GE
159 Plastics Avenue
Pittsfield, MA 01201
USA

Transmitted Via Overnight Courier

November 7, 2006

Mr. Dean Tagliaferro
U.S. Environmental Protection Agency
c/o Weston Solutions, Inc.
10 Lyman Street
Pittsfield, MA 01201

Re: **GE-Pittsfield/Housatonic River Site**
Groundwater Management Area 4 (GECD340)
Results of PCB Assessment – Selected Monitoring Wells

Dear Mr. Tagliaferro:

In the September 13, 2006 *Groundwater Management Area 4 Groundwater Quality Monitoring Interim Report for Spring 2006* (Spring 2006 Groundwater Report), GE summarized the results of activities performed at Groundwater Management Area (GMA) 4 (also known as the Plant Site 3 GMA) during spring 2006, and presented the results of the latest round of sampling and analysis of groundwater performed as part of the interim monitoring program for GMA 4. As discussed in that report, GE's spring 2006 groundwater analytical results from GMA 4 indicated an apparent increase in PCB concentrations in filtered samples at several monitoring wells compared to prior data. Moreover, at one of the locations at which PCBs were detected by the laboratory used by GE, no PCBs were detected in the EPA-analyzed split sample. To further assess this discrepancy and to evaluate the performance of GE's laboratory, GE proposed to conduct an expedited round of sampling activities at selected locations and to submit samples for PCB analysis to separate laboratories. Following assessment of the PCB results, GE proposed to submit a letter to EPA summarizing its findings and recommended sampling strategy for the remainder of the fall 2006 sampling round at GMA 4.

EPA conditionally approved GE's expedited sampling proposal in an electronic communication dated September 25, 2006 and GE conducted the expedited groundwater sampling activities on September 28, 2006 to October 2, 2006. This letter presents the analytical results of those sampling activities and, based on an assessment of the data, describes GE's plans to conduct the fall 2006 sampling event at GMA 4.

Field Activities

The September/October 2006 sampling event was performed between September 28, 2006 and October 2, 2006 at three groundwater monitoring wells located along the Tyler Street Extension (i.e., wells 78-1, 78-6, and GMA 4-6). Groundwater samples were generally collected in accordance with GE's approved FSP/QAPP, with minor variations that have been agreed upon by EPA and GE regarding the placement of the sampling pump intake at wells that intersect the glacial till at this GMA. This modification to the groundwater sampling procedure was included in the draft revisions to the FSP/QAPP submitted to EPA on February 10, 2006.

Low-flow sampling techniques, using a peristaltic pump, were utilized for the purging and collection of groundwater samples during this sampling event. Each monitoring well that was sampled was purged utilizing low-flow sampling techniques until field parameters (including temperature, pH, specific conductivity, turbidity, dissolved oxygen, and, oxidation-reduction potential) stabilized prior to sample collection. Field parameters were measured in combination with the sampling activities at the monitoring wells. The field sampling records are provided in Attachment A to this letter. A summary of the stabilized field measurement results during the September/October sampling event is provided below.

PARAMETER	UNITS	WELL 78-1	WELL 78-6	WELL GMA4-6
Temperature	Degrees Celsius	16.55	16.56	14.97
pH	pH units	6.12	6.22	6.31
Specific Conductivity	Millisiemens per centimeter	1.136	1.967	1.334
Turbidity	NTUs	1.0	43.0	1.0
Dissolved Oxygen	Milligrams per liter	0.49	0.60	0.34
Oxidation-Reduction Potential	Millivolts	70.9	-97.9	121.0

As shown above, none of the groundwater samples extracted from the monitoring wells during this sampling event had turbidity levels greater than the target level of 50 NTU upon stabilization. These results indicate that the sampling and measurement procedures utilized during this sampling event were effective in obtaining groundwater samples with low turbidity.

The collected groundwater samples were submitted to SGS Environmental Services, Inc. of Charleston, West Virginia (SGS) and Northeast Analytical of Schenectady, New York (NEA) for laboratory analysis. The groundwater samples collected by GE during this sampling event were filtered by the laboratories and analyzed for PCBs using EPA Method 8082. Split samples from all monitoring wells were also provided upon request to EPA's subcontractor (Weston Solutions, Inc.) for separate PCB analyses performed by Severn Trent Laboratories of Burlington, Vermont at the discretion of EPA. EPA's analyses were conducted on unfiltered samples.

Following receipt of the analytical data, the results were reviewed for completeness and the filtered analytical results were compared to the Massachusetts Contingency Plan (MCP) Method 1 GW-3 Standard and to the MCP Upper Concentration Limit (UCL) for PCBs in groundwater. The analytical data obtained from GE's laboratories were validated in accordance with the FSP/QAPP. As discussed in the validation reports provided as Attachments B and C, 100% of the PCB data from each laboratory are considered to be useable.

Analytical Results

Groundwater samples from three wells were analyzed for PCBs as part of the September/October sampling event. The PCB analytical results are summarized in attached Table 1 (for GE's filtered samples) and Table 2 (for EPA's unfiltered split samples).

As shown in Table 1, no PCBs were detected in any of the three filtered samples analyzed by SGS, while a single PCB Aroclor (reported as Aroclor-1254, although the sample exhibited an altered PCB pattern) was detected in one of the groundwater samples (well 78-1) analyzed by NEA. The detection reported by NEA was at a trace concentration (0.000022 ppm), which was lower than the SGS detection limit of 0.000062 ppm in the split sample. The reported concentration was also below the applicable MCP Method 1 GW-3 Standard (0.0003 ppm) and UCL for groundwater (0.005 ppm) for PCBs.

