Professional Geologist Certification
2019 Annual Groundwater Monitoring Report
Broadway Complex Site
Owego, Tioga County, New York

VCA Index #A7-0407-0001
Site #V00290-7

December 4, 2019

As the person with primary responsibility for the performance of the geological services and activities associated with the captioned report, I certify that I have reviewed the document entitled *"2019 Annual Groundwater Monitoring Report, Broadway Complex Site, Owego, Tioga County, New York"* prepared in accordance with Section 3 of the *Site Management Plan for the Broadway Complex Site*, dated April 7, 2015 and prepared for IBM Corporation under Voluntary Cleanup Agreement #A7-0407-0001, Site #V00290-7. This report is dated December 4, 2019 and was prepared by Groundwater Sciences Corporation for IBM Corporation.

As a professional geologist in the State of New York, I certify that the associated geological services and this report have been prepared under my direct supervision. To the best of my knowledge, all such information contained in this report is complete and accurate.

This report bears the seal of a professional geologist. No alterations may be made to the information contained in this report unless made in accordance with Title 8, Article 145, Section 7209 of New York State Education Law.

Signature: Charles A. Rine Date: December 4, 2019

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GROUNDWATER SCIENCES

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December 4, 2019

Mr. Gary Priscott
Project Manager
Kirkwood Sub-Office, Region 7
New York State Department of Environmental Conservation
1679 NY Route 11
Kirkwood, New York 13795

Re: *2019 Annual Groundwater Monitoring Report*
Broadway Complex Site, Owego, Tioga County, New York
VCA Index #A7-0407-0001, Site #V00290-7

Dear Mr. Priscott:

This report provides the results of the 2019 annual groundwater monitoring activities performed at the Broadway Complex Site (Site), located at 1200 Taylor Road in the Town of Owego, Tioga County, New York (Tax Map Identifier Number 129.07-1-10). The groundwater monitoring was conducted in October 2019 by Groundwater Sciences Corporation (GSC) on behalf of IBM Corporation (IBM). The monitoring activities and the preparation of this report were completed in accordance with the requirements for groundwater monitoring and reporting specified in Section 3 of the Site Management Plan (SMP)[1]. A figure showing the location and boundaries of the 4.8-acre Broadway Complex Site is provided as **Figure 1**.

BACKGROUND

The Site was investigated and remediated in accordance with Voluntary Cleanup Agreement (VCA) #A7-0407-0001, Site #V00290-7, between IBM and the New York State Department of Environmental Conservation (NYSDEC). Results of the investigations identified the presence of chlorinated volatile organic compounds (CVOCs) in soil and groundwater that have been attributed, in part, to a former 10,000-gallon septic tank (see **Figure 2**). Specifically, the findings of these field investigations indicated the presence of a CVOC groundwater plume of limited horizontal and vertical extent attributed to the former septic tank that comingles in the area of the former septic tank with a much broader and deeper CVOC groundwater plume present across much of the Site. The broader and deeper groundwater plume originates from an off-Site source area to the north (a former chemical storage area). The CVOCs related to the former septic tank include trichloroethene (TCE) and its degradation products cis-1,2-dichloroethene (c12DCE), and vinyl chloride, referred to as the "TCE-series" compounds. The CVOCs related to the off-Site source area include: TCE-series compounds; 1,1,1-trichloroethane (TCA); and TCA degradation products 1,1-dichloroethene (11DCE), and 1,1-dichloroethane (11DCA); and 1,2-dichloroethane (12DCA), a common impurity in TCA.

[1] Groundwater Sciences Corporation, April 7, 2015, *Site Management Plan, Broadway Complex Site, Owego, Tioga County, New York, VCA Index #A7-0407-0001, Site #V00290-7*, prepared for IBM Corporation.

Based on the findings of the investigation and results of interim remedial measures, the Site remedy selected by NYSDEC consists of No Further Action with Institutional Controls (ICs). The ICs have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. A Deed Restriction granted to the NYSDEC and recorded with the Tioga County Clerk on March 2, 2015 requires compliance with the SMP and ICs placed on the Site. The SMP provides a detailed description of procedures required to manage contamination at the Site, including: (1) implementation and management of ICs, (2) groundwater monitoring, and (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports. IBM is responsible for implementation and reporting of groundwater monitoring at the Site for a period of five years, beginning in 2015. This report presents the results from the fifth and final year of groundwater monitoring. All other requirements of the SMP are the responsibility of the Site owner.

