UJ	0.06 U	0.14 J	0.06 U	**6 U**	0.3 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.06 U	0.06 U	12 U	0.06 U	0.3 UJ	7.2 J	7.4 J	0.06 U	**89**	5.5	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.05 U	0.076 J	**10 U**	0.05 U	0.25 UJ	**2.6**	**6.2**	0.05 U	**22**	**1.3**	0.05 U	0.05 U
1,2,3-Trichlorobenzene[2]	µg/L	N/A	N/A	0.07 U	0.07 U	14 U	0.07 U	0.35 UJ	0.07 U	0.07 U	0.07 U	7 U	0.35 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene[2]	µg/L	14	70	0.06 U	0.06 U	12 U	0.06 U	0.3 UJ	0.06 U	0.06 U	0.06 U	6 U	0.3 U	0.06 U	0.06 U
1,2-Dibromo-3-chloropropane[2]	µg/L	0.02	0.2	**0.05 U**	**0.05 U**	**10 U**	**0.05 U**	0.25 UJ	**0.05 U**	**0.05 U**	**0.05 U**	**5 U**	**0.25 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane[2]	µg/L	0.5	5	0.05 U	0.05 U	**10 U**	0.05 U	0.25 UJ	0.05 U	0.05 U	0.05 U	**5 U**	0.25 U	0.05 U	0.05 U
1,2-Dichlorobenzene[2]	µg/L	60	600	0.05 U	0.05 U	10 U	0.05 U	0.25 UJ	0.05 U	0.05 U	0.05 U	5 U	0.25 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.03 U	0.03 U	**6 U**	0.03 U	0.34 J	0.11	0.03 U	0.03 U	**3 U**	0.15 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.05 U	0.05 U	**10 U**	0.05 U	0.25 UJ	0.05 U	0.05 U	0.05 U	**5 U**	0.25 U	0.05 U	0.05 U
1,3-Dichlorobenzene[2]	µg/L	125	1,250	0.027 U	0.027 U	5.4 U	0.027 U	0.14 UJ	0.027 U	0.027 U	0.027 U	2.7 U	0.14 U	0.027 U	0.027 U
1,4-Dichlorobenzene[2]	µg/L	15	75	0.04 U	0.04 U	8 U	0.04 U	0.2 UJ	0.04 U	0.04 U	0.04 U	4 U	0.2 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.6 UJ	0.6 UJ	120 U	0.6 U	3 UJ	0.6 UJ	0.6 UJ	0.6 U	60 U	3 U	0.6 U	0.6 U
2-Hexanone	µg/L	N/A	N/A	1.6 U	1.6 U	320 U	1.6 U	8 UJ	1.6 U	1.6 U	1.6 U	160 U	8 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.8 UJ	0.8 UJ	160 U	0.8 U	4 UJ	0.8 UJ	0.8 UJ	0.8 U	80 U	4 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	1.5 UJ	**300 U**	1.5 U	7.5 UJ	1.5 UJ	1.5 UJ	1.5 U	150 U	7.5 U	1.5 U	1.5 U
Benzene	µg/L	0.5	5	0.05 U	0.12 J	**10 U**	0.05 U	0.25 UJ	**0.61**	0.05 U	0.05 U	**5 U**	0.25 U	0.05 U	0.05 U
Bromochloromethane[2]	µg/L	N/A	N/A	0.028 U	0.028 U	5.6 U	0.028 U	0.14 UJ	0.028 U	0.028 U	0.028 U	2.8 U	0.14 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.03 U	0.03 U	**12 U**	0.03 U	**0.15 UJ**	0.03 U	0.03 U	0.03 U	**4.4 J**	**0.15 U**	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.04 U	0.04 UJ	**8 U**	0.04 UJ	0.2 UJ	0.04 UJ	0.04 UJ	0.04 U	**4 UJ**	0.2 U	0.04 U	0.04 UJ
Bromomethane	µg/L	1	10	0.07 U	0.07 U	**14 U**	0.07 U	0.35 UJ	0.07 U	0.07 U	0.07 U	**7 U**	0.35 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.09 U	0.09 U	18 U	0.09 U	0.45 UJ	0.09 U	0.09 U	0.09 U	9 UJ	0.45 U	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.022 U	0.022 U	**4.4 U**	0.022 U	0.11 UJ	0.022 U	0.022 U	0.022 U	**2.2 U**	0.11 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.04 U	2.1	8 U	0.04 U	0.2 UJ	4.4	0.04 U	0.04 U	4 U	0.2 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.07 UJ	0.07 UJ	14 U	0.07 U	0.35 UJ	0.29	0.07 U	0.07 U	7 U	0.35 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.022 U	0.022 U	**4.4 U**	0.32 U	0.11 UJ	0.099 U	0.022 U	0.022 U	**2.2 U**	0.11 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	**0.33 U**	**0.3 U**	**10 U**	0.23 U	**0.45 UJ**	0.19 U	0.21 U	**0.31 U**	**5 U**	**0.54 U**	**0.41 U**	**0.51 U**
cis-1,2-Dichloroethene	µg/L	7	70	0.05 U	1.1	**1,300**	0.39	**19 J**	**23**	**64**	0.15 J	**350**	**34**	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 U	**3.4 U**	0.017 U	**0.085 UJ**	0.017 U	0.017 U	0.017 U	**1.7 U**	**0.085 U**	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.026 U	0.026 U	5.2 U	0.026 U	0.13 UJ	0.026 U	0.026 U	0.026 U	2.6 U	0.13 U	0.026 U	0.026 U
Dichlorodifluoromethane[2]	µg/L	200	1,000	0.03 U	0.03 U	17 J	0.03 U	0.15 UJ	0.03 U	0.03 U	0.03 U	3 U	0.15 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.024 U	0.024 U	4.8 U	0.024 U	0.12 UJ	0.024 U	0.024 U	0.024 U	2.4 U	0.12 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.04 U	0.04 U	8 U	0.04 U	0.2 UJ	0.04 U	0.04 U	0.04 U	4 U	0.2 U	0.04 U	0.04 U
m,p,-Xylene (sum of isomers)	µg/L	1,000	10,000	0.08 U	0.08 U	16 U	0.08 U	0.4 UJ	0.08 U	0.08 U	0.08 U	8 U	0.4 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.08 U	0.08 U	**16 UJ**	0.08 U	0.95 J	0.08 U	0.08 U	0.08 UJ	8 UJ	0.4 UJ	0.08 UJ	0.08 U
Methylene chloride	µg/L	0.5	5	0.18 UJ	0.18 UJ	**410 UJ**	0.18 UJ	**1.5 UJ**	0.18 UJ	0.18 UJ	**0.68 UJ**	**18 UJ**	**11 UJ**	**0.53 UJ**	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.023 U	0.023 U	4.6 U	0.023 U	0.12 UJ	0.023 U	0.023 U	0.023 U	2.3 U	0.12 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.022 U	0.022 U	4.4 U	0.022 U	0.11 UJ	0.022 U	0.022 U	0.022 U	2.2 U	0.11 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	**10 U**	0.05 U	0.25 UJ	**2.6**	0.05 U	0.05 U	**5 U**	0.25 U	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.06 U	0.06 U	12 U	0.06 U	0.3 UJ	0.06 U	0.06 U	0.06 U	6 U	0.3 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.06 U	0.082 J	**32 J**	0.06 U	1.1 J	1.1 J	0.94 J	0.06 U	14 J	1.6	0.06 UJ	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 U	**3.4 U**	0.017 U	**0.085 UJ**	0.017 U	0.017 U	0.017 U	**1.7 UJ**	**0.085 U**	0.017 UJ	0.017 U
Trichloroethene	µg/L	0.5	5	0.05 U	**10**	**10 U**	0.34	**1.1 J**	**210**	**750**	0.05 U	**690**	**27**	0.05 U	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.013 U	0.013 U	**33**	0.013 U	**0.065 UJ**	**0.43**	**0.18**	0.013 U	**6.6**	**0.63**	0.013 U	0.013 U

Bolded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Preventative Action Limit (PAL).

Shaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

[1]WAC NR 140 PAL and ES exceedances for iron, manganese, and sulfate are based on public welfare groundwater quality standards.

[2]Analysis not validated by USEPA, as it is not a part of the QAPP/SAS.

mg/L = milligrams per liter; µg/L = micrograms per liter; mmhos/cm = millimhos per centimeter

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.

U indicates that the constituent was not detected above the method detection limit.

UJ indicates that the constituent was not detected above the estimated method detection limit.

UB indicates that the constiuent is considered to be below the detection limit listed due to blank contamination.

TABLE 3

Monitoring Well Field and Analytical Results - September 2007

2007 4th Quarter Groundwater Report

OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-107S	MW-107D
Field Parameters					
Dissolved Oxygen (DO)	mg/L			0.64	1.67
Oxidation Reduction Potential (ORP)	millivolts			-104.9	-83.5
pH	pH units			7.42	7.18
Specific Conductivity	mmhos/cm			0.823	1.295
Temperature	deg C			12.21	11.12
Depth to water	feet			3.49	2.95
Natural Attenuation Parameters					
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	Sentinel Well - VOCs only	Sentinel Well - VOCs only
Chloride (as Cl)	mg/L	125	250		
Ethane	µg/L	N/A	N/A		
Ethene	µg/L	N/A	N/A		
Iron, total[1]	µg/L	150	300		
Iron, dissolved[1]	µg/L	150	300		
Manganese, total[1]	µg/L	25	50		
Manganese, dissolved[1]	µg/L	25	50		
Methane	µg/L	N/A	N/A		
Nitrogen, nitrate (as N)	mg/L	2	10		
Sulfate (as SO4)[1]	mg/L	125	250		
Sulfide	mg/L	N/A	N/A		
Total Organic Carbon	mg/L	N/A	N/A		
VOCs					
1,1,1-Trichloroethane	µg/L	40	200	0.05 UJ	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.019 UJ	0.019 UJ
1,1,2-Trichloroethane	µg/L	0.5	5	0.06 UJ	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.06 UJ	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.05 UJ	0.05 U
1,2,3-Trichlorobenzene[2]	µg/L	N/A	N/A	0.07 UJ	0.07 U
1,2,4-Trichlorobenzene[2]	µg/L	14	70	0.06 UJ	0.06 U
1,2-Dibromo-3-chloropropane[2]	µg/L	0.02	0.2	**0.05 UJ**	**0.05 U**
1,2-Dibromoethane[2]	µg/L	0.5	5	0.05 UJ	0.05 U
1,2-Dichlorobenzene[2]	µg/L	60	600	0.05 UJ	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.03 UJ	0.03 UJ
1,2-Dichloropropane	µg/L	0.5	5	0.05 UJ	0.05 U
1,3-Dichlorobenzene[2]	µg/L	125	1,250	0.027 UJ	0.027 U
1,4-Dichlorobenzene[2]	µg/L	15	75	0.04 UJ	0.04 U
2-Butanone	µg/L	N/A	N/A	0.6 UJ	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	1.6 UJ	1.6 UJ
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.8 UJ	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	1.5 UJ
Benzene	µg/L	0.5	5	0.05 UJ	0.05 U
Bromochloromethane[2]	µg/L	N/A	N/A	0.028 UJ	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.03 UJ	0.03 UJ
Bromoform	µg/L	0.44	4.4	0.04 UJ	0.04 U
Bromomethane	µg/L	1	10	0.07 UJ	0.07 U
Carbon disulfide	µg/L	200	1,000	0.09 UJ	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.022 UJ	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.04 UJ	0.04 U
Chloroethane	µg/L	80	400	0.07 UJ	0.07 U
Chloroform	µg/L	0.6	6	0.022 UJ	0.022 U
Chloromethane	µg/L	0.3	3	**0.63 UJ**	**0.75 U**
cis-1,2-Dichloroethene	µg/L	7	70	0.05 UJ	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 UJ	0.017 U
Dibromochloromethane	µg/L	6	60	0.026 UJ	0.026 U
Dichlorodifluoromethane[2]	µg/L	200	1,000	0.03 UJ	0.03 U
Ethylbenzene	µg/L	140	700	0.024 UJ	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.04 UJ	0.04 U
m,p,-Xylene (sum of isomers)	µg/L	1,000	10,000	0.08 UJ	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.08 UJ	0.08 UJ
Methylene chloride	µg/L	0.5	5	**0.69 UJ**	**0.58 UJ**
o-Xylene	µg/L	N/A	N/A	0.023 UJ	0.023 U
Styrene	µg/L	10	100	0.022 UJ	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 UJ	0.05 U
Toluene	µg/L	200	1,000	0.06 UJ	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.06 UJ	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 UJ	0.017 UJ
Trichloroethene	µg/L	0.5	5	0.05 UJ	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.013 UJ	0.013 U

Bolded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Preventative Action Limit (PAL).

Shaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

[1]WAC NR 140 PAL and ES exceedances for iron, manganese, and sulfate are based on public welfare groundwater quality standards.

[2]Analysis not validated by USEPA, as it is not a part of the QAPP/SAS.

mg/L = milligrams per liter; µg/L = micrograms per liter; mmhos/cm = millimhos per centimeter

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.

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UB indicates that the constiuent is considered to be below the detection limit listed due to blank contamination.

TABLE 4

Private Well Analytical Results—September 2007

2007 4th Quarter Groundwater Report

OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	PW-01	PW-02	PW-03	PW-04	PW-05	PW-07	PW-08	PW-09	PW-10	PW-11	DW-01
VOCs														
1,1,1-Trichloroethane	µg/L	40	200	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ	0.019 UJ
1,1,2-Trichloroethane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene[1]	µg/L	N/A	N/A	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene[1]	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2-Dibromo-3-chloropropane[1]	µg/L	0.02	0.2	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane[1]	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene[1]	µg/L	60	600	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.24 J	0.03 UJ	0.045 J	0.03 UJ	0.043 J	0.05 J	0.03 UJ	0.069 J	0.03 U	0.03 UJ	0.03 UJ
1,2-Dichloropropane	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,3-Dichlorobenzene[1]	µg/L	125	1,250	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene[1]	µg/L	15	75	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.6 UJ	0.6 UJ	0.6 UJ	0.6 UJ	0.6 UJ	0.6 UJ	0.6 UJ	0.6 UJ	0.6 U	0.6 UJ	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ	1.6 UJ
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane[1]	µg/L	N/A	N/A	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ	0.03 U	0.03 UJ	0.03 UJ
Bromoform	µg/L	0.44	4.4	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.39 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	**0.41 U**	**0.43 U**	**0.33 U**	0.26 U	0.21 U	**0.32 U**	**0.45 U**	0.22 U	0.28 U	0.26 U	**0.32 U**
cis-1,2-Dichloroethene	µg/L	7	70	0.05 U	0.05 U	0.75	0.94	0.84	3.9	1.5	6.2 J	0.05 U	0.61	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane[1]	µg/L	200	1,000	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p,-Xylene (sum of isomers)	µg/L	1,000	10,000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.08 UJ	0.08 UJ	0.54 J	0.54 J	0.63 J	0.75 J	0.67 J	0.9 J	0.26	0.91 J	0.08 UJ
Methylene chloride	µg/L	0.5	5	**1.1 UJ**	**1.3 UJ**	**0.5 UJ**	**0.62 UJ**	**0.54 UJ**	0.48 UJ	**0.78 UJ**	**0.78 R**	0.18 UJ	0.49 UJ	0.48 UJ
o-Xylene	µg/L	N/A	N/A	0.023 U	0.054 J	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 UJ	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 R	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.06 U	0.06 U	0.08 J	0.11 J	0.089 J	0.35	0.13 J	0.56	0.06 U	0.075 J	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 UJ	0.017 UJ	0.017 UJ	0.017 UJ	0.017 UJ	0.017 UJ	0.017 UJ	0.017 UJ	0.017 U	0.017 UJ	0.017 UJ
Trichloroethene	µg/L	0.5	5	0.05 U	0.05 U	**0.53**	0.067 J	0.11 J	0.05 U	0.13 J	0.12 J	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	**0.072**	0.013 U	**0.052**	0.013 U	0.013 U	0.013 U

[1]Analysis not validated by USEPA, as it is not a part of the QAPP/SAS.

µg/L = micrograms per liter

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.

U indicates that the constituent was not detected above the method detection limit.

UJ indicates that the constituent was not detected above the estimated method detection limit.

UB indicates that the constiuent is considered to be below the detection limit listed due to blank contamination.

Bolded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Preventive Action Limit (PAL).

Shaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 5

Private Well Analytical Results—September 2007

2007 4th Quarter Groundwater Report

OECI Site

Constituent	Units	SW-01	SW-03
Natural Attenuation Parameters			
Alkalinity, total (as CaCO3)	mg/L	460	470
Chloride (as Cl)	mg/L	29	40
Ethane	µg/L	0.4 U	0.4 U
Ethene	µg/L	0.5 U	0.5 U
Iron, total	µg/L	1,100	590
Iron, dissolved	µg/L	180 J	230 J
Manganese, total	µg/L	990 J	1,000 J
Manganese, dissolved	µg/L	880	950
Methane	µg/L	7.3 J	4.8 J
Nitrogen, ammonia (as N)	mg/L	0.021 U	0.021 U
Nitrogen, nitrate (as N)	mg/L	0.11 U	0.31 J
Phosphorus, total	mg/L	0.24	0.24
Sulfate (as SO4)	mg/L	3.7 J	5.6 J
Sulfide	mg/L	1 U	1 U
Total Organic Carbon	mg/L	20	18
VOCs			
1,1,1-Trichloroethane	µg/L	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.019 U	0.019 U
1,1,2-Trichloroethane	µg/L	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.05 U	0.05 U
1,2,3-Trichlorobenzene[1]	µg/L	0.07 U	0.07 U
1,2,4-Trichlorobenzene[1]	µg/L	0.06 U	0.06 U
1,2-Dibromo-3-chloropropane[1]	µg/L	0.05 U	0.05 U
1,2-Dibromoethane[1]	µg/L	0.05 U	0.05 U
1,2-Dichlorobenzene[1]	µg/L	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.05 U	0.05 U
1,3-Dichlorobenzene[1]	µg/L	0.027 U	0.027 U
1,4-Dichlorobenzene[1]	µg/L	0.04 U	0.04 U
2-Butanone	µg/L	0.6 UJ	0.6 UJ
2-Hexanone	µg/L	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	0.8 UJ	0.8 UJ
Acetone	µg/L	1.5 UJ	1.5 UJ
Benzene	µg/L	0.05 U	0.05 U
Bromochloromethane[1]	µg/L	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.03 U	0.03 U
Bromoform	µg/L	0.04 U	0.04 U
Bromomethane	µg/L	0.07 U	0.07 U
Carbon disulfide	µg/L	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.022 U	0.022 U
Chlorobenzene	µg/L	0.04 U	0.04 U
Chloroethane	µg/L	0.07 U	0.07 U
Chloroform	µg/L	0.022 U	0.022 U
Chloromethane	µg/L	0.17 U	0.23 U
cis-1,2-Dichloroethene	µg/L	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.026 U	0.026 U
Dichlorodifluoromethane[1]	µg/L	0.03 U	0.07 J
Ethylbenzene	µg/L	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.04 U	0.04 U
m,p,-Xylene (sum of isomers)	µg/L	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.08 U	0.08 U
Methylene chloride	µg/L	0.18 UJ	0.18 UJ
o-Xylene	µg/L	0.023 U	0.023 U
Styrene	µg/L	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.05 U	0.05 U
Toluene	µg/L	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	0.06 U	0.06 U
trans-1,3-Dichloropropene	µg/L	0.017 U	0.017 U
Trichloroethene	µg/L	0.05 U	0.05 U
Vinyl chloride	µg/L	0.013 U	0.013 U

[1]Analysis not validated by USEPA, as it is not a part of the QAPP/SAS.

mg/L = milligrams per liter; µg/L = micrograms per liter

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.