PCBs were detected in each of the three unfiltered samples analyzed by EPA's laboratory, as shown in Table 2. The total detected PCB concentrations in those unfiltered samples ranged from 0.000034 ppm (well GMA4-6) to 0.00023 ppm (well 78-1). Those concentrations were all below the applicable MCP UCL for PCBs in groundwater (0.005 ppm). Moreover, although GE and EPA have agreed that only filtered data should be compared to the GW-3 standards as the filtered data are more representative of groundwater quality, GE notes that the concentrations detected in EPA's unfiltered samples were all below the GW-3 standard.

Assessment of Results and Fall 2006 Sampling Activities

The most recent groundwater analytical results are not consistent with the data from GE's groundwater samples collected in the spring 2006 sampling round and, in particular, do not show the apparent increase in PCB concentrations observed in that round. Rather, the recent data are consistent with prior data which showed PCBs at trace or non-detectable levels. Data validation of the spring 2006 PCB results does not indicate any laboratory deviations that would readily explain the anomalous results. The September/October data obtained by SGS were similar to the data obtained by NEA (with the exception of one identified PCB Aroclor at a low concentration). No problems were noted during validation of either laboratory's set of September/October data. However, due to the lack of detectable concentrations of PCBs in almost all of the samples analyzed, the conclusions to be drawn from the comparison of data from each laboratory were limited. Therefore, GE plans to continue its laboratory assessment during the fall 2006 sampling event at GMA 4. As in the past, GE will collect all groundwater samples required for PCB and Appendix IX+3 analyses under the GMA 4 groundwater quality monitoring program and submit them to SGS for analysis. In addition, GE will collect split samples from each of the GMA 4 wells scheduled for sampling and submit them to NEA for filtered PCB analysis. This additional split sampling will provide comparable data from a larger group of wells to allow a more meaningful comparison to be made between the two laboratories.

GE will initiate the fall 2006 interim sampling event during the week of November 6, 2006. Weston Solutions, Inc. has been informed of the sampling schedule to coordinate the assignment of field oversight personnel and the sampling of locations where split samples will be provided to EPA. Semi-annual sampling and analyses will be performed at 12 OPCA groundwater monitoring program wells. As discussed in the Spring 2006 Groundwater Report, well OPCA-MW-1R will be sampled in place of well OPCA-MW-1, since that well was decommissioned following the performance of the spring 2006 groundwater sampling event. In addition, well GMA4-6 will be added to the OPCA monitoring network, as directed by EPA in its June 5, 2006 conditional approval letter. Analyses will be performed according to the requirements of the OPCA groundwater monitoring program as presented in the Spring 2006 Groundwater Report.

Please call Andrew Silfer or me if you have any questions regarding these results.

Sincerely,

Richard W. Gates
Remediation Project Manager

Enclosures
V:\GE_Pittsfield_CD_GMA_4\Reports and Presentations\Nov 06 Results Rpt\57862196LtrRpt.doc

cc: Tim Conway, EPA (cover letter only)
Holly Inglis, EPA (CD-ROM)
Rose Howell, EPA (CD-ROM, cover letter only)
K.C. Mitkevicius, USACE (CD-ROM)
Linda Palmieri, Weston (2 hard copies & CD-ROM)
Susan Steenstrup, MDEP (2 copies)
Anna Symington, MDEP (cover letter only)
Jane Rothchild, MDEP (cover letter only)
Thomas Angus, MDEP (cover letter only)
Nancy E. Harper, MA AG
Dale Young, MA EOEA
Mayor James Ruberto, City of Pittsfield
Pittsfield Commissioner of Public Health
Thomas Hickey, Director, PEDA
Jeffery Bernstein, Bernstein, Cushner & Kimmel
Theresa Bowers, Gradient
Michael Carroll, GE (cover letter only)
Andrew Silfer, GE (CD-ROM)
Rod McLaren, GE (cover letter only)
James Nuss, BBL
James Bieke, Goodwin Procter
John Ciampa, SPECTRA
Scott LeBeau, General Dynamics
Tim Eglin, Purenergy, LLC
Public Information Repositories
GE Internal Repositories

Tables

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TABLE 1
GROUNDWATER ANALYTICAL RESULTS - FILTERED SAMPLES ANALYZED BY GE

RESULTS OF PCB ASSESSMENT - SELECTED MONITORING WELLS
GROUNDWATER MANAGEMENT AREA 4
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Parameter / Sample ID: / Date Collected:	Method 1 GW-3 Standards	MCP UCL for Groundwater	78-1 09/29/06	78-6 09/28/06	GMA4-6 10/02/06
PCBs					
Aroclor-1016	Not Listed	Not Listed	ND(0.000022) {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010)}
Aroclor-1221	Not Listed	Not Listed	ND(0.000022) {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010)}
Aroclor-1232	Not Listed	Not Listed	ND(0.000022) {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010) J}
Aroclor-1242	Not Listed	Not Listed	ND(0.000022) {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010) J}
Aroclor-1248	Not Listed	Not Listed	ND(0.000022) {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010) J}
Aroclor-1254	Not Listed	Not Listed	0.000022 AF {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010)}
Aroclor-1260	Not Listed	Not Listed	ND(0.000022) {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010)}
Total PCBs	0.0003	0.005	0.000022 {ND(0.000062) J}	ND(0.000022) [ND(0.000022)] {ND(0.000062) J [ND(0.000062) J]}	ND(0.000022) {ND(0.00010) J}

Notes:

1. Samples were collected by BBL, an ARCADIS company, and submitted to Northeast Analytical, Inc. and SGS Environmental Services, Inc. for analysis of PCBs. Samples analyzed by SGS Environmental Services, Inc. are presented in {brackets}.
2. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, Blasland Bouck & Lee, Inc. (approved May 29, 2004 and resubmitted June 19, 2004).
3. ND - Analyte was not detected. The number in parentheses is the associated detection limit.
4. Field duplicate sample results are presented in [brackets].