SCOPE OF SERVICES

The groundwater monitoring activities were performed on October 10, 2019 by GSC Environmental Scientist, Kelly Devine. The scope of services performed at the Site as part of annual groundwater monitoring included:

- Review of the physical condition of groundwater monitoring wells;
- Recording of water level measurements at accessible monitoring well locations; and
- Collection of groundwater samples from five monitoring wells specified in the SMP.

The depth to groundwater measurements were recorded at twenty-six (26) monitoring well locations that screen the shallow or deep alluvium as shown on **Figure 3**. The "Shallow Wells – Alluvium" map depicts wells that screen across the water table while the "Deep Wells – Alluvium" map depicts wells that screen alluvium between elevations of about 790 to 810 feet above mean sea level (amsl). The depth to groundwater measurements were obtained using an electronic water level measuring device in accordance with methods described in the Groundwater Sampling and Analysis Plan, included as Appendix A of the SMP. Tabulated potentiometric groundwater elevations for 2019 are listed on **Table 1** which also includes groundwater elevation data recorded in 2009, 2010, and 2015 through 2018.

Groundwater samples were collected from shallow alluvium monitoring wells 911-5, 911-10, and 911-18 and from deep alluvium monitoring wells 911-19 and 911-21 using the methods described in the Groundwater Sampling and Analysis Plan, Appendix A of the SMP. An estimated three well bore volumes of water were purged from each monitoring well using disposable bailers prior to collecting the samples. Purge water was contained and taken to IBM's groundwater treatment facility on the adjacent Lockheed Martin facility. The groundwater samples were placed in coolers with ice and shipped using chain-of-custody protocols to Eurofins Lancaster Laboratories Environmental in Lancaster, Pennsylvania where they were analyzed for volatile organic compounds (VOCs) in accordance with SW-846 Method 8260C. Groundwater level measurements, purge volumes, purge times and field screening results (pH, specific conductivity, and temperature) were recorded on Sampling Field Data Sheets, which are provided as **Attachment A**.

Analytical laboratory results for groundwater samples from the five monitoring wells are summarized on **Table 2** which also includes for reference the relevant Part 703 Groundwater Quality Standards of 6 New York Codes, Rules and Regulations (6NYCRR) and the CVOC concentrations measured during six previous monitoring events in 2009, 2010, and 2015 through 2018. Concentrations greater than the

applicable Part 703 groundwater quality standards are highlighted in yellow. The analytical laboratory reports for 2019 are provided in **Attachment B**.

FINDINGS

Groundwater Elevations

The depth range of the water table was approximately 7.9 feet to 10.5 feet below the ground surface (bgs) in October 2019. As depicted on the "Shallow Wells - Alluvium" map on **Figure 4**, groundwater flow directions near the water table are generally from the northeast to southwest, from beneath the footprint of the Broadway Building and former septic tank towards the parking lot south of the Broadway Building. This groundwater flow direction is consistent with historical flows at the Site.

The depth range of the potentiometric surface in the deep alluvium was approximately 8.1 to 10.1 feet bgs in October 2019. As depicted on the "Deep Wells - Alluvium" map on **Figure 4**, the potentiometric surface elevations for wells screened in the deep portion of the alluvium indicate a more southerly groundwater flow direction as compared to conditions near the water table. This southerly flow direction is also consistent with the results of past monitoring.

Groundwater Chemistry

As shown on **Table 2**, the results of the 2019 annual groundwater monitoring event indicate that TCE is present in all five monitoring wells. In addition, TCA and c12DCE were detected in all of the wells, and 11DCE and 11DCA were each detected in two wells. Some of the detections were at estimated concentrations less than the limit of quantitation but greater than the method detection limit, as indicated by "J" data qualifiers from the analytical laboratory.

Semi-logarithmic graphs showing concentrations of the applicable CVOCs versus time for the five monitoring wells are presented in **Attachment C**. As shown on these graphs, concentrations of CVOCs detected in samples collected in October 2019 from shallow alluvium wells 911-10 and 911-18 were lower than concentrations detected in samples collected in 2009 and 2010. Compared to the samples collected in 2018, concentrations of CVOCs were about the same or lower in 2019 at well 911-18. Although concentrations of CVOCs were mostly higher in 2019 than in 2018 at well 911-10, they were still lower than in any sample collected prior to 2018. Concentrations of CVOCs detected in samples collected in 2019 from deep alluvium wells 911-19 and 911-21 were generally comparable to or lower than concentrations detected in samples collected in 2009 and 2010. Compared to 2017, concentrations of TCE in 2019 at well 911-21 have decreased by more than two orders of magnitude, from 560 micrograms per liter (ug/L) to about 2 ug/L. Although slightly higher than in 2018, concentrations of other CVOCs in 2019 at well 911-21 were still lower than in any sample collected prior to 2018, with none exceeding 3 ug/L. These graphical observations are supported by statistical testing as described below.