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Figures

NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04
2. BASE MAP DEVELOPED FROM AERIAL PHOTOGRAPHS DATED 3/26/1999 PREPARED BY AEROMETRICS, INC., SHEBOYGAN, WISCONSIN.
3. VERTICAL DATUM (ELEVATION) IS REFERENCED TO USGS MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT. TOPOGRAPHIC CONTOUR INTERVAL: 2 FEET.
4. THE HORIZONTAL DATUM IS BASED ON THE WISCONSIN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM (NAD) 1927 - WISCONSIN SOUTH.
5. MONITORING WELL LOCATIONS AND ELEVATIONS ARE BASED ON A SURVEY PERFORMED BY SPATIAL DATA SURVEYS ON DECEMBER 2001, JANUARY 2002, JUNE 2002, AND APRIL 2003.
6. SITE BENCHMARKS ESTABLISHED BASED ON SURVEY FROM BENCHMARK MONUMENT LOCATED ON THE SOUTHWEST CORNER OF THE INTERSECTION OF MAPLETON ROAD AND MILL ROAD. NE 1/4 OF NE 1/4 OF SECTION 8, TOWNSHIP 8 NORTH, RANGE 17 EAST.
7. THE PRIVATE OR SUPPLY WELLS SHOWN ON THIS MAP REPRESENT A PORTION OF THE PRIVATE WELLS SERVING THE RESIDENTS OR BUSINESSES IN THE TOWN OF ASHIPPUN, AND REPRESENT A PORTION OF THESE WELLS THAT LIKELY EXIST WITHIN THE CONFINED AREA OF THIS MAP.

LEGEND

SITE INSTRUMENTATION

- BEDROCK MONITORING WELL
- DEEP UNCONSOLIDATED MONITORING WELL
- SHALLOW UNCONSOLIDATED MONITORING WELL
- DRIVE POINT WELL
- EXTRACTION WELL
- SITE BUILDING WELL (DW-01)
- RESIDENTIAL WELL
- DEEP UNCONSOLIDATED SENTINEL WELL
- SHALLOW UNCONSOLIDATED SENTINEL WELL
- STAFF GAUGE
- CURRENT SITE BUILDING
- FORMER OECI SITE BUILDING
- FORMER OECI SITE BOUNDARY
- FENCED AREA
- ELEVATION CONTOUR (FT ABOVE MEAN SEA LEVEL) CONTOUR INTERVAL = 2FT

Feet

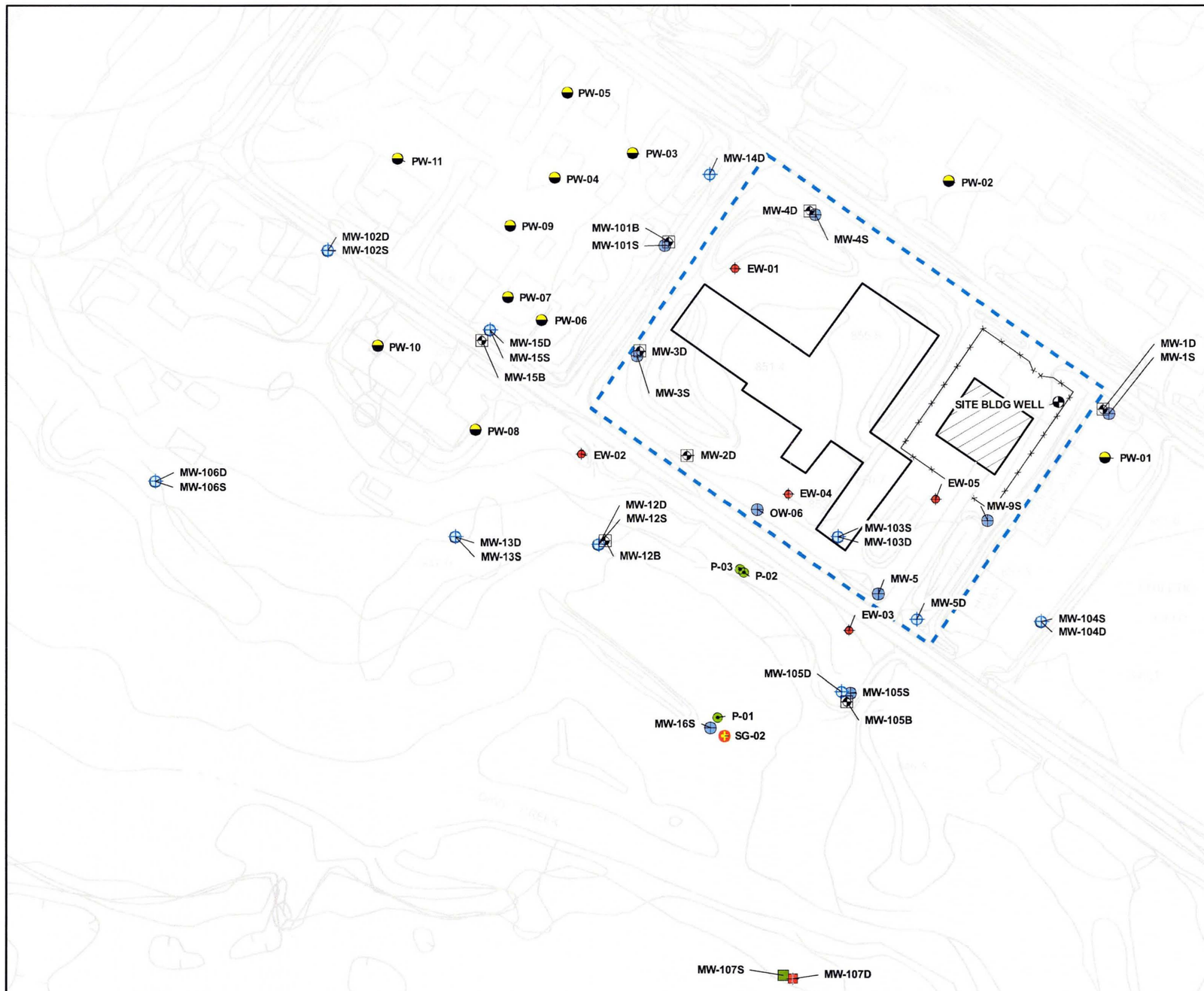
0 100 200

N

FIGURE 1
Site Monitoring Location– September 2007
2007 4th Quarter Groundwater Report
OECI Site

ES052007001CVO-OECI_Site_MonitoringLocations_Fig01_4thQR_v04

CH2MHILL



NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04
2. BASE MAP DEVELOPED FROM AERIAL PHOTOGRAPHS DATED 3/26/1999 PREPARED BY AEROMETRICS, INC., SHEBOYGAN, WISCONSIN.
3. VERTICAL DATUM (ELEVATION) IS REFERENCED TO USGS MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT. TOPOGRAPHIC CONTOUR INTERVAL: 2 FEET.
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LEGEND

SITE INSTRUMENTATION

- BEDROCK MONITORING WELL
- DEEP UNCONSOLIDATED MONITORING WELL
- SHALLOW UNCONSOLIDATED MONITORING WELL
- DRIVE POINT WELL
- EXTRACTION WELL
- SITE BUILDING WELL (DW-01)
- RESIDENTIAL WELL
- DEEP UNCONSOLIDATED SENTINEL WELL
- SHALLOW UNCONSOLIDATED SENTINEL WELL
- STAFF GAUGE
- CURRENT SITE BUILDING
- FORMER OECI SITE BUILDING
- FORMER OECI SITE BOUNDARY
- FENCED AREA
- ELEVATION CONTOUR (FT ABOVE MEAN SEA LEVEL) CONTOUR INTERVAL = 2FT

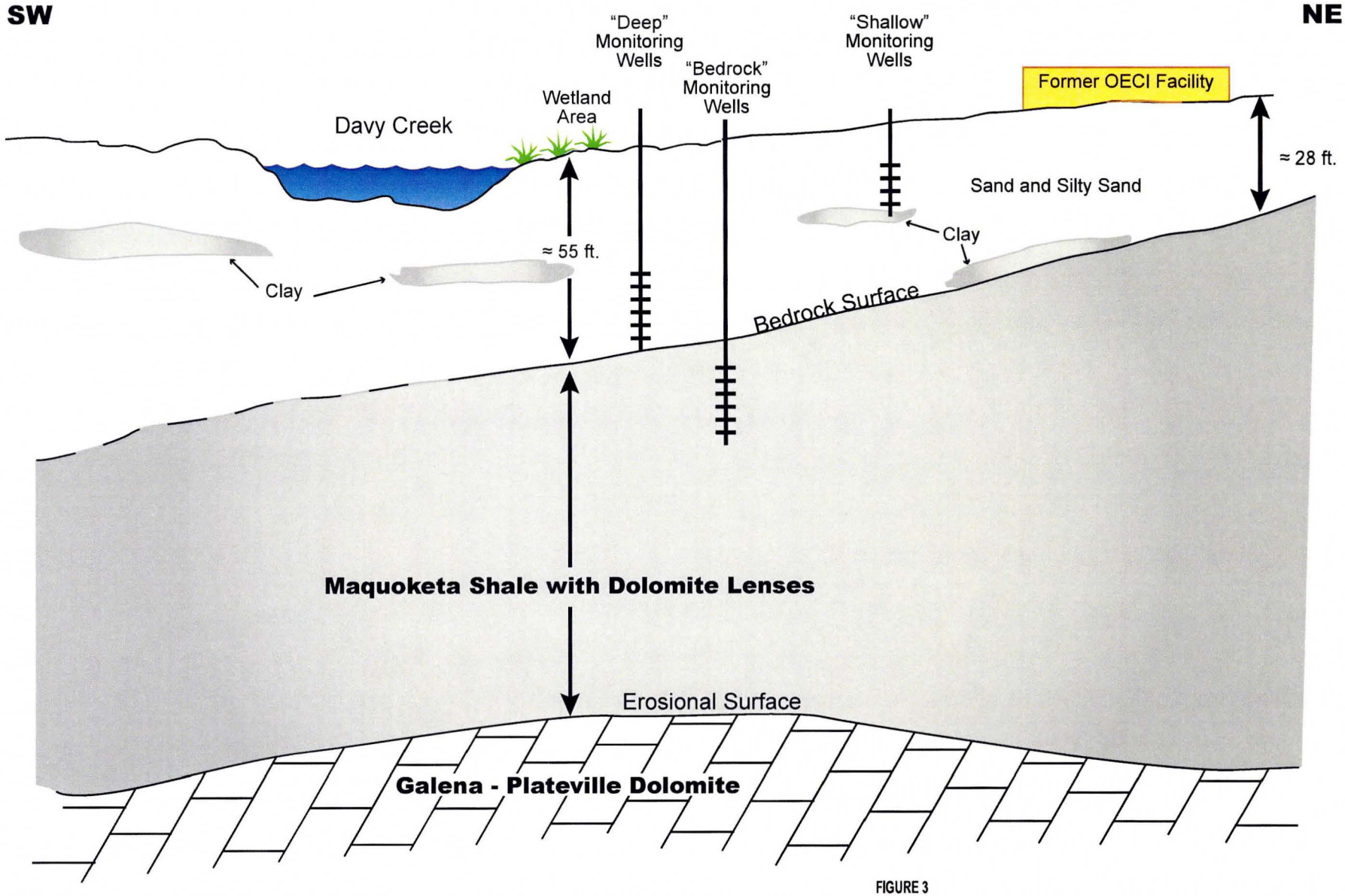
N

0 60 120
Feet

FIGURE 2
Site Monitoring Well Locations – September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

ES052007001CVO-OECI_Site_MonitoringWellLocations_Fig02_4thQR_v04



- NOT TO SCALE -

FIGURE 3
Conceptual Depiction of Site Aquifer Units and Well Placement – September 2007
2007 4th Quarter Groundwater Report
OECI Site

NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04.

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MW-3S
Well Obstructed

MW-101S
847.29

MW-102S
846.39

MW-4S
847.57

MW-15S
846.42

MW-1S
847.68

MW-106S
845.00

MW-13S
845.71

MW-9S
846.64

MW-103S
846.30

MW-12S
845.21

MW-16S
845.05

MW-105S
845.42

MW-104S
846.17

MW-5
Well Broken

MW-107S
845.17

847.6
847.4
847.2
847
846.8
846.6
846.4
846.2
846
845.8
845.6
845.4
845.2
845

LEGEND

Site Instrumentation

- Shallow Unconsolidated Monitoring Well
- Shallow Unconsolidated Sentinel Well
- Estimated Groundwater Contour (0.2 foot contour interval; dashed where inferred)
- Approximate Site Boundary
- Fence
- OECI Treatment Plant
- Existing 2' Topographic Contour

N

0 70 140
Feet

FIGURE 4
Shallow Unconsolidated Groundwater Elevations - September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

MKE \\WAVE\PROJ\GIS\OEIC\MAPFILES\GROUNDWATER_ELEVATION_MAPS_SEPT_2007\FIGURE04_SHALLOW_UNCONSOLIDATED_AQUIFER_SEPT2007_GW_ELEV.MXD 3/4/2008 16:24:05

NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04.

2. BASE MAP DEVELOPED FROM AERIAL PHOTOGRAPHS DATED 3/26/1999 PREPARED BY AEROMETRICS, INC., SHEBOYGAN, WISCONSIN.

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4. VERTICAL DATUM (ELEVATION) IS REFERENCED TO USGS MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT. TOPOGRAPHIC CONTOUR INTERVAL: 2 FEET.

5. MONITORING WELL LOCATIONS AND ELEVATIONS ARE BASED ON A SURVEYS PERFORMED BY SPATIAL DATA SURVEYS ON DECEMBER 2001, JANUARY 2002, JUNE 2002 AND APRIL 2003.

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MW-14D
Well Inaccessible

MW-102D
846.01

MW-15D
846.05

MW-103D
846.35

MW-106D
845.85

MW-12D
845.82

MW-13D
845.78

MW-5D
846.02

MW-104D
845.96

MW-105D
845.81

MW-107D
845.69

846

846.1

846.2

846.3

845.9

845.8

845.7

LEGEND

Site Instrumentation

- Deep Unconsolidated Monitoring Well
- Deep Unconsolidated Sentinel Well
- Estimated Groundwater Contour (0.1 foot contour interval; dashed where inferred)
- Approximate Site Boundary
- Fence
- OECI Treatment Plant
- Existing 2' Topographic Contour

N

0 60 120
Feet

FIGURE 5
Deep Unconsolidated Groundwater Elevations - September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

MKE \\WAVE\PROJ\GIS\OEIC\MAPFILES\GROUNDWATER_ELEVATION_MAPS_SEPT_2007\FIGURE05_DEEP_UNCONSOLIDATED_AQUIFER_SEPT2007_GW_ELEV.MXD 2/25/2008 10:50:28

NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04.

2. BASE MAP DEVELOPED FROM AERIAL PHOTOGRAPHS DATED 3/26/1999 PREPARED BY AEROMETRICS, INC., SHEBOYGAN, WISCONSIN.

3. THE HORIZONTAL DATUM IS BASED ON THE WISCONSIN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM (NAD) 1927- WISCONSIN SOUTH.

4. VERTICAL DATUM (ELEVATION) IS REFERENCED TO USGS MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT. TOPOGRAPHIC CONTOUR INTERVAL: 2 FEET.

5. MONITORING WELL LOCATIONS AND ELEVATIONS ARE BASED ON A SURVEYS PERFORMED BY SPATIAL DATA SURVEYS ON DECEMBER 2001, JANUARY 2002, JUNE 2002 AND APRIL 2003.

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MW-4D
846.78

MW-101B
846.48

MW-15B
836.60

MW-3D
846.17

MW-1D
847.55

MW-2D
847.14

MW-12B
845.87

MW-105B
845.87

838 839 840 841 842 843 844 845 846 847

LEGEND

Site Instrumentation

- Bedrock Well
- Estimated Groundwater Contour (1 foot contour interval; dashed where inferred)
- Approximate Site Boundary
- Fence
- OECI Treatment Plant
- Existing 2' Topographic Contour

N

0 50 100
Feet

FIGURE 6
Bedrock Groundwater Elevations - September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

MKE \\WAVE\PROJ\GIS\OEIC\MAPFILES\GROUNDWATER_ELEVATION_MAPS_SEPT_2007\FIGURE06_BEDROCK_CONTOUR_SEPT2007_GW_ELEV.MXD 2/25/2008 13:35:45

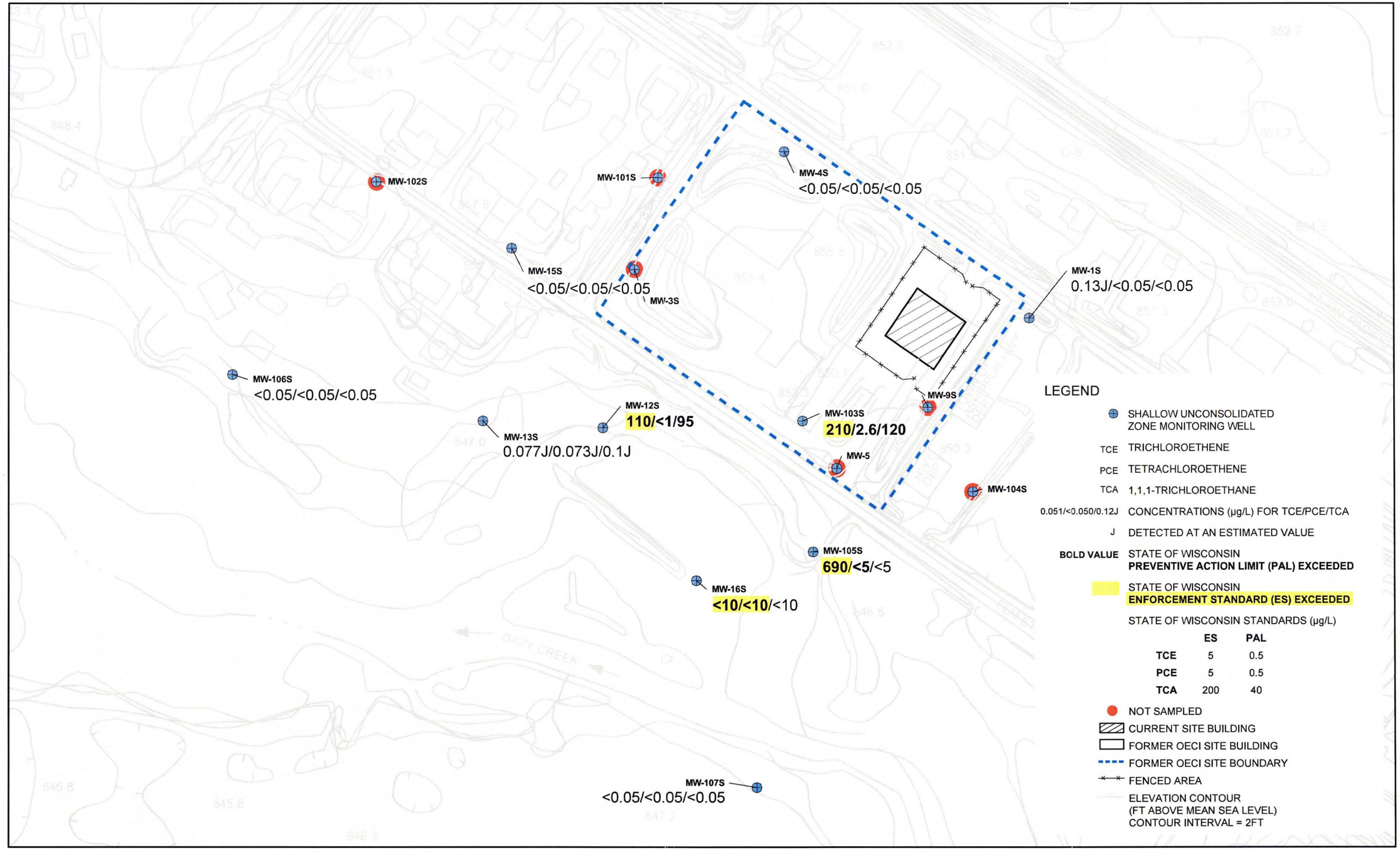

FIGURE 7
Groundwater TCE, PCE and TCA Concentrations in Shallow Unconsolidated Wells – September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

