City of Bothell™

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LETTER OF TRANSMITTAL

Date: November 14, 2016

Company: Department of Ecology
Attn: Sunny Becker NWRO Toxics
Address: Cleanup Program 3190 - 160th SE
Bellevue, WA 98008

From: Nduta Mbuthia, Project Engineer, Capital Projects Division

Attached please find: Electronic copy of:-

1) Letter Report (11/10/2016) - YR 3, QTR 3 Groundwater Monitoring Report for Riverside Site

- ☐ For your information/files
- ☐ For your action
- ☒ At your request
- ☐ Approved as noted
- ☐ Returned for correction
- ☐ Please return all copies
- ☐ Other:

Comments: N/A

HWA GeoSciences Inc.

Geotechnical Engineering • Hydrogeology • Geoenvironmental Services • Inspection and Testing

November 10, 2016
HWA Project No. 2007 098- 2012

Ms. Sunny Becker
Washington Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008

Subject: **GROUND WATER MONITORING AND NEW EXTRACTION WELL RESULTS**
YEAR 3, QUARTER 3 – SEPTEMBER/OCTOBER 2016
Riverside Site
Bothell, Washington

Dear Ms. Becker:

This report describes quarterly ground water monitoring results and soil results from the installation of two new extraction wells at the Riverside HVOC Site, hereafter referred to as "the Site", located in downtown Bothell, Washington.

Ground water remediation is being performed as an interim action, in response to tetrachloroethene (PCE) and its degradation products in shallow ground water at concentrations exceeding Model Toxics Control Act (MTCA) Method A cleanup levels. The interim action is being performed in accordance with the Interim Action Work Plan (IAWP) dated January 7, 2013 and per the scope of work set forth in Amendment 2 to Agreed Order DE 6295, dated April 19, 2013, between the City of Bothell (City) and the Washington State Department of Ecology (Ecology). Remediation is being performed via pump-and-treat methods, which includes ground water extraction and discharge to the sanitary sewer via King County Industrial Waste Discharge permit 4268-01. The remediation system currently includes four active extraction wells (EW-1 through EW-4), two newly installed (inactive) extraction wells (EW-5 and EW-6) that will be connected to the system by the end of November, and 11 monitoring wells (RMW-4 through RMW-13 and BC-3).

Figure 1 shows a site plan with well locations. Ground water monitoring and remediation activities are described below.

GROUND WATER REMEDIATION ACTIVITIES

The ground water extraction and treatment system began operation in December 2013 and is still operating. Ground water extraction from the remediation system is measured via a totalizing flow meter placed in the effluent pipe that discharges to the King County sanitary sewer.

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Quarterly discharge reports are submitted to King County Industrial Waste Division using standard forms provided by King County. The first through third quarterly discharge reports for the year 2016 are attached for reference (Appendix A). Effluent samples were collected from extraction wells EW-1 through EW-4 and from the combined discharge effluent from the remediation system. Sampling dates for extraction wells are shown in Table 1.

COMPLIANCE GROUND WATER MONITORING

This section describes performance monitoring of ground water performed during the interim action.

- First year (2014) ground water monitoring events were performed in April, June, September and December 2014.
- Second year (2015) ground water monitoring events were performed in March, June, September, and December 2015.
- Third year (2016) ground water monitoring events were performed in March, June, and September, with one subsequent round remaining and tentatively scheduled for December 2016.

All monitoring events have included sampling some wells on a quarterly basis and some wells on a semi-annual basis in accordance with the IAWP (see Table 1).

Performance monitoring is performed to confirm that the interim action has attained cleanup standards. Performance monitoring includes collection of ground water samples from the extraction wells and selected monitoring wells, as described in Table 1 (excerpted from the IAWP).

Performance monitoring samples are analyzed for halogenated volatile organic compounds (HVOCs) and field parameters (temperature, dissolved oxygen, oxygen reduction potential, specific conductivity, and pH).

GROUND WATER ANALYTICAL RESULTS

Analytical results for ground water samples are summarized in Table 2. Figures 2, 3, and 4 show graphs of HVOCs over time as follows:

- Figure 2 - Monitoring wells, PCE vs time
- Figure 3 - Extraction wells, PCE vs time
- Figure 4 - RMW-7 HVOCs vs. time

Sampling events in September 2009 and May 2013 provide ground water chemistry data from when the wells were installed, and base-line ground water chemistry data prior to initial operation of the ground water treatment system. Review of analytical results for monitoring well samples provides the following observations:

- HVOC concentrations in the monitoring wells, including RMW-7 at the point of compliance near the river, had decreased from 2009 to 2013, before the treatment system was installed.

- After the treatment system was started in December 2013, PCE and trichloroethene (TCE) concentrations in monitoring well RMW-7 have changed seasonally, but generally show decreasing concentrations.

- After the treatment system was started in December 2013 HVOC concentrations in monitoring wells RMW-6 and RMW-10 also changed seasonally, with HVOC concentrations below cleanup levels and generally remaining within the same range. Vinyl chloride concentrations exceeding the MTCA Method A cleanup level were detected in well RMW-6 in September 2009 and May 2013. However, vinyl chloride and other HVOC degradation product concentrations have been non-detect or below the cleanup levels since May 2013.

- Previous sampling events showed decreasing PCE and TCE concentrations at BC-3.

Review of analytical results for extraction well samples provides the following observations and trends:

- HVOC concentrations in the extraction wells after the treatment system was started have changed seasonally, but have generally remained within the same range.

- Wells EW-1, EW-2, and EW-3 have generally contained PCE and/or TCE exceeding the MTCA Method A cleanup levels. EW-3 has also exhibited concentrations of cis 1,2-dichloroethene ((cis) 1,2-DCE) and/or vinyl chloride that exceed the MTCA Method A cleanup levels. Other HVOC degradation products have either been non-detect or detected at concentrations below the MTCA cleanup levels.

- Well EW-4 has the lowest HVOC concentrations, with no PCE detected in the last four rounds of sampling and TCE detected below the MTCA cleanup level for the last eight rounds of sampling. Except for vinyl chloride, other degradation products detected in EW-4 have either been non-detect or below the MTCA cleanup levels. Vinyl chloride has been detected above cleanup levels since pumping started in EW-4.

GROUND WATER TREATMENT SYSTEM PERFORMANCE DATA

Treatment system performance data is collected on at least a monthly basis. Total discharge to-date is 6,911,008 gallons based on totalizer readings at the discharge outlet to the sanitary sewer. Average flows have been around 8,000 gallons per day, with flows up to 15,000 gallons per day during periods of higher ground water and when all wells are functioning properly. Flows have remained between 10,000 and 15,0000 gallons per day since February 2016.

NEW EXTRACTION WELLS

Following a meeting with Ecology's site manager on June 23, 2016, two additional ground water extraction wells were installed on October 11 and 12, 2016. The extraction well installation activities included advancing two borings to depths of approximately 37 feet below ground surface (bgs) utilizing a truck mounted hollow stem auger drill rig. Ground water extraction wells, identified as EW-5 and EW-6, were constructed of 4-inch diameter, schedule 40 polyvinyl chloride (PVC) casing with 20 feet of 0.020-inch mill-slotted well screen that was placed from 15 to 35 feet bgs. The new extraction well locations are also shown on Figures 1 and 5. Both of the extraction wells were located at the downgradient end of the site, near the river, upgradient from monitoring well RMW-7.

During drilling activities, soil samples were collected from 2.5-foot soil intervals to the completion depth of each of the borings. HWA conducted field screening of soil from the borings for the presence of volatile organic vapors using a Mini-Rae PGM 75 PID. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is useful for providing qualitative information with respect to the presence and relative concentration of organic vapors. PID readings are shown on the boring logs (Appendix B).

After well completion (on October 12, 2016), each well was developed for approximately four hours via surging (with a surge block with check valve) and pumping.

Soil samples collected during drilling activities were collected in clean, unused, laboratory-supplied containers, labeled with pertinent sampling information, transferred to an ice-filled, insulated cooler, and transported to the analytical laboratory under chain-of-custody procedures. Select soil samples were submitted for chemical analysis of HVOCs at OnSite Environmental of Redmond, Washington, an Ecology-accredited third-party analytical laboratory. Laboratory results are included in Appendix B of this letter report and are discussed below.

SOIL ANALYTICAL RESULTS

Soil analytical results are summarized in Table 3. HVOC detections of PCE, TCE, (cis) 1,2-DCE, and vinyl chloride were identified above laboratory detection limits in both of

the soil samples submitted from EW-5 and in one of the samples submitted from EW-6. None of these HVOC detections were above Ecology's MTCA Method A or B cleanup levels.

CONCLUSIONS AND RECOMMENDATIONS

Analytical results of the quarterly monitoring indicate all extraction wells have been and continue to recover HVOC-impacted ground water. Analytical results indicate decreasing trends in HVOC concentrations at EW-4, BC-3 and RMW-7, suggesting some shrinking of the plume, although the generally similar concentrations in the other wells suggest a steady state condition, where HVOCs from upgradient areas may be replacing ground water pumped from the system. The extraction system is, however, acting as a barrier and capturing HVOC-impacted ground water that might otherwise be discharging into the river, as intended.

Analytical results of the soil samples submitted from the two new extraction wells indicate no elevated concentrations of HVOCs in soils collected from EW-5 or EW-6. In November 2016, the new extraction wells will be plumbed into the existing ground water treatment system already in operation at the Site. The pump and treat system will be calibrated to balance the pumping from all the wells to achieve equilibrium to prevent a large amount of water from being pulled from the river. The first round of ground water samples will be collected from these wells in December 2016.

In summary, the analytical results from the ground water monitoring and extraction wells show that the treatment system is effectively collecting HVOC-impacted ground water. After connection of the new extraction wells to the existing system, we recommend continued operation of the treatment system. No augmentation or modifications of the system appear warranted other than what is needed as part of normal operation and maintenance.

We appreciate the opportunity to provide our services to you on this project. Please feel free to contact me if you have any questions or need additional information.

Sincerely,
HWA GEOSCIENCES INC.

Nicole Kapise
Senior Environmental Geologist

Arnie Sugar, LG, LHG
Principal Hydrogeologist

Attachments:
Table 1, Performance Monitoring per the IAWP
Table 2, Ground water analytical results, including new wells
Table 3: Analytical Results for Soil Samples, new wells

Figure 1, Site plan
Figure 2, Monitoring wells, PCE vs time
Figure 3, Extraction wells, PCE vs time
Figure 4, MW-7 HVOCs vs. time
Figure 5: HVOCs in Ground water

Appendix A: Year 2016 Quarterly King County Industrial Waste Reports
Appendix B: Subsurface Boring Logs, new wells
Appendix C: Laboratory Analytical Results, new wells

Table 1
Performance Monitoring
Bothell Riverside Site

Sample Type	Sampling Location	Sampling Frequency / Rationale
Preliminary Point of Compliance	Extraction well 1 Extraction well 2 Extraction well 3 Extraction well 4 Extraction well 5 (added 12/16) Extraction well 6 (added 12/16) RMW-7	Quarterly for one year, then modify based on results and consultation with Ecology (e.g. move to semi-annual if concentrations stabilize)
Combined discharge	Combined discharge at sewer manhole or manifold	As required by KCIWD permit
Nearby wells	BC-3 RMW-4 RMW-5 RMW-6 RMW-8 RMW-9 RMW-10 RMW-13 (added 12/16)	Semi-annual for one year, then modify based on results and consultation with Ecology to check for water quality impacts due to pumping