Statistical Concentration Trends and Concentration Ratios

Concentration trends for the collective TCA-series and TCE-series compounds shown on Table 2 were statistically evaluated using the non-parametric Mann-Kendall test. The Mann-Kendall test module from ProUCL version 5.1, a statistical software package created for USEPA, was used to identify statistically significant trends at a significance level of $\alpha = 0.05$, which corresponds to a confidence limit of 95%. Duplicate samples were averaged such that nine results for each well, including two results from 2018,

were tested for trends. Of the three shallow alluvium wells, 911-10 exhibited statistically significant decreasing trends for both TCE-series and TCA-series compounds. Of the two deep alluvium wells, 911-21 exhibited statistically significant decreasing trends for both TCE-series and TCA-series compounds. None of the other wells exhibited statistically significant concentration trends.

As shown on **Table 2**, the ratios of TCE-series concentrations to TCA-series concentrations in 2019 are similar to the ratios in prior years at shallow alluvium well 911-5, which is located in the former septic tank excavation where TCE is the predominant CVOC. West of the former septic tank excavation, the TCE-series:TCA-series ratio in 2019 at shallow alluvium well 911-10 was lower compared to the period from 2009 to 2017 but was higher than in 2018. Southwest of the former septic tank excavation, the ratio in 2019 at shallow alluvium well 911-18 was similar to the ratios during the period from 2009 to 2016, lower than in 2017, and higher than in 2018. In the case of shallow alluvium well 911-10, the increase in the ratio from 2018 to 2019 is the result of an order-of-magnitude increase in the concentration of TCE-series parameters coupled with practically no change in the concentration of TCA-series parameters. This is the reverse of the situation in 2018 when the decrease in the ratio compared to 2017 was the result of a precipitous decline in the concentration of TCE-series parameters coupled with a lesser decline in the concentration of TCA-series parameters. The situation at deep alluvium well 911-21 is similar to that of shallow well 911-10, with a precipitous decline in the concentration of TCE-series parameters from 2017 to 2018 coupled with a lesser decline in the concentration of TCA-series parameters. As stated previously, both 911-10 and 911-21 exhibit statistically significant decreasing trends in CVOC series concentrations.

For deep alluvium well 911-19, which has elevated concentrations of both TCE-series parameters (commingling of dissolved plumes from the septic tank source area and the off-Site source to the north) and TCA-series parameters (from the off-Site source area to the north), the doubling of the TCE-series:TCA-series ratio from 2018 to 2019 is the result of a significant increase in the concentration of TCE coupled with a decrease in the concentration of TCA.

CONCLUSIONS AND RECOMMENDATION

Compared to the results of previous monitoring conducted in 2009 and 2010, the results of groundwater monitoring in 2019 reflect similar groundwater elevations and flow directions, lower concentrations of CVOCs at shallow monitoring wells 911-10 and 911-18, and similar or lower concentrations at deep monitoring wells 911-19 and 911-21. Elevated concentrations are present only in a limited area near the former septic tank (well 911-05). Overall, it is clear that concentrations of CVOCs at the Site have been generally stable or attenuating since 2015.

Conclusions expressed in the 2013 Remedial Alternatives Report[2] regarding the nature and extent of contamination continue to be valid: the large CVOC plume from the off-Site source area (a former chemical storage area) and the *de minimis* CVOC contribution from the former septic tank are ultimately captured by IBM's off-Site groundwater extraction wells 404 and 405 located on the adjacent Lockheed Martin property, with treatment by IBM's groundwater treatment facility.

After completing the five years of groundwater monitoring and reporting specified in the SMP, IBM plans to discontinue groundwater monitoring activities, as previously agreed upon with the NYSDEC. IBM will contact the property owner with regard to whether they wish to maintain the monitoring wells for monitoring their groundwater plume emanating from the off-Site source area. If the property owner

[2] Groundwater Sciences Corporation, October 11, 2013, *Remedial Alternatives Report for the Broadway Complex Site, VCA Index #A7-0407-0001, Site #V00290-7*, prepared for IBM Corporation.

chooses not to maintain the monitoring wells, then IBM will decommission the wells in accordance with NYSDEC's *CP-43: Groundwater Monitoring Well Decommissioning Policy*.

Should you have any questions, please contact Brandon Ashby of IBM Corporate Environmental Affairs at 703-257-2582.