ES052007001CVO-OECI_TCE_PCE_TCA_Shallow_Fig07_4thQR_v07

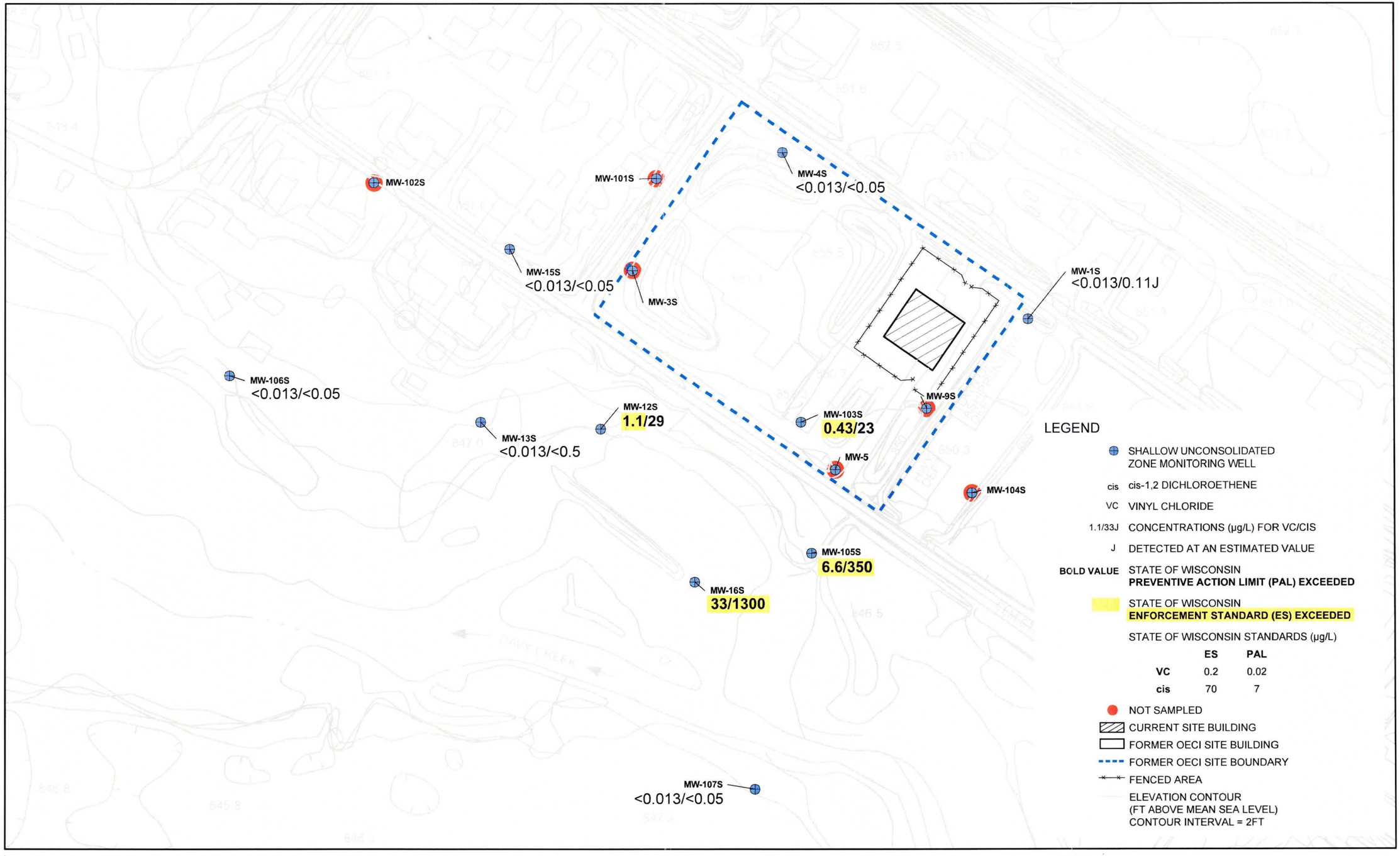

FIGURE 8
Groundwater VC and cis Concentrations in Shallow Unconsolidated Wells – September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

ES052007001CVO-OECI_VEcis_Shallow_Fig08_4thQR_v07

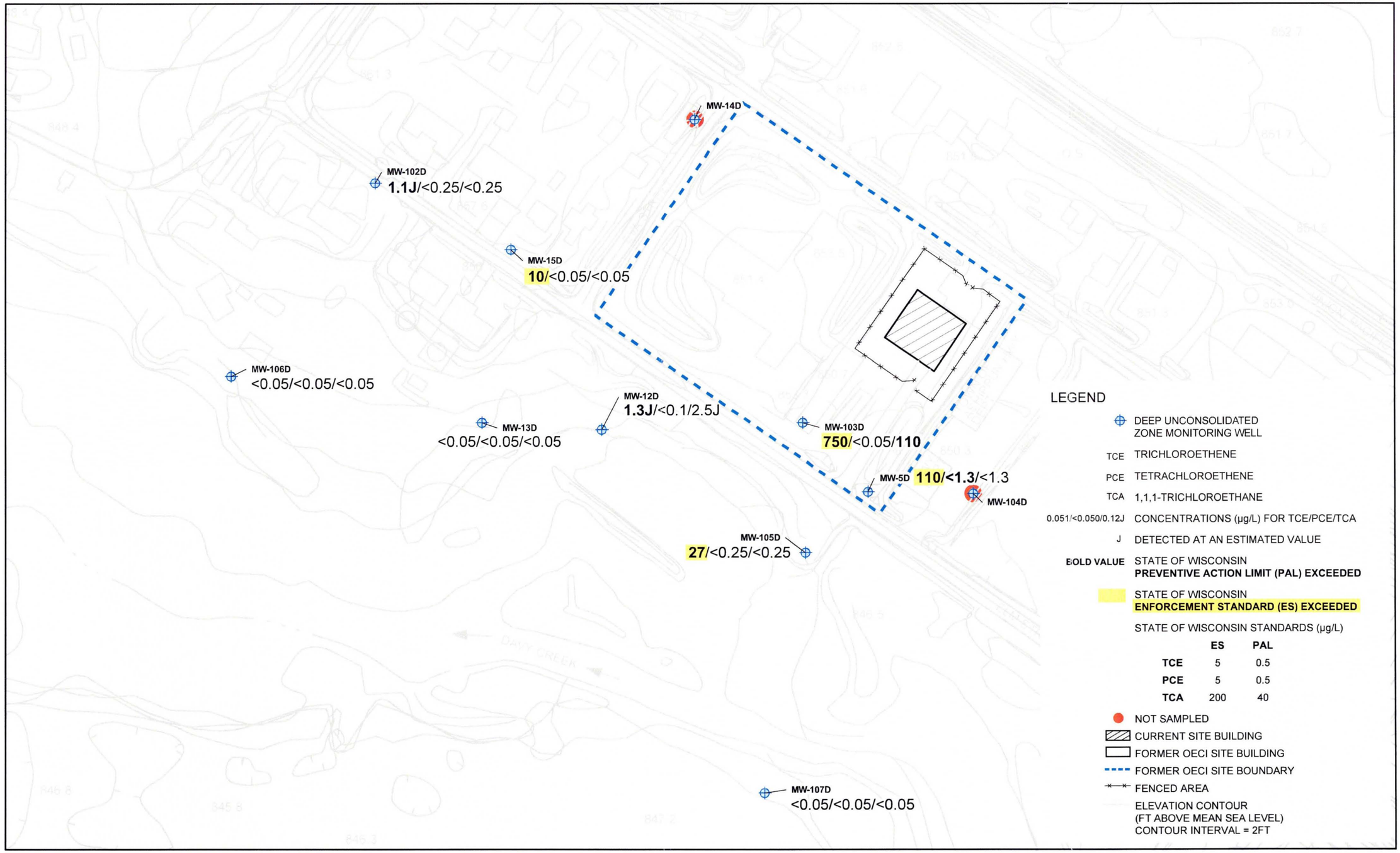

FIGURE 9
Groundwater TCE, PCE and TCA Concentrations in Deep Unconsolidated Wells – September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

ES052007001CVO-OECI_TCE_PCE_TCA_Deep_Fig09_4thQR_v08

MW-14D

MW-102D
<0.065/19J

MW-15D
<0.013/1.1

MW-106D
<0.013/<0.05

MW-12D
0.48J/5.1J

MW-13D
0.038J/0.74

MW-103D
0.18/64

MW-5D
3/83

MW-104D

MW-105D
0.63/34

MW-107D
<0.013/<0.05

DAVY CREEK

LEGEND

- DEEP UNCONSOLIDATED ZONE MONITORING WELL
- cis — cis-1,2 DICHLOROETHENE
- VC — VINYL CHLORIDE
- 1.1/33J — CONCENTRATIONS (µg/L) FOR VC/CIS
- J — DETECTED AT AN ESTIMATED VALUE
- **BOLD VALUE** — STATE OF WISCONSIN **PREVENTIVE ACTION LIMIT (PAL) EXCEEDED**
- STATE OF WISCONSIN **ENFORCEMENT STANDARD (ES) EXCEEDED**

STATE OF WISCONSIN STANDARDS (µg/L)

	ES	PAL
VC	0.2	0.02
cis	70	7

- NOT SAMPLED
- CURRENT SITE BUILDING
- FORMER OECI SITE BUILDING
- FORMER OECI SITE BOUNDARY
- FENCED AREA
- ELEVATION CONTOUR (FT ABOVE MEAN SEA LEVEL) CONTOUR INTERVAL = 2FT

N

0 60 120
Feet

FIGURE 10
Groundwater VC and cis Concentrations in Deep Unconsolidated Wells – September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

ES052007001CVO-OECI_VEcis_Deep_Fig10_4thQR_v08

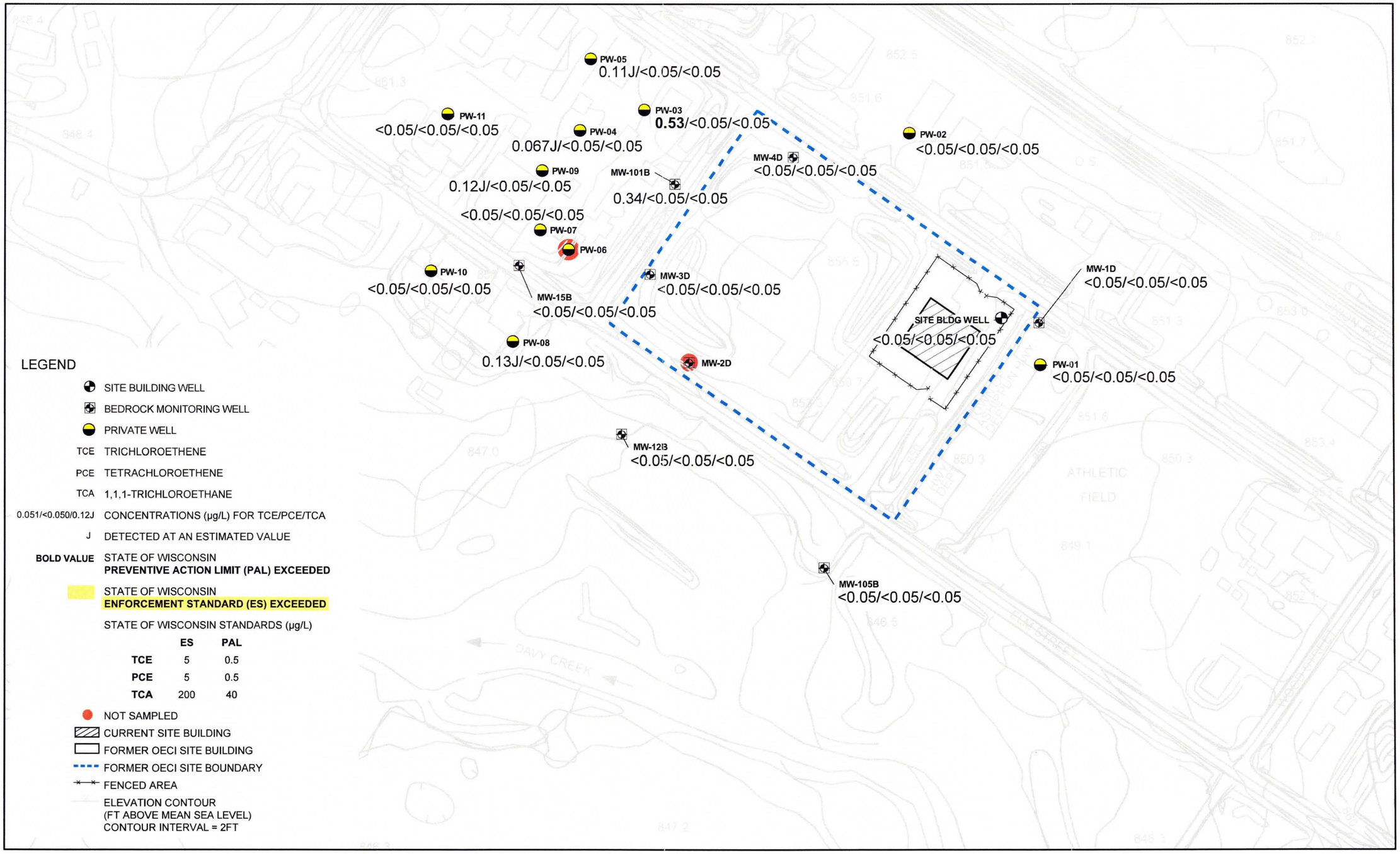

FIGURE 11
Groundwater TCE, PCE and TCA Concentrations in Bedrock Wells – September 2007
2007 4th Quarter Groundwater Report
OECI Site

CH2MHILL

ES052007001CVO-OECI_TCA_PCE_TCE_Bedrock_Fig11_4thQR_v09

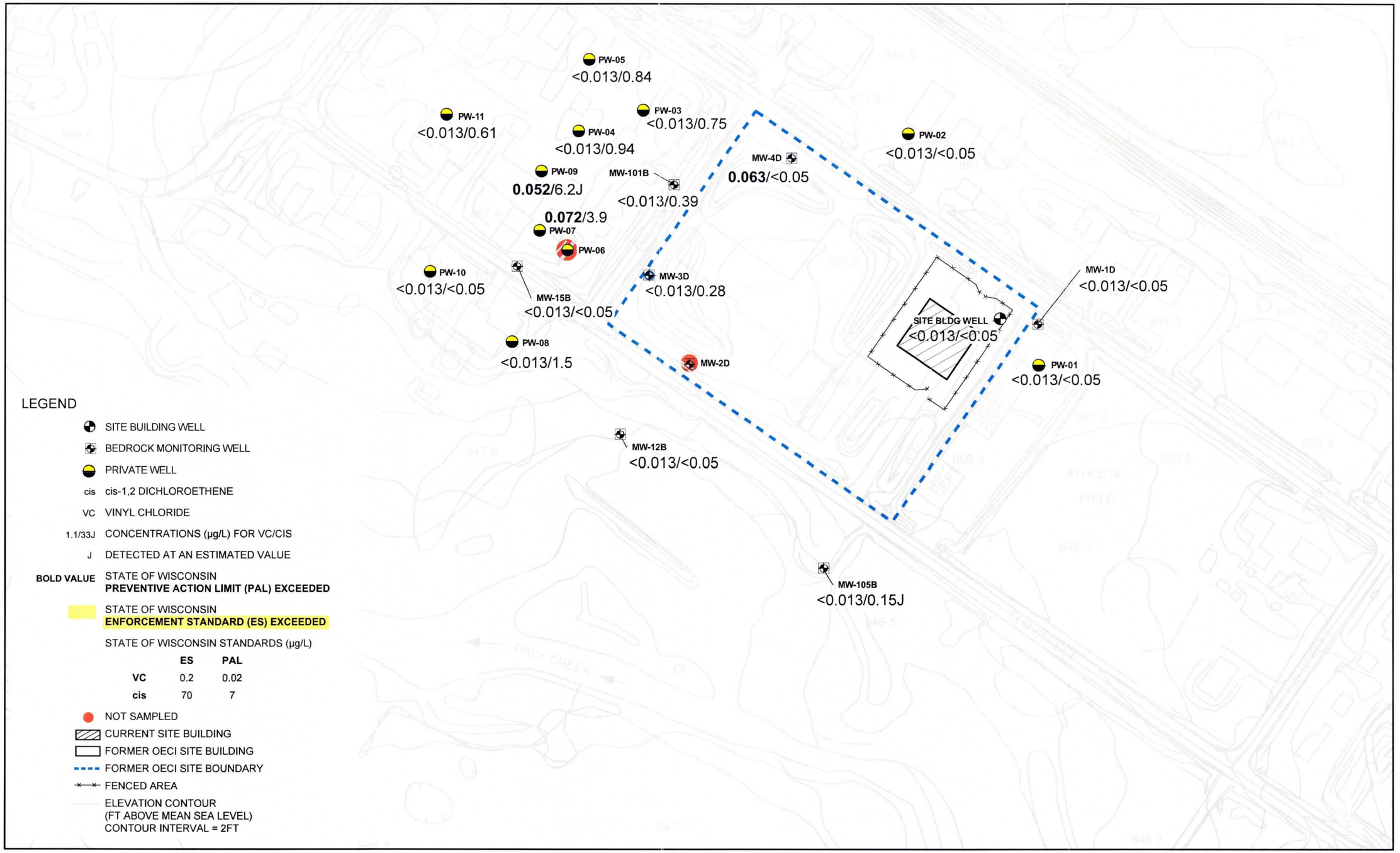

FIGURE 12
Groundwater VC and cis Concentrations in Bedrock Wells – September 2007
2007 4th Quarter Groundwater Report
OECI Site

ES052007001CVO-OECI_VCcis_Bedrock_Fig12_4thQR_v10

CH2MHILL

Appendix A

Data Validation Memorandum

Data Usability Evaluation
Oconomowoc Electroplating Company, Inc. Site, Ashippun, Wisconsin
WA No. 003-LRLR-05M8, Contract No. EP-S5-06-01

PREPARED FOR: U.S. Environmental Protection Agency

PREPARED BY: Adrienne Unger/CH2M HILL

DATE: March 14, 2008

This memorandum presents the data usability evaluation of the groundwater samples collected during the field investigation conducted at the Oconomowoc Electroplating Company, Inc. site in Ashippun, Wisconsin, during September 2007. CH2M HILL performed the sampling. CT Laboratories, Inc. of Baraboo, Wisconsin, performed the analyses.

Fifty-nine groundwater and surface water samples were collected, including quality control (QC) samples, and analyzed for one or more of the following U.S. Environmental Protection Agency (USEPA)-approved methods:

- Volatile organic compounds (VOCs) by USEPA SW-846 Method 8260
- Alkalinity by USEPA 310.2
- Ammonia by USEPA 350.1
- Chloride by USEPA SW-846 Method 9056
- Methane, ethane, and ethene by RSK 175
- Nitrate by USEPA SW-846 Method 9056
- Orthophosphate by USEPA SW-846 Method 9056
- Sulfate by USEPA SW-846 Method 9056
- Sulfide by USEPA 376.1
- Total organic carbon by USEPA SW-846 Method 9060
- Total metals by USEPA SW-846 Method 6010B
- Dissolved metals by USEPA SW-846 Method 6010B

As part of the quality assurance (QA) process outlined in the field sampling plan (CH2M HILL, 2006), QC samples were collected in the field to complement the assessment of overall data quality and usability. These QC samples collected were field duplicates, aliquots for laboratory matrix spike/matrix spike duplicates (MS/MSDs), a field blank, and an equipment blank. VOC trip blanks also were used as a means of QC; these samples were supplied by the laboratory.

The dataset was reviewed by the USEPA Environmental Service Assistance Team (ESAT) contractor, TechLaw, (Attachment 1) to assess the accuracy and precision of the method and the matrix using criteria established in the National Functional Guidelines (NFG) for data

review. Completeness of the dataset was then derived. USEPA validators added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

Standard data qualifiers were used as a means of classifying the data as to their conformance to QC requirements. The applied data qualifiers are defined as follows:

[U] The sample target was analyzed for but not detected above the level of the associated limit of detection or quantitation.

[J] The associated value is an estimated quantity. This qualifier was appended when the data indicated the presence of a specific target analyte but was below the stated reporting (or quantitation) limit, and/or when QC statistics alluded to an analytical bias.