Table 2
Bothell Riverside Site
Ground Water Analytical Results

			FIELD PARAMETERS							HVOCs							NOTES
Monitoring Well Identification	Screened Interval (ft bgs)	Date Sampled	Depth to Water (ft below MP)	pH (units)	Conductivity (µS)	Temp (°C)	Dissolved Oxygen (mg/L)	Oxygen Reduction Potential (ORP)	Settable Solids (mg/L)	Tetrachloro-ethene (µg/L)	Trichloro-ethene (µg/L)	1,1-Dichloro-ethene (µg/L)	(cis) 1,2-Dichloro-ethene (µg/L)	(trans) 1,2-Dichloro-ethene (µg/L)	Vinyl chloride (µg/L)	Chloroform (ug/L)	
MTCA Method A (Table 720-1, WAC 173-340-900) or Method B Cleanup Level										**5**	**5**	**400 (B)**	**16 (B)**	**160 (B)**	**0.2**		
KCIWD Limits									**7.00**	**240**	**500**	**1700**	**Total <2000**		**12**		
RMW-4	**15-25**	6/24/14															Wellhead buried under new landscaping
		12/19/14	12.2	6.59	1183	14.6	1.70			**0.79**	**0.33**	<0.20	<0.20	<0.20	<0.20		
		6/23/15	13.09	5.76	987	17.67	0.00	-125.70		**0.52**	**0.72**	<0.20	<0.20	<0.20	<0.20		
		12/8/15	11.95	5.99	510	14.9	0.00	-69.90		**2.2**	**0.56**	<0.20	<0.20	<0.20	<0.2		
		6/29/16	12.22	5.17	400	15.31	4.22	91.50		**3.6**	**0.46**	<0.20	<0.20	<0.20	<0.20		
RMW-5	**12-22**	5/24/13	11.51	6.70	932	13.9	1.00			**1.7**	<0.2		<0.2		<0.20		
		6/24/14	14.51	6.48	740	14.5	0.15			**1.4**	**0.40**	<0.20	<0.20	<0.20	<0.20		
		12/19/14	13.61	6.28	1226	13.3	0.55			**1.3**	**0.32**	<0.20	**0.22**	<0.20	<0.20		
		6/23/15	14.26	6.28	953	16.1	0.00	-127.10		**0.66**	**0.36**	<0.20	<0.20	<0.20	<0.20		
		12/8/15	13.29	5.83	318	14.54	18.61	-90.40		**1.6**	<0.20	<0.20	<0.20	<0.20	<0.2		
		6/29/16	13.41	6.18	356	14.43	1.71	-2.00		**1.1**	**0.31**	<0.20	<0.20	<0.20	<0.20		
RMW-6	**15-25**	9/14/09								<0.2	**0.27**		**3.6**		**5.3**		
		5/24/13	10.42	6.68	467	14.3	1.40			<0.2	<0.2		**2.7**		**3.4**		
		6/24/14	14.79	6.47	407	14.2	0.13			**0.34**	**0.60**	<0.20	**0.42**	<0.20	<0.20		
		12/19/14	13.31	6.09	294	14.3	0.82			**0.47**	<0.20	<0.20	<0.20	<0.20	<0.20		
		6/23/15	13.65	6.12	283	15.2	0.00	8.00		<0.20	**1.4**	<0.20	**0.88**	<0.20	<0.20		
		12/8/15	12.46	6.00	232	14.99	0.00	-40.10		<0.2	**2.7**	<0.20	**1.0**	<0.20	<0.20		
		6/29/16	13.14	6.39	194	15.34	1.64	35.50		<0.20	**2.5**	<0.20	**1.3**	<0.20	<0.20		
RMW-7	**15-25**	9/14/09								**50**	**120**		**190**		**22**		
		5/24/13	16.31	6.80	447	16.2	0.30			**9**	**33**		**65**		**9.3**		
		4/4/14	16.65	6.50	1969	12.9	0.55			**0.75**	**3.8**		**35**	**0.54**	**8.3**		
		6/25/14	16.55	6.48	865	15.2	0.03			**5.2**	**24**	<0.20	**80**	**1.1**	**9.9**		
		9/22/14	17.54	6.96	386	18.2	5.25			<1.0	**3.2**	<1.0	**170**	**1.6**	**47**		
		12/19/14	17.49	6.06	683	15.4	0.73			**2.9**	**8.9**	<1.0	**150**	**1.4**	**34**		
		3/18/15	16.66	6.35	1127	14.9	1.87			<0.40	**1.5**	<0.40	**57**	**0.64**	**20**	<0.40	
		6/23/15	17.41	5.97	508	17.96	0	-70.3		<0.40	**3.1**	<0.40	**95**	**1.2**	**9.6**		
		9/11/15	18.50	6.22	464	21.54	3.23			**4.2**	**23**	<1.0	**110**	**1.4**	**14**		
		12/8/15	15.97	5.96	274	15.92	0.00	-12.3		**3.5**	**8.7**	<0.20	**85**	**0.87**	**9.0**		
		3/31/16	16.94	6.40	403	14.63	2	38.9		**1.5**	**6.8**	<0.40	**84**	**0.91**	**35**	<0.40	
		6/29/16	17.11	6.28	297	16.57	1.2	30.3		**2.3**	**14**	<0.40	**65**	**0.68**	**12**		
		9/30/16	18.28	6.12	419	16.81	0.69	31.3		**2.4**	**7.8**	<1.0	**89**	<1.0	**13**	<1.0	
RMW-8	**20-30**	9/15/09								**0.46**	**2.6**		**1.3**		<0.2		
		5/24/13	18.81	6.42	494	16.4	0.10			**0.5**	**0.85**		**0.44**		<0.2		
		6/25/14	19.62	6.27	650	15.7	0.20			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/19/14	20.63	6.18	431	14.5	0.84			**0.7**	<0.20	<0.20	<0.20	<0.20	<0.20		
		6/23/15	20.87	5.74	333	26.9	0.27	-61.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/8/15	19.42	5.83	344	15.15	1.51	44.30		<0.2	**0.39**	<0.20	**0.47**	<0.20	<0.2		
		6/29/16	20.5	6.27	216	17.47	2.05	32.00		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
RMW-9	**20-30**	9/15/09								<0.20	<0.20		<0.20		<0.20		
		5/24/13	13.65	6.38	247	15.7	4.00			<0.20	<0.20		<0.20		<0.20		
		6/24/14										<0.20		<0.20			Well abandoned during SR 522 construction
RMW-9R		12/19/14	15.31	6.16	182	15.7	2.92			**0.79**	<0.20	<0.20	<0.20	<0.20	<0.20		
		6/23/15	4.00	5.93	139	18.7	4.20	70.40		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/8/15	15.92	5.75	163	15.61	3.29	94.30		<0.2	<0.2	<0.20	<0.2	<0.20	<0.2		
		6/29/16	15.31	6.53	132	15.91	11.2	94.90		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		

RMW-10	32-42	5/24/13	11.85	6.52	247	13.3	6.60			<0.20	<0.20		<0.20		<0.20		
		6/24/14	15.00	6.19	361	15.4	1.08			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/19/14	14.80	6.08	284	15.0	2.03			**0.69**	<0.20	<0.20	<0.20	<0.20	<0.20		
		6/23/15	20.40	6.43	233	17.3	7.28	37.00		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
		12/8/15	19.69	5.94	134	14.69	5.41	50.00		<0.2	<0.2	<0.20	<0.2	<0.20	<0.2		
		6/29/16	13.6	6.68	166	15.83	8.35	29.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
RMW-12	15-25	7/25/16	16.25	6.3	0.442	17.68	1.53	21.7		**120**	**19**	<1.0	**14**	<1.0	<1.0	<1.0	
RMW-13	15-25	7/25/16	14.95	5.19	0.333	17.4	2.5	183.5		<0.20	<0.20	<0.20	**1.8**	<0.20	**0.24**	0.26	
BC-3	15-25	9/5/08								**110**	**120**		**46**		<1		
		5/24/13	12.95	6.55	342	15.1	4.00			**25**	**11**		**4**		<0.20		
		6/24/14	14.41	6.06	426	14.8	2.40			**11**	**4.0**	<0.20	**0.75**	<0.20	<0.20		
		12/19/14	15.61	6.07	298	14.8	1.82			**7.7**	**2.1**	<0.20	**0.44**	<0.20	<0.20		
		6/23/15	18.30	5.68	161	21.2	364.00	123.40		**3.8**	**0.9**	<0.20	<0.20	<0.20	<0.20		
		12/8/15	15.3	5.59	248	15.17	6.05	120.80		**5.3**	**1.3**	<0.20	**0.29**	<0.20	<0.20		
		6/29/16	16.95	5.9	167	15.84	6.97	52.20		**3.7**	**0.93**	<0.20	<0.20	<0.20	<0.20		
EW-1	12.5-32.5	4/4/14	27.90							**17**	**3**		**1.2**		<0.20		
		6/25/14	14.78	6.61	0.10	18.3	5.68			**27**	**8.1**	<0.20	**6.5**	<0.20	<0.20		
		9/22/14															Pump not working
		12/19/14		6.42	107	17.3	4.99			**21**	**2.6**	<0.20	**0.82**	<0.20	<0.20		
		3/18/15		7.01	167	15.9	3.65			**2.8**	**0.27**	<0.20	<0.20	<0.20	<0.20	<0.20	
		6/23/15								**22**	**2**	<0.20	**0.95**	<0.20	<0.20	**2.20**	
		9/11/15	15.86	6.01	160	19.54	2.99	-49.88		**41**	**2.2**	<0.20	**0.79**	<0.20	<0.20	**1.30**	
		12/8/15															Pump not working
		3/31/16		6,27	227	15.94	6.55	80.2		**22**	**2.8**	<0.20	**2.5**	<0.20	<0.20	**0.84**	
		6/29/16		6.37	192	16.7	8.1	47.5		**24**	**4.2**	<0.20	**4.5**	<0.20	<0.20	**0.32**	
		9/30/16		5.63	193	14.21	4.1	90.1		**20**	**2.0**	<0.20	**2.3**	<0.20	<0.20	**0.33**	
EW-2	15-35	4/4/14	23.70							**13**	**2.8**		**1.5**		<0.20		
		6/25/14	17.10	6.58	143	16.5	2.21			**28**	**3.8**	<0.20	**1.5**	<0.20	<0.20		
		9/22/14								**66**	**16**	<0.40	**12**	<0.40	<0.40		
		12/19/14		7.01	204	15.8	2.31			**44**	**12**	<0.40	**12**	<0.40	<0.40		
		3/18/15		6.87	251	15.0	2.16			**22**	**6.5**	<0.20	**4.3**	<0.20	<0.20	<0.20	
		6/23/15								**8.6**	**2.4**	<0.20	**1.8**	<0.20	<0.20	**1.40**	
		9/11/15	19.89	6.11	235	19.9	2.84	-56.8		**6.5**	**0.62**	<0.20	<0.20	<0.20	<0.20	**0.25**	
		12/8/15		5.92	201	15.12	2.43	595.1		**16**	**2.6**	<0.20	**2.4**	<0.20	<0.20		
		3/31/16		5.75	218	15,21	8.58	129.9		**16**	**4.0**	<0.20	**3.7**	<0.20	<0.20	<0.20	
		6/29/16		6.46	185	15.75	6.85	48.3		**17**	**4.1**	<0.20	**3.2**	<0.20	<0.20		
		9/30/16		5.94	191	14.24	3.97	73.9		**21**	**6.2**	<0.20	**5.6**	<0.20	<0.20	<0.20	
EW-3	14-34	4/4/14	23.80							**49**	**14**		**7.2**		**0.61**		
		6/25/14	19.00	6.58	182	16.4	6.34			**41**	**14**	<0.40	**12**	<0.40	<0.40		
		9/22/14								**190**	**59**	<1.0	**33**	<1.0	**1.10**		
		12/19/14		6.82	275	15.9	6.02			**21**	**6.4**	<0.20	**6**	<0.20	<0.20		
		3/18/15		6.78	322	15.4	5.47			**140**	**46**	<1.0	**29**	<1.0	<1.0	<1.0	
		6/23/15								**87**	**24**		**9**			**15.00**	
		9/11/15	20.86	6.56	354	19.89	2.53	-65.78		**81**	**28**	<0.40	**14**	<0.40	<0.40	**0.44**	
		12/8/15		5.82	247	16.59	2.36	160		**33**	**11**	<0.20	**7.8**	<0.20	**0.38**		
		3/31/16		6.20	358	19.57	2.28	87.5		**72**	**21**	<0.20	**16**	<0.20	**0.64**	<0.40	
		6/29/16		6.28	304	19.37	6.51	45.9		**79**	**24**	<0.40	**14**	<0.40	**0.43**		
		9/30/16		5.84	386	18.59	1.11	51.7		**50**	**18**	<0.20	**10**	<0.20	**0.63**	<0.20	
EW-4	11-31	4/4/14	12.50														Pump not working
		6/25/14	17.30	6.46	0.22	16.0	1.73			**1.7**	**1.8**	<0.20	**1.1**	<0.20	**0.38**		
		9/22/14								**45**	**10**	<0.20	**7.4**	<0.20	**0.87**		
		12/19/14		6.68	105	16.6	1.99			**1.2**	**1.6**	<0.20	**1.1**	<0.20	**0.27**		
		3/18/15								**15**	**4.8**	<0.20	**3.2**	<0.20	<0.20	**0.21**	
		6/23/15								**0.85**	**2.8**	<0.20	**1.7**	<0.20	**0.37**	**2.10**	
		9/11/15	18.84	6.23	125	19.22	2.55	-65.32		**1.8**	**2.1**	<0.20	**0.92**	<0.20	**0.28**	<0.20	
		12/8/15		5.84	424	22.04	0	214		<0.20	**1.6**	<0.20	**2.9**	<0.20	**0.85**		
		3/31/16		6.61	354	15.91	1.47	2.0		<0.20	**2.5**	<0.20	**2.0**	<0.20	**0.31**	<0.20	
		6/29/16		6.54	344	19.19	6.99	33.0		<0.20	**1.2**	<0.20	**3.5**	<0.20	**0.61**		
		9/30/16		8.14	373	17.05	0.95	12.0		<0.20	**0.88**	<0.20	**4.0**	<0.20	**0.75**	<0.20	