Data Qualifiers:

AF - Aroclor 1254 is being reported as the best Aroclor match. The sample exhibits an altered PCB pattern.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - UNFILTERED SAMPLES ANALYZED BY EPA

RESULTS OF PCB ASSESSMENT - SELECTED MONITORING WELLS
GROUNDWATER MANAGEMENT AREA 4
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Parameter	Sample ID: / Date Collected:	MCP UCL for Groundwater	78-1 09/28/06	78-6 09/28/06	GMA4-6 10/02/06
PCBs					
Aroclor-1016		Not Listed	ND(0.000025)	ND(0.000025)[ND(0.000027)]	ND(0.000013)
Aroclor-1221		Not Listed	ND(0.000025)	ND(0.000025)[ND(0.000027)]	ND(0.000013)
Aroclor-1232		Not Listed	ND(0.000025)	ND(0.000025)[ND(0.000027)]	ND(0.000013)
Aroclor-1242		Not Listed	ND(0.000025)	ND(0.000025)[ND(0.000027)]	ND(0.000013)
Aroclor-1248		Not Listed	ND(0.000025)	ND(0.000025)[ND(0.000027)]	ND(0.000013)
Aroclor-1254		Not Listed	0.00017	0.000048[0.000048]	0.000034
Aroclor-1260		Not Listed	0.000056	ND(0.000025)[ND(0.000027)]	ND(0.000013)
Total PCBs		0.005	0.00023	0.000048[0.000048]	0.000034

Notes:

1. Samples were collected by BBL, an ARCADIS company, and submitted to STL-Burlington for analysis of PCBs on behalf of EPA.
2. Sample results are presented as provided by EPA and have not been validated by GE.
3. ND - Analyte was not detected. The number in parentheses is the associated detection limit.
4. Field duplicate sample results are presented in [brackets].

Figure

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NOTES:

1. MAPPING BASED ON AUTOCAD DRAWING FILE (PLANT3.CAD) AS PROVIDED BY GE AND ADDITIONAL INFORMATION FROM THE MCP PHASE II SCOPE OF WORK AND PROPOSAL FOR RCRA FACILITY INVESTIGATION (O'BRIEN & GERE ENGINEERS, INC., FEBRUARY 1996) AS WELL AS SUPPLEMENTAL SITE SURVEY INFORMATION OBTAINED BY HILL ENGINEERS, PLANNERS & ARCHITECTS (WEEK OF MAY 29, 1997). LOCATIONS EAST OF THE PARKING LOT DIGITIZED FROM MARCH 2000 AIR PHOTO AND ARE APPROXIMATE.
2. ALL LOCATIONS ARE APPROXIMATE.

CONNECTICUT AVE.
ALLENDALE SCHOOL
VIRGINIA AVE.
CALIFORNIA AVE.
PLASTICS AVE.
TYLER STREET EXTENSION
NEW YORK AVE.
MERRILL ROAD
BUILDING 71 OPCA EXPANSION (APPROXIMATE LOCATION)
ALLENDALE SCHOOL PROPERTY
HILL 78 OPCA (APPROXIMATE EXISTING BOUNDARY)
BUILDING 71 OPCA (APPROXIMATE EXISTING BOUNDARY)
PARKING LOT
OP-1
OP-2
STORMWATER BASIN
STORMWATER BASIN
COOLING TOWER
GAS TURBINE GENERATOR BUILDING
STEAM TURBINE GENERATOR BLDG.
TANKS
SOIL STOCKPILE AREA
SWALE A
SWALE B
SWALE C
30" CULVERT
SWALE
78
73
14-E

78-1
78-2
78-3
78-4
78-5R
78-6
78-7
GMA4-1
GMA4-5
GMA4-6
GMA 4-2
GMA 4-3
GMA 4-4
60A/B-R
RF-14
RF-15
NY-1
NY-2
NY-3
NY-4
ES1-6
ES1-20
SCH-4
UB-MW-5
UB-MW-6
UB-MW-7
UB-MW-8
OPCA-MW-1
OPCA-MW-1R
OPCA-MW-2
OPCA-MW-3
OPCA-MW-4
OPCA-MW-5/5R
OPCA-MW-6
OPCA-MW-7
OPCA-MW-8
ASW-1
ASW-2
ASW-3
ASW-4
ASW-5
ASW-6
H78B-8/8R
H78B-11
H78B-12
H78B-13R
H78B-15
H78B-16
H78B-17R
H78B-18
H78B-28R

LEGEND:

- APPROXIMATE SITE BOUNDARY
- FENCE LINE
- H78B-15 EXISTING MONITORING WELL
- H78B-28/28R DECOMMISSIONED WELL LOCATION
- ASW-4 DEEP WATER SUPPLY WELL
- GW-2 SENTINEL/COMPLIANCE WELL
- GW-3 PERIMETER WELL
- GENERAL/SOURCE AREA SENTINEL WELL (GW-3)
- OPCA GROUNDWATER MONITORING PROGRAM WELL TO BE SAMPLED SEMI-ANNUALLY
- HISTORICAL EXTENT OF LNAPL
- WELL TO BE SAMPLED ANNUALLY FOR VOCs
- EXPEDITED GROUND GROUNDWATER SAMPLING LOCATIONS