[UJ] The component was analyzed for but not detected at a level equal to or greater than the level of detection (LOD) or quantification (often the reporting limit [RL]). This flag was used when QC measurements indicated a possible low bias in the analytical data.

[R] Rejected. The data were of insufficient quality to be deemed acceptable as reported or otherwise qualified.

Groundwater Samples

CH2M HILL conducted a review of the validation performed by USEPA for the groundwater samples in sample delivery group (SDG) 62785. Table 1 lists the sample identifications (IDs) and SDGs that were reviewed (100 percent of all samples collected).

TABLE 1
Sample Summary by Laboratory ID and Sample Delivery Group
Oconomowoc Electroplating

Sample ID	SDG	Sample ID	SDG	Sample ID	SDG
07CE47-01	62785	07CE47-27	62785	07CE47-53	62785
07CE47-02	62785	07CE47-28	62785	07CE47-54	62785
07CE47-03	62785	07CE47-29	62785	07CE47-55	62785
07CE47-04	62785	07CE47-30	62785	07CE47-56	62785
07CE47-05	62785	07CE47-31	62785	07CE47-57	62785
07CE47-06	62785	07CE47-32	62785	07CE47-58	62785
07CE47-07	62785	07CE47-33	62785	07CE47-59	62785
07CE47-08	62785	07CE47-34	62785	07CE47-60	62785
07CE47-09	62785	07CE47-35	62785	07CE47-61	62785
07CE47-10	62785	07CE47-36	62785	07CE47-62	62785
07CE47-11	62785	07CE47-37	62785	07CE47-63	62785
07CE47-12	62785	07CE47-38	62785	07CE47-64	62785

TABLE 1
Sample Summary by Laboratory ID and Sample Delivery Group
Oconomowoc Electroplating

Sample ID	SDG	Sample ID	SDG	Sample ID	SDG
07CE47-13	62785	07CE47-39	62785	07CE47-65	62785
07CE47-14	62785	07CE47-40	62785	07CE47-66	62785
07CE47-15	62785	07CE47-41	62785	07CE47-67	62785
07CE47-16	62785	07CE47-42	62785	07CE47-68	62785
07CE47-17	62785	07CE47-43	62785	07CE47-69	62785
07CE47-18	62785	07CE47-44	62785	07CE47-70	62785
07CE47-19	62785	07CE47-45	62785	07CE47-71	62785
07CE47-20	62785	07CE47-46	62785	07CE47-72	62785
07CE47-21	62785	07CE47-47	62785	07CE47-73	62785
07CE47-22	62785	07CE47-48	62785	07CE47-74	62785
07CE47-23	62785	07CE47-49	62785	07CE47-75	62785
07CE47-24	62785	07CE47-50	62785	07CE47-76	62785
07CE47-25	62785	07CE47-51	62785	07CE47-77	62785
07CE47-26	62785	07CE47-52	62785	07CE47-78	62785

The USEPA validation case narratives and worksheets indicate which of these sample results were biased due to applicable QC statistics or other NFG requirements. The qualifications are described in Attachment 1. Some results were rejected; those are summarized as follows:

- The MS/MSD recoveries for methylene chloride and styrene were below 20 percent for sample 07CE47-72. These sample results were qualified as unusable "R".
- The peak for chloride in sample 07CE47-05 was misidentified during analysis. This detected sample result was qualified as unusable "R".
- The total organic carbon result for sample 07CE47-27 was less than the negative limit of detection. This nondetected sample result was qualified as unusable "R".

The dataset completeness is 99.9 percent usable and may be used in the project decision-making process with qualification. In addition, approximately 10 percent of the data underwent a comparative review to evaluate the accuracy between the database and the USEPA validation reports. No discrepancies were noted.

Conclusions

The USEPA validation reports were verified to comply with the applicable NFG for data review. This verification confirmed that the validation performed by USEPA was complete

for the entire dataset analyzed by CT Laboratories. Qualified data, if not rejected, are considered usuable for the project decision-making process. The project data quality objectives (DQOs) established a completeness goal for the project at 90 percent. The percent completeness for these groundwater data is 99.9 percent (0.1 percent of the data were rejected) and met the established DQOs set forth in the quality assurance project plan (CH2M HILL 2004).

Data summary tables of the results have been provided as a table in the *2007 Fourth Quarter Groundwater Report – OECI Site*. An electronic file of these data also will be submitted as part of this deliverable.

Reference Cited

CH2M HILL. 2004. *Quality Assurance Project Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin*. WA No. 236-RALR-05M8 Contract No. 68-W6-0025. October.

CH2M HILL. 2006. *Field Sampling Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin*. WA No. 003-LRLR-05MS Contract No. EP-SS-06-01. October.

Attachment 1

Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: October 18, 2007

FROM: Stephen L. Ostrodka, Chief (SRT-4J)
Superfund Field Services Section

TO: Data User: Ch2m Hill

We have reviewed the data for the following case:

SITE Name: Oconomowoc Electroplating Company (WI)

SAS Project: 07CE47 SDG Number: 62785-VOC

Number and Type of Samples: 59 Waters (59 VOCs / 29 MEE)

Sample Numbers: 07CE47; -01, -03, -05, -07, -09, -10, -12, -13, -15, -17, -19, -20, -22, -24, -26, -27, -29, -31, -33, -34, -36, -38, -40, -42 thru -74, -76 thru -78

Laboratory: CT Laboratories Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SRT-4J

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Fifty-nine (59) preserved water samples listed in the following table were collected September 24 - 28, 2007. CT Laboratories of Baraboo, Wisconsin received the samples September 25 - 29, 2007. All but eleven (11) samples were received intact and properly cooled. The following eleven (11) samples; 07CE47-31, 07CE47-33, 07CE47-34, 07CE47-36, 07CE47-38, 07CE47-57, 07CE47-58, 07CE47-62, 07CE47-63, 07CE47-65 and 07CE47-67 were received with cooler temperatures less than 2.0 °C. Fifty-nine (59) samples were analyzed October 1 – 11, 2007 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Twenty-nine (29) samples were analyzed September 28 and October 2, 2007 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

EPA ID	CTI Lab ID	Sample location	Date sampled	MEE Analyses	VOC Analyses
07CE47-01	504795	OEP-MW-103D	09/24/07	09/28/07	10/01/07
07CE47-03	504798	OEP-MW-103S	09/24/07	09/28/07	10/01/07
07CE47-05	504800	OEP-MW-015D	09/24/07	09/28/07	10/02/07
07CE47-07	504802	OEP-MW-015S	09/24/07	09/28/07	10/02/07
07CE47-09	504804	OEP-JS-001	09/24/07		10/01/07
07CE47-10	505255	OEP-FB-001	09/25/07	09/28/07	10/02/07
07CE47-12	505257	OEP-JS-002	09/25/07		10/02/07
07CE47-13	505221	OEP-MW-001D	09/25/07	09/28/07	10/01/07
07CE47-15	505223	OEP-MW-001S	09/25/07	09/28/07	10/02/07
07CE47-17	505225	OEP-MW-004S	09/25/07	09/28/07	10/02/07
07CE47-19	505227	OEP-JS-003	09/25/07		10/02/07
07CE47-20	505230	OEP-MW-004D	09/25/07	09/28/07	10/02/07
07CE47-22	505263	OEP-MW101B	09/25/07	09/28/07	10/05/07
07CE47-24	505265	OEP-MW101BFR	09/25/07	09/28/07	10/05/07
07CE47-26	505267	OEP-JS-004	09/25/07		10/05/07
07CE47-27	505258	OEP-EB-001	09/25/07	09/28/07	10/02/07
07CE47-29	505268	OEP-MW-003D	09/25/07	09/28/07	10/10/07
07CE47-31	505199	OEP-MW-102D	09/25/07	09/28/07	10/01/07
07CE47-33	505210	OEP-JS-005	09/25/07		10/01/07
07CE47-34	505213	OEP-SW-01	09/25/07	09/28/07	10/01/07
07CE47-36	505217	OEP-SW-01FR	09/25/07	09/28/07	10/01/07
07CE47-38	505219	OEP-SW-03	09/25/07	09/28/07	10/01/07
07CE47-40	505260	OEP-MW-005D	09/25/07	09/28/07	10/02/07
07CE47-42	505262	OEP-JS-006	09/25/07		10/02/07
07CE47-43	505561	OEP-MW-013D	09/26/07	09/28/07	10/05/07

07CE47-44	505563	OEP-MW-013DFR	09/26/07	09/28/07	10/10/07
07CE47-45	505565	OEP-MW-013S	09/26/07	10/02/07	10/05/07
07CE47-46	505567	OEP-JS-007	09/26/07		10/06/07
07CE47-47	505570	OEP-MW-012B	09/26/07	10/02/07	10/10/07
07CE47-48	505568	OEP-MW-012D	09/26/07	10/02/07	10/06/07
07CE47-49	505572	OEP-MW-012S	09/26/07	10/02/07	10/05/07
07CE47-50	505574	OEP-JS-008	09/26/07		10/06/07
07CE47-51	505575	OEP-MW-106D	09/26/07		10/05/07
07CE47-52	505576	OEP-MW-106DFR	09/26/07		10/05/07
07CE47-53	505577	OEP-MW-106S	09/26/07		10/10/07
07CE47-54	506132	OEP-MW-105B	09/27/07	10/02/07	10/10/07
07CE47-55	506148	OEP-MW-105D	09/27/07	10/02/07	10/10/07
07CE47-56	506150	OEP-MW-105S	09/27/07	10/02/07	10/05/07
07CE47-57	506139	OEP-PW-01	09/27/07		10/11/07
07CE47-58	506140	OEP-PW-07	09/27/07		10/11/07
07CE47-59	506152	OEP-JS-009	09/27/07		10/10/07
07CE47-60	506134	OEP-JS-010	09/27/07		10/10/07
07CE47-61	506135	OEP-MW-107S	09/27/07		10/10/07
07CE47-62	506141	OEP-PW-05	09/27/07		10/11/07
07CE47-63	506142	OEP-PW-08	09/27/07		10/11/07
07CE47-64	506136	OEP-MW-107D	09/27/07		10/11/07
07CE47-65	506143	OEP-DW-01	09/27/07		10/11/07
07CE47-66	506137	OEP-MW-015B	09/27/07	10/02/07	10/11/07
07CE47-67	506144	OEP-JS-011	09/27/07		10/06/07
07CE47-68	506145	OEP-PW-11	09/27/07		10/11/07
07CE47-69	506146	OEP-PW-03	09/27/07		10/11/07
07CE47-70	506147	OEP-PW-03FR	09/27/07		10/11/07
07CE47-71	506193	OEP-PW-02	09/28/07		10/11/07
07CE47-72	506194	OEP-PW-09	09/28/07		10/11/07
07CE47-73	506195	OEP-PW-04	09/28/07		10/11/07
07CE47-74	506198	OEP-MW-016S	09/28/07	10/02/07	10/10/07
07CE47-76	506196	OEP-JS-012	09/28/07		10/06/07
07CE47-77	506200	OEP-JS-013	09/28/07		10/06/07
07CE47-78	506197	OEP-PW-010	09/28/07		10/11/07

The laboratory reported the results of 46 volatile analytes. Only the following 36 volatile analytes were requested in the SAS contract and only these analytes will be discussed in the following validation report.

Acetone	Benzene	Bromodichloromethane
Bromoform	Bromomethane	2-Butanone (MEK)
Carbon disulfide	Carbon tetrachloride	Chlorobenzene
Chloroethane	Chloroform	Chloromethane
Dibromochloromethane	1,1-Dichloroethane	1,2-Dichloroethane
1,1-Dichloroethene	Cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene
1,2-Dichloropropane	Cis-1,3-Dichloropropene	Trans-1,3-Dichloropropene
Ethylbenzene	2-Hexanone	4-Methyl-2-pentanone (MIBK)
Methylene chloride	Styrene	1,1,2,2-Tetrachloroethane
Tetrachloroethene	Toluene	1,1,1-Trichloroethane
1,1,2-Trichloroethane	Trichloroethene	Vinyl chloride
[Xylenes, total]	M & p-Xylene	o-Xylene
Isopropylbenzene	Methyl tert-butyl ether	

The following samples are the method blanks for the SW-846 Method 8260B analyses. MB-506767, MB-508218 and MB-509731 were identified as method blanks and accompanied by Volatile Method Blank Summaries. Six (6) additional QC samples were identified as Method Blanks (MB) and or Continuing Calibration Blanks (CCB) on the Volatile Organic Instrument Performance Check Forms (Form 5A). The MEE method blanks are MB-506045, MB-506048 and MB-506906 for the Mod RSK 175 analyses.

Samples 07CE47-40, 07CE47-56 and 07CE47-72 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses. Samples 07CE47-40 and 07CE47-56 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The VOC laboratory control samples are LCS-506766, LCS-508217 and LCS-509730. The VOC laboratory control sample duplicates are LCSD-507355 and LCSD-509758. The MEE laboratory control samples are LCS-506044 and LCS-506905. The MEE laboratory control sample duplicates are LCSD-506049 and LCSD-506909.

Thirteen (13) samples; 07CE47-09, 07CE47-12, 07CE47-19, 07CE47-26, 07CE47-33, 07CE47-42, 07CE47-46, 07CE47-50, 07CE47-59, 07CE47-60, 07CE47-67, 07CE47-76 and 07CE47-77 are identified as Trip Blanks. Sample 07CE47-27 is identified as an Equipment Blank. Sample 07CE47-10 is identified as a Field Blank.

Sample 07CE47-24 is a field replicate of 07CE47-22. Sample 07CE47-36 is a field replicate of 07CE47-34. Sample 07CE47-37 is a field replicate of 07CE47-35. Sample 07CE47-44 is a field replicate of 07CE47-43. Sample 07CE47-52 is a field replicate of 07CE47-51. Sample 07CE47-70 is a field replicate of 07CE47-69.

The VOA and MEE analyses were performed within the technical holding time of 14 days after sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Fifty-nine (59) preserved water samples listed in the following table were collected September 24 - 28, 2007. CT Laboratories of Baraboo, Wisconsin received the samples September 25 - 29, 2007. All but eleven (11) samples were received intact and properly cooled. The following eleven (11) samples; 07CE47-31, 07CE47-33, 07CE47-34, 07CE47-36, 07CE47-38, 07CE47-57, 07CE47-58, 07CE47-62, 07CE47-63, 07CE47-65 and 07CE47-67 were received with cooler temperatures less than 2.0 °C. Fifty-nine (59) samples were analyzed October 1 – 11, 2007 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Twenty-nine (29) samples were analyzed September 28 and October 2, 2007 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

The VOA and MEE analyses were performed within the technical holding time of 14 days after sample collection; therefore, the results are acceptable.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

VOC: The GC/MS tuning for SW-846 Method 8260B complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks.

MEE: All GC/FID calibration complied with the amount and area for the MEE (Methane-Ethane-Ethene) standards. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the results are acceptable.

3. CALIBRATION

VOC: 7-point calibration curves (0.2/2.0, 0.4/4.0, 1.0/10.0, 2.0/20.0, 4.0/40.0, 6.0/60.0 and 8.0/80.0 µg/L) were performed on September 29, 2007 and October 9, 2007. All %RSDs were less than 15%; therefore, the results do not require any qualification for this criterion.

Continuing Calibrations were conducted at the start of every analytical sequence. All analytes are evaluated for %Ds less than 20%. No minimum RRF values were identified in the SAS contract. The average RRFs for Acetone and 2-Butanone were less than 0.05 but greater than the minimum RRF of 0.01 currently used in SOW SOM01.1. The average RRFs for all surrogates 1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane and Toluene-d_8 were less than 0.05 and less than the minimum RRF of 0.05 currently used in SOW SOM01.1. All %Ds for these surrogates were greater than 20%. Sample results are not qualified based on the RRF values or %D of the surrogates alone.

The following samples are associated with a continuing calibration where one or more analytes has a %D greater than 20%. Detected compounds should be qualified "J".

Methylene chloride
07CE47-26, 07CE47-40, 07CE47-40MS, 07CE47-40MSD, 07CE47-48, 07CE47-56MS, 07CE47-56MSD, 07CE47-72MS, 07CE47-72MSD, 07CE47-77, LCS506766, LCS508217, LCS509730, LCSD507355, LCSD509758, MB506767, MB509731

Acetone
07CE47-72MS, 07CE47-72MSD, LCS506766, LCSD509758

1,2-Dichloroethane
07CE47-57, 07CE47-58, 07CE47-62, 07CE47-69, 07CE47-70, 07CE47-72

2-Butanone, 4-Methyl-2-pentanone
LCS506766

trans-1,3-Dichloropropene
07CE47-56MS, 07CE47-56MSD

Bromoform
07CE47-40MS, 07CE47-40MSD, LCS508217, LCSD507355

2-Hexanone
07CE47-72MS, 07CE47-72MSD, LCSD509758

1,1,2,2-Tetrachloroethane
07CE47-72MS, 07CE47-72MSD, LCS508217, LCSD509758

Methyl tert Butyl Ether
07CE47-31, 07CE47-56MS, 07CE47-56MSD, 07CE47-58, 07CE47-62, 07CE47-63, 07CE47-68, 07CE47-69, 07CE47-70, 07CE47-72, 07CE47-73

trans-1,2-Dichloroethene
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-31, 07CE47-40MS, 07CE47-40MSD, 07CE47-48, 07CE47-56, 07CE47-56MS, 07CE47-56MSD, LCSD507355

The following samples are associated with a continuing calibration where one or more analytes has a %D greater than 20%. Non-detected quantitation limits should be qualified "UJ". The non-detected quantitation limit for Methylene chloride in sample 07CE47-72 is qualified "R" because of very poor matrix spike recoveries.