DISCH	NA	4/4/14	NA	6.48	443	15.3				**25**	**6.3**		**3**	<0.20	<0.20		
		6/25/14	NA	6.40	200	16.4	1.43		0.0	**30**	**8.4**	<0.20	**5.9**	<0.20	**0.38**		
		9/22/14	NA						0.2	**79**	**18**	<0.40	**13**	<0.40	<0.40		
		12/18/14	NA							**11**	**2.7**	<0.20	**2.5**	<0.20	<0.20		
		3/18/15	NA	6.54	230	15.1	1.89		0.1	**25**	**7.4**	<0.20	**4.7**	<0.20	<0.20	<0.20	
		6/23/15	NA							**11**	**2.3**	<0.20	**1.5**	<0.20	<0.20	**1.60**	
		9/11/15	NA	6.23	245	20.55	2.68	-65.3	0	**7.9**	**1.5**	<0.20	**0.77**	<0.20	<0.20	**0.39**	
		12/8/15	NA	6.15	267	17.2	3.9	18		**68**	**21**	<0.20	**15**	**0.23**	**0.91**		
		3/31/16	NA	6.57	261	16.26	6.78	50.6		**21**	**5.5**	<0.20	**4.4**	<0.20	<0.20	**0.21**	
		6/29/16	NA	6.71	214	16.83	6.14	13.7		**24**	**5.7**	<0.20	**4.6**	<0.20	<0.20		
		9/30/16	NA	6.39	219	14.52	2.9	20.6		**16**	**4.4**	<0.20	**3.6**	<0.20	**0.22**	<0.20	
QC Samples			**FIELD PARAMETERS**							**HVOCs**							**NOTES**
DUP 6/25/14		6/25/14								**28**	**8.4**	<0.20	**6.4**	<0.20	**0.37**		Duplicate of DISCH 6/25/14
DUP 12/19/14		12/19/14								**0.92**	<0.20	<0.20	<0.20	<0.20	<0.20		Duplicate of RMW-8 12/19/2014
Trip Blank		6/25/14								<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		
DUP 9/22/14		9/22/14								**66**	**16**	<0.40	<0.40	<0.40	<0.40		Duplicate of EX2 9/22/2014
Trip Blank		3/18/15								<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
DUP		3/18/15								<0.40	**1.0**	<0.40	**54**	**0.65**	**19**	<0.40	Duplicate of RMW-7 3/18/2015
Trip Blank		9/11/15								<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
DUP		9/11/15								**23**	1.7	<0.20	**0.62**	<0.20	<0.20	**0.91**	
Trip Blank		12/8/15								<0.2	<0.2	<0.20	<0.2	<0.20	<0.2		
DUP		12/8/15								**2.8**	**0.6**	<0.2	<0.2	<0.2	<0.2		Duplicate of RMW-4 12/8/15

Bold indicates analyte detected at a concentration greater than the laboratory reporing limit

Yellow highlight indicates analyte exceeds MTCA cleanup level

MTCA = Model Toxic Control Act

KCIWD = King County Industrial Waste Discharge limit

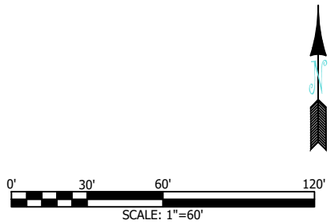
Blank – Not analyzed

NA – Not applicable

Table 3
Soil Analytical Results, New Wells

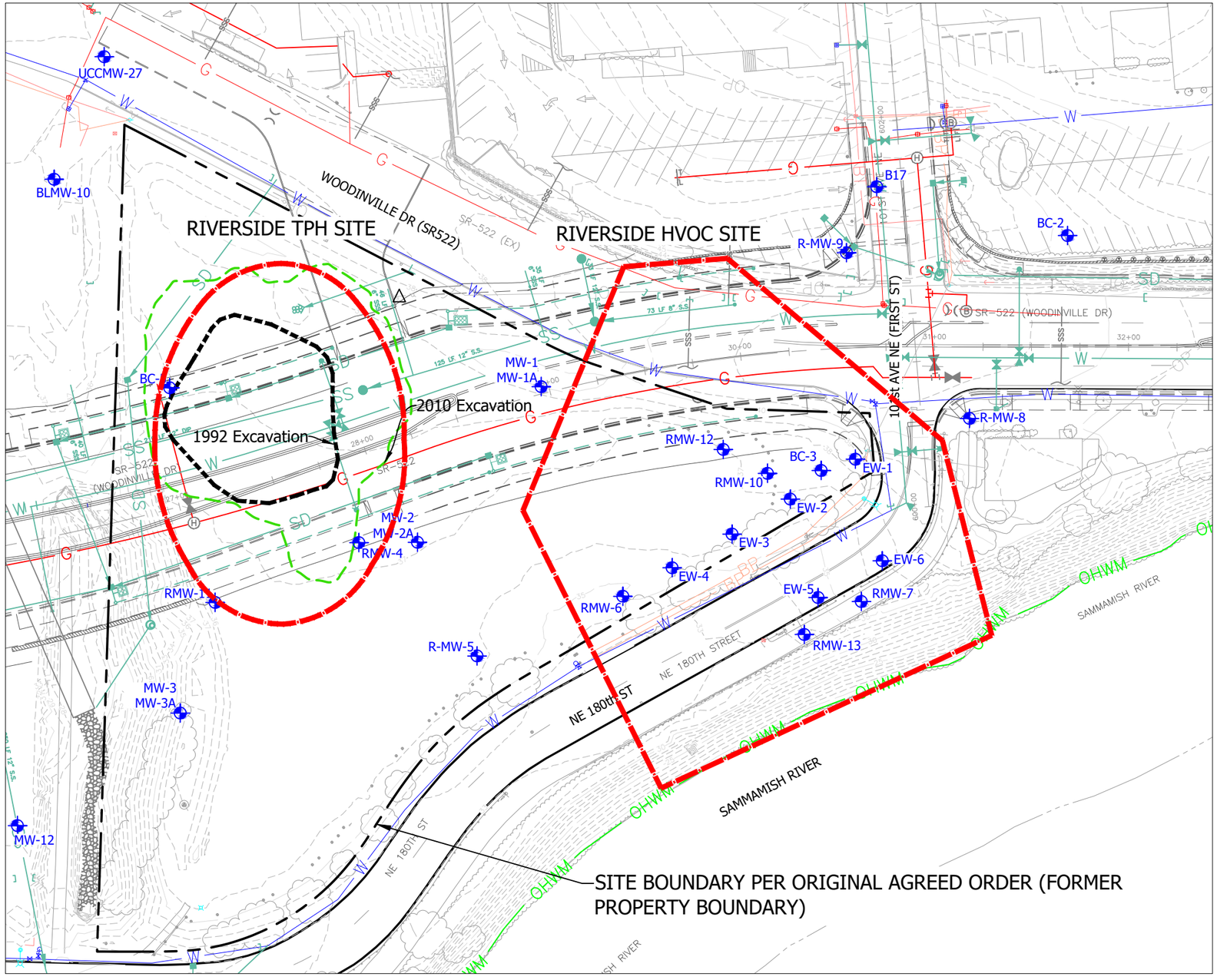
Sample Identifier	Date	Sample Depth (feet bgs)	PCE* (mg/kg)	TCE* (mg/kg)	(cis) 1,2-DCE* (mg/kg)	Vinyl Chloride* (mg/kg)
EW-5-18'	10/11/16	18.0	<0.00092	<0.00092	**0.0015**	<0.00092
EW-5-21'	10/11/16	21.0	<0.00081	<0.00081	**0.0023**	**0.002**
EW-6-19'	10/12/16	19.0	<0.00070	<0.00070	<0.00070	<0.00070
EW-6-21'	10/12/16	21.0	**0.0038**	**0.0052**	**0.05**	**0.0028**
MTCA Method A Cleanup Level			0.05	0.03	N/A	N/A
MTCA Method B Cleanup Level			476	12	160	0.67

Notes:
PCE – Tetrachloroethene
TCE – Trichloroethene
cis 1,2-DCE - cis 1,2-Dichloroethene
Bold – Analyte detected
mg/kg – milligrams per kilogram
N/A – Not available
* No other HVOCs were detected above laboratory reporting limits (see Appendix B For complete list of compounds analyzed).