0 120' 240'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSSETTS

GMA4 INTERIM MONITORING PROGRAM

SITE PLAN

BBL an ARCADIS company

FIGURE 1

SYR-BS-SDL RCB LAYER: ON=*; OFF=*REF
G:\GE_ACTIVE\C\2018700\SPRING06\2018TB04.DWG SAVED:11/7/2006 9:13 AM LAYOUT:Layout1 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED:11/7/2006 9:14 AM BY:RBASSETT
PROJECTNAME:----
XREFS: 2018TX07 2018TX00 IMAGES:

Attachments

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Attachment A

Field Sampling Records

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GROUNDWATER SAMPLING LOG

Well No. 78-1
Key No. NA
PID Background (ppm) 0
Well Headspace (ppm) 0

Site/GMA Name GE Pittsfield - GMA-4
Sampling Personnel GAR/SME
Date 9/28/06
Weather Mostly sunny, 70°, Windy

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point -0.80 Meas. From Ground
Well Diameter 4"
Screen Interval Depth 8'-23' Meas. From Ground
Water Table Depth 11.12' Meas. From TIC
Well Depth 22.40' Meas. From TIC
Length of Water Column 11.28'
Volume of Water in Well 7.36 gallons
Intake Depth of Pump/Tubing 16.8' Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Sample Time 11:45
Sample ID 78-1
Duplicate ID —
MS/MSD Collected Here
Split Sample ID HCGW000054-0-6528

Required	Analytical Parameters:	Collected
( )	VOCs (Std. list)	( )
( )	VOCs (Exp. list)	( )
( )	SVOCs	( )
( )	PCBs (Total)	( )
(X)	PCBs (Dissolved)	(X)
( )	Metals/Inorganics (Total)	( )
( )	Metals/Inorganics (Dissolved)	( )
( )	EPA Cyanide (Dissolved)	( )
( )	PAC Cyanide (Dissolved)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

EVACUATION INFORMATION

Pump Start Time 10:30
Pump Stop Time 13:30
Minutes of Pumping 180
Volume of Water Removed 4.75 gallons
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump ( )
Peristaltic Pump (X) Submersible Pump ( ) Other/Specify ( )
Pump Type: Geo Pump 2
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI-556 - 03M0230AC
Hach 2100P Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
10:35	100ml	0.13	11.24	—	—	—	3	—	—
10:45	100ml	0.40	11.35	16.13	6.06	1.126	2	4.53	160.4
10:50	100ml	0.53	11.39	16.13	6.02	1.126	1	1.60	143.7
10:55	100ml	0.66	11.46	16.07	6.03	1.126	1	1.31	128.0
11:00	100ml	0.79	11.51	16.17	6.02	1.127	1	1.26	117.7
11:05	100ml	0.92	11.55	16.27	6.03	1.128	1	0.90	111.3
11:10	100ml	1.06	11.60	16.50	6.03	1.131	2	0.83	105.0
11:15	100ml	1.19	11.64	16.42	6.08	1.136	1	0.80	96.9

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

Initial Purge: Clear, odorless
Final Purge: Clear, odorless
Weston/EPA collected split samples for Total PCBs and an MS/MSD

SAMPLE DESTINATION

Laboratory: SGS + NEA
Delivered Via: —
Airbill #: —

Field Sampling Coordinator: [signature]

GROUNDWATER SAMPLING LOG

Well No. 78-1

Site/GMA Name GE Pittsfield - GMA-4
Sampling Personnel GAR/JME
Date 9/28/01
Weather Mostly sunny, 70°, Windy

WELL INFORMATION - See Page 1

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
11:20	100ml	1.32	11.68	16.19	6.05	1.133	1	0.66	93.3
11:25	100ml	1.45	11.72	16.41	6.07	1.136	1	0.56	87.0
11:30	100ml	1.59	11.75	16.61	6.10	1.137	1	0.57	80.0
11:35	100ml	1.72	11.78	16.43	6.12	1.139	1	0.51	75.0
11:40	100ml	1.85	11.80	16.55	6.12	1.136	1	0.49	70.9

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

C:\WORK\GE\[illegible]

GROUNDWATER SAMPLING LOG

Well No. 78-6
Key No. NA
PID Background (ppm) 0
Well Headspace (ppm) 0

Site/GMA Name GE Pittsfield - GMA-4
Sampling Personnel GAR/SME
Date 9/28/06
Weather Mostly sunny, 70°, Windy

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point -0.40' Meas. From Ground
Well Diameter 4"
Screen Interval Depth 3'-18' Meas. From Ground
Water Table Depth 8.14' Meas. From TIC
Well Depth 17.49' Meas. From TIC
Length of Water Column 9.35'
Volume of Water in Well 6.10 gallons
Intake Depth of Pump/Tubing 12.8" Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Sample Time 16:45
Sample ID 78-6
Duplicate ID Dup-1
MS/MSD —
SpR Sample ID HL-GW000055-0606528
(Duplicate) HL-GW000055-1-606528