Very truly yours,
GROUNDWATER SCIENCES CORPORATION

Charles A. Rine

Charles A. Rine
Senior Associate

Attachments: Table 1: Groundwater Elevation Data
Table 2: Groundwater Chemistry Data - Volatile Organic Compounds
Figure 1: Site Location Map
Figure 2: Broadway Complex Site Map
Figure 3: Well Location Maps
Figure 4: Groundwater Elevation Contour Maps (October 10, 2019)
Attachment A: Sampling Field Data Sheets
Attachment B: Analytical Laboratory Report
Attachment C: Graphs of Time versus VOC Concentrations

cc: Brandon Ashby - IBM CEA

TABLE 1
GROUNDWATER ELEVATION DATA
2019 Annual Groundwater Monitoring
Broadway Complex Site, Owego, Tioga County, New York

Well ID	Northing	Easting	M.P./ TOC Elevation	G.S. Elevation	Depth to Bottom	9/21/2009		10/26/2009		3/22/2010		10/5/2015		10/5/2016		10/24/2017		10/17/2018		10/10/2019	
						Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
	(grid feet)	(grid feet)	(ft amsl)	(ft amsl)	(ft)	(ft)	(ft amsl)	(ft)	(ft amsl)	(ft)	(ft amsl)	(ft)	(ft amsl)	(ft)	(ft amsl)	(ft)	(ft amsl)	(ft)	(ft amsl)	(ft)	(ft amsl)
Shallow Alluvium Monitoring Wells																					
911-1	766235.5	916455.1	832.56	832.9	18.07	9.48	823.08	9.33	823.23	8.97	823.59	9.48	823.08	9.73	822.83	9.52	823.04	9.08	823.48	9.18	823.38
911-2	766295.1	916609.2	835.71	836.1	19.47	10.87	824.84	10.68	825.03	10.46	825.25	10.75	824.96	10.91	824.80	10.93	824.78	9.86	825.85	10.07	825.64
911-3	766106.0	916630.2	831.69	832.0	15.96	7.06	824.63	6.91	824.78	6.98	824.71	7.42	824.27	7.51	824.18	7.50	824.19	7.43	824.26	7.56	824.13
911-4	766345.7	916722.7	838.53	838.9	19.80	11.81	826.72	11.50	827.03	11.27	827.26	10.51	828.02	10.96	827.57	11.33	827.20	9.13	829.40	9.53	829.00
911-5	766321.6	916686.2	837.49	837.9	17.58	10.81	826.68	10.63	826.86	10.50	826.99	10.31	827.18	10.45	827.04	10.60	826.89	9.14	828.35	9.68	827.81
911-6	766338.6	916584.8	836.62	836.9	19.20	10.18	826.44	10.20	826.42	8.74	827.88	9.83	826.79	10.42	826.20	9.84	826.78	8.67	827.95	8.70	827.92
911-8	766344.9	916629.7	837.09	837.4	19.97	10.81	826.28	10.68	826.41	9.60	827.49	10.22	826.87	10.63	826.46	10.37	826.72	9.71	827.38	9.38	827.71
911-10	766317.1	916665.7	836.55	837.0	17.78	10.90	825.65	10.60	825.95	10.30	826.25	10.15	826.40	10.37	826.18	10.45	826.10	8.72	827.83	8.90	827.65
911-13	766294.9	916717.1	837.13	837.6	17.80	11.50	825.63	11.20	825.93	10.93	826.20	11.02	826.11	11.31	825.82	11.46	825.67	8.97	828.16	9.71	827.42