Chloromethane
07CE47-19, 07CE47-20, 07CE47-27, 07CE47-40, 07CE47-42

Chloroethane
07CE47-05, 07CE47-07, 07CE47-10, 07CE47-12, 07CE47-13,
07CE47-15, 07CE47-17, 07CE47-19, 07CE47-20, 07CE47-27,
07CE47-40, 07CE47-42

Methylene chloride
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-07, 07CE47-09,
07CE47-10, 07CE47-12, 07CE47-13, 07CE47-15, 07CE47-17,
07CE47-19, 07CE47-20, 07CE47-22, 07CE47-24, 07CE47-27,
07CE47-29, 07CE47-31, 07CE47-33, 07CE47-34, 07CE47-36,
07CE47-38, 07CE47-42, 07CE47-43, 07CE47-44, 07CE47-45,
07CE47-47, 07CE47-49, 07CE47-50, 07CE47-51, 07CE47-52,
07CE47-53, 07CE47-54, 07CE47-55, 07CE47-56, 07CE47-57,
07CE47-58, 07CE47-59, 07CE47-60, 07CE47-61, 07CE47-62,
07CE47-63, 07CE47-64, 07CE47-65, 07CE47-66, 07CE47-67,
07CE47-68, 07CE47-69, 07CE47-70, 07CE47-71, 07CE47-72,
07CE47-73, 07CE47-74, 07CE47-76, 07CE47-78, MB508218,
CCB(10/03/07@10:42), CCB(10/11/07@12:14)

Acetone
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-07, 07CE47-09,
07CE47-10, 07CE47-12, 07CE47-13, 07CE47-15, 07CE47-17,
07CE47-19, 07CE47-20, 07CE47-27, 07CE47-31, 07CE47-33,
07CE47-34, 07CE47-36, 07CE47-38, 07CE47-40, 07CE47-42,
07CE47-57, 07CE47-58, 07CE47-61, 07CE47-62, 07CE47-63,
07CE47-64, 07CE47-65, 07CE47-66, 07CE47-68, 07CE47-69,
07CE47-70, 07CE47-71, 07CE47-72, 07CE47-73, 07CE47-78,
MB506767, CCB(10/11/07@12:14)

1,2-Dichloroethane
07CE47-61, 07CE47-63, 07CE47-64, 07CE47-65, 07CE47-66,
07CE47-68, 07CE47-71, 07CE47-73

2-Butanone
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-07, 07CE47-09,
07CE47-13, 07CE47-31, 07CE47-33, 07CE47-34, 07CE47-36,
07CE47-38, 07CE47-57, 07CE47-58, 07CE47-61, 07CE47-62,
07CE47-63, 07CE47-64, 07CE47-65, 07CE47-66, 07CE47-68,
07CE47-69, 07CE47-70, 07CE47-71, 07CE47-72, 07CE47-73,
MB506767

Bromodichloromethane
07CE47-57, 07CE47-58, 07CE47-61, 07CE47-62, 07CE47-63,
07CE47-64, 07CE47-65, 07CE47-66, 07CE47-68, 07CE47-69,
07CE47-70, 07CE47-71, 07CE47-72, 07CE47-73

trans-1,3-Dichloropropene
07CE47-26, 07CE47-31, 07CE47-48, 07CE47-50, 07CE47-53,
07CE47-56, 07CE47-57, 07CE47-58, 07CE47-59, 07CE47-61,
07CE47-62, 07CE47-63, 07CE47-64, 07CE47-65, 07CE47-66,
07CE47-67, 07CE47-68, 07CE47-69, 07CE47-70, 07CE47-71,
07CE47-72, 07CE47-73, 07CE47-76, 07CE47-77

Bromoform
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-22, 07CE47-24,
07CE47-26, 07CE47-29, 07CE47-43, 07CE47-44, 07CE47-45,
07CE47-47, 07CE47-48, 07CE47-49, 07CE47-51, 07CE47-52,
07CE47-56, MB508218, CCB(10/03/07@11:37)

4-Methyl-2-pentanone
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-07, 07CE47-09,
07CE47-13, 07CE47-31, 07CE47-33, 07CE47-34, 07CE47-36,
07CE47-38, MB506767

2-Hexanone
07CE47-57, 07CE47-58, 07CE47-61, 07CE47-62, 07CE47-63,
07CE47-64, 07CE47-65, 07CE47-66, 07CE47-68, 07CE47-69,
07CE47-70, 07CE47-71, 07CE47-72, 07CE47-73, 07CE47-78,
CCB(10/11/07@12:14)

1,1,2,2-Tetrachloroethane
07CE47-22, 07CE47-24, 07CE47-26, 07CE47-29, 07CE47-43,
07CE47-44, 07CE47-45, 07CE47-47, 07CE47-48, 07CE47-49,
07CE47-51, 07CE47-52, 07CE47-56, 07CE47-57, 07CE47-58,
07CE47-61, 07CE47-62, 07CE47-63, 07CE47-64, 07CE47-65,
07CE47-66, 07CE47-68, 07CE47-69, 07CE47-70, 07CE47-71,
07CE47-72, 07CE47-73, 07CE47-78, MB508218,

CCB(10/11/07@12:14)

Methyl tert Butyl Ether
07CE47-26, 07CE47-48, 07CE47-50, 07CE47-53, 07CE47-54,
07CE47-55, 07CE47-56, 07CE47-57, 07CE47-59, 07CE47-60,
07CE47-61, 07CE47-64, 07CE47-65, 07CE47-66, 07CE47-67,
07CE47-71, 07CE47-74, 07CE47-76, 07CE47-77

trans-1,2-Dichloroethene
07CE47-26, 07CE47-50, 07CE47-53, 07CE47-59, 07CE47-67,
07CE47-76, 07CE47-77, CCB(10/03/07@11:37)

MEE: A 7-pt Initial Calibration curve (2, 5, 10, 20, 50, 100 and 200 ppmV) was performed on August 15, 2007 and evaluated for a Goodness of Fit (correlation coefficient) ≥ 0.995. All %RSDs were less than 15%; therefore, the results do not require any qualification.

Continuing calibrations were analyzed on September 28, 2007 and October 2, 2007 at the appropriate frequency of 1 CCV after every 10 field samples. All %Ds were less than 20%; therefore, the results do not require any qualification.

4. BLANKS

VOC: The following QC samples are the method blanks for the SW-846 Method 8260B analyses. MB-506767, MB-508218 and MB-509731 were identified as method blanks and accompanied by Volatile Method Blank Summaries. Six (6) additional QC samples were identified as Method Blanks (MB) and or Continuing Calibration Blanks (CCB) on the Volatile Organic Instrument Performance Check Forms (Form 5A). Samples analyzed after each MB or CCB were regarded as the samples associated with that QC sample.

The following samples are associated with method blanks MB-508218, CCB(10/03/07@11:37) and CCB (10/11/07@12:14). No analytes of interest were reported for these QC samples; therefore the associated samples did not require any qualification for this criterion.

07CE47-01, 07CE47-03, 07CE47-05, 07CE47-22, 07CE47-24, 07CE47-26,
07CE47-40MS, 07CE47-40MSD, 07CE47-43, 07CE47-45,
07CE47-49, 07CE47-51, 07CE47-52, 07CE47-56, 07CE47-72MS,
07CE47-72MSD, 07CE47-78, LCS508217, LCSD507355

The following samples are associated with method blanks MB-506767, MB-509731, CCB(10/02/07@10:42), CCB(10/06/07@09:10), CCB(10/10/07@11:00), and CCB(10/10/07@23:06). Method blank MB-506767 contained Methylene chloride at 2.15 µg/L and 1,1,1-Trichloroethane at 0.187 µg/L. CCB(10/02/07@10:42) contained Methylene Chloride at 0.3729 µg/L. CCB(10/06/07@09:10) contained Carbon disulfide at 0.2424 µg/L and

1,1,1-Trichloroethane at 0.1683 µg/L. Method blank MB-509731 contained Methylene chloride at 0.523 µg/L. CCB(10/10/07@11:00) contained Methylene chloride at 1.4063 µg/L. CCB(10/10/07@23:06) contained Methylene chloride at 0.5047 µg/L.

07CE47-01,	07CE47-03,	07CE47-05,	07CE47-07,	07CE47-09,	07CE47-10,
07CE47-12,	07CE47-13,	07CE47-15,	07CE47-17,	07CE47-19,	07CE47-20,
07CE47-27,	07CE47-29,	07CE47-31,	07CE47-33,	07CE47-34,	07CE47-36,
07CE47-38,	07CE47-40,	07CE47-42,	07CE47-44,	07CE47-46,	07CE47-47,
07CE47-48,	07CE47-50,	07CE47-53,	07CE47-54,	07CE47-55,	07CE47-57,
07CE47-58,	07CE47-59,	07CE47-60,	07CE47-61,	07CE47-62,	07CE47-63,
07CE47-64,	07CE47-65,	07CE47-66,	07CE47-67,	07CE47-68,	07CE47-69,
07CE47-70,	07CE47-71,	07CE47-72,	07CE47-73,	07CE47-74,	07CE47-76,
07CE47-77,	LCS506766				

No samples were qualified for the presence of 1,1,1-Trichloroethane or Carbon disulfide.

The concentrations of Methylene chloride, a common laboratory contaminant, were less than ten times (10X) the associated method blank concentration in the following samples. The presence of Methylene chloride in the following samples was qualified "U" as resulting from method blank contamination. The sample concentrations were greater than the laboratory's reporting limit and are regarded as the modified reporting limit for that analyte in that sample. Some quantitation limits should be qualified "UJ" because all of the calibration criteria was not met.

Methylene chloride

07CE47-09	07CE47-12	07CE47-29	07CE47-31	07CE47-33
07CE47-42	07CE47-44	07CE47-47	07CE47-53	07CE47-54
07CE47-55	07CE47-57	07CE47-58	07CE47-59	07CE47-60
07CE47-61	07CE47-62	07CE47-63	07CE47-64	07CE47-65
07CE47-66	07CE47-68	07CE47-69	07CE47-70	07CE47-71
07CE47-72	07CE47-73	07CE47-74		

Sample 07CE47-10 is the field blank. Sample 07CE47-10 contained Chloromethane at 0.21 µg/L and Chloroform at 0.75 µg/L. These analytes are not common laboratory contaminants.

The concentrations of Chloromethane were less than five times (5X) the associated field blank concentration. The presence of Chloromethane in the following samples was qualified "U" as resulting from field blank contamination. Some quantitation limits should be qualified "UJ" because to low surrogate recoveries.

Chloromethane

07CE47-01	07CE47-03	07CE47-05	07CE47-07	07CE47-09
07CE47-12	07CE47-13	07CE47-15	07CE47-17	07CE47-19
07CE47-20	07CE47-22	07CE47-24	07CE47-26	07CE47-27
07CE47-29	07CE47-31	07CE47-33	07CE47-34	07CE47-36
07CE47-38	07CE47-42	07CE47-43	07CE47-44	07CE47-45
07CE47-46	07CE47-47	07CE47-48	07CE47-50	07CE47-51
07CE47-52	07CE47-53	07CE47-54	07CE47-55	07CE47-57
07CE47-58	07CE47-59	07CE47-60	07CE47-61	07CE47-62
07CE47-63	07CE47-64	07CE47-65	07CE47-66	07CE47-67
07CE47-68	07CE47-69	07CE47-70	07CE47-71	07CE47-72
07CE47-73	07CE47-76	07CE47-77	07CE47-78	

The concentrations of Chloroform were less than five times (5X) the associated field blank concentration. The presence of Chloroform in the following samples was qualified "U" as resulting from field blank contamination.

Chloroform

07CE47-03	07CE47-22	07CE47-24	07CE47-27	07CE47-45
07CE47-72				

Thirteen (13) samples; 07CE47-09, 07CE47-12, 07CE47-19, 07CE47-26, 07CE47-33, 07CE47-42, 07CE47-46, 07CE47-50, 07CE47-59, 07CE47-60, 07CE47-67, 07CE47-76 and 07CE47-77 are identified as Trip Blanks. No contaminants are reported for any of these samples. Trip blank 07CE47-26 contained Methylene chloride at 0.24 µg/L. Trip blank 07CE47-77 contained Methylene chloride at 0.33 µg/L. No samples were qualified because of Trip Blank contamination.

MEE: The MEE method blanks are MB-506045, MB-506048 and MB-506906 for the Mod RSK 175 analyses. None of the Method Blank had any contaminants; therefore, the results are acceptable. The Volatile Method Blank Summaries for Analytical Method Mod RSK 175 list the samples associated with each method blank.

Sample 07CE47-10 is the Field Blank and contained Methane at a concentration of 0.33 µg/L. The following samples reported analyte concentrations less than five times (5X) the field blank concentration and were qualified "U" as resulting from blank contamination. The sample concentrations were greater than the laboratory's reporting limit and are regarded as the modified reporting limit for that analyte in that sample.

Methane

07CE47-05	07CE47-07	07CE47-17	07CE47-27	07CE47-45

Sample 07CE47-27 is the Equipment Blank and contained no reportable contamination.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

VOC: All SW-846 Method 8260B volatile surrogate compounds (1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane, Toluene-d_8) were within the QC limits (75-135%) for all VOC samples, except samples 07CE37-13, 07CE37-31, 07CE37-48 and 07CE37-61.

The %recovery of Toluene-d_8 was less than 75% for samples 07CE37-13, 07CE37-31, 07CE37-48 and 07CE37-61. All detected analytes in the samples should be qualified as estimated, "J" and the quantitation limits should be qualified "UJ".

MEE: Not applicable to this analysis.

6A. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

VOC: Samples 07CE47-40, 07CE47-56 and 07CE47-72 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses.

The %recoveries for all compounds, except Methylene chloride and Carbon Disulfide, were within the QC limits (60 – 130%) for samples 07CE47-40MS and 07CE47-40MSD. All RPDs were less than 30%. The %recoveries for Methylene chloride were below the lower limit but greater than 20% in both samples 07CE47-40MS and 07CE47-40MSD. The %recovery for Carbon disulfide was below the lower limit but greater than 20% in sample 07CE47-40MS. The presence of Methylene chloride in the unspiked sample, 07CE47-40, should be qualified "J". The quantitation limit for Carbon Disulfide in the unspiked sample, 07CE47-40, should be qualified "UJ".

The %recoveries for all compounds, except Methylene chloride and Carbon Disulfide, were within the QC limits (60 – 130%) for samples 07CE47-56MS and 07CE47-56MSD. All RPDs, except Methylene chloride, were less than 30%. The %recovery for Carbon disulfide was below the lower limit but greater than 20% in sample 07CE47-56MS. The %recovery for Methylene chloride was higher than the upper limit in sample 07CE47-56MSD. The RPD for Methylene chloride was greater than 30%. The analytes were not detected in the unspiked sample. The quantitation limits for Methylene chloride and Carbon Disulfide in the unspiked sample, 07CE47-56, should be qualified "UJ".

The %recoveries for all compounds, except Methylene chloride, 1,1,1-Trichloroethane, Tetrachloroethene, Styrene, m,p-Xylene, cis-1,2-Dichloroethene and o-Xylene were within the QC limits (60 – 130%) for samples 07CE47-72MS and 07CE47-72MSD. All RPDs, except Methylene chloride and Styrene, were less than 30%. The %recoveries for 1,1,1-Trichloroethane, Tetrachloroethene and cis-1,2-Dichloroethene were higher than the upper limit in sample 07CE47-72MS. The %recoveries for Methylene chloride m,p-Xylene and o-Xylene were below the lower

limit but greater than 20% in sample 07CE47-72MS. The %recoveries for m,p-Xylene and o-Xylene were below the lower limit but greater than 20% in sample 07CE47-72MSD. The %recovery for Methylene chloride was less than 20% in sample 07CE47-72MSD. The %recoveries for Styrene were less than 20% in both samples 07CE47-72MS and 07CE47-72MSD. The RPDs for Methylene chloride and Styrene were greater than 30%. The presence of cis-1,2-Dichloroethene in the unspiked sample, 07CE47-72, should be qualified "J". The quantitation limits for 1,1,1-Trichloroethane, Tetrachloroethene, m,p-Xylene and o-Xylene in the unspiked sample, 07CE47-72, should be qualified "UJ". The quantitation limits for Methylene chloride and Styene in the unspiked sample, 07CE47-72, should be qualified "R" because of the very low recoveries.

MEE: Samples 07CE47-40 and 07CE47-56 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The percent recoveries for Methane were greater than 130% in both samples 07CE47-40MS and 07CE47-40MSD. All RPDs were less than 30%. The detection for Methane in the unspiked sample, 07CE47-40, should be qualified as estimated, "J".

The percent recoveries for Methane were less than 10% in both samples 07CE47-56MS and 07CE47-56MSD. The RPD for Methane was greater than 30%. The detection for Methane in the unspiked sample, 07CE47-56, should be qualified as estimated, "J".

6B. LABORATORY CONTROL SAMPLES

VOC: The VOC laboratory control samples are LCS-506766, LCS-508217 and LCS-509730. The VOC laboratory control sample duplicates are LCSD-507355 and LCSD-509758. Samples bracketed between the a LCS and a LCSD sample were regarded as the field samples associated with the QC samples.

LCS-506766 and LCSD-507355 were analyzed October 1st and 3rd, 2007. The percent recoveries for all compounds were within the QC limits (60 – 130%) and the RPDs were less than 30%; therefore, the associated samples did not require any qualification for this criterion.

LCS-508217 was analyzed on October 5, 2007. The percent recoveries for all compounds were within the QC limits (60 – 130%); therefore, the associated samples did not require any qualification for this criterion.

LCS-509730 and LCSD-509758 were analyzed October 9th and 11th, 2007. The percent recoveries for all compounds, except Methylene chloride, were within the QC limits (60 – 130%). All RPDs were less than 30%. The %recovery for Methylene chloride was above the upper limit of 130% in sample LCS-509730.

The detection of the following analytes in the following samples should be qualified as estimated, "J".

Methylene chloride
07CE47-72MS, 07CE47-72MSD

The quantitation limits for the following analytes are not qualified because of high %recoveries.

Methylene chloride

07CE47-29,	07CE47-44,	07CE47-47,	07CE47-53,	07CE47-54,
07CE47-55,	07CE47-56,	07CE47-57,	07CE47-58,	07CE47-59,
07CE47-60,	07CE47-61,	07CE47-62,	07CE47-63,	07CE47-64,
07CE47-65,	07CE47-66,	07CE47-68,	07CE47-69,	07CE47-70,
07CE47-71,	07CE47-72,	07CE47-73,	07CE47-74,	07CE47-78

MEE: The MEE laboratory control samples are LCS-506044 and LCS-506905. The MEE laboratory control sample duplicates are LCSD-506049 and LCSD-506909. The percent recoveries for all compounds were within the QC limits (60 – 130%) and all RPDs were less than 30%. No samples required qualification for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

Nine (9) samples; 07CE47-09, 07CE47-42, 07CE47-46, 07CE47-50, 07CE47-59, 07CE47-60, 07CE47-67, 07CE47-76 and 07CE47-77 are identified as Trip Blanks. Samples 07CE47-09 and 07CE47-72 contained Chloromethane with concentrations of 0.21 µg/L. Samples 07CE47-42, 07CE47-50, 07CE47-59 and 07CE47-60 contained Chloromethane with concentrations of 0.20 µg/L. Samples 07CE47-46 and 07CE47-67 contained Chloromethane with concentrations of 0.22 µg/L. Sample 07CE47-77 contained Chloromethane with a concentration of 0.25 µg/L and Methylene chloride with a concentration on 0.33 µg/L.

Sample 07CE47-27 is identified as an Equipment Blank. Sample 07CE47-27 contained no reportable analytes.

Sample 07CE47-10 is identified as a Field Blank. Sample 07CE47-10 is the Field Blank and contained Methane at a concentration of 0.33 µg/L.

Sample 07CE47-24 is a field replicate of 07CE47-22. Sample 07CE47-36 is a field replicate of 07CE47-34. Sample 07CE47-37 is a field replicate of 07CE47-35. Sample 07CE47-44 is a field replicate of 07CE47-43. Sample 07CE47-52 is a field replicate of 07CE47-51. Sample 07CE47-70 is a field replicate of 07CE47-69. Samples 07CE47-34,

07CE47-35, 07CE47-36, 07CE47-37, 07CE47-51 and 07CE47-52 contained no reportable analytes.

Sample results and RPDs for samples 07CE47-22, 07CE47-24, 07CE47-43, 07CE47-44, 07CE47-69 and 07CE47-70 are summarized in the following table.

Analyte	**07CE47-22**	**07CE47-24**	RPDs
	Df = 1.0	Df = 1.0	
Trichloroethene	0.34	0.30	12.5 %
Cis-1,2-Dichloroethene	0.39	0.35	10.8 %
Methyl tert-butyl ether		0.087	200 %

Analyte	**07CE47-43**	**07CE47-44**	RPDs
	Df = 1.0	Df = 1.0	
Vinyl chloride	0.38		200 %
Cis-1,2-Dichloroethene	0.74	0.90	19.5 %
Methyl tert-butyl ether	0.40	0.51	24.2 %

Analyte	**07CE47-69**	**07CE47-70**	RPDs
	Df = 1.0	Df = 1.0	
1,2-Dichloroethane	0.045	0.040	12 %
Trichloroethene	0.53	0.55	3.7 %
Cis-1,2-Dichloroethene	0.75	0.79	5.2 %
Methyl tert-butyl ether	0.54	0.68	23 %
Trans-1,2-Dichloroethene	0.08	0.13	48 %

8. INTERNAL STANDARDS

The three internal standard's (Fluorobenzene, Chlorobenzene-d_5, 1,4-Dichlorobenzene-d_4) retention times and area counts for the VOC samples were within the QC limits; therefore, the results are acceptable.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all VOC and MEE compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and dilutions were run. The reporting limits for the VOC compounds were less than or equal to the reporting limits specified in the SAS contract for all analytes; except 1,1,2,2-Tetrachloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene. The requested reporting limit for cis-1,3-Dichloropropene was

0.016 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for trans-1,3-Dichloropropene was 0.015 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for 1,1,2,2-Tetrachloroethane was 0.018 µg/L and the actual reporting limit was 0.019 µg/L. Xylenes (total) was reported as m,p-Xylene and o-Xylene.

The reporting limit for Ethane, Ethene and Methane were less than or equal to 10 µg/L as specified in the SAS contract.