Required	Analytical Parameters:	Collected
( )	VOCs (Std. list)	( )
( )	VOCs (Exp. list)	( )
( )	SVOCs	( )
( )	PCBs (Total)	( )
(X)	PCBs (Dissolved)	(X)
( )	Metals/Inorganics (Total)	( )
( )	Metals/Inorganics (Dissolved)	( )
( )	EPA Cyanide (Dissolved)	( )
( )	PAC Cyanide (Dissolved)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

EVACUATION INFORMATION

Pump Start Time 15:00
Pump Stop Time 17:50
Minutes of Pumping 160
Volume of Water Removed 4.25 gallons
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump ( )
Peristaltic Pump (X) Submersible Pump ( ) Other/Specify ( )
Pump Type: Geo Pump 2
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI-556 MPS -03MD230Ac
Hach 2100P Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
15:15	100ml	0.13	8.33	—	—	—	76	—	—
15:25	100ml	0.40	8.56	—	—	—	55	—	—
15:35	100ml	0.66	8.58	—	—	—	56	—	—
15:45	100ml	0.92	8.59	—	—	—	51	—	—
15:50	100ml	1.06	8.59	—	—	—	62	—	—
16:00	100ml	1.32	8.59	—	—	—	49	—	—
16:10	100ml	1.59	8.58	17.01	6.36	2.086	45	3.25	-91.0
16:15	100ml	1.72	8.59	16.88	6.23	2.074	46	1.26	-91.3

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

Initial Purge: Orange-brown, particles, odorless
Final Purge: Light orange-brown, odorless

SAMPLE DESTINATION

Laboratory: SGS & NEA
Delivered Via: UPS
Airbill #: —

Field Sampling Coordinator:

C:\WORKDOC2\...

GROUNDWATER SAMPLING LOG

Well No. 78-6

Site/GMA Name GE Hitachi - GMA-4

Sampling Personnel GAR/SME

Date 9/29/06

Weather Mostly sunny, 70°, windy

WELL INFORMATION - See Page 1

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
16:20	100ml	1.85	8.59	16.75	6.21	2.053	46	0.97	-94.2
16:25	100ml	1.98	8.59	16.64	6.21	2.028	43	0.70	-96.2
16:30	100ml	2.11	8.59	16.62	6.20	2.015	46	0.58	-95.4
16:35	100ml	2.25	8.59	16.61	6.21	1.992	44	0.61	-97.0
16:40	100ml	2.38	8.59	16.56	6.22	1.967	~~39~~43	0.60	-97.9

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

GROUNDWATER SAMPLING LOG

Well No. GMA 4-6
Key No. NA
PID Background (ppm) 0
Well Headspace (ppm) 0

Site/GMA Name GE Pittsfield - GMA-4
Sampling Personnel GARLSWD
Date 10/2/06
Weather Partly cloudy, 65°F

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point -0.60' Meas. From Ground
Well Diameter 2"
Screen Interval Depth 3'-13' Meas. From Ground
Water Table Depth 8.85' Meas. From TIC
Well Depth 12.63' Meas. From TIC
Length of Water Column 3.78'
Volume of Water in Well 0.62 gallon
Intake Depth of Pump/Tubing 10.7' Meas. From TIC

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Sample Time 16:05
Sample ID GMA4-6
Duplicate ID —
MS/MSD —
Split Sample ID HL-GW000056-D-16C02

Required	Analytical Parameters:	Collected
( )	VOCs (Std. list)	( )
(1	VOCs (Exp. list)	( )
( )	SVOCs	( )
( )	PCBs (Total)	( )
(X)	PCBs (Dissolved)	(X)
( )	Metals/Inorganics (Total)	( )
( )	Metals/Inorganics (Dissolved)	( )
( )	EPA Cyanide (Dissolved)	( )
( )	PAC Cyanide (Dissolved)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

EVACUATION INFORMATION

Pump Start Time 14:55
Pump Stop Time 16:45
Minutes of Pumping 110
Volume of Water Removed 2.9 gallons
Did Well Go Dry? Y (N)

Evacuation Method: Bailer ( ) Bladder Pump ( )
Peristaltic Pump (X) Submersible Pump ( ) Other/Specify ( )
Pump Type: Geo Pump Z
Samples collected by same method as evacuation? (Y) N (specify)

Water Quality Meter Type(s) / Serial Numbers: YSI-556 MPS - 03M0230AC
Hach 2100P Turbidimeter

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
15:03	100ml	0.21	8.95	—	—	—	16	—	—
15:10	100ml	0.40	8.95	15.20	6.08	1.329	7	12.30	186.4
15:15	100ml	0.53	8.95	15.21	6.10	1.333	7	1.31	178.6
15:20	100ml	0.66	8.95	15.40	6.16	1.337	4	0.68	166.2
15:25	100ml	0.79	8.95	15.26	6.21	1.338	2	0.58	157.3
15:30	100ml	0.92	8.95	15.08	6.19	1.333	1	0.55	152.5
15:35	100ml	1.06	8.95	14.99	6.22	1.334	1	0.52	146.6
15:40	100ml	1.19	8.96	14.92	6.23	1.334	1	0.50	141.3

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

Initial Purge: Clear, odorless
Final Purge: Clear, odorless

SAMPLE DESTINATION

Laboratory: SGS & NEA
Delivered Via: UPS
Airbill #: —

Field Sampling Coordinator:

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GROUNDWATER SAMPLING LOG

Well No. GMA4-6

Site/GMA Name GE Pitts Field - GMA-4
Sampling Personnel GAR/SWD
Date 10/26/06
Weather Partly cloudy, 60°F