911-16	766279.1	916633.6	835.37	835.7	18.50	10.36	825.01	10.17	825.20	10.00	825.37	10.24	825.13	10.41	824.96	10.43	824.94	9.11	826.26	9.21	826.16
911-18	766290.2	916663.2	835.65	836.0	17.61	10.48	825.17	10.25	825.40	10.06	825.59	10.23	825.42	10.41	825.24	10.48	825.17	9.00	826.65	9.22	826.43
911-20	766257.7	916684.9	834.85	835.3	16.92	9.52	825.33	9.25	825.60	9.05	825.80	9.34	825.51	9.51	825.34	9.54	825.31	7.87	826.98	8.40	826.45
911-22	766260.0	916605.3	834.94	835.5	17.33	10.02	824.92	9.88	825.06	9.65	825.29	10.00	824.94	10.10	824.84	10.19	824.75	8.87	826.07	9.10	825.84
BMW-1	766338.6	916619.7	836.75	837.2	17.65	10.69	826.06	10.56	826.19	9.55	827.20	NR	NR	10.52	826.23	10.31	826.44	8.58	828.17	9.33	827.42
Deep Alluvium Monitoring Wells																					
911-7	766341.6	916585.6	836.71	837.0	41.04	9.36	827.35	9.36	827.35	7.85	828.86	8.99	827.72	9.33	827.38	8.96	827.75	7.34	829.37	7.78	828.93
911-9	766344.2	916633.8	837.03	837.4	39.70	9.66	827.37	9.66	827.37	8.18	828.85	9.24	827.79	9.58	827.45	9.25	827.78	7.62	829.41	8.05	828.98
911-11	766321.5	916667.0	836.84	837.1	37.22	10.51	826.33	10.33	826.51	9.55	827.29	9.95	826.89	10.29	826.55	10.12	826.72	8.46	828.38	8.84	828.00
911-12	766322.4	916683.9	837.34	837.8	38.47	11.06	826.28	10.96	826.38	10.27	827.07	10.45	826.89	10.75	826.59	10.57	826.77	9.41	827.93	9.43	827.91
911-14	766297.5	916718.4	837.09	837.5	38.60	11.51	825.58	11.21	825.88	10.93	826.16	11.02	826.07	11.27	825.82	11.42	825.67	8.97	828.12	9.72	827.37
911-15	766298.9	916611.1	835.91	836.2	40.72	10.80	825.11	10.71	825.20	9.75	826.16	10.47	825.44	10.82	825.09	10.49	825.42	9.37	826.54	9.72	826.19
911-17	766283.2	916635.0	835.53	835.8	38.80	10.42	825.11	10.31	825.22	10.00	825.53	10.24	825.29	10.42	825.11	10.24	825.29	9.21	826.32	9.68	825.85
911-19	766295.1	916664.5	835.82	836.3	34.24	10.28	825.54	10.04	825.78	9.68	826.14	9.76	826.06	9.98	825.84	10.01	825.81	8.27	827.55	8.73	827.09
911-21	766261.7	916685.3	834.97	835.4	39.17	9.57	825.40	9.35	825.62	9.07	825.90	9.21	825.76	9.40	825.57	9.48	825.49	8.14	826.83	8.09	826.88
911-23	766261.2	916601.5	834.86	835.3	33.80	10.07	824.79	9.96	824.90	9.40	825.46	9.89	824.97	9.86	825.00	10.03	824.83	8.96	825.90	9.23	825.63
911-24	766256.3	916602.3	834.85	835.2	44.80	10.04	824.81	9.92	824.93	9.22	825.63	9.80	825.05	10.07	824.78	9.87	824.98	8.77	826.08	9.12	825.73
911-25	766338.4	916588.6	836.71	837.1	52.36	9.54	827.17	9.50	827.21	7.97	828.74	9.09	827.62	9.63	827.08	9.10	827.61	7.42	829.29	7.90	828.81