EXPLANATION OF SYMBOLS

- APPROXIMATE EXTENT OF 2010 CLEANUP EXCAVATION
- APPROXIMATE EXTENT OF 1990'S CLEANUP
- APPROXIMATE PROPERTY BOUNDARY
- SITE BOUNDARY
- RMW-13 MONITORING WELL LOCATIONS
- EW-13 EXTRACTION WELL LOCATIONS



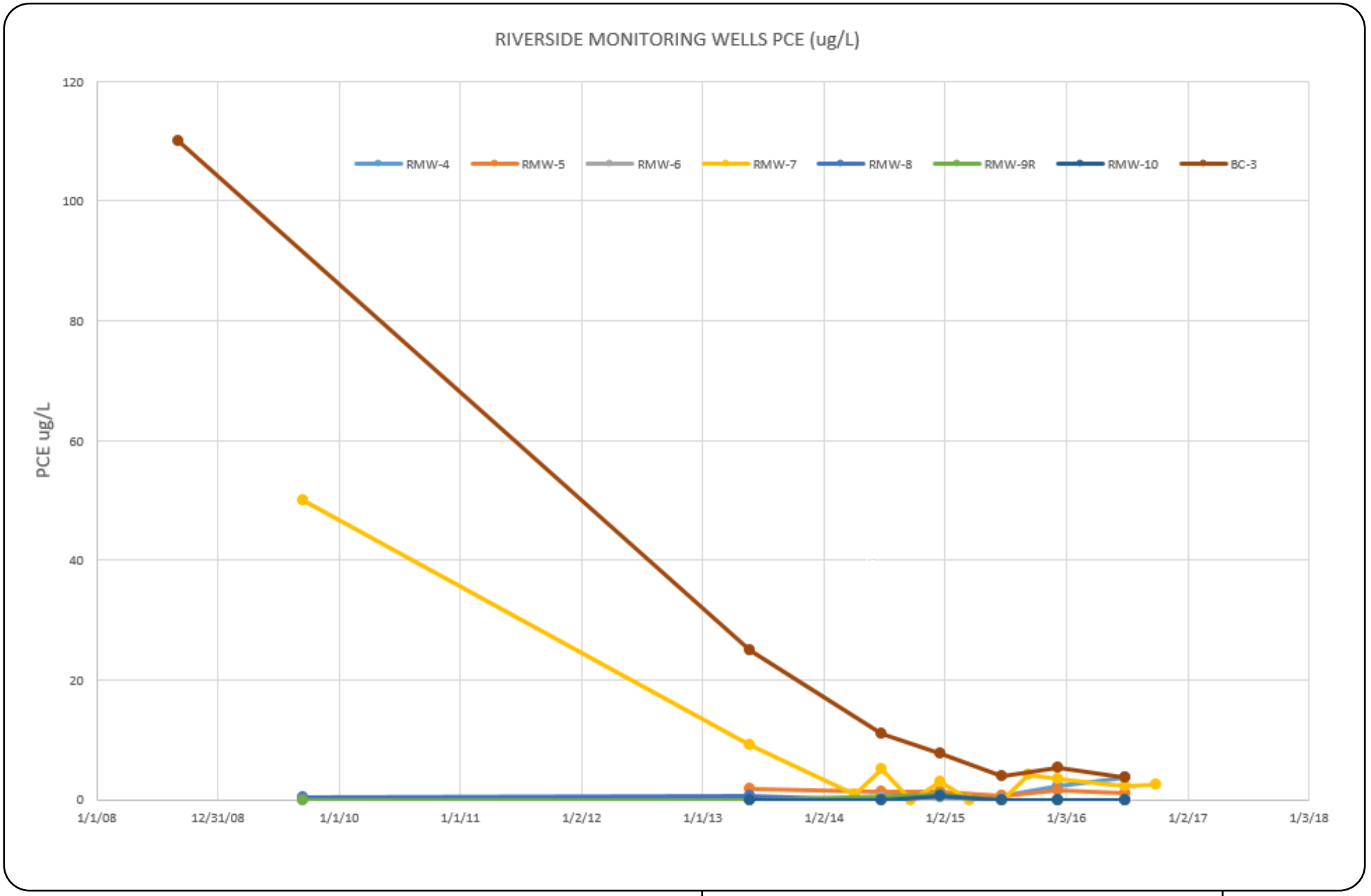
HWA GEOSCIENCES INC.

BOTHELL RIVERSIDE HVOC SITE
BOTHELL, WASHINGTON

Site Plan Showing Well Locations

DRAWN BY EFK
CHECK BY NK
DATE 11.7.16

FIGURE NO. 1
PROJECT NO. 2007-098 T2012



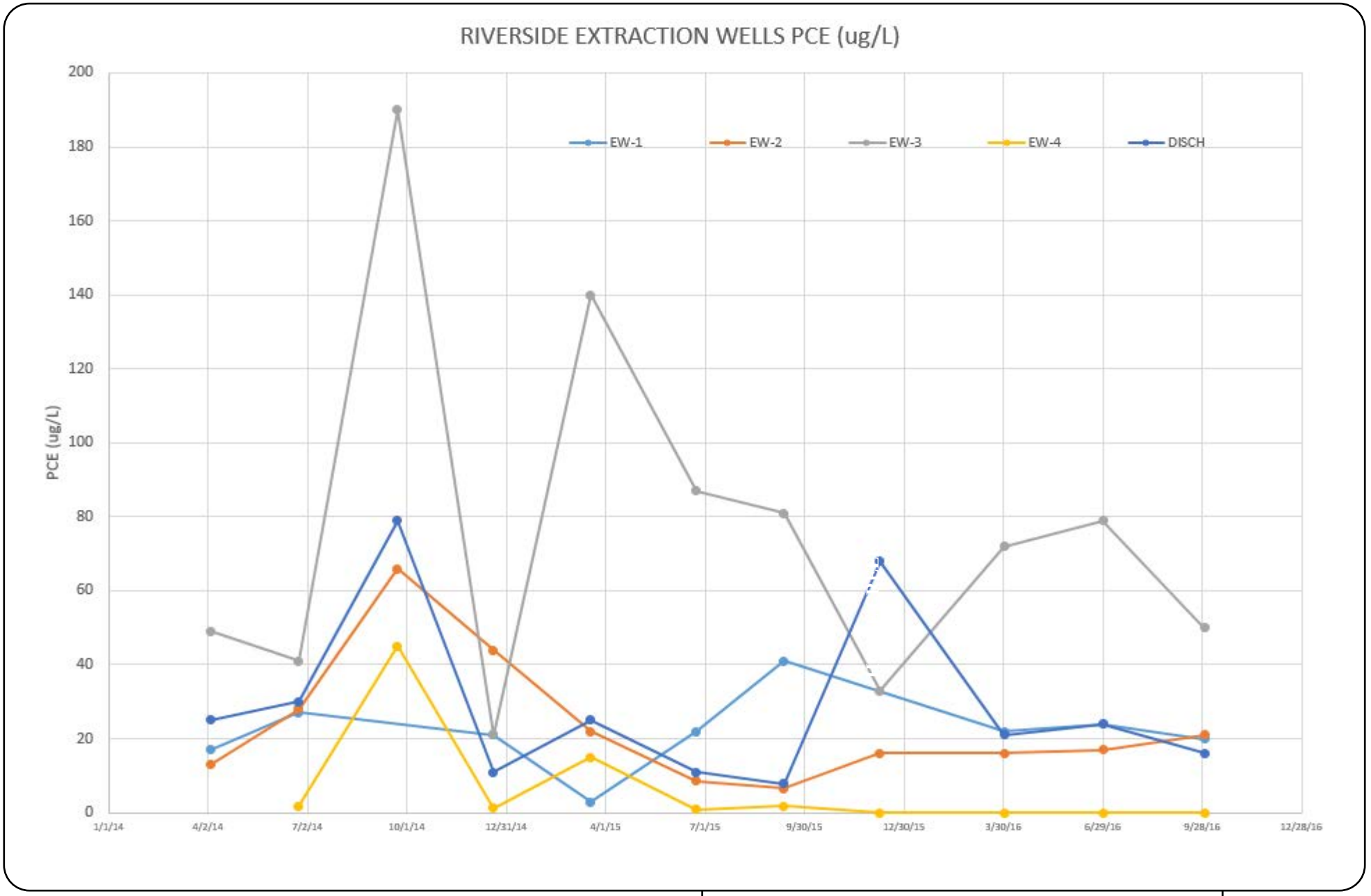
HWA GeoSciences Inc.

MONITORING WELLS PCE (UG/L)

BOTHELL RIVERSIDE HVOC SITE
BOTHELL, WASHINGTON

FIGURE NO.
2

POJECT NO
2007-098



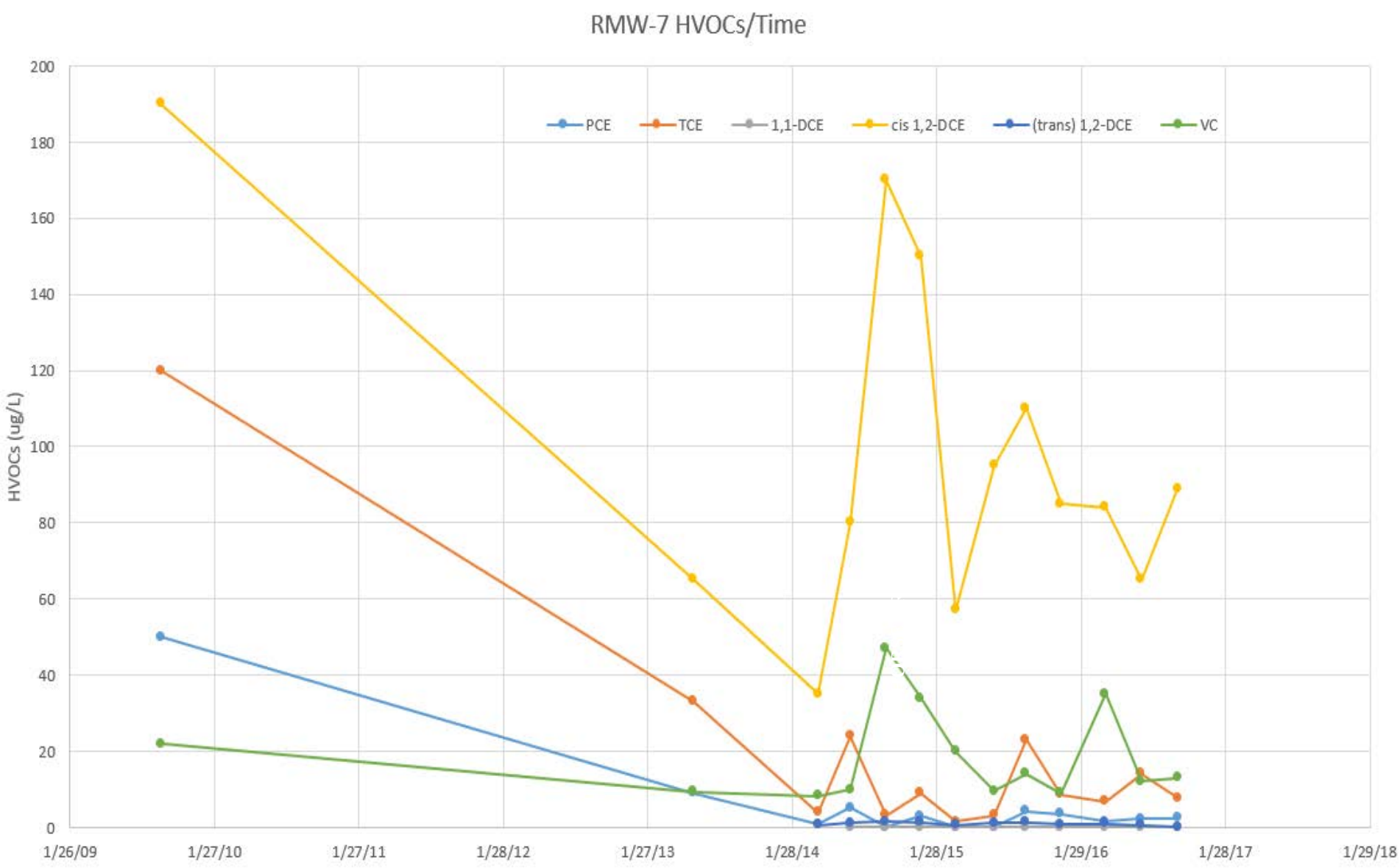
HWA GeoSciences Inc.