WELL INFORMATION - See Page 1

Time	Pump Rate (L/min.)	Total Gallons Removed	Water Level (ft TIC)	Temp. (Celsius) [3%]*	pH [0.1 units]*	Sp. Cond. (mS/cm) [3%]*	Turbidity (NTU) [10% or 1 NTU]*	DO (mg/l) [10% or 0.1 mg/l]*	ORP (mV) [10 mV]*
15:45	100ml	1.32	8.96	14.90	6.25	1.335	1	0.48	135.5
15:50	100ml	1.45	8.96	14.97	6.27	1.337	1	0.42	130.3
15:55	100ml	1.59	8.96	14.90	6.30	1.335	1	0.37	124.1
16:00	100ml	1.72	8.96	14.97	6.31	1.334	1	0.34	121.0

* The stabilization criteria for each field parameter (three consecutive readings collected at 3- to 5-minute intervals) is listed in each column heading.

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

C:\WORK\GE\Groundwater\654196\Attachment\2-2

Attachment B

Data Validation Report – SGS Environmental Services, Inc.

BBL®
an ARCADIS company

ATTACHMENT B
GROUNDWATER SAMPLING DATA VALIDATION REPORT
GROUNDWATER MANAGEMENT AREA 4 PCB ASSESSMENT

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

1.0 General

This attachment summarizes the Tier I and Tier II data reviews performed for groundwater samples collected during Remedial Investigation activities conducted at Groundwater Management Area 4, located at the General Electric Company facility in Pittsfield, Massachusetts. The samples were analyzed for polychlorinated biphenyls (PCBs) by SGS Environmental Services, Inc. (formerly CT&E) of Wilmington, North Carolina. Data validation was performed for four PCB samples.

2.0 Data Evaluation Procedures

This attachment outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- *Field Sampling Plan/Quality Assurance Project Plan, General Electric Company, Pittsfield, Massachusetts*, Blasland, Bouck & Lee, Inc. (BBL; FSP/QAPP, approved May 25, 2004 and resubmitted June 15, 2004);

- *Region I Tiered Organic and Inorganic Data Validation Guidelines*, USEPA Region I (July 1, 1993);

- *Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, USEPA Region I (February 1, 1988) (Modified November 1, 1988); and

- *Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, USEPA Region I (Draft, December 1996).

A tabulated summary of the Tier I and Tier II data evaluations is presented in Table B-1. Each sample subjected to evaluation is listed in Table B-1 to document that data review was performed, as well as present the highest level of data validation (Tier I or Tier II) that was applied. Samples that required data qualification are listed separately for each parameter (compound or analyte) that required qualification.

The following data qualifiers were used in this data evaluation:

J The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL).

U The compound was analyzed for, but was not detected. The sample quantitation limit is presented and adjusted for dilution and (for solid samples only) percent moisture. Non-detect sample results are presented as ND(PQL) within this report and in Table B-1 for consistency with documents previously prepared for investigations conducted at this site.

UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required qualification are presented as ND(PQL) J within this report and in Table B-1 for consistency with documents previously prepared for this investigation.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

3.0 Data Validation Procedures

The FSP/QAPP provides (in Section 7.5) that all analytical data will be validated to a Tier I level following the procedures presented in the *Region I Tiered Organic and Inorganic Data Validation Guidelines* (USEPA guidelines). Accordingly, 100% of the analytical data for these investigations were subjected to Tier I review. The Tier I review consisted of a completeness evidence audit, as outlined in the *USEPA Region I CSF Completeness Evidence Audit Program* (USEPA Region I, 7/31/91), to ensure that all laboratory data and documentation were present. In the event data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the USEPA Region I Tier I data completeness requirements. A tabulated summary of the samples subjected to Tier I and Tier II data evaluation is presented in the following table.

Summary of Samples Subjected to Tier I and Tier II Data Validation

Parameter	Tier I Only			Tier I &Tier II			Total
	Samples	Duplicates	Blanks	Samples	Duplicates	Blanks	
PCBs	0	0	0	3	0	1	4
Total	**0**	**0**	**0**	**3**	**0**	**1**	**4**

As specified in the FSP/QAPP, all of the laboratory sample delivery group packages were randomly chosen to be subjected to Tier II review. A Tier II review was also performed to resolve data usability limitations identified from laboratory qualification of the data during the Tier I data review. The Tier II data review consisted of a review of all data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the Region I Data Validation Functional Guidelines. The Tier II review resulted in the qualification of data for several samples due to minor QA/QC deficiencies. Additionally, all field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP. A tabulated summary of the samples subjected to Tier I and Tier II data evaluations is presented in the following table.

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in USEPA Region I data validation guidance documents. When the data validation process identified several quality control deficiencies, the cumulative effect of the various deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented below for each analytical method.

4.0 Data Review

The continuing calibration criterion requires that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF for PCBs to be less than 15%. Sample data for detect and non-detect compounds with %D values that exceeded the continuing calibration criteria were qualified as estimated (J). A summary of the compounds that exceeded the continuing calibration criterion and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to Continuing Calibration of %D Values

Analysis	Compound	Number of Affected Samples	Qualification
PCBs	Aroclor-1232	1	J
	Aroclor-1242	1	J
	Aroclor-1248	4	J
	Total PCBs	4	J

Laboratory control standard (LCS) analysis recovery criteria for organics must be within the laboratory-generated QC acceptance limits specified on the LCS reporting form. Organic sample results associated with the LCS that exceeded laboratory-generated QC acceptance limits were qualified as estimated. Compounds that did not meet LCS recovery criteria and the number of samples qualified due to those deviations are presented in the following table.