Note:
Planar coordinates, measuring point elevations and ground surface elevations for Broadway Complex Site monitoring wells are based on a September 1, 2009 field location and elevation survey by Butler Land Surveying LLC (BLS) of Little Meadows, Pennsylvania.

Key:
M.P./TOC = measuring point / top of casing (groundwater elevation reference point)
G.S. = ground surface
ft bgs = feet below ground surface
ft amsl = feet above mean sea level

TABLE 2

GROUNDWATER CHEMISTRY DATA - VOLATILE ORGANIC COMPOUNDS

2019 Annual Groundwater Monitoring

Broadway Complex Site, Owego, Tioga County, New York

Monitoring Well ID	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	**TCE-Series**	1,1,1-Trichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	1,2-Dichloroethane	**TCA-Series**	**Ratio TCE-Series:TCA-Series**	Chloroform (Trichloromethane)	Freon® 113 (Trifluorotrichloroethane)
Part 703 Groundwater Quality Standard		5	5	5	5	2	NA	5	5	5	0.6	NA	NA	7	5
Shallow Alluvium Monitoring Wells															
911-5	9/22/2009	0.6 J	350	5.8	<2.5	1.4 J	***360***	0.7 J	<2.5	<2.5	<2.5	***0.7***	***510***	1 J	<2.5
	10/26/2009	<5.0	770	38	<5.0	4.5 J	***830***	2.2 J	<5.0	<5.0	<5.0	***2.2***	***380***	<5.0	<5.0
	3/22/2010	13 J	2500	25	<25	<25	***2500***	8.6 J	<25	<25	<25	***8.6***	***290***	<25	<25
	10/5/2015	<5.0	780	11	<5.0	<5.0	***790***	2.0 J	<5.0	<5.0	<5.0	***2.0***	***400***	<5.0	<5.0
	10/5/2016	<5	730	11	<5	<5	***740***	1.9 J	<5	<5	<5	***1.9***	***390***	<5	<5
	10/5/2016 Dup	<5	700	14	<5	<5	***720***	1.8 J	<5	<5	<5	***1.8***	***400***	<5	<5
	10/24/2017	<5	450	12	<5	<5	***470***	1.1 J	<5	<5	<5	***1.1***	***430***	<5	<5
	10/17/2018	0.5 J	300	5	<1	<1	***310***	1.2	<1	<1	<1	***1.2***	***260***	<1	<1
	10/17/2018 Dup	0.4 J	270	4.8	<1	<1	***280***	1.1	<1	<1	<1	***1.1***	***250***	<1	<1
	11/7/2018	<50	3400	58	<50	<50	***3500***	11 J	<50	<50	<50	***11***	***320***	<50	<50
	10/10/2019	0.6 J	380	6.3	<2.5	<2.5	***390***	1.6 J	<2.5	<2.5	<2.5	***1.6***	***240***	<2.5	<2.5
911-10	9/21/2009	<250	45000	270	<250	<250	***45000***	98 J	<250	<250	<250	***98***	***460***	<250	<250
	10/27/2009	<250	43000	300	<250	<250	***43000***	93 J	<250	<250	<250	***93***	***460***	<250	<250
	3/23/2010	<50	15000	96	<50	<50	***15000***	36 J	<50	<50	<50	***36***	***420***	<50	<50
	10/5/2015	<50	9700	71	<50	<50	***9800***	22 J	<50	<50	<50	***22***	***450***	<50	<50
	10/5/2016	<50	11000 J	70	<50	<50	***11000***	23 J	<50	<50	<50	***23***	***480***	<50	<50
	10/24/2017	<50	6500	49 J	<50	<50	***6600***	15 J	<50	<50	<50	***15***	***440***	<50	<50
	10/24/2017 Dup	<50	6600	49 J	<50	<50	***6700***	14 J	<50	<50	<50	***14***	***480***	<50	<50
	10/17/2018	0.1 J	100	1.4	<0.5	<0.5	***100***	1	0.2 J	<0.5	<0.5	***1.3***	***77***	0.2 J	<0.5
	11/7/2018	0.07 J	17	0.4 J	<0.5	<0.5	***18***	0.8	0.1 J	<0.5	<0.5	***0.9***	***20***	0.3 J	<0.5
	10/10/2019	0.4 J	210	2.9	<2.5	<2.5	***210***	1.1 J	<2.5	<2.5	0.4 J	***1.1***	***191***	<2.5	<2.5
911-18	9/22/2009	<10	1700	27	<10	<10	***1700***	11	4.2 J	<10	<10	***17***	***100***	<10	<10
	10/26/2009	<10	1400	27	<10	<10	***1400***	12	3.5 J	<10	<10	***17***	***82***	<10	<10
	3/22/2010	<5.0	1500	24	<5.0	<5.0	***1500***	9.5	2.8 J	<5.0	<5.0	***13***	***120***	<5.0	<5.0
	10/5/2015	<0.5	150	5.9	<0.5	<0.5	***160***	0.6	0.5 J	<0.5	<0.5	***1.3***	***120***	0.2 J	<0.5
	10/5/2015 Dup	<0.5	110	4.2	<0.5	<0.5	***120***	0.3 J	0.3 J	<0.5	<0.5	***0.7***	***170***	0.2 J	<0.5
	10/5/2016	0.2 J	180	4.9	<0.5	<0.5	***190***	0.7	0.4 J	<0.5	<0.5	***1.3***	***150***	0.2 J	<0.5
	10/24/2017	<2.5	250	6	<2.5	<2.5	***260***	0.8 J	<2.5	<2.5	<2.5	***0.8***	***330***	<2.5	<2.5
	10/17/2018	0.2 J	360	9.9	0.2 J	<1	***370***	3.6	0.9 J	0.4 J	<1	***5.4***	***69***	<1	<1
	11/7/2018	<10	540	12	<10	<10	***560***	4.2 J	1.2 J	<10	<10	***5.9***	***95***	<10	<10
	10/10/2019	<2.5	210	9.3	<2.5	<2.5	***220***	0.9 J	<2.5	0.4 J	0.3 J	***1.4***	***157***	<2.5	<2.5