EXTRACTION WELLS PCE (UG/L)

BOTHELL RIVERSIDE HVOC SITE
BOTHELL, WASHINGTON

FIGURE NO.
3

POJECT NO
2007-098



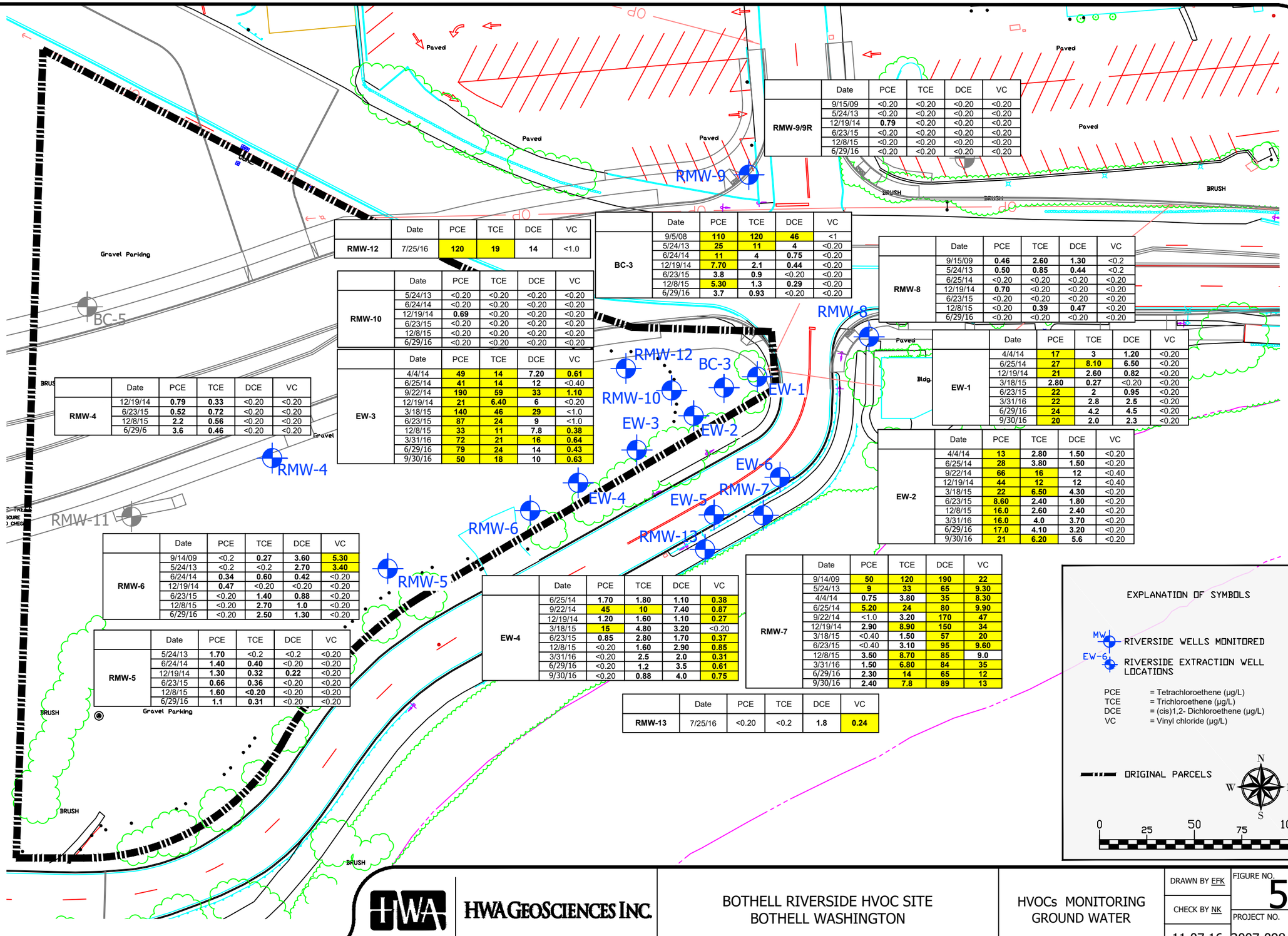
HWA GeoSciences Inc.

RMW-7 HVOCS (UG/L)

BOTHELL RIVERSIDE HVOC SITE
BOTHELL, WASHINGTON

FIGURE NO.
4

POJECT NO
2007-098



	Date	PCE	TCE	DCE	VC
RMW-9/9R	9/15/09	<0.20	<0.20	<0.20	<0.20
	5/24/13	<0.20	<0.20	<0.20	<0.20
	12/19/14	**0.79**	<0.20	<0.20	<0.20
	6/23/15	<0.20	<0.20	<0.20	<0.20
	12/8/15	<0.20	<0.20	<0.20	<0.20
	6/29/16	<0.20	<0.20	<0.20	<0.20

	Date	PCE	TCE	DCE	VC
RMW-12	7/25/16	**120**	**19**	**14**	<1.0

	Date	PCE	TCE	DCE	VC
BC-3	9/5/08	**110**	**120**	**46**	<1
	5/24/13	**25**	**11**	**4**	<0.20
	6/24/14	**11**	**4**	**0.75**	<0.20
	12/19/14	**7.70**	**2.1**	**0.44**	<0.20
	6/23/15	**3.8**	**0.9**	<0.20	<0.20
	12/8/15	**5.30**	**1.3**	**0.29**	<0.20
	6/29/16	**3.7**	**0.93**	<0.20	<0.20

	Date	PCE	TCE	DCE	VC
RMW-8	9/15/09	**0.46**	**2.60**	**1.30**	<0.2
	5/24/13	**0.50**	**0.85**	**0.44**	<0.2
	6/25/14	<0.20	<0.20	<0.20	<0.20
	12/19/14	**0.70**	<0.20	<0.20	<0.20
	6/23/15	<0.20	<0.20	<0.20	<0.20
	12/8/15	<0.20	**0.39**	**0.47**	<0.20
	6/29/16	<0.20	<0.20	<0.20	<0.20

	Date	PCE	TCE	DCE	VC
RMW-10	5/24/13	<0.20	<0.20	<0.20	<0.20
	6/24/14	<0.20	<0.20	<0.20	<0.20
	12/19/14	**0.69**	<0.20	<0.20	<0.20
	6/23/15	<0.20	<0.20	<0.20	<0.20
	12/8/15	<0.20	<0.20	<0.20	<0.20
	6/29/16	<0.20	<0.20	<0.20	<0.20

	Date	PCE	TCE	DCE	VC
EW-1	4/4/14	**17**	**3**	**1.20**	<0.20
	6/25/14	**27**	**8.10**	**6.50**	<0.20
	12/19/14	**21**	**2.60**	**0.82**	<0.20
	3/18/15	**2.80**	**0.27**	<0.20	<0.20
	6/23/15	**22**	**2**	**0.95**	<0.20
	3/31/16	**22**	**2.8**	**2.5**	<0.20
	6/29/16	**24**	**4.2**	**4.5**	<0.20
	9/30/16	**20**	**2.0**	**2.3**	<0.20

	Date	PCE	TCE	DCE	VC
EW-3	4/4/14	**49**	**14**	**7.20**	**0.61**
	6/25/14	**41**	**14**	**12**	<0.40
	9/22/14	**190**	**59**	**33**	**1.10**
	12/19/14	**21**	**6.40**	**6**	<0.20
	3/18/15	**140**	**46**	**29**	<1.0
	6/23/15	**87**	**24**	**9**	<1.0
	12/8/15	**33**	**11**	**7.8**	**0.38**
	3/31/16	**72**	**21**	**16**	**0.64**
	6/29/16	**79**	**24**	**14**	**0.43**
	9/30/16	**50**	**18**	**10**	**0.63**

	Date	PCE	TCE	DCE	VC
EW-2	4/4/14	**13**	**2.80**	**1.50**	<0.20
	6/25/14	**28**	**3.80**	**1.50**	<0.20
	9/22/14	**66**	**16**	**12**	<0.40
	12/19/14	**44**	**12**	**12**	<0.40
	3/18/15	**22**	**6.50**	**4.30**	<0.20
	6/23/15	**8.60**	**2.40**	**1.80**	<0.20
	12/8/15	**16.0**	**2.60**	**2.40**	<0.20
	3/31/16	**16.0**	**4.0**	**3.70**	<0.20
	6/29/16	**17.0**	**4.10**	**3.20**	<0.20
	9/30/16	**21**	**6.20**	**5.6**	<0.20

	Date	PCE	TCE	DCE	VC
RMW-4	12/19/14	**0.79**	**0.33**	<0.20	<0.20
	6/23/15	**0.52**	**0.72**	<0.20	<0.20
	12/8/15	**2.2**	**0.56**	<0.20	<0.20
	6/29/6	**3.6**	**0.46**	<0.20	<0.20

	Date	PCE	TCE	DCE	VC
RMW-6	9/14/09	<0.2	**0.27**	**3.60**	**5.30**
	5/24/13	<0.2	<0.2	**2.70**	**3.40**
	6/24/14	**0.34**	**0.60**	**0.42**	<0.20
	12/19/14	**0.47**	<0.20	<0.20	<0.20
	6/23/15	<0.20	**1.40**	**0.88**	<0.20
	12/8/15	<0.20	**2.70**	**1.0**	<0.20
	6/29/16	<0.20	**2.50**	**1.30**	<0.20

	Date	PCE	TCE	DCE	VC
RMW-5	5/24/13	**1.70**	<0.2	<0.2	<0.20
	6/24/14	**1.40**	**0.40**	<0.20	<0.20
	12/19/14	**1.30**	**0.32**	**0.22**	<0.20
	6/23/15	**0.66**	**0.36**	<0.20	<0.20
	12/8/15	**1.60**	**<0.20**	<0.20	<0.20
	6/29/16	**1.1**	**0.31**	<0.20	<0.20

	Date	PCE	TCE	DCE	VC
EW-4	6/25/14	**1.70**	**1.80**	**1.10**	**0.38**
	9/22/14	**45**	**10**	**7.40**	**0.87**
	12/19/14	**1.20**	**1.60**	**1.10**	**0.27**
	3/18/15	**15**	**4.80**	**3.20**	<0.20
	6/23/15	**0.85**	**2.80**	**1.70**	**0.37**
	12/8/15	<0.20	**1.60**	**2.90**	**0.85**
	3/31/16	<0.20	**2.5**	**2.0**	**0.31**
	6/29/16	<0.20	**1.2**	**3.5**	**0.61**
	9/30/16	<0.20	**0.88**	**4.0**	**0.75**

	Date	PCE	TCE	DCE	VC
RMW-7	9/14/09	**50**	**120**	**190**	**22**
	5/24/13	**9**	**33**	**65**	**9.30**
	4/4/14	**0.75**	**3.80**	**35**	**8.30**
	6/25/14	**5.20**	**24**	**80**	**9.90**
	9/22/14	<1.0	**3.20**	**170**	**47**
	12/19/14	**2.90**	**8.90**	**150**	**34**
	3/18/15	<0.40	**1.50**	**57**	**20**
	6/23/15	<0.40	**3.10**	**95**	**9.60**
	12/8/15	**3.50**	**8.70**	**85**	**9.0**
	3/31/16	**1.50**	**6.80**	**84**	**35**
	6/29/16	**2.30**	**14**	**65**	**12**
	9/30/16	**2.40**	**7.8**	**89**	**13**

	Date	PCE	TCE	DCE	VC
RMW-13	7/25/16	<0.20	<0.2	**1.8**	**0.24**

EXPLANATION OF SYMBOLS

MW-1 RIVERSIDE WELLS MONITORED

EW-6 RIVERSIDE EXTRACTION WELL LOCATIONS

PCE = Tetrachloroethene (µg/L)
TCE = Trichloroethene (µg/L)
DCE = (cis)1,2- Dichloroethene (µg/L)
VC = Vinyl chloride (µg/L)

ORIGINAL PARCELS

N W E S

0 25 50 75 100

HWA GEOSCIENCES INC.