Compounds Qualified Due to LCS Recovery Deviations

Analysis	Compound	Number of Affected Samples	Qualification
PCBs	Aroclor-1016	3	J
	Aroclor-1221	3	J
	Aroclor-1232	3	J
	Aroclor-1242	3	J
	Aroclor-1248	3	J
	Aroclor-1254	3	J
	Aroclor-1260	3	J
	Total PCBs	3	J

5.0 Overall Data Usability

This section summarizes the analytical data in terms of its completeness and usability for site characterization purposes. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I and Tier II data validation reviews. Data completeness with respect to usability was calculated separately for inorganic and each of the organic analysis. The percent usability calculation also includes quality control samples collected to aid in the evaluation of data usability. Therefore, field/equipment blank, trip blank, and field duplicate data determined to be unusable as a result of the validation process are represented in the percent usability value tabulated in the following table.

Data Usability

Parameter	Percent Usability	Rejected Data
PCBs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. Therefore, the following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.

5.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples used to evaluate precision included field duplicates and MS/MSD samples. For this analytical program, none of the data required qualification due to field duplicate RPD or MS/MSD RPD deviations.

5.2 Accuracy

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, laboratory control standards (LCSs), MS/MSD samples, and surrogate compound recoveries. For this analytical program, 31.3% of the data required qualification due to instrument calibration deviations and 75.0% of the data required qualification due to LCS recovery deviations. None of the data required qualification due to MS/MSD or surrogate recovery deviations.

5.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in MDEP-approved work plans, and by following the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with USEPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. For this analytical program, none of the data required qualification due to holding time deviations.

5.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. The USEPA SW-846[1] analytical methods presented in the FSP/QAPP are updated on occasion by the USEPA to benefit from recent technological advancements in analytical chemistry and instrumentation. In most cases, the method upgrades include the incorporation of new technology that improves the sensitivity and stability of the instrumentation or allows the laboratory to increase throughput without hindering accuracy and precision. Overall, the analytical methods for this investigation have remained consistent in their general approach through continued use of the basic analytical techniques (e.g., sample extraction/preparation, instrument calibration, QA/QC procedures). Through this use of consistent base analytical procedures and by requiring that updated procedures meet the QA/QC criteria specified in the FSP/QAPP, the analytical data from past, present, and future sampling events will be comparable to allow for qualitative and quantitative assessment of site conditions.

5.5 Completeness

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses -- the generation of a sufficient amount of valid data. This analytical data set had an overall usability of 100%.

[1] Test Methods for evaluating Solid Waste, SW-846, USEPA, Final Update III, December 1996.

TABLE B - 1
ANALYTICAL DATA VALIDATION SUMMARY
GROUNDWATER MANAGEMENT AREA 4 PCB ASSESSMENT

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs											
G135-190	78-1 (Filtered)	9/28/2006	Water	Tier II	Yes	Aroclor-1016	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1221	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1232	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1242	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1248	CCAL %D	18.9%	<15%	ND(0.000062) J	
						Aroclor-1248	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1254	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1260	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Total PCBs	CCAL %D	18.9%	<15%	ND(0.000062) J	
						Total PCBs	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
G135-190	78-6 (Filtered)	9/28/2006	Water	Tier II	Yes	Aroclor-1016	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1221	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1232	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1242	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1248	CCAL %D	18.9%	<15%	ND(0.000062) J	
						Aroclor-1248	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1254	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1260	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Total PCBs	CCAL %D	18.9%	<15%	ND(0.000062) J	
						Total PCBs	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
G135-190	DUP-1 (Filtered)	9/28/2006	Water	Tier II	Yes	Aroclor-1016	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	78-6 (Filtered)
						Aroclor-1221	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1232	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1242	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1248	CCAL %D	18.9%	<15%	ND(0.000062) J	
						Aroclor-1248	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1254	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Aroclor-1260	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
						Total PCBs	CCAL %D	18.9%	<15%	ND(0.000062) J	
						Total PCBs	LCS %R - Arochlor-1260	62.1%	70% to 130%	ND(0.000062) J	
G135-192	GMA4-6 (Filtered)	10/2/2006	Water	Tier II	Yes	Aroclor-1232	CCAL %D	18.9%	<15%	ND(0.00010) J	
						Aroclor-1242	CCAL %D	31.7%	<15%	ND(0.00010) J	
						Aroclor-1248	CCAL %D	22.7%	<15%	ND(0.00010) J	
						Total PCBs	CCAL %D	18.9%, 31.7%, 22.7%	<15%	ND(0.00010) J	

Attachment C

Data Validation Report – Northeast Analytical, Inc.

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an ARCADIS company

ATTACHMENT C
GROUNDWATER SAMPLING DATA VALIDATION REPORT
GROUNDWATER MANAGEMENT AREA 4 PCB ASSESSMENT

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

1.0 General

This attachment summarizes the Tier I and Tier II data reviews performed for groundwater samples collected during Remedial Investigation activities conducted at Groundwater Management Area 4, located at the General Electric Company facility in Pittsfield, Massachusetts. The samples were analyzed for polychlorinated biphenyls (PCBs) by Northeast Analytical, Inc. (NEA) of Schenectady, New York. Data validation was performed for four PCB samples.