TABLE 2

GROUNDWATER CHEMISTRY DATA - VOLATILE ORGANIC COMPOUNDS

2019 Annual Groundwater Monitoring

Broadway Complex Site, Owego, Tioga County, New York

Monitoring Well ID	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	**TCE-Series**	1,1,1-Trichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	1,2-Dichloroethane	**TCA-Series**	**Ratio TCE-Series:TCA-Series**	Chloroform (Trichloromethane)	Freon® 113 (Trifluorotrichloroethane)
Part 703 Groundwater Quality Standard		5	5	5	5	2	NA	5	5	5	0.6	NA	NA	7	5
Deep Alluvium Monitoring Wells															
911-19	9/22/2009	<25	3500	110	<25	<25	***3600***	200	44	11 J	<25	***280***	***13***	<25	<25
	9/22/2009 Dup	<25	3100	110	<25	<25	***3200***	200	44	11 J	<25	***280***	***11***	<25	<25
	10/26/2009	<25	5000	160	<25	<25	***5200***	270	47	13 J	<25	***350***	***15***	<25	<25
	10/26/2009 Dup	<25	5300	170	<25	<25	***5500***	250	47	13 J	<25	***330***	***17***	<25	<25
	3/22/2010	<25	4600	160	<25	<25	***4800***	260	44	14 J	<25	***340***	***14***	<25	<25
	3/22/2010 Dup	<25	4400	160	<25	<25	***4600***	260	47	14 J	<25	***340***	***14***	<25	<25
	10/5/2015	<25	2600	79	<25	<25	***2700***	59	17 J	6.1 J	<25	***91***	***30***	<25	<25
	10/5/2016	5.9 J	1900	64	<25	<25	***2000***	49	13 J	<25	<25	***67***	***30***	<25	<25
	10/24/2017	<25	5000	120	<25	<25	***5200***	77	25 J	7.4 J	<25	***120***	***43***	<25	<25
	10/17/2018	3.4 J	2100	120	0.9 J	<5	***2300***	97	29	9.8	<5	***150***	***15***	<5	<5
	11/7/2018	3.0 J	2100	100	2.5 J	<10	***2200***	110	24	11	<10	***160***	***14***	<10	<10
	10/10/2019	2.7 J	3300	100	<13	<13	***3400***	74	7.5 J	22	<13	***110***	***31***	<10	<10
911-21	9/21/2009	<5.0	570	16	<5.0	<5.0	***590***	24	6.8	4.3 J	<5.0	***39***	***15***	<5.0	<5.0
	10/26/2009	<5.0	430	14	<5.0	<5.0	***450***	21	4.6 J	3.6 J	<5.0	***32***	***14***	<5.0	<5.0
	3/22/2010	<2.5	410	13	0.5 J	<2.5	***430***	17	3.6	3.3	<2.5	***26***	***17***	0.5 J	<2.5
	10/5/2015	<2.5	450	6.1	<2.5	<2.5	***460***	6	1.6 J	0.9 J	<2.5	***9.4***	***49***	<2.5	<2.5
	10/5/2016	<2.5	510 J	6.6	<2.5	<2.5	***520***	6.6	1.2 J	1 J	<2.5	***9.6***	***54***	<2.5	<2.5
	10/24/2017	1.2 J	560	10	<5	<5	***570***	8.5	1.4 J	1.2 J	<5	***12***	***48***	<5	<5
	10/17/2018	<0.5	13	<0.5	<0.5	<0.5	***13***	1.3	<0.5	0.3 J	<0.5	***1.7***	***7.6***	<0.5	<0.5
	11/7/2018	<0.5	6.3	0.3 J	<0.5	<0.5	***6.7***	1.4	<0.5	0.3 J	<0.5	***1.8***	***3.7***	<0.5	<0.5
	10/10/2019	0.09 J	2.4	0.8	<0.5	<0.5	***3.5***	3.3	0.7	<0.5	<0.5	***4.3***	***0.8***	<0.5	<0.5
	10/10/2019 Dup	0.08 J	2.2	0.7	<0.5	<0.5	***3.1***	3.0	0.7	<0.5	<0.5	***4***	***0.8***	<0.5	<0.5

Notes:

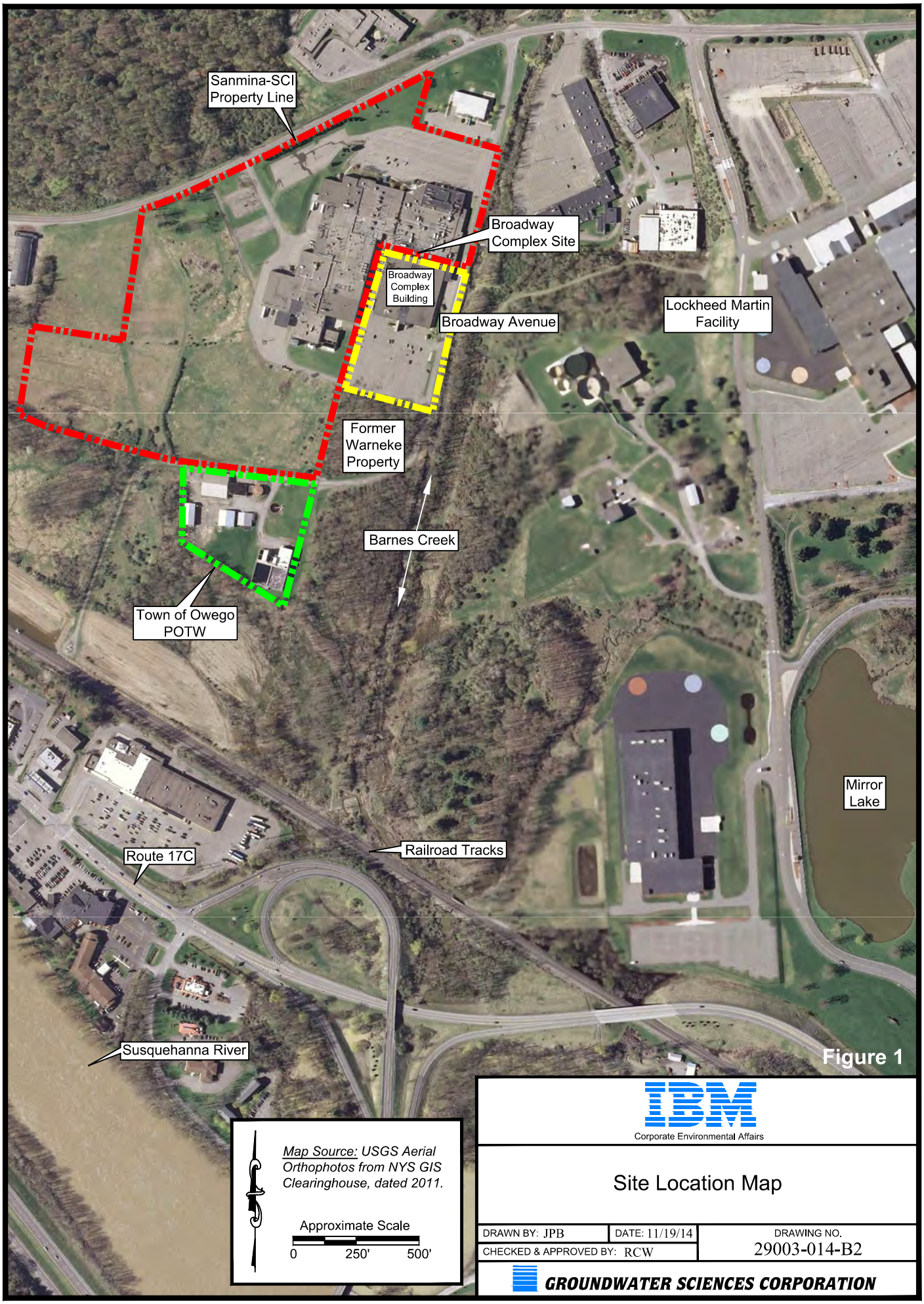
1. Groundwater monitoring well sampling was performed by personnel from Groundwater Sciences Corporation (GSC) on the dates listed above.
2. The groundwater samples were submitted to Eurofins Lancaster Laboratories Environmental of Lancaster, Pennsylvania and were analyzed for volatile organic compounds (VOCs) by SW-846 Method 8260C. Results for groundwater samples are posted in micrograms per liter (µg/L). Concentrations greater than the applicable Part 703 groundwater quality standards are highlighted in yellow.
3. Other notes:

"<" means "Not Detected." The value shown is the Limit of Quantitation (LOQ).

"Dup" indicates a duplicate sample.

"J" signifies an estimated value. In most cases, this means that the result is greater than or equal to the Method Detection Limit (MDL) and is less than the LOQ. In other cases, it means that the result has been qualified for some other reason using standard data validation criteria. In some cases, this means that the result exceeds the calibration range of the analytical instrument.

All calculated values have been rounded to two significant figures, or to one significant figure if less than 1.


Sanmina-SCI Property Line
Broadway Complex Site
Broadway Complex Building
Broadway Avenue
Lockheed Martin Facility
Former Warneke Property
Barnes Creek
Town of Owego POTW
Mirror Lake
Railroad Tracks
Route 17C
Susquehanna River
Figure 1
Map Source: USGS Aerial Orthophotos from NYS GIS Clearinghouse, dated 2011.
Approximate Scale
0
250'
500'
IBM
Corporate Environmental Affairs
Site Location Map
DRAWN BY: JPB
DATE: 11/19/14
DRAWING NO.
29003-014-B2
CHECKED & APPROVED BY: RCW
GROUNDWATER SCIENCES CORPORATION