BOTHELL RIVERSIDE HVOC SITE
BOTHELL WASHINGTON

HVOCs MONITORING
GROUND WATER

DRAWN BY EFK
CHECK BY NK
11.07.16

FIGURE NO. 5

PROJECT NO. 2007-098 T2012

S:\2007 PROJECTS\2007-098-22 BOTHELL CROSSROADS\CAD 2007-098\HWA 2007-098-21 T2012.DWG <11x17 T2012 Fig 1> Plotted: 11/10/2016 10:07 AM

APPENDIX A

YEAR 2016 QUARTERLY KING COUNTY INDUSTRIAL WASTE REPORTS

King County

Industrial Waste Quarterly Self-Monitoring Report

Send to: King County Industrial Waste
130 Nickerson Street, Suite 200
Seattle, WA 98109-1658
Phone 206-263-3000 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Company Name: **Bothell, City of - Riverside Groundwater Remediation Site**

This form is available at www.kingcounty.gov/industrialwaste.

Please specify year: **2016** **QUARTER 1** **Sample Site No.:** **IW1175A** **Permit/DA No.:** **4268-01**

Month	Sample Date	Sample Type C (Composite) G (Grab) BC (Batch)	1,2-Dichloro-ethylene (**Total** *cis & trans*) (µg/l)	Tetrachloro-ethylene **(PCE)** (µg/l)	Trichloro-ethylene **(TCE)** (µg/l)	Vinyl Chloride (µg/l)	1,1-Dichloro-ethane (µg/l)	Settleable Solids (ml/L)	Discharge Volume on sample day (gallons)	Total Monthly Flow (gallons)
January										
	Total volume discharged for January									30,270
February										
	Total volume discharged for February									64,234
March										
	3/31/16	G	4.4	21	5.5	<0.20	<0.20	0	12010	
	Total volume discharged for March									356,845

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested

Arnie Sugar, Designated rep. for City of Bothell per Delegation of signature form dated 8/22/13

Signature of Principal Executive or Authorized Agent Date

Due date: First quarter report is due by April 15 each year.

King County

Industrial Waste Quarterly Self-Monitoring Report

Send to: King County Industrial Waste
130 Nickerson Street, Suite 200
Seattle, WA 98109-1658
Phone 206-263-3000 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Company Name: **Bothell, City of - Riverside Groundwater Remediation Site**

This form is available at www.kingcounty.gov/industrialwaste.

Please specify year: **2016** **QUARTER 2** **Sample Site No.:** **IW1175A** **Permit/DA No.:** **4268-01**

Month	Sample Date	Sample Type C (Composite) G (Grab) BC (Batch)	1,2-Dichloro-ethylene (**Total** *cis & trans*) (µg/l)	Tetrachloro-ethylene **(PCE)** (µg/l)	Trichloro-ethylene **(TCE)** (µg/l)	Vinyl Chloride (µg/l)	1,1-Dichloro-ethane (µg/l)	Settleable Solids (ml/L)	Discharge Volume on sample day (gallons)	Total Monthly Flow (gallons)
April										
									Total volume discharged for April	473,271
May										
									Total volume discharged for May	513,263
June										
	6/29/16	G	4.6	24	5.7	<0.20	<0.20	0	15,537	
									Total volume discharged for June	411,789

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested

Arnie Sugar, Designated rep. for City of Bothell per Delegation of signature form dated 8/22/13

Signature of Principal Executive or Authorized Agent Date

Due date: Second quarter report is due by July 15 each year.

King County

Industrial Waste Quarterly Self-Monitoring Report

Send to: King County Industrial Waste
130 Nickerson Street, Suite 200
Seattle, WA 98109-1658
Phone 206-263-3000 / FAX 206-263-3001
Email: info.KCIW@kingcounty.gov

Company Name: **Bothell, City of - Riverside Groundwater Remediation Site**

This form is available at www.kingcounty.gov/industrialwaste.

Please specify year: **2016** **QUARTER 3** **Sample Site No.: IW1175A** **Permit/DA No.: 4268-01**

Month	Sample Date	Sample Type C (Composite) G (Grab) BC (Batch)	1,2-Dichloro-ethylene (**Total** *cis & trans*) (µg/l)	Tetrachloro-ethylene **(PCE)** (µg/l)	Trichloro-ethylene **(TCE)** (µg/l)	Vinyl Chloride (µg/l)	1,1-Dichloro-ethane (µg/l)	Settleable Solids (ml/L)	Discharge Volume on sample day (gallons)	Total Monthly Flow (gallons)
July										
									Total volume discharged for July	442,385
August										
									Total volume discharged for August	452,329
September										
	9/30/16	G	3.6	16	4.4	0.22	<0.20	0	11,000	
									Total volume discharged for September	234,782

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested

October 13, 2016

Arnie Sugar , Designated rep. for City of Bothell per Delegation of signature form dated 8/22/13

Signature of Principal Executive or Authorized Agent — Date

Due date: Third quarter report is due by October 15 each year.

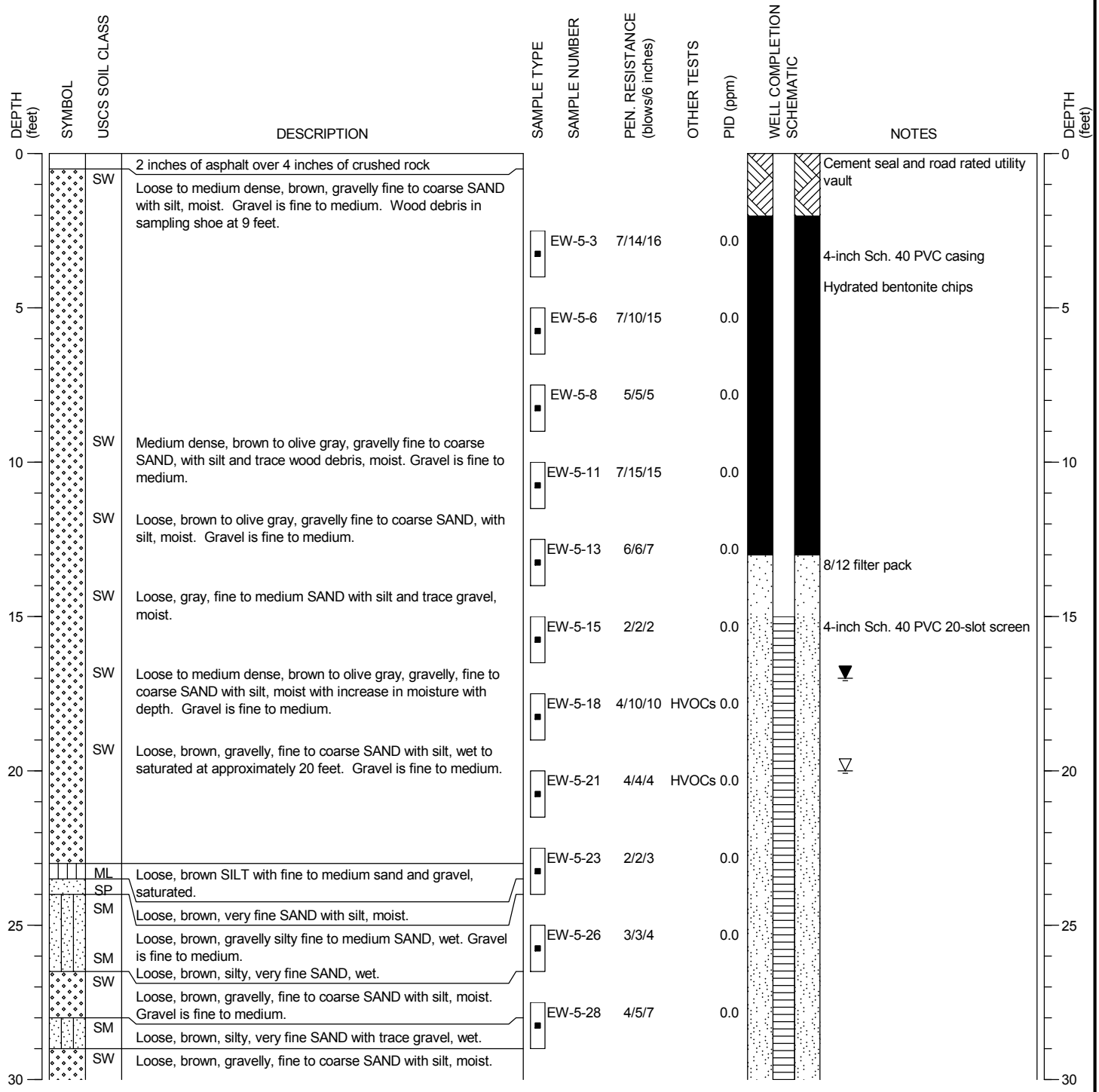
APPENDIX B

SUBSURFACE BORING LOGS, NEW EXTRACTION WELLS

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 75 Truck-mounted HSA
SAMPLING METHOD: D&M Split Spoon with 300 lb hammer
LOCATION: South Lane of 180th

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 10/11/2016
DATE COMPLETED: 10/11/2016
LOGGED BY: N. Kapise



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Riverside HVOC Site
Bothell, Washington

MONITORING WELL:
EW-5

PROJECT NO.: 2007-098-800 FIGURE: 1

MWELL 2007-098-RIVERSIDE.GPJ 11/10/16

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 75 Truck-mounted HSA
SAMPLING METHOD: D&M Split Spoon with 300 lb hammer
LOCATION: South Lane of 180th

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 10/11/2016
DATE COMPLETED: 10/11/2016
LOGGED BY: N. Kapise

DEPTH (feet)	SYMBOL	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	WELL COMPLETION SCHEMATIC	NOTES	DEPTH (feet)
30			Gravel is fine to medium.								30
		SM	Loose, brown, silty, very fine SAND with trace gravel, wet.	■	EW-5-31	3/4/6		0.0			
		SW	Loose, brown, gravelly, fine to coarse SAND with trace silt, moist.								
		SP	Loose, brown, very fine SAND with silt, moist.	■	EW-5-33	7/9/10		0.0			
		SM	Loose, brown, silty, very fine to fine SAND, wet.								
35				■	EW-5-36	5/6/7		0.0			35
		ML	Loose, gray SILT, moist.								
			Exploration terminated at 37 feet. Groundwater encountered at 20 feet. No visual or olfactory signs of contamination in soil. Well installed with screen from 15 to 35 feet.								
40											40
45											45
50											50
55											55
60											60

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Riverside HVOC Site
Bothell, Washington