The following VOC samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

07CE47-15
Methyl tert-Butyl Ether

07CE47-47
Chlorobenzene

The following MEE samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

07CE47-10, 07CE47-15, 07CE47-20, 07CE47-31, 07CE47-34, 07CE47-36, 07CE47-38, 07CE47-43, 07CE47-48
Methane

07CE47-56
Ethane

07CE47-74
Ethane, Methane

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance. GC/FID baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The data package was missing pages 2230, 2256, 2277, 2278, 2282 and 2294 from the 'Chain of Custody, PM Confirmation and Sample Condition Forms Documents' section of the data package.

The final shipment of samples arrived at the Laboratory on September 29, 2007. The Laboratory Case Narrative was prepared on October 12, 2007 and forwarded by Ch2mHill on October 15, 2007 which is well within 21 calendar days of sample receipt.

Photocopies of the airbills were included with this package. The original sample tags, packing list and airbills should have been sent to CH2M HILL.

Copies of the most recent MDL studies were not included with this data package but MDL (LOD – Level of Detection) values are present on the Laboratory Form Is.

VOC SAS Table II. QC Requirements lists the frequency of audits for method blanks as 'at least one per group of 10 or fewer samples'. The laboratory provided only 3 analyses identified as method blanks and an additional six analyses identified as Continuing Calibration Blanks. Volatile analyses require the analysis of a QC blank on each day of analysis and the volatile analyses spanned a 10-day time period. Inspections of both SW-846 Method 8000 (Determinative Chromatographic Separations, Sec. 7.7 & 8.2) and Method 8260 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, Sec. 8.4) indicate that the terms method blank and continuing calibration blank could describe the same QC sample. As the CCB samples were analyzed daily and followed the Continuing Calibration Verification Standard, the Reviewer regarded them as method blanks for this data package. No Analysis Data Sheets were provided for the CCB samples. Copies of the raw data for these QC samples and the Form 5As (Volatile Organic Instrument Performance Check) are included with the hardcopy validation package. CCB 10/02/07@10:42 is associated with 11 samples rather than 10 samples. CCB 10/10/07@23:06 is associated with 14 samples rather than 10 samples.

The detections for trans-1,2-Dichloroethene in samples 07CE47-62, 07CE47-68 and 07CE47-73 were removed from the Analysis Data Sheets as they were false positives according to the Laboratory's procedures. Copies of the raw data are included with the hardcopy data validation package.

The following VOC samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted results were reported for the affected samples:

1,1-Dichloroethane, 1,1,1-Trichloroethane, Cis-1,2-Dichloroethene
07CE47-01, 07CE47-03

Trichloroethene
07CE47-01, 07CE47-03, 07CE47-05, 07CE47-56

The following MEE samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted results were reported for the affected samples:

Methane
07CE47-01, 07CE47-03, 07CE47-13, 07CE47-29, 07CE47-40, 07CE47-47, 07CE47-54, 07CE47-55, 07CE47-56, 07CE47-66

No corresponding LCSD was analyzed for LCS508217 due to instrument malfunction.

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Summary of Sample Results (only SAS requested analytes):

Analytes	07CE47-01		07CE47-03		07CE47-05		07CE47-07		07CE47-09	
Dilution factors =	1.0/100.0		1.0 / 50.0		1.0 / 5.0		1.0		1.0	
Chloromethane	0.21	U	0.19	U	0.30	U	0.33	U	0.21	U
Bromomethane	0.070	U	0.070	U	0.070	U	0.070	U	0.070	U
Vinyl chloride	**0.18**		**0.43**		0.013	U	0.013	U	0.013	U
Chloroethane	0.070	U	**0.29**		0.070	UJ	0.070	UJ	0.070	U
Methylene chloride	0.18	UJ	0.18	UJ	0.18	UJ	0.18	UJ	0.44	UJ
Acetone	1.5	UJ	1.5	UJ	1.5	UJ	1.5	UJ	1.5	UJ
Carbon disulfide	0.090	U	0.090	U	0.090	U	0.090	U	0.090	U
1,1-Dichloroethene	**6.2**		**2.6**		**0.076**		0.050	U	0.050	U
1,1-Dichloroethane	**7.4**		**7.2**		0.060	U	0.060	U	0.060	U
Chloroform	0.022	U	0.099	U	0.022	U	0.022	U	0.022	U
1,2-Dichloroethane	0.030	U	**0.11**		0.030	U	0.030	U	0.030	U
2-Butanone	0.60	UJ	0.60	UJ	0.60	UJ	0.60	UJ	0.60	UJ
1,1,1-Trichloroethane	**110**		**120**		0.050	U	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.030	U	0.030	U	0.030	U	0.030	U
1,2-Dichloropropane	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.017	U
Trichloroethene	**750**		**210**		**10**		0.050	U	0.050	U
Dibromochloromethane	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
1,1,2-Trichloroethane	**0.14**		0.060	U	0.060	U	0.060	U	0.060	U
Benzene	0.050	U	**0.61**		**0.12**		0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.017	U
Bromoform	0.040	UJ	0.040	UJ	0.040	UJ	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	UJ	0.80	UJ	0.80	UJ	0.80	UJ	0.80	UJ
2-Hexanone	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U
Tetrachloroethene	0.050	U	**2.6**		0.050	U	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.019	U	0.019	U	0.019	U	0.019	U
Toluene	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chlorobenzene	0.040	U	**4.4**		**2.1**		0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.080	U	0.080	U	0.080	U
Cis-1,2-Dichloroethene	**64**		**23**		**1.1**		0.050	U	0.050	U
Isopropylbenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	U	0.080	U	0.080	U	0.080	U	0.080	U
o-Xylene	0.023	U	0.023	U	0.023	U	0.023	U	0.023	U
Trans-1,2-Dichloroethene	**0.94**	**J**	**1.1**	**J**	**0.082**	**J**	0.060	U	0.060	U

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-10		07CE47-12		07CE47-13		07CE47-15		07CE47-17	
Dilution factors =	1.0		1.0		1.0		1.0		1.0	
Chloromethane	**0.21**		0.22	U	0.24	UJ	0.18	U	0.22	U
Bromomethane	0.070	U	0.070	U	0.070	UJ	0.070	U	0.070	U
Vinyl chloride	0.013	U	0.013	U	0.013	UJ	0.013	U	0.013	U
Chloroethane	0.070	UJ	0.070	UJ	0.070	UJ	0.070	UJ	0.070	UJ
Methylene chloride	0.18	UJ	0.36	UJ	0.18	UJ	0.18	UJ	0.18	UJ
Acetone	1.5	UJ	1.5	UJ	1.5	UJ	1.5	UJ	1.5	UJ
Carbon disulfide	0.090	U	0.090	U	0.090	UJ	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U
Chloroform	**0.75**		0.022	U	0.022	UJ	0.022	U	0.022	U
1,2-Dichloroethane	0.030	U	0.030	U	0.030	UJ	0.030	U	0.030	U
2-Butanone	0.60	U	0.60	U	0.60	UJ	0.60	U	0.60	U
1,1,1-Trichloroethane	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.022	UJ	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.030	U	0.030	UJ	0.030	U	0.030	U
1,2-Dichloropropane	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	UJ	0.017	U	0.017	U
Trichloroethene	0.050	U	0.050	U	0.050	UJ	**0.13**		0.050	U
Dibromochloromethane	0.026	U	0.026	U	0.026	UJ	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	U	0.017	U	0.017	UJ	0.017	U	0.017	U
Bromoform	0.040	U	0.040	U	0.040	UJ	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	U	0.80	U	0.80	UJ	0.80	U	0.80	U
2-Hexanone	1.6	U	1.6	U	1.6	UJ	1.6	U	1.6	U
Tetrachloroethene	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.019	U	0.019	UJ	0.019	U	0.019	U
Toluene	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	0.040	UJ	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.024	UJ	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.022	UJ	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.080	UJ	0.080	U	0.080	U
Cis-1,2-Dichloroethene	0.050	U	0.050	U	0.050	UJ	**0.11**		0.050	U
Isopropylbenzene	0.040	U	0.040	U	**0.060**	**J**	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	U	0.080	U	0.080	UJ	**0.080**	**J**	0.080	U
o-Xylene	0.023	U	0.023	U	0.023	UJ	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U

(All detections are in **bold** print.)

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-19		07CE47-20		07CE47-22		07CE47-24		07CE47-26	
Dilution factors =	1.0		1.0		1.0		1.0		1.0	
Chloromethane	0.19	UJ	0.33	UJ	0.23	U	0.17	U	0.19	U
Bromomethane	0.070	U	0.070	U	0.070	U	0.070	U	0.070	U
Vinyl chloride	0.013	U	**0.063**		0.013	U	0.013	U	0.013	U
Chloroethane	0.070	UJ	0.070	UJ	0.070	U	0.070	U	0.070	U
Methylene chloride	0.18	UJ	0.18	UJ	0.18	UJ	0.18	UJ	**0.24**	**J**
Acetone	1.5	UJ	1.5	UJ	1.5	U	1.5	U	1.5	U
Carbon disulfide	0.090	U	0.090	U	0.090	U	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chloroform	0.022	U	0.022	U	0.32	U	0.31	U	0.022	U
1,2-Dichloroethane	0.030	U	0.030	U	0.030	U	0.030	U	0.030	U
2-Butanone	0.60	U	0.60	U	0.60	U	0.60	U	0.60	U
1,1,1-Trichloroethane	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.030	U	0.030	U	0.030	U	0.030	U
1,2-Dichloropropane	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.017	U
Trichloroethene	0.050	U	0.050	U	**0.34**		**0.30**		0.050	U
Dibromochloromethane	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.017	UJ
Bromoform	0.040	U	0.040	U	0.040	UJ	0.040	UJ	0.040	UJ
4-Methyl-2-pentanone	0.80	U	0.80	U	0.80	U	0.80	U	0.80	U
2-Hexanone	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U
Tetrachloroethene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.019	U	0.019	UJ	0.019	UJ	0.019	UJ
Toluene	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.080	U	0.080	U	0.080	U
Cis-1,2-Dichloroethene	0.050	U	0.050	U	**0.39**		**0.35**		0.050	U
Isopropylbenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	U	**1.6**		0.080	U	**0.087**		0.080	UJ
o-Xylene	0.023	U	0.023	U	0.023	U	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	U	0.060	U	0.060	U	0.060	U	0.060	UJ

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-27		07CE47-29		07CE47-31		07CE47-33		07CE47-34	
Dilution factors =	1.0		1.0		5.0		1.0		1.0	
Chloromethane	0.29	UJ	0.54	U	0.45	UJ	0.21	U	0.17	U
Bromomethane	0.070	U	0.070	U	0.35	UJ	0.070	U	0.070	U
Vinyl chloride	0.013	U	0.013	U	0.065	UJ	0.013	U	0.013	U
Chloroethane	0.070	UJ	0.070	U	0.35	UJ	0.070	U	0.070	U
Methylene chloride	0.18	UJ	0.57	UJ	1.5	UJ	0.40	UJ	0.18	UJ
Acetone	1.5	UJ	1.5	U	7.5	UJ	1.5	UJ	1.5	UJ
Carbon disulfide	0.090	U	0.090	U	0.45	UJ	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	0.25	UJ	0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	0.30	UJ	0.060	U	0.060	U
Chloroform	0.72	U	0.022	U	0.11	UJ	0.022	U	0.022	U
1,2-Dichloroethane	0.030	U	0.030	U	**0.34**	**J**	0.030	U	0.030	U
2-Butanone	0.60	U	0.60	U	3.0	UJ	0.60	UJ	0.60	UJ
1,1,1-Trichloroethane	0.050	U	0.050	U	0.25	UJ	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.11	UJ	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.030	U	0.15	UJ	0.030	U	0.030	U
1,2-Dichloropropane	0.050	U	0.050	U	0.25	UJ	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.085	UJ	0.017	U	0.017	U
Trichloroethene	0.050	U	0.050	U	**1.1**	**J**	0.050	U	0.050	U
Dibromochloromethane	0.026	U	0.026	U	0.13	UJ	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	0.30	UJ	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	0.25	UJ	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	U	0.017	U	0.085	UJ	0.017	U	0.017	U
Bromoform	0.040	U	0.040	UJ	0.20	UJ	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	U	0.80	U	4.0	UJ	0.80	UJ	0.80	UJ
2-Hexanone	1.6	U	1.6	U	8.0	UJ	1.6	U	1.6	U
Tetrachloroethene	0.050	U	0.050	U	0.25	UJ	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.019	UJ	0.095	UJ	0.019	U	0.019	U
Toluene	0.060	U	0.060	U	0.30	UJ	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	0.20	UJ	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.12	UJ	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.11	UJ	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.40	UJ	0.080	U	0.080	U
Cis-1,2-Dichloroethene	0.050	U	**0.28**		**19**	**J**	0.050	U	0.050	U
Isopropylbenzene	0.040	U	0.040	U	0.20	UJ	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	U	**0.39**		**0.95**	**J**	0.080	U	0.080	U
o-Xylene	0.023	U	0.023	U	0.12	UJ	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	U	0.060	U	**1.1**	**J**	0.060	U	0.060	U

(All detections are in **bold** print.)

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-36		07CE47-38		07CE47-40		07CE47-42		07CE47-43	
Dilution factors =	1.0		1.0		25.0		1.0		1.0	
Chloromethane	0.20	U	0.23	U	1.3	UJ	0.20	UJ	0.74	U
Bromomethane	0.070	U	0.070	U	1.8	U	0.070	U	0.070	U
Vinyl chloride	0.013	U	0.013	U	**3.0**		0.013	U	**0.038**	
Chloroethane	0.070	U	0.070	U	1.8	UJ	0.070	UJ	0.070	U
Methylene chloride	0.18	UJ	0.18	UJ	**26**	**J**	0.24	UJ	0.18	UJ
Acetone	1.5	UJ	1.5	UJ	38	UJ	1.5	UJ	1.5	U
Carbon disulfide	0.090	U	0.090	U	2.3	UJ	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	**1.8**		0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	**7.7**		0.060	U	0.060	U
Chloroform	0.022	U	0.022	U	0.55	U	0.022	U	0.022	U
1,2-Dichloroethane	0.030	U	0.030	U	0.75	U	0.030	U	0.030	U
2-Butanone	0.60	UJ	0.60	UJ	15	U	0.60	U	0.60	U
1,1,1-Trichloroethane	0.050	U	0.050	U	1.3	U	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.55	U	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.030	U	0.75	U	0.030	U	0.030	U
1,2-Dichloropropane	0.050	U	0.050	U	1.3	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.43	U	0.017	U	0.017	U
Trichloroethene	0.050	U	0.050	U	**110**		0.050	U	0.050	U
Dibromochloromethane	0.026	U	0.026	U	0.65	U	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	1.5	U	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	1.3	U	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	U	0.017	U	0.43	U	0.017	U	0.017	U
Bromoform	0.040	U	0.040	U	1.0	U	0.040	U	0.040	UJ
4-Methyl-2-pentanone	0.80	UJ	0.80	UJ	20	U	0.80	U	0.80	U
2-Hexanone	1.6	U	1.6	U	40	U	1.6	U	1.6	U
Tetrachloroethene	0.050	U	0.050	U	1.3	U	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.019	U	0.48	U	0.019	U	0.019	UJ
Toluene	0.060	U	0.060	U	1.5	U	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	1.0	U	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.60	U	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.55	U	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	2.0	U	0.080	U	0.080	U
Cis-1,2-Dichloroethene	0.050	U	0.050	U	**83**		0.050	U	**0.74**	
Isopropylbenzene	0.040	U	0.040	U	1.0	U	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	U	0.080	U	2.0	U	0.080	U	**0.40**	
o-Xylene	0.023	U	0.023	U	0.58	U	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	U	0.060	U	**5.3**		0.060	U	0.060	U

(All detections are in **bold** print.)

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-44		07CE47-45		07CE47-46		07CE47-47		07CE47-48	
Dilution factors =	1.0		1.0		1.0		1.0		2.0	
Chloromethane	0.71	U	0.15	U	0.22	U	0.49	U	0.45	UJ
Bromomethane	0.070	U	0.070	U	0.070	U	0.070	U	0.14	UJ
Vinyl chloride	0.013	U	0.013	U	0.013	U	0.013	U	**0.48**	**J**
Chloroethane	0.070	U	0.070	U	0.070	U	0.070	U	0.14	UJ
Methylene chloride	0.21	UJ	0.18	UJ	0.18	U	0.33	UJ	**2.4**	**J**
Acetone	1.5	U	1.5	U	1.5	U	1.5	U	3.0	UJ
Carbon disulfide	0.090	U	0.090	U	0.090	U	0.090	U	0.18	UJ
1,1-Dichloroethene	0.050	U	0.050	U	0.050	U	0.050	U	**0.26**	**J**
1,1-Dichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	**14**	**J**
Chloroform	0.022	U	0.58	U	0.022	U	0.022	U	0.044	UJ
1,2-Dichloroethane	0.030	U	0.030	U	0.030	U	0.030	U	0.060	UJ
2-Butanone	0.60	U	0.60	U	0.60	U	0.60	U	1.2	UJ
1,1,1-Trichloroethane	0.050	U	**0.10**		0.050	U	0.050	U	**2.5**	**J**
Carbon tetrachloride	0.022	U	0.022	U	0.022	U	0.022	U	0.044	UJ
Bromodichloromethane	0.030	U	0.030	U	0.030	U	0.030	U	0.060	UJ
1,2-Dichloropropane	0.050	U	0.050	U	0.050	U	0.050	U	0.10	UJ
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.034	UJ
Trichloroethene	0.050	U	**0.077**		0.050	U	0.050	U	**1.3**	**J**
Dibromochloromethane	0.026	U	0.026	U	0.026	U	0.026	U	0.052	UJ
1,1,2-Trichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.12	UJ
Benzene	0.050	U	0.050	U	0.050	U	0.050	U	0.10	UJ
Trans-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.034	UJ
Bromoform	0.040	UJ	0.040	UJ	0.040	U	0.040	UJ	0.080	UJ
4-Methyl-2-pentanone	0.80	U	0.80	U	0.80	U	0.80	U	1.6	UJ
2-Hexanone	1.6	U	1.6	U	1.6	U	1.6	U	3.2	UJ
Tetrachloroethene	0.050	U	**0.073**		0.050	U	0.050	U	0.10	UJ
1,1,2,2-Tetrachloroethane	0.019	UJ	0.019	UJ	0.019	U	0.019	UJ	0.038	UJ
Toluene	0.060	U	0.060	U	0.060	U	0.060	U	0.12	UJ
Chlorobenzene	0.040	U	0.040	U	0.040	U	**0.066**	**J**	0.080	UJ
Ethylbenzene	0.024	U	0.024	U	0.024	U	0.024	U	0.048	UJ
Styrene	0.022	U	0.022	U	0.022	U	0.022	U	0.044	UJ
M & p-Xylene	0.080	U	0.080	U	0.080	U	0.080	U	0.16	UJ
Cis-1,2-Dichloroethene	**0.90**		0.050	U	0.050	U	0.050	U	**5.1**	**J**
Isopropylbenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.080	UJ
Methyl tert-butyl ether	**0.51**		0.080	U	0.080	U	0.080	U	0.16	UJ
o-Xylene	0.023	U	0.023	U	0.023	U	0.023	U	0.046	UJ
Trans-1,2-Dichloroethene	0.060	U	0.060	U	0.060	U	0.060	U	**0.89**	**J**

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-49		07CE47-50		07CE47-51		07CE47-52		07CE47-53	
Dilution factors =	20.0		1.0		1.0		1.0		1.0	
Chloromethane	1.0	U	0.20	U	0.51	U	0.39	U	0.41	U
Bromomethane	1.4	U	0.070	U	0.070	U	0.070	U	0.070	U
Vinyl chloride	**1.1**		0.013	U	0.013	U	0.013	U	0.013	U
Chloroethane	1.4	U	0.070	U	0.070	U	0.070	U	0.070	U
Methylene chloride	3.6	UJ	0.18	UJ	0.18	UJ	0.18	UJ	0.53	UJ
Acetone	30	U	1.5	U	1.5	U	1.5	U	1.5	U
Carbon disulfide	1.8	U	0.090	U	0.090	U	0.090	U	0.090	U
1,1-Dichloroethene	**14**		0.050	U	0.050	U	0.050	U	0.050	U
1,1-Dichloroethane	**55**		0.060	U	0.060	U	0.060	U	0.060	U
Chloroform	0.44	U	0.022	U	0.022	U	0.022	U	0.022	U
1,2-Dichloroethane	0.60	U	0.030	U	0.030	U	0.030	U	0.030	U
2-Butanone	12	U	0.60	U	0.60	U	0.60	U	0.60	U
1,1,1-Trichloroethane	**95**		0.050	U	0.050	U	0.050	U	0.050	U
Carbon tetrachloride	0.44	U	0.022	U	0.022	U	0.022	U	0.022	U
Bromodichloromethane	0.60	U	0.030	U	0.030	U	0.030	U	0.030	U
1,2-Dichloropropane	1.0	U	0.050	U	0.050	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.34	U	0.017	U	0.017	U	0.017	U	0.017	U
Trichloroethene	**110**		0.050	U	0.050	U	0.050	U	0.050	U
Dibromochloromethane	0.52	U	0.026	U	0.026	U	0.026	U	0.026	U
1,1,2-Trichloroethane	1.2	U	0.060	U	0.060	U	0.060	U	0.060	U
Benzene	1.0	U	0.050	U	0.050	U	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.34	U	0.017	UJ	0.017	U	0.017	U	0.017	UJ
Bromoform	0.80	UJ	0.040	U	0.040	UJ	0.040	UJ	0.040	U
4-Methyl-2-pentanone	16	U	0.80	U	0.80	U	0.80	U	0.80	U
2-Hexanone	32	U	1.6	U	1.6	U	1.6	U	1.6	U
Tetrachloroethene	1.0	U	0.050	U	0.050	U	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.38	UJ	0.019	U	0.019	UJ	0.19	UJ	0.019	U
Toluene	1.2	U	0.060	U	0.060	U	0.060	U	0.060	U
Chlorobenzene	0.80	U	0.040	U	0.040	U	0.040	U	0.040	U
Ethylbenzene	0.48	U	0.024	U	0.024	U	0.024	U	0.024	U
Styrene	0.44	U	0.022	U	0.022	U	0.022	U	0.022	U
M & p-Xylene	1.6	U	0.080	U	0.080	U	0.080	U	0.080	U
Cis-1,2-Dichloroethene	**29**		0.050	U	0.050	U	0.050	U	0.050	U
Isopropylbenzene	0.80	U	0.040	U	0.040	U	0.040	U	0.040	U
Methyl tert-butyl ether	1.6	U	0.080	UJ	0.080	U	0.080	U	0.080	UJ
o-Xylene	0.46	U	0.023	U	0.023	U	0.023	U	0.023	U
Trans-1,2-Dichloroethene	**17**		0.060	UJ	0.060	U	0.060	U	0.060	UJ

(All detections are in **bold** print.)