2.0 Data Evaluation Procedures

This attachment outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- *Field Sampling Plan/Quality Assurance Project Plan, General Electric Company, Pittsfield, Massachusetts*, Blasland, Bouck & Lee, Inc. (BBL; FSP/QAPP, approved May 25, 2004 and resubmitted June 15, 2004);

- *Region I Tiered Organic and Inorganic Data Validation Guidelines*, USEPA Region I (July 1, 1993);

- *Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, USEPA Region I (February 1, 1988) (Modified November 1, 1988); and

- *Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, USEPA Region I (Draft, December 1996).

A tabulated summary of the Tier I and Tier II data evaluations is presented in Table C-1. Each sample subjected to evaluation is listed in Table C-1 to document that data review was performed, as well as present the highest level of data validation (Tier I or Tier II) that was applied. Samples that required data qualification are listed separately for each parameter (compound or analyte) that required qualification.

The following data qualifiers were used in this data evaluation:

J The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL).

U The compound was analyzed for, but was not detected. The sample quantitation limit is presented and adjusted for dilution and (for solid samples only) percent moisture. Non-detect sample results are presented as ND(PQL) within this report and in Table C-1 for consistency with documents previously prepared for investigations conducted at this site.

UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required qualification are presented as ND(PQL) J within this report and in Table C-1 for consistency with documents previously prepared for this investigation.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

3.0 Data Validation Procedures

The FSP/QAPP provides (in Section 7.5) that all analytical data will be validated to a Tier I level following the procedures presented in the *Region I Tiered Organic and Inorganic Data Validation Guidelines* (USEPA guidelines). Accordingly, 100% of the analytical data for these investigations were subjected to Tier I review. The Tier I review consisted of a completeness evidence audit, as outlined in the *USEPA Region I CSF Completeness Evidence Audit Program* (USEPA Region I, 7/31/91), to ensure that all laboratory data and documentation were present. In the event data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the USEPA Region I Tier I data completeness requirements. A tabulated summary of the samples subjected to Tier I and Tier II data evaluation is presented in the following table.

Summary of Samples Subjected to Tier I and Tier II Data Validation

Parameter	Tier I Only			Tier I &Tier II			Total
	Samples	Duplicates	Blanks	Samples	Duplicates	Blanks	
PCBs	0	0	0	3	0	1	4
Total	**0**	**0**	**0**	**3**	**0**	**1**	**4**

As specified in the FSP/QAPP, all of the laboratory sample delivery group packages were randomly chosen to be subjected to Tier II review. A Tier II review was also performed to resolve data usability limitations identified from laboratory qualification of the data during the Tier I data review. The Tier II data review consisted of a review of all data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the Region I Data Validation Functional Guidelines. The Tier II review resulted in the qualification of data for several samples due to minor QA/QC deficiencies. Additionally, all field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP. A tabulated summary of the samples subjected to Tier I and Tier II data evaluations is presented in the following table.

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in USEPA Region I data validation guidance documents. When the data validation process identified several quality control deficiencies, the cumulative effect of the various deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented below for each analytical method.

4.0 Overall Data Usability

This section summarizes the analytical data in terms of its completeness and usability for site characterization purposes. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I and Tier II data validation reviews. Data completeness with respect to usability was calculated separately for inorganic and each of the organic analysis. The percent usability calculation also includes quality control samples collected to aid in the evaluation of data usability. Therefore, field/equipment blank, trip blank, and field duplicate data determined to be unusable as a result of the validation process are represented in the percent usability value tabulated in the following table.

Data Usability

Parameter	Percent Usability	Rejected Data
PCBs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. Therefore, the following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.

4.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples used to evaluate precision included field duplicates, and MS/MSD samples. For this analytical program, none of the data required qualification due to field duplicate RPD or MS/MSD RPD deviations.

4.2 Accuracy

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, laboratory control standards (LCSs), MS/MSD samples, and surrogate compound recoveries. For this analytical program, none of the data required qualification due to calibration, LCS, MS/MSD or surrogate recovery deviations.

4.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in MDEP-approved work plans, and by following

the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with USEPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. For this analytical program, none of the data required qualification due to holding time deviations.

4.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. The USEPA SW-846[1] analytical methods presented in the FSP/QAPP are updated on occasion by the USEPA to benefit from recent technological advancements in analytical chemistry and instrumentation. In most cases, the method upgrades include the incorporation of new technology that improves the sensitivity and stability of the instrumentation or allows the laboratory to increase throughput without hindering accuracy and precision. Overall, the analytical methods for this investigation have remained consistent in their general approach through continued use of the basic analytical techniques (e.g., sample extraction/preparation, instrument calibration, QA/QC procedures). Through this use of consistent base analytical procedures and by requiring that updated procedures meet the QA/QC criteria specified in the FSP/QAPP, the analytical data from past, present, and future sampling events will be comparable to allow for qualitative and quantitative assessment of site conditions.

4.5 Completeness

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses -- the generation of a sufficient amount of valid data. This analytical data set had an overall usability of 100%.

[1] Test Methods for evaluating Solid Waste, SW-846, USEPA, Final Update III, December 1996.

TABLE C - 1
ANALYTICAL DATA VALIDATION SUMMARY
GROUNDWATER MANAGEMENT AREA 4 PCB ASSESSMENT

GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs											
06090169_Rev00	78-1 (Filtered)	9/28/2006	Water	Tier II	No						
06090169_Rev00	78-6 (Filtered)	9/28/2006	Water	Tier II	No						
06090169_Rev00	DUP-1 (Filtered)	9/28/2006	Water	Tier II	No						78-6 (Filtered)
06100023_Rev00	GMA4-6 (Filtered)	10/2/2006	Water	Tier II	No						