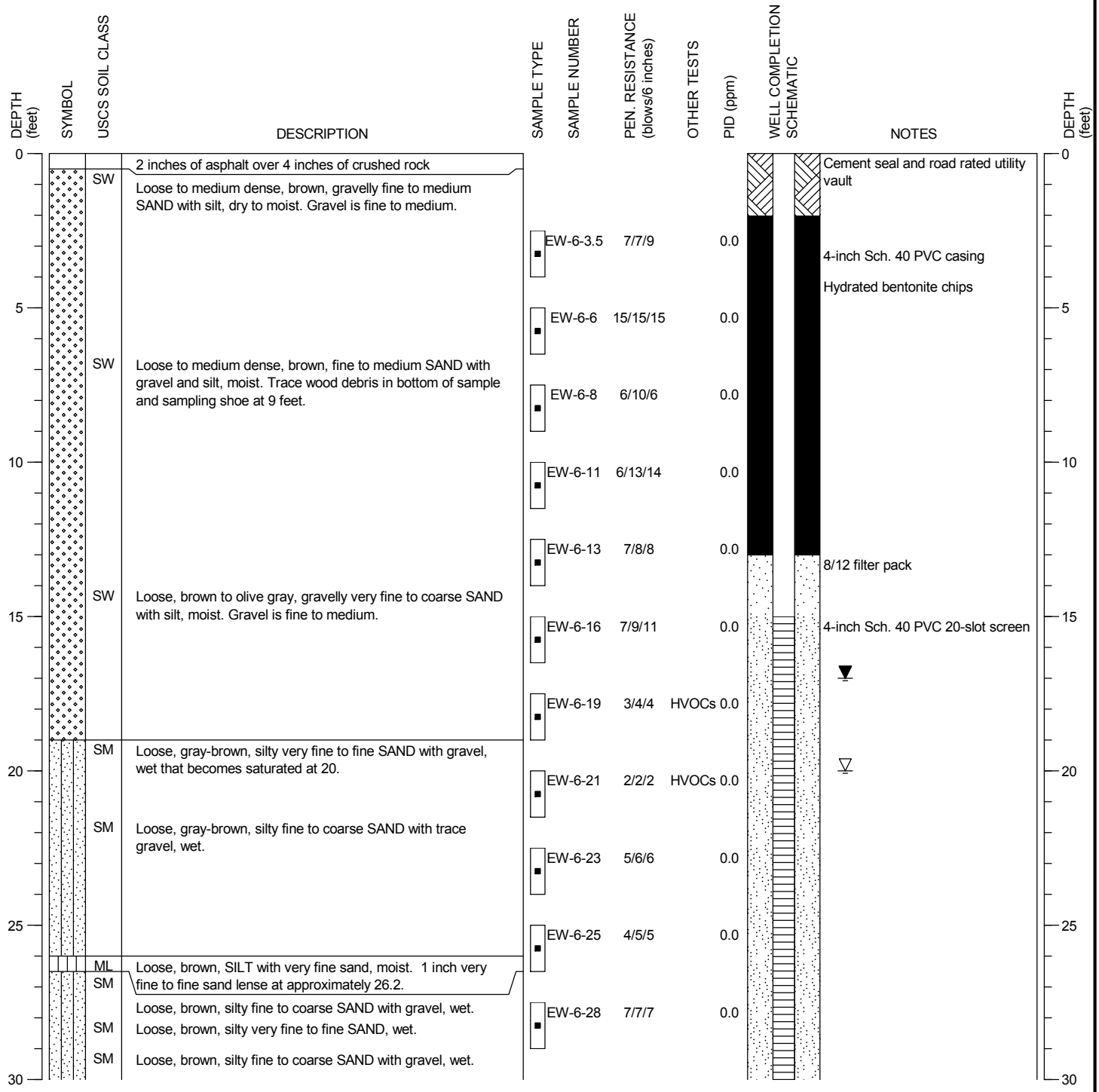
MONITORING WELL:
EW-5

PROJECT NO.: 2007-098-800 FIGURE: 1

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 75 Truck-mounted HSA
SAMPLING METHOD: D&M Split Spoon with 300 lb hammer
LOCATION: South Lane of 180th

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 10/12/2016
DATE COMPLETED: 10/12/2016
LOGGED BY: N. Kapise



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Riverside HVOC Site
Bothell, Washington

MONITORING WELL:
EW-6

PROJECT NO.: 2007-098-800 FIGURE: 2

DRILLING COMPANY: Cascade Drilling, Inc.
DRILLING METHOD: CME 75 Truck-mounted HSA
SAMPLING METHOD: D&M Split Spoon with 300 lb hammer
LOCATION: South Lane of 180th

SURFACE ELEVATION: ± feet
CASING ELEVATION ± feet

DATE STARTED: 10/12/2016
DATE COMPLETED: 10/12/2016
LOGGED BY: N. Kapise

DEPTH (feet)	SYMBOL	USCS SOIL CLASS	DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	PID (ppm)	WELL COMPLETION SCHEMATIC	NOTES
30		SM	Loose, brown, silty very fine to fine SAND, wet.		EW-6-31	3/9/10		0.0		
		SM	Medium dense, brown, silty very fine to fine SAND with trace medium gravel, wet.		EW-6-33	3/18/20		0.0		
35		SM	Medium dense, brown, silty very fine to fine SAND, wet. Iron oxide staining at approximately 36.		EW-6-36	4/13/21		0.0		
			Exploration terminated at 37 feet. Groundwater encountered at 20 feet. No visual or olfactory signs of contamination in soil. Well installed with screen from 15 to 35 feet.							
40										
45										
50										
55										
60										

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

Bothell Riverside HVOC Site
Bothell, Washington

MONITORING WELL:
EW-6

PROJECT NO.: 2007-098-800 FIGURE: 2

APPENDIX C

LABORATORY ANALYTICAL RESULTS

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 10, 2016

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-22
Laboratory Reference No. 1609-396

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on September 30, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

Case Narrative

Samples were collected on September 30, 2016 and received by the laboratory on September 30, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-1**					
Laboratory ID:	09-396-01					
Dichlorodifluoromethane	ND	0.37	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	1.3	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	1.4	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	2.3	0.20	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroform	0.33	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	2.0	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	12	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-1**					
Laboratory ID:	09-396-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	20	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*121*	*71-131*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*92*	*80-125*				

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-2**					
Laboratory ID:	09-396-02					
Dichlorodifluoromethane	ND	0.37	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	1.3	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	1.4	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	5.6	0.20	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroform	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	6.2	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	12	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-2**					
Laboratory ID:	09-396-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	21	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*124*	*71-131*				
Toluene-d8	*121*	*80-127*				
4-Bromofluorobenzene	*93*	*80-125*				

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-3**					
Laboratory ID:	09-396-03					
Dichlorodifluoromethane	ND	0.37	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	1.3	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	0.63	0.20	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	1.4	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	10	0.20	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroform	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	18	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	12	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-3**					
Laboratory ID:	09-396-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	50	1.0	EPA 8260C	10-6-16	10-6-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*117*	*71-131*				
Toluene-d8	*102*	*80-127*				
4-Bromofluorobenzene	*98*	*80-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-4**					
Laboratory ID:	09-396-04					
Dichlorodifluoromethane	ND	0.37	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	1.3	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	0.75	0.20	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	1.4	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	4.0	0.20	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroform	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	0.88	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	12	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-4**					
Laboratory ID:	09-396-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*119*	*71-131*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*96*	*80-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**RMW-7**					
Laboratory ID:	09-396-05					
Dichlorodifluoromethane	ND	1.9	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	6.5	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	13	1.0	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	5.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	7.0	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	10	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	89	1.0	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Chloroform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	7.8	1.0	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	60	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	1.0	EPA 8260C	10-5-16	10-5-16	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**RMW-7**					
Laboratory ID:	09-396-05					
1,1,2-Trichloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	2.4	1.0	EPA 8260C	10-5-16	10-5-16	
1,3-Dichloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	5.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	5.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*117*	*71-131*				
Toluene-d8	*98*	*80-127*				
4-Bromofluorobenzene	*95*	*80-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DISC**					
Laboratory ID:	09-396-06					
Dichlorodifluoromethane	ND	0.37	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	1.3	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	0.22	0.20	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	1.4	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	3.6	0.20	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroform	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	4.4	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	12	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DISC**					
Laboratory ID:	09-396-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	16	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*119*	*71-131*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*96*	*80-125*				

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HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1005W2					
Dichlorodifluoromethane	ND	0.37	EPA 8260C	10-5-16	10-5-16	
Chloromethane	ND	1.3	EPA 8260C	10-5-16	10-5-16	
Vinyl Chloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroethane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Iodomethane	ND	1.4	EPA 8260C	10-5-16	10-5-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-5-16	10-5-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chloroform	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Trichloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromomethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chloroethyl Vinyl Ether	ND	12	EPA 8260C	10-5-16	10-5-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-5-16	10-5-16	

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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1005W2					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Tetrachloroethene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Bromoform	ND	1.0	EPA 8260C	10-5-16	10-5-16	
Bromobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-5-16	10-5-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-5-16	10-5-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-5-16	10-5-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*120*	*71-131*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*106*	*80-125*				

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1006W1					
Dichlorodifluoromethane	ND	0.32	EPA 8260C	10-6-16	10-6-16	
Chloromethane	ND	1.0	EPA 8260C	10-6-16	10-6-16	
Vinyl Chloride	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Bromomethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Chloroethane	ND	1.0	EPA 8260C	10-6-16	10-6-16	
Trichlorofluoromethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,1-Dichloroethene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Iodomethane	ND	1.0	EPA 8260C	10-6-16	10-6-16	
Methylene Chloride	ND	2.0	EPA 8260C	10-6-16	10-6-16	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,1-Dichloroethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
2,2-Dichloropropane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Bromochloromethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Chloroform	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Carbon Tetrachloride	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,1-Dichloropropene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2-Dichloroethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Trichloroethene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2-Dichloropropane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Dibromomethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Bromodichloromethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
2-Chloroethyl Vinyl Ether	ND	11	EPA 8260C	10-6-16	10-6-16	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	10-6-16	10-6-16	

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
Page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1006W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Tetrachloroethene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,3-Dichloropropane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Dibromochloromethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2-Dibromoethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Chlorobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Bromoform	ND	1.0	EPA 8260C	10-6-16	10-6-16	
Bromobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	10-6-16	10-6-16	
2-Chlorotoluene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
4-Chlorotoluene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	10-6-16	10-6-16	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Hexachlorobutadiene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	10-6-16	10-6-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*115*	*71-131*				
Toluene-d8	*109*	*80-127*				
4-Bromofluorobenzene	*96*	*80-125*				

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1005W2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**8.12**	**8.68**	10.0	10.0	81	87	62-132	7	20	
Benzene	**10.5**	**9.89**	10.0	10.0	105	99	75-121	6	15	
Trichloroethene	**9.04**	**8.74**	10.0	10.0	90	87	65-115	3	15	
Toluene	**10.4**	**10.4**	10.0	10.0	104	104	78-120	0	15	
Chlorobenzene	**9.91**	**9.42**	10.0	10.0	99	94	77-118	5	15	
Surrogate:										
Dibromofluoromethane					*112*	*117*	*71-131*			
Toluene-d8					*97*	*99*	*80-127*			
4-Bromofluorobenzene					*98*	*97*	*80-125*			

Date of Report: October 10, 2016
Samples Submitted: September 30, 2016
Laboratory Reference: 1609-396
Project: 2007-098-22

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1006W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**7.42**	**6.95**	10.0	10.0	74	70	62-132	7	20	
Benzene	**10.5**	**10.0**	10.0	10.0	105	100	75-121	5	15	
Trichloroethene	**9.08**	**8.82**	10.0	10.0	91	88	65-115	3	15	
Toluene	**10.5**	**10.5**	10.0	10.0	105	105	78-120	0	15	
Chlorobenzene	**9.89**	**9.40**	10.0	10.0	99	94	77-118	5	15	
Surrogate:										
Dibromofluoromethane					*108*	*111*	*71-131*			
Toluene-d8					*108*	*110*	*80-127*			
4-Bromofluorobenzene					*93*	*86*	*80-125*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

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

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: HWA Geosciences
Project Number: 2007-098-22
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Austin York

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☑ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 09-396

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	EW-1	9-30-16	1002	water	3						X																
2	EW-2		1015																								
3	EW-3		1030																								
4	EW-4		1048																								
5	RMW-7		1140																								
6	DISC	9-30-16	1103	water	3						X																

	Signature	Company	Date	Time
Relinquished		HWA Geosciences	9-30-16	1220
Received		OSE	9/30/16	1220
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 17, 2016

Arnie Sugar
HWA GeoSciences, Inc.
21312 30th Drive SE, Suite 110
Bothell, WA 98021

Re: Analytical Data for Project 2007-098-2041
Laboratory Reference No. 1610-129

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on October 13, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