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE7-54		07CE47-55		07CE47-56		07CE47-57		07CE47-58	
Dilution factors =	1.0		5.0		100.0/500.0		1.0		1.0	
Chloromethane	0.31	U	0.54	U	5.0	U	0.41	U	0.32	U
Bromomethane	0.070	U	0.35	U	7.0	U	0.070	U	0.070	U
Vinyl chloride	0.013	U	**0.63**		**6.6**		0.013	U	**0.072**	
Chloroethane	0.070	U	0.35	U	7.0	U	0.070	U	0.070	U
Methylene chloride	0.68	UJ	11	UJ	18	UJ	1.1	UJ	0.48	UJ
Acetone	1.5	U	7.5	U	150	U	1.5	UJ	1.5	UJ
Carbon disulfide	0.090	U	0.45	U	9.0	UJ	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	**1.3**		**22**		0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	**5.5**		**89**		0.060	U	0.060	U
Chloroform	0.022	U	0.11	U	2.2	U	0.022	U	0.022	U
1,2-Dichloroethane	0.030	U	0.15	U	3.0	U	**0.24**	**J**	**0.050**	**J**
2-Butanone	0.60	U	3.0	U	60	U	0.60	UJ	0.60	UJ
1,1,1-Trichloroethane	0.050	U	0.25	U	5.0	U	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.11	U	2.2	U	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.15	U	**4.4**		0.030	UJ	0.030	UJ
1,2-Dichloropropane	0.050	U	0.25	U	5.0	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.085	U	1.7	U	0.017	U	0.017	U
Trichloroethene	0.050	U	**27**		**690**		0.050	U	0.050	U
Dibromochloromethane	0.026	U	0.13	U	2.6	U	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.30	U	6.0	U	0.060	U	0.060	U
Benzene	0.050	U	0.25	U	5.0	U	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	U	0.085	U	1.7	UJ	0.017	UJ	0.017	UJ
Bromoform	0.040	U	0.20	U	4.0	UJ	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	U	4.0	U	80	U	0.80	U	0.80	U
2-Hexanone	1.6	U	8.0	U	160	U	1.6	UJ	1.6	UJ
Tetrachloroethene	0.050	U	0.25	U	5.0	U	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.095	U	1.9	UJ	0.019	UJ	0.019	UJ
Toluene	0.060	U	0.30	U	6.0	U	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.20	U	4.0	U	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.12	U	2.4	U	0.024	U	0.024	U
Styrene	0.022	U	0.11	U	2.2	U	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.40	U	8.0	U	0.080	U	0.080	U
Cis-1,2-Dichloroethene	**0.15**		**34**		**350**		0.050	U	**3.9**	
Isopropylbenzene	0.040	U	0.20	U	4.0	U	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	UJ	0.40	UJ	8.0	UJ	0.080	UJ	**0.75**	**J**
o-Xylene	0.023	U	0.12	U	2.3	U	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	U	**1.6**		**14**	**J**	0.060	U	**0.35**	

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-59		07CE47-60		07CE47-61		07CE47-62		07CE47-63	
Dilution factors =	1.0		1.0		1.0		1.0		1.0	
Chloromethane	0.20	U	0.21	U	0.63	UJ	0.21	U	0.45	U
Bromomethane	0.070	U	0.070	U	0.070	UJ	0.070	U	0.070	U
Vinyl chloride	0.013	U	0.013	U	0.013	UJ	0.013	U	0.013	U
Chloroethane	0.070	U	0.070	U	0.070	UJ	0.070	U	0.070	U
Methylene chloride	1.1	UJ	1.2	UJ	0.69	UJ	0.54	UJ	0.78	UJ
Acetone	1.5	U	1.5	U	1.5	UJ	1.5	UJ	1.5	UJ
Carbon disulfide	0.090	U	0.090	U	0.090	UJ	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U
Chloroform	0.022	U	0.022	U	0.022	UJ	0.022	U	0.022	U
1,2-Dichloroethane	0.030	U	0.030	U	0.030	UJ	**0.043**	**J**	0.030	UJ
2-Butanone	0.60	U	0.60	U	0.60	UJ	0.60	UJ	0.60	UJ
1,1,1-Trichloroethane	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.022	UJ	0.022	U	0.022	U
Bromodichloromethane	0.030	U	0.030	U	0.030	UJ	0.030	UJ	0.030	UJ
1,2-Dichloropropane	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	UJ	0.017	U	0.017	U
Trichloroethene	0.050	U	0.050	U	0.050	UJ	**0.11**		**0.13**	
Dibromochloromethane	0.026	U	0.026	U	0.026	UJ	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	UJ	0.017	U	0.017	UJ	0.017	UJ	0.017	UJ
Bromoform	0.040	U	0.040	U	0.040	UJ	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	U	0.80	U	0.80	UJ	0.80	U	0.80	U
2-Hexanone	1.6	U	1.6	U	1.6	UJ	1.6	UJ	1.6	UJ
Tetrachloroethene	0.050	U	0.050	U	0.050	UJ	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	U	0.019	U	0.019	UJ	0.019	UJ	0.019	UJ
Toluene	0.060	U	0.060	U	0.060	UJ	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	0.040	UJ	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.024	UJ	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.022	UJ	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.080	UJ	0.080	U	0.080	U
Cis-1,2-Dichloroethene	0.050	U	0.050	U	0.050	UJ	**0.84**		**1.5**	
Isopropylbenzene	0.040	U	0.040	U	0.040	UJ	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	UJ	0.080	UJ	0.080	UJ	**0.63**	**J**	**0.67**	**J**
o-Xylene	0.023	U	0.023	U	0.023	UJ	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	UJ	0.060	U	0.060	UJ	0.060	U	**0.13**	

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-64		07CE47-65		07CE47-66		07CE47-67		07CE47-68	
Dilution factors =	1.0		1.0		1.0		1.0		1.0	
Chloromethane	0.75	U	0.32	U	0.51	U	0.22	U	0.26	U
Bromomethane	0.070	U	0.070	U	0.070	U	0.070	U	0.070	U
Vinyl chloride	0.013	U	0.013	U	0.013	U	0.013	U	0.013	U
Chloroethane	0.070	U	0.070	U	0.070	U	0.070	U	0.070	U
Methylene chloride	0.58	UJ	0.48	UJ	1.1	UJ	0.18	UJ	0.49	UJ
Acetone	1.5	UJ	1.5	UJ	1.5	UJ	1.5	U	1.5	UJ
Carbon disulfide	0.090	U	0.090	U	0.090	U	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chloroform	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
1,2-Dichloroethane	0.030	UJ	0.030	UJ	0.030	UJ	0.030	U	0.030	UJ
2-Butanone	0.60	UJ	0.60	UJ	0.60	UJ	0.60	U	0.60	UJ
1,1,1-Trichloroethane	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
Bromodichloromethane	0.030	UJ	0.030	UJ	0.030	UJ	0.030	U	0.030	UJ
1,2-Dichloropropane	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.017	U
Trichloroethene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Dibromochloromethane	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	UJ	0.017	UJ	0.017	UJ	0.017	UJ	0.017	UJ
Bromoform	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	U	0.80	U	0.80	U	0.80	U	0.80	U
2-Hexanone	1.6	UJ	1.6	UJ	1.6	UJ	1.6	U	1.6	UJ
Tetrachloroethene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
1,1,2,2-Tetrachloroethane	0.019	UJ	0.019	UJ	0.019	UJ	0.019	U	0.019	UJ
Toluene	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.080	U	0.080	U	0.080	U
Cis-1,2-Dichloroethene	0.050	U	0.050	U	0.050	U	0.050	U	**0.61**	
Isopropylbenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Methyl tert-butyl ether	0.080	UJ	0.080	UJ	0.080	UJ	0.080	UJ	**0.91**	**J**
o-Xylene	0.023	U	0.023	U	0.023	U	0.023	U	0.023	U
Trans-1,2-Dichloroethene	0.060	U	0.060	U	0.060	U	0.060	UJ	0.060	U

(All detections are in **bold** print.)

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-69		07CE47-70		07CE47-71		07CE47-72		07CE47-73	
Dilution factors =	1.0		1.0		1.0		1.0		1.0	
Chloromethane	0.33	U	0.39	U	0.43	U	0.22	U	0.26	U
Bromomethane	0.070	U	0.070	U	0.070	U	0.070	U	0.070	U
Vinyl chloride	0.013	U	0.013	U	0.013	U	**0.052**	**J**	0.013	U
Chloroethane	0.070	U	0.070	U	0.070	U	0.070	U	0.070	U
Methylene chloride	0.50	UJ	0.53	UJ	1.3	UJ	0.78	R	0.62	UJ
Acetone	1.5	UJ	1.5	UJ	1.5	UJ	1.5	UJ	1.5	UJ
Carbon disulfide	0.090	U	0.090	U	0.090	U	0.090	U	0.090	U
1,1-Dichloroethene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
1,1-Dichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chloroform	0.022	U	0.022	U	0.022	U	0.39	U	0.022	U
1,2-Dichloroethane	**0.045**	**J**	**0.040**	**J**	0.030	UJ	**0.069**	**J**	0.030	UJ
2-Butanone	0.60	UJ	0.60	UJ	0.60	UJ	0.60	UJ	0.60	UJ
1,1,1-Trichloroethane	0.050	U	0.050	U	0.050	U	0.050	UJ	0.050	U
Carbon tetrachloride	0.022	U	0.022	U	0.022	U	0.022	U	0.022	U
Bromodichloromethane	0.030	UJ	0.030	UJ	0.030	UJ	0.030	UJ	0.030	UJ
1,2-Dichloropropane	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Cis-1,3-Dichloropropene	0.017	U	0.017	U	0.017	U	0.017	U	0.017	U
Trichloroethene	**0.53**		**0.55**		0.050	U	**0.12**		**0.067**	
Dibromochloromethane	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U
1,1,2-Trichloroethane	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Benzene	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
Trans-1,3-Dichloropropene	0.017	UJ	0.017	UJ	0.017	UJ	0.017	UJ	0.017	UJ
Bromoform	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
4-Methyl-2-pentanone	0.80	U	0.80	U	0.80	U	0.80	U	0.80	U
2-Hexanone	1.6	UJ	1.6	UJ	1.6	UJ	1.6	UJ	1.6	UJ
Tetrachloroethene	0.050	U	0.050	U	0.050	U	0.050	UJ	0.050	U
1,1,2,2-Tetrachloroethane	0.019	UJ	0.019	UJ	0.019	UJ	0.019	UJ	0.019	UJ
Toluene	0.060	U	0.060	U	0.060	U	0.060	U	0.060	U
Chlorobenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Ethylbenzene	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U
Styrene	0.022	U	0.022	U	0.022	U	0.022	R	0.022	U
M & p-Xylene	0.080	U	0.080	U	0.080	U	0.080	UJ	0.080	U
Cis-1,2-Dichloroethene	**0.75**		**0.79**		0.050	U	**6.2**	**J**	**0.94**	
Isopropylbenzene	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
Methyl tert-butyl ether	**0.54**	**J**	**0.68**	**J**	0.080	UJ	**0.90**	**J**	**0.54**	**J**
o-Xylene	0.023	U	0.023	U	**0.054**		0.023	UJ	0.023	U
Trans-1,2-Dichloroethene	**0.080**		**0.13**		0.060	U	**0.56**		0.060	U

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Analytes	07CE47-74		07CE47-76		07CE47-77		07CE47-78		SAS RLs
Dilution factors =	200.0		1.0		1.0		1.0		
Chloromethane	10	U	0.21	U	0.25	U	0.28	U	0.2
Bromomethane	14	U	0.070	U	0.070	U	0.070	U	0.2
Vinyl chloride	**33**		0.013	U	0.013	U	0.013	U	0.018
Chloroethane	14	U	0.070	U	0.070	U	0.070	U	0.2
Methylene chloride	410	UJ	0.18	UJ	**0.33**	**J**	0.18	UJ	0.2
Acetone	300	U	1.5	U	1.5	U	1.5	UJ	2.0
Carbon disulfide	18	U	0.090	U	0.090	U	0.090	U	0.4
1,1-Dichloroethene	10	U	0.050	U	0.050	U	0.050	U	0.2
1,1-Dichloroethane	12	U	0.060	U	0.060	U	0.060	U	0.2
Chloroform	4.4	U	0.022	U	0.022	U	0.022	U	0.2
1,2-Dichloroethane	6.0	U	0.030	U	0.030	U	0.030	U	0.2
2-Butanone	120	U	0.60	U	0.60	U	0.60	U	2.0
1,1,1-Trichloroethane	10	U	0.050	U	0.050	U	0.050	U	1.0
Carbon tetrachloride	4.4	U	0.022	U	0.022	U	0.022	U	0.2
Bromodichloromethane	**12**		0.030	U	0.030	U	0.030	U	0.05
1,2-Dichloropropane	10	U	0.050	U	0.050	U	0.050	U	0.2
Cis-1,3-Dichloropropene	3.4	U	0.017	U	0.017	U	0.017	U	0.016
Trichloroethene	10	U	0.050	U	0.050	U	0.050	U	0.2
Dibromochloromethane	5.2	U	0.026	U	0.026	U	0.026	U	0.2
1,1,2-Trichloroethane	12	U	0.060	U	0.060	U	0.060	U	0.2
Benzene	10	U	0.050	U	0.050	U	0.050	U	0.2
Trans-1,3-Dichloropropene	3.4	U	0.017	UJ	0.017	UJ	0.017	U	0.015
Bromoform	8.0	U	0.040	U	0.040	U	0.040	U	0.2
4-Methyl-2-pentanone	160	U	0.80	U	0.80	U	0.80	U	2.0
2-Hexanone	320	U	1.6	U	1.6	U	1.6	UJ	2.0
Tetrachloroethene	10	U	0.050	U	0.050	U	0.050	U	0.2
1,1,2,2-Tetrachloroethane	3.8	U	0.019	U	0.019	U	0.019	UJ	0.018
Toluene	12	U	0.060	U	0.060	U	0.060	U	1.0
Chlorobenzene	8.0	U	0.040	U	0.040	U	0.040	U	0.2
Ethylbenzene	4.8	U	0.024	U	0.024	U	0.024	U	0.05
Styrene	4.4	U	0.022	U	0.022	U	0.022	U	0.2
M & p-Xylene	16	U	0.080	U	0.080	U	0.080	U	0.2
Cis-1,2-Dichloroethene	**1300**		0.050	U	0.050	U	0.050	U	0.2
Isopropylbenzene	8.0	U	0.040	U	0.040	U	0.040	U	0.2
Methyl tert-butyl ether	16	UJ	0.080	UJ	0.080	UJ	**0.26**		0.2
o-Xylene	4.6	U	0.023	U	0.023	U	0.023	U	0.2
Trans-1,2-Dichloroethene	**32**		0.060	UJ	0.060	UJ	0.060	U	0.2

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

	07CE47-01		07CE47-03		07CE47-05		07CE47-07		07CE47-10	
	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L
Ethane	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U
Ethene	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U
Methane	4.0	**36**	4.0	**23**	1.0	1.6 U	1.0	0.68 U	1.0	**0.33 J**

	07CE47-13		07CE47-15		07CE47-17		07CE47-20		07CE47-22	
	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L
Ethane	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U
Ethene	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U
Methane	200.0	**2800**	1.0	**5.6 J**	1.0	1.4 U	1.0	**3.8 J**	1.0	**16**

	07CE47-24		07CE47-27		07CE47-29		07CE47-31		07CE47-34	
	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L
Ethane	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U
Ethene	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U
Methane	1.0	**18**	1.0	0.37 U	10.0	**81**	1.0	**4.7 J**	1.0	**7.3 J**

	07CE47-36		07CE47-38		07CE47-40		07CE47-43		07CE47-44	
	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L
Ethane	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U
Ethene	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U
Methane	1.0	**6.7 J**	1.0	**4.8 J**	4.0	**21 J**	1.0	**8.5 J**	1.0	**10**

	07CE47-45		07CE47-47		07CE47-48		07CE47-49		07CE47-54	
	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L
Ethane	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U	1.0	0.40 U
Ethene	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U
Methane	1.0	1.4 U	4.0	**44**	1.0	**6.1 J**	1.0	**12**	50.0	**810**

	07CE47-55		07CE47-56		07CE47-66		07CE47-74	
	Df=	µg/L	Df=	µg/L	Df=	µg/L	Df=	µg/L
Ethane	1.0	0.40 U	1.0	**1.2 J**	1.0	0.40 U	1.0	**1.4 J**
Ethene	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U	1.0	0.50 U
Methane	4.0	**18**	20.0	**170 J**	50.0	**650**	1.0	**6.0 J**

(All detections are in **bold** print.)