Case Narrative

Samples were collected on October 11 and 12, 2016 and received by the laboratory on October 13, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Halogenated Volatiles EPA 8260C Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-5-18**					
Laboratory ID:	10-129-07					
Dichlorodifluoromethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Chloromethane	ND	0.0046	EPA 8260C	10-14-16	10-14-16	
Vinyl Chloride	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Bromomethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Chloroethane	ND	0.0046	EPA 8260C	10-14-16	10-14-16	
Trichlorofluoromethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Iodomethane	ND	0.0063	EPA 8260C	10-14-16	10-14-16	
Methylene Chloride	ND	0.0046	EPA 8260C	10-14-16	10-14-16	
(trans) 1,2-Dichloroethene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
2,2-Dichloropropane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
(cis) 1,2-Dichloroethene	0.0015	0.00092	EPA 8260C	10-14-16	10-14-16	
Bromochloromethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Chloroform	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,1,1-Trichloroethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Carbon Tetrachloride	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloropropene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloroethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Trichloroethene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloropropane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Dibromomethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Bromodichloromethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
2-Chloroethyl Vinyl Ether	ND	0.0046	EPA 8260C	10-14-16	10-14-16	
(cis) 1,3-Dichloropropene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
(trans) 1,3-Dichloropropene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-5-18**					
Laboratory ID:	10-129-07					
1,1,2-Trichloroethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Tetrachloroethene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,3-Dichloropropane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Dibromochloromethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromoethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Chlorobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,1,1,2-Tetrachloroethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Bromoform	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Bromobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,1,2,2-Tetrachloroethane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichloropropane	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
2-Chlorotoluene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
4-Chlorotoluene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,3-Dichlorobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,4-Dichlorobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,2-Dichlorobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromo-3-chloropropane	ND	0.0046	EPA 8260C	10-14-16	10-14-16	
1,2,4-Trichlorobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Hexachlorobutadiene	ND	0.0046	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichlorobenzene	ND	0.00092	EPA 8260C	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*76-131*				
Toluene-d8	*105*	*80-126*				
4-Bromofluorobenzene	*101*	*60-146*				

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-5-21**					
Laboratory ID:	10-129-08					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	10-14-16	10-14-16	
Chloromethane	ND	0.0041	EPA 8260C	10-14-16	10-14-16	
Vinyl Chloride	0.0020	0.00081	EPA 8260C	10-14-16	10-14-16	
Bromomethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Chloroethane	ND	0.0041	EPA 8260C	10-14-16	10-14-16	
Trichlorofluoromethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Iodomethane	ND	0.0056	EPA 8260C	10-14-16	10-14-16	
Methylene Chloride	ND	0.0041	EPA 8260C	10-14-16	10-14-16	
(trans) 1,2-Dichloroethene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
2,2-Dichloropropane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
(cis) 1,2-Dichloroethene	0.0023	0.00081	EPA 8260C	10-14-16	10-14-16	
Bromochloromethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Chloroform	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,1,1-Trichloroethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Carbon Tetrachloride	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloropropene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloroethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Trichloroethene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloropropane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Dibromomethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Bromodichloromethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
2-Chloroethyl Vinyl Ether	ND	0.0041	EPA 8260C	10-14-16	10-14-16	
(cis) 1,3-Dichloropropene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
(trans) 1,3-Dichloropropene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-5-21**					
Laboratory ID:	10-129-08					
1,1,2-Trichloroethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Tetrachloroethene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,3-Dichloropropane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Dibromochloromethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromoethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Chlorobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,1,1,2-Tetrachloroethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Bromoform	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Bromobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,1,2,2-Tetrachloroethane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichloropropane	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
2-Chlorotoluene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
4-Chlorotoluene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,3-Dichlorobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,4-Dichlorobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,2-Dichlorobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromo-3-chloropropane	ND	0.0041	EPA 8260C	10-14-16	10-14-16	
1,2,4-Trichlorobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Hexachlorobutadiene	ND	0.0041	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichlorobenzene	ND	0.00081	EPA 8260C	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*76-131*				
Toluene-d8	*108*	*80-126*				
4-Bromofluorobenzene	*103*	*60-146*				

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-6-19**					
Laboratory ID:	10-129-21					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	10-14-16	10-14-16	
Chloromethane	ND	0.0035	EPA 8260C	10-14-16	10-14-16	
Vinyl Chloride	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Bromomethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Chloroethane	ND	0.0035	EPA 8260C	10-14-16	10-14-16	
Trichlorofluoromethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Iodomethane	ND	0.0049	EPA 8260C	10-14-16	10-14-16	
Methylene Chloride	ND	0.0035	EPA 8260C	10-14-16	10-14-16	
(trans) 1,2-Dichloroethene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
2,2-Dichloropropane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
(cis) 1,2-Dichloroethene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Bromochloromethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Chloroform	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,1,1-Trichloroethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Carbon Tetrachloride	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloropropene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloroethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Trichloroethene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloropropane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Dibromomethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Bromodichloromethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
2-Chloroethyl Vinyl Ether	ND	0.0035	EPA 8260C	10-14-16	10-14-16	
(cis) 1,3-Dichloropropene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
(trans) 1,3-Dichloropropene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-6-19**					
Laboratory ID:	10-129-21					
1,1,2-Trichloroethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Tetrachloroethene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,3-Dichloropropane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Dibromochloromethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromoethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Chlorobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,1,1,2-Tetrachloroethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Bromoform	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Bromobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,1,2,2-Tetrachloroethane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichloropropane	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
2-Chlorotoluene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
4-Chlorotoluene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,3-Dichlorobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,4-Dichlorobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,2-Dichlorobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromo-3-chloropropane	ND	0.0035	EPA 8260C	10-14-16	10-14-16	
1,2,4-Trichlorobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Hexachlorobutadiene	ND	0.0035	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichlorobenzene	ND	0.00070	EPA 8260C	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*76-131*				
Toluene-d8	*99*	*80-126*				
4-Bromofluorobenzene	*92*	*60-146*				

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-6-21**					
Laboratory ID:	10-129-22					
Dichlorodifluoromethane	ND	0.0021	EPA 8260C	10-14-16	10-14-16	
Chloromethane	ND	0.0071	EPA 8260C	10-14-16	10-14-16	
Vinyl Chloride	0.0028	0.0014	EPA 8260C	10-14-16	10-14-16	
Bromomethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Chloroethane	ND	0.0071	EPA 8260C	10-14-16	10-14-16	
Trichlorofluoromethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Iodomethane	ND	0.0097	EPA 8260C	10-14-16	10-14-16	
Methylene Chloride	ND	0.0071	EPA 8260C	10-14-16	10-14-16	
(trans) 1,2-Dichloroethene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
2,2-Dichloropropane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
(cis) 1,2-Dichloroethene	0.050	0.0014	EPA 8260C	10-14-16	10-14-16	
Bromochloromethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Chloroform	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,1,1-Trichloroethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Carbon Tetrachloride	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloropropene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloroethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Trichloroethene	0.0052	0.0014	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloropropane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Dibromomethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Bromodichloromethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
2-Chloroethyl Vinyl Ether	ND	0.0071	EPA 8260C	10-14-16	10-14-16	
(cis) 1,3-Dichloropropene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
(trans) 1,3-Dichloropropene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EW-6-21**					
Laboratory ID:	10-129-22					
1,1,2-Trichloroethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Tetrachloroethene	0.0038	0.0014	EPA 8260C	10-14-16	10-14-16	
1,3-Dichloropropane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Dibromochloromethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromoethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Chlorobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,1,1,2-Tetrachloroethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Bromoform	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Bromobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,1,2,2-Tetrachloroethane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichloropropane	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
2-Chlorotoluene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
4-Chlorotoluene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,3-Dichlorobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,4-Dichlorobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,2-Dichlorobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromo-3-chloropropane	ND	0.0071	EPA 8260C	10-14-16	10-14-16	
1,2,4-Trichlorobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Hexachlorobutadiene	ND	0.0071	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichlorobenzene	ND	0.0014	EPA 8260C	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*76-131*				
Toluene-d8	*107*	*80-126*				
4-Bromofluorobenzene	*102*	*60-146*				

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1014S1					
Dichlorodifluoromethane	ND	0.0015	EPA 8260C	10-14-16	10-14-16	
Chloromethane	ND	0.0050	EPA 8260C	10-14-16	10-14-16	
Vinyl Chloride	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Bromomethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Chloroethane	ND	0.0050	EPA 8260C	10-14-16	10-14-16	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Iodomethane	ND	0.0069	EPA 8260C	10-14-16	10-14-16	
Methylene Chloride	ND	0.0050	EPA 8260C	10-14-16	10-14-16	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Bromochloromethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Chloroform	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Trichloroethene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Dibromomethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Bromodichloromethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	10-14-16	10-14-16	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1014S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Tetrachloroethene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Dibromochloromethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Chlorobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Bromoform	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Bromobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
2-Chlorotoluene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
4-Chlorotoluene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	10-14-16	10-14-16	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	10-14-16	10-14-16	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	10-14-16	10-14-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*76-131*				
Toluene-d8	*110*	*80-126*				
4-Bromofluorobenzene	*106*	*60-146*				

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

HALOGENATED VOLATILES EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1014S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0410**	**0.0437**	0.0500	0.0500	82	87	68-126	6	15	
Benzene	**0.0444**	**0.0467**	0.0500	0.0500	89	93	70-121	5	15	
Trichloroethene	**0.0433**	**0.0452**	0.0500	0.0500	87	90	75-120	4	15	
Toluene	**0.0462**	**0.0499**	0.0500	0.0500	92	100	80-120	8	15	
Chlorobenzene	**0.0459**	**0.0474**	0.0500	0.0500	92	95	76-120	3	15	
Surrogate:										
Dibromofluoromethane					*96*	*94*	*76-131*			
Toluene-d8					*99*	*102*	*80-126*			
4-Bromofluorobenzene					*99*	*97*	*60-146*			

Date of Report: October 17, 2016
Samples Submitted: October 13, 2016
Laboratory Reference: 1610-129
Project: 2007-098-2041

% MOISTURE

Date Analyzed: 10-14-16

Client ID	Lab ID	% Moisture
EW-5-18	10-129-07	11
EW-5-21	10-129-08	13
EW-6-19	10-129-21	6
EW-6-21	10-129-22	39

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

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

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

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OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 10-129

Company: HWA GeoSciences
Project Number: 2007-098-2041
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Nicole Kapise

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	EW-5-3	10/11/16	10:40	Soil	1																						
2	EW-5-6		10:42																								
3	EW-5-8		10:47																								
4	EW-5-11		10:50		4																						
5	EW-5-13		10:55																								
6	EW-5-15		11:03																								
7	EW-5-18		11:10								X																10
8	EW-5-21		11:15								X																10
9	EW-5-23		11:25								HMT NL																
10	EW-5-26		11:27																								

	Signature	Company	Date	Time
Relinquished	Nicole Kapise	HWA GeoSc	10/13/16	9:45
Received			10/13/16	0945
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: HWA GeoSciences
Project Number: 2007-098-2041
Project Name: Riverside
Project Manager: Arnie Sugar
Sampled by: Nicole Kapise

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 10-129

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers
11	EW-5-28	10/11/16	11:35	Soil	4
12	EW-5-31		11:40		1
13	EW-5-33		11:47		1
14	EW-5-36		11:52		1
15	EW-6-3.5	10/12/16	8:00		1
16	EW-6-6		8:05		1
17	EW-6-8		8:10		1
18	EW-6-11		8:15		4
19	EW-6-13		8:20		1
20	EW-6-16		8:25		1

	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						

	Signature	Company	Date	Time
Relinquished	Nicole Kapise	HWA GeoSc	10/13/16	9:45
Received			10/13/16	0945
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

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Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 10-129

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
21	EW-6-19	10/12/16	8:30	Soil	4						X											16
22	EW-6-21		8:35								X											20
23	EW-6-23		8:40																			
24	EW-6-25		8:45																			
25	EW-6-28		8:50																			
26	EW-6-31		8:55																			
27	EW-6-33		9:05		1																	
28	EW-6-36		9:10																			
29	Trip Blank			W	3																	

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Nicole Kapise	HWA GeoSciences	10/13/16	9:45	
Received			10/13/16	0945	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ EOD ☒

Data Package: Standard ☐ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____