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: February 22, 2008

SAS Project: 07CE47
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 62785-VOC
Laboratory: CT Laboratories

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

U	Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
N	Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
R	Indicates the data are unusable. (The compound may or may not be present.)
P	Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
C	Indicates pesticide results that have been confirmed by GC/MS.
B	Indicates the analyte is detected in the associated method blank as well as the sample.
E	Indicates compounds whose concentrations exceeded the calibration range of the instrument.
D	Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations rported in the two analyses.
A	Indicates TICs that are suspected to be aldol condensation products.
G	Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
L	Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
T	Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 12/12/07

SUBJECT: **Review of Data**
Received for review on 10/18/07

FROM: **Stephen L. Ostrodka, Chief (SRT-4J)**
Superfund Field Services Section

TO: **Data User:** CH2M Hill

We have reviewed the data for the following case:

SITE NAME: Oconomowoc Electroplating (WI)

CASE NUMBER: 07CE47 **SDG NUMBER:** 62785-MET

Number and Type of Samples: 58 waters (29 total/29 dissolved)

Sample Numbers: 07CE47-01 thru -08, -10 thru -11, -13 thru -18, -20 thru -25, -27 thru -32, -34 thru -41, -43 thru -45, -47 thru -49, -54 thru -56, -66, -74 thru -75

Laboratory: CT Laboratories **Hrs. for Review:**

Following are our findings:

CC: Howard Pham
Region 5 TOPO
Mail Code: SRT-4J

Narrative

The laboratory's portion of this case contains 58 water samples (29 dissolved, 29 total, see attached table) which were collected between September 24 and 28, 2007 and received at the laboratory between September 25 and 29, 2007. They were analyzed for iron and manganese. Total and dissolved samples collected September 26 and 27, 2007 were assigned the same EPA sample IDs by the field personnel. See the attached table for specific identifiers. All sample results are reported to the MDL. The samples were analyzed using SW846 6010B (ICP-AES) analysis procedures.

Evidential Audit: All provided ICP reporting forms are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms, or sample tags were provided. CLP equivalent forms for ICSA/ABs were not provided. Levels recorded on the Forms for the MRL check sample ("CRDL" sample) were not at the SAS required levels (Fe = 300, Mn = 10; SAS requires Fe = 30, Mn = 6). A sample identified as "mdl chk" on the raw data was analyzed, however, no true value was provided; therefore the recovery of that sample cannot be evaluated.

No analytical date was provided on the MDL summary form or the linearity form. MDL and linearity values recorded on the forms provided were used for evaluation of the data.
The values provided for MDLs on the calibration blanks forms (87 for Fe, 3.1 for Mn) were different from the Level of Detection (LOD) listed on the Form 1s (39 total Fe, 10 dissolved Fe, 0.5 total Mn, 0.4 dissolved Mn). Dissolved LOD/RL values are used for evaluation of the blank data. No values or units were filled in for the method blanks for the dissolved analyses.

The Duplicate Forms included (pages 1288-1291 in the case) are for the LCS/LCSD. No sample description is provided on the Form. Duplicate forms are also included for the MS/MSD. The laboratory performed post digestion spikes on serial dilution failures and reported results unqualified. This does not make the data reportable. Samples affected by failed serial dilutions are qualified due to possible matrix interferences.

No times are included on the Analysis Run Logs for the calibration. Four run logs were included with the case; each represents part of the same analytical run.

ICP-AES: Section 8(d) of the SAS requires that the RL must be shown to have been met before any samples are analyzed; since the "CRDL" sample was not analyzed at the SAS required RL (the sample contains 300 ug/L Fe and 10 ug/L Mn; the SAS requires 30 ug/L Fe and 6 ug/L Mn), this requirement was not met. All Fe results less than 300 ug/L and Mn results less than 10 ug/L are estimated "J" for detects and "UJ" for non-detects due to the failure of the laboratory to meet the SAS required reporting limit.

For Fe, the SAS required reporting limit for total Fe (30 ug/L) was not met by the laboratory. All non-detect total Fe results (07CE47-03, -10, -20, -22, -24 and -27) are estimated "UJ."

Reviewed by: Stephen Connet
Date: 12/12/2007

Additionally, all Fe results (total and dissolved) greater than the MDL but less than 300 ug/L are estimated for the laboratory failing to meeting the SAS requirement of showing they were able to meet the SAS required reporting limit (see above). Total Fe results for 07CE47-05, -07, -15, and dissolved Fe results for 07CE47-02, -04, -23, -25, -35, -37, -39, -49 are estimated "J" due to the laboratory not demonstrating that they could meet the SAS required reporting limit. Finally, the RPD for the serial dilution performed on dissolve sample 07CE47-56 was greater than 10% indicating possible physical or chemical interference; the dissolved Fe results for samples 07CE47-45, -47, -48, -49, -54, -55, -56 and -66 are estimated "J" for detects and "UJ" for non-detects due to possible physical or chemical interference.

For Mn, Mn was detected in one of the CCBs. The result for total sample 07CE47-45 is estimated "J+" due to possible contamination. Also, total Mn results for 07CE47-07 and -45 are estimated "J" because the reported results are between the LOD/RL and the SAS required RL. Finally, the RPDs for the serial dilutions performed on dissolve sample 07CE47-56 and total sample 07CE47-40 were greater than 10% indicating possible physical or chemical interference; the dissolved Mn results for samples 07CE47-45, -47, -48, -49, -54, -55, -56 and -66 and total Mn results for samples 07CE47-01, -03, -05, -07, -10, -13, -15, -17, -20, -22, -24, -27, -29, -31, -34, -36, -38, -40, -43, -44 are estimated "J" for detects and "UJ" for non-detects due to possible physical or chemical interference.

Other comments: Total samples 07CE47-22/-24, -34/-36, -43/-44 and dissolved samples -23/-25, -35/-37, -43/-44 were identified as field duplicates. Duplicates were evaluated according to the same criteria as laboratory duplicates. All showed good correlation except total samples 07CE47-35/-37 (iron only); no sample results were qualified for field duplicate failure.

Samples 07CE47-10 and -11 were identified as equipment blanks. Samples 07CE47-10 and -11 were identified as field blanks. No contamination was found in any of the equipment or field blanks.

Lab ID	Sample ID (Total)	Lab ID	Sample ID (Dissolved)	Sample Point	Sample Date	Sample Time
504795	07CE47-01	504796	07CE47-02	OEP-MW-103D	9/24/2007	14:58
504798	07CE47-03	504799	07CE47-04	OEP-MW-103S	9/24/2007	15:05
504800	07CE47-05	504801	07CE47-06	OEP-MW-015D	9/24/2007	16:10
504802	07CE47-07	504803	07CE47-08	OEP-MW-015S	9/24/2007	16:10
505255	07CE47-10	505256	07CE47-11	OEP-FB-001	9/25/2007	9:35
505221	07CE47-13	505222	07CE47-14	OEP-MW-001D	9/25/2007	10:35
505223	07CE47-15	505224	07CE47-16	OEP-MW-001S	9/25/2007	9:40
505225	07CE47-17	505226	07CE47-18	OEP-MW-004S	9/25/2007	9:45
505230	07CE47-20	505234	07CE47-21	OEP-MW-004D	9/25/2007	11:00
505263	07CE47-22	505264	07CE47-23	OEP-MW-101B	9/25/2007	12:10
505265	07CE47-24	505266	07CE47-25	OEP-MW-101BFR	9/25/2007	12:15
505258	07CE47-27	505259	07CE47-28	OEP-EB-001	9/25/2007	12:40
505268	07CE47-29	505269	07CE47-30	OEP-MW-003D	9/25/2007	12:00
505199	07CE47-31	505203	07CE47-32	OEP-MW-102D	9/25/2007	15:30
505213	07CE47-34	505216	07CE47-35	OEP-SW-01	9/25/2007	16:20
505217	07CE47-36	505218	07CE47-37	OEP-SW-01FR	9/25/2007	16:25
505219	07CE47-38	505220	07CE47-39	OEP-SW-03	9/25/2007	16:40
505260	07CE47-40	505261	07CE47-41	OEP-MW-005D	9/25/2007	16:35
505561	07CE47-43	505562	07CE47-43	OEP-MW-013D	9/26/2007	10:10
505563	07CE47-44	505564	07CE47-44	OEP-MW-013DFR	9/26/2007	10:15
505565	07CE47-45	505566	07CE47-45	OEP-MW-013S	9/26/2007	10:10
505570	07CE47-47	505571	07CE47-47	OEP-MW-012B	9/26/2007	11:45
505568	07CE47-48	505569	07CE47-48	OEP-MW-012D	9/26/2007	11:35
505572	07CE47-49	505573	07CE47-49	OEP-MW-012S	9/26/2007	12:25
506132	07CE47-54	506133	07CE47-54	OEP-MW-105B	9/27/2007	10:15
506148	07CE47-55	506149	07CE47-55	OEP-MW-105D	9/27/2007	11:05
506150	07CE47-56	506151	07CE47-56	OEP-MW-105S	9/27/2007	10:30
506137	07CE47-66	506138	07CE47-66	OEP-MW-015B	9/27/2007	16:35
506198	07CE47-74	506199	07CE47-75	OEP-MW-016S	9/28/2007	10:30

Reviewed by: Stephen Connet
Date: 12/12/2007

ILM05.4 Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Stephen Connet
Date: 12/12/2007

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: January 11, 2008

SUBJECT: **Review of Data**
Received for review on October 18, 2007

FROM: **Stephen L. Ostrodka, Chief (SRT-4J)**
Superfund Field Services Section

TO: **Data User:** CH2M HILL

We have reviewed the data for the following case:

SITE NAME: Oconomowoc Electroplating Company (WI)

CASE NUMBER: 07CE47 **SDG NUMBER:** 62785-INO

Number and Type of Samples: 29 water samples

Sample Numbers: 07CE47-01, -03, -05, -07, -10, -13, -15, -17, -20, -22, -24, -27, -29, -31, -34, -36, -38, -40, -43 thru 45, -47 thru 49, -54 thru 56, -66, -74

Laboratory: CT Laboratories **Hrs. for Review:**

Following are our findings:

CC: Howard Pham
Region 5 TOPO
Mail Code: SRT-4J

Narrative

The laboratory's portion of this case contains 29 water samples (see TABLE 1). The samples were collected between September 24 and 27, 2007. They were analyzed for alkalinity, total organic carbon (TOC), sulfide, sulfate, nitrate, orthophosphate and chloride (see TABLE 2). All sample results are reported to the MDL. The samples were analyzed using SW846 9056 (anions), 9060 (total organic carbon), EPA 310.2 (alkalinity), and 376.1 (sulfide) analysis procedures.

Evidential Audit: All reporting forms provided are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms or sample tags were provided.

No MDL summaries were provided. It is unknown when MDLs were performed. MDL (LOD) values recorded on the results Form 1 were used for evaluation of the data. MDL and RL values on Form 1s are equal.

Alkalinity: The SAS requires that the lowest calibration point be run at 10.0 mg/L. The lowest point performed was 25 mg/L. All sample results were above 25 mg/L except samples 07CE47-10 and 07CE47-27, which are non-detects. These results are estimated "UJ" due to the laboratories inability to meet the SAS required RL. All other alkalinity results are acceptable.

Ammonia: No defects were found. All ammonia results are acceptable.

Chloride: Chloride results for 07CE47-05 were reported incorrectly. The incorrect peak was identified during analysis. The chloride result for 07CE47-05 are qualified "R" due to misidentification. The field blank contains chloride (1.0 mg/L) above the laboratory reporting limit (0.9 mg/L) and more than the SAS reporting limit (1.0 mg/L). Samples 07CE47-03 and 07CE47-10 are reported with analyte concentrations above the method detection limit (MDL) but below the 5 times the blank value are qualified "J+". All remaining chloride results are acceptable.

Nitrate: No defects were found. The field blank contains nitrate (0.11 mg/L) above the laboratory reporting limit (0.11 mg/L) but less than the SAS reporting limit (1.0 mg/L). Samples 07CE47-03 and 07CE47-10 are reported with analyte concentrations above the method detection limit (MDL) but below the 5 times the blank value are qualified "J+". All other nitrate results are acceptable.

Orthophosphate: No defects were found. Samples reported with analyte concentrations above the method detection limit (MDL) but below the SAS limit are qualified "J".

Sulfate: Sulfate result for 07CE47-15 was reported incorrectly at 61 mg/L on Form I. Raw data showed sulfate was detected at 56 mg/L. Correction for sulfate result of 07CE47-15 was made by the reviewer. Samples 07CE47-13, 07CE47-22, 07CE47-34, 07CE47-36, and 07CE47-38 are reported with analyte concentrations above the method detection limit (MDL) but below the SAS limit are qualified "J".

Sulfide: No defects were found. All sulfide results are acceptable.

TOC: The SAS requires a low standard be run to confirm the reporting limit of 1.0 mg/L. This was not performed. All TOC results are below the lowest calibration standard of 10 mg/L. The TOC

results for samples 07CE47-10, 07CE47-13, and 07CE47-17 are estimated "J" for detects and "UJ" for non-detects. The field blank contains total organic carbon (1.4 mg/L) above the laboratory reporting limit (0.5 mg/L) and more than the SAS reporting limit (1.0 mg/L) therefore, samples 07CE47-01, 07CE47-03, 07CE47-05, 07CE47-07, 07CE47-15, 07CE47-20, 07CE47-22, 07CE47-24, 07CE47-29, 07CE47-31, 07CE47-40, 07CE47-43, 07CE47-44, 07CE47-45, 07CE47-47, 07CE47-48, 07CE47-49, 07CE47-54, 07CE47-55, 07CE47-56, 07CE47-66, and 07CE47-74 are reported with analyte concentrations above the method detection limit (MDL) but below the 5 times the blank value are qualified "J+". TOC result for sample 07CE47-27 is less than the negative Limit of Detection (LOD), therefore qualified "R".

Other comments: Samples 07CE47-05/07CE47-07 and 07CE47-43/07CE47-44 were identified as field duplicates. Duplicates were evaluated according to the same criteria as laboratory duplicates. All showed good correlation. Sample 07CE47-10 was identified as field blank. Sample 07CE47-27 was identified as equipment blank.

TABLE 1

Lab ID	*EPA sample ID*	*Sample location*	*Cooler Tem.*	*Collection date*	*Collection time*	*Received date*
504795	07CE47-01	OPE-MW-103D	2.4	9/24/2007	14:58	9/25/2007
504798	07CE47-03	OPE-MW-103S	2.4	9/24/2007	15:05	9/25/2007
504800	07CE47-05	OEP-MW-015D	2.4	9/24/2007	16:10	9/25/2007
504802	07CE47-07	OEP-MW-015S	2.4	9/24/2007	16:10	9/25/2007
505255	07CE47-10	OEP-FB-001	3.6	9/25/2007	09:35	9/26/2007
505221	07CE47-13	OEP-MW-001D	4.1	9/25/2007	10:35	9/26/2007
505223	07CE47-15	OEP-MW-001S	4.1	9/25/2007	09:40	9/26/2007
505225	07CE47-17	OEP-MW-004S	4.1	9/25/2007	09:45	9/26/2007
505230	07CE47-20	OEP-MW-004D	4.1	9/25/2007	11:00	9/26/2007
505263	07CE47-22	OEP-MW-101B	3.6	9/25/2007	12:10	9/26/2007
505265	07CE47-24	OEP-MW-101BFR	3.6	9/25/2007	12:15	9/26/2007
505258	07CE47-27	OEP-EB-001	3.6	9/25/2007	12:40	9/26/2007
505268	07CE47-29	OEP-MW-003D	3.6	9/25/2007	12:00	9/26/2007
505199	07CE47-31	OEP-MW-102D	1.9	9/25/2007	15:30	9/26/2007
505213	07CE47-34	OEP-SW-01	1.9	9/25/2007	16:20	9/26/2007
505217	07CE47-36	OEP-SW-01FR	1.9	9/25/2007	16:25	9/26/2007
505219	07CE47-38	OEP-SW-03	1.9	9/25/2007	16:40	9/26/2007
505260	07CE47-40	OEP-MW-005D	5.4	9/25/2007	16:35	9/26/2007
505561	07CE47-43	OEP-MW-013D	4.2	9/26/2007	10:10	9/27/2007
505563	07CE47-44	OEP-MW-013DFR	4.2	9/26/2007	10:15	9/27/2007
505565	07CE47-45	OEP-MW-013S	4.2	9/26/2007	10:10	9/27/2007
505570	07CE47-47	OEP-MW-012B	2.9	9/26/2007	11:45	9/27/2007
505568	07CE47-48	OEP-MW-012D	4.2	9/26/2007	11:35	9/27/2007
505572	07CE47-49	OEP-MW-012S	2.9	9/26/2007	12:25	9/27/2007
506132	07CE47-54	OEP-MW-105B	2.1	9/27/2007	10:15	9/28/2007
506148	07CE47-55	OEP-MW-105D	3.4	9/27/2007	11:05	9/28/2007
506150	07CE47-56	OEP-MW-105S	3.4	9/27/2007	10:30	9/28/2007
506137	07CE47-66	OEP-MW-15B	2.1	9/27/2007	16:35	9/28/2007

TABLE 2

Lab ID	EPA Sample ID	Sample Concentration (mg/L)															
			ALK		NO3		CL		SO4		S2		TOC		NH3		O-Phos
		DF		DF		DF		DF		DF		DF	-	DF		DF	
504795	07CE47-01	1	400	1	0.11 U	10	170	1	37	1	1.0 U	1	2.6 J+				
504798	07CE47-03	1	500	1	0.48 J+	1	1.1 J+	5	85	1	1.0 U	1	6.4 J+				
504800	07CE47-05	1	370	1	1.8	1	R	1	48	1	1.0 U	1	1.5 J+				
504802	07CE47-07	1	290	1	1.5	1	12	1	17	1	1.0 U	1	1.0 J+				
505255	07CE47-10	1	9 UJ	1	0.11 J	1	1.0 J	1	0.80 U	1	1.0 U	1	1.4 J				
505221	07CE47-13	1	360	1	0.11 U	1	6.8	1	1.2 J	1	1.0 U	1	0.5 UJ				
505223	07CE47-15	1	390	1	0.11 U	4	60	4	56	1	1.0 U	1	0.5 J+				
505225	07CE47-17	1	770	1	0.11 U	1	34	4	100	1	1.0 U	1	9.7 J				
505230	07CE47-20	1	310	1	0.39 J+	10	150	1	60	1	1.0 U	1	0.86 J+				
505263	07CE47-22	1	120	1	0.48 J+	1	9.6	1	7.4 J	1	1.0 U	1	3.1 J+				
505265	07CE47-24	1	150	1	0.39 J+	1	19	1	11	1	1.0 U	1	3.9 J+				
505258	07CE47-27	1	9 UJ	1	0.11 U	1	0.90 U	1	0.80 U	1	1.0 U	1	R				
505268	07CE47-29	1	370	1	0.11 U	10	130	1	52	1	1.0 U	1	0.84 J+				
505199	07CE47-31	1	460	1	0.11 U	10	240	10	140	1	1.0 U	1	2.0 J+				
505213	07CE47-34	1	460	1	0.11 U	1	29	1	3.7 J	1	1.0 U	1	20	1	0.021U	1	0.24 J
505217	07CE47-36	1	460	1	0.11 U	1	29	1	3.7 J	1	1.0 U	1	20	1	0.021U	1	0.23 J
505219	07CE47-38	1	470	1	0.31 J+	1	40	1	5.6 J	1	1.0 U	1	18	1	0.021U	1	0.24 J
505260	07CE47-40	1	410	1	0.11 U	10	140	1	52	1	1.0 U	1	0.81 J+				
505561	07CE47-43	1	380	1	0.11 U	10	120	10	71	1	1.0 U	1	1.4 J+				
505563	07CE47-44	1	360	1	0.11 U	20	120	10	69	1	1.0 U	1	1.4 J+				
505565	07CE47-45	1	320	1	8.4	1	36	1	23	1	1.0 U	1	1.9 J+				
505570	07CE47-47	1	340	1	0.11 U	10	230	1	38	1	1.0 U	1	0.82 J+				
505568	07CE47-48	1	420	1	0.11 U	1	200	1	83	1	1.0 U	1	2.6 J+				
505572	07CE47-49	1	400	1	0.31 J+	1	250	1	53	1	1.0 U	1	2.8 J+				
506132	07CE47-54	1	260	1	0.11 U	5	130	1	11	1	1.0 U	1	0.97 J+				
506148	07CE47-55	1	430	1	0.11 U	10	160	1	55	1	1.0 U	1	3.7 J+				
506150	07CE47-56	1	470	1	0.11 U	10	270	1	52	1	1.0 U	1	2.2 J+				
506137	07CE47-66	1	390	1	0.11 U	1	21	1	62	1	1.0 U	1	0.67 J+				
506198	07CE47-74	1	850	1	0.11 U	50	290	50	1600	1	1.0 U	1	3.8 J+				

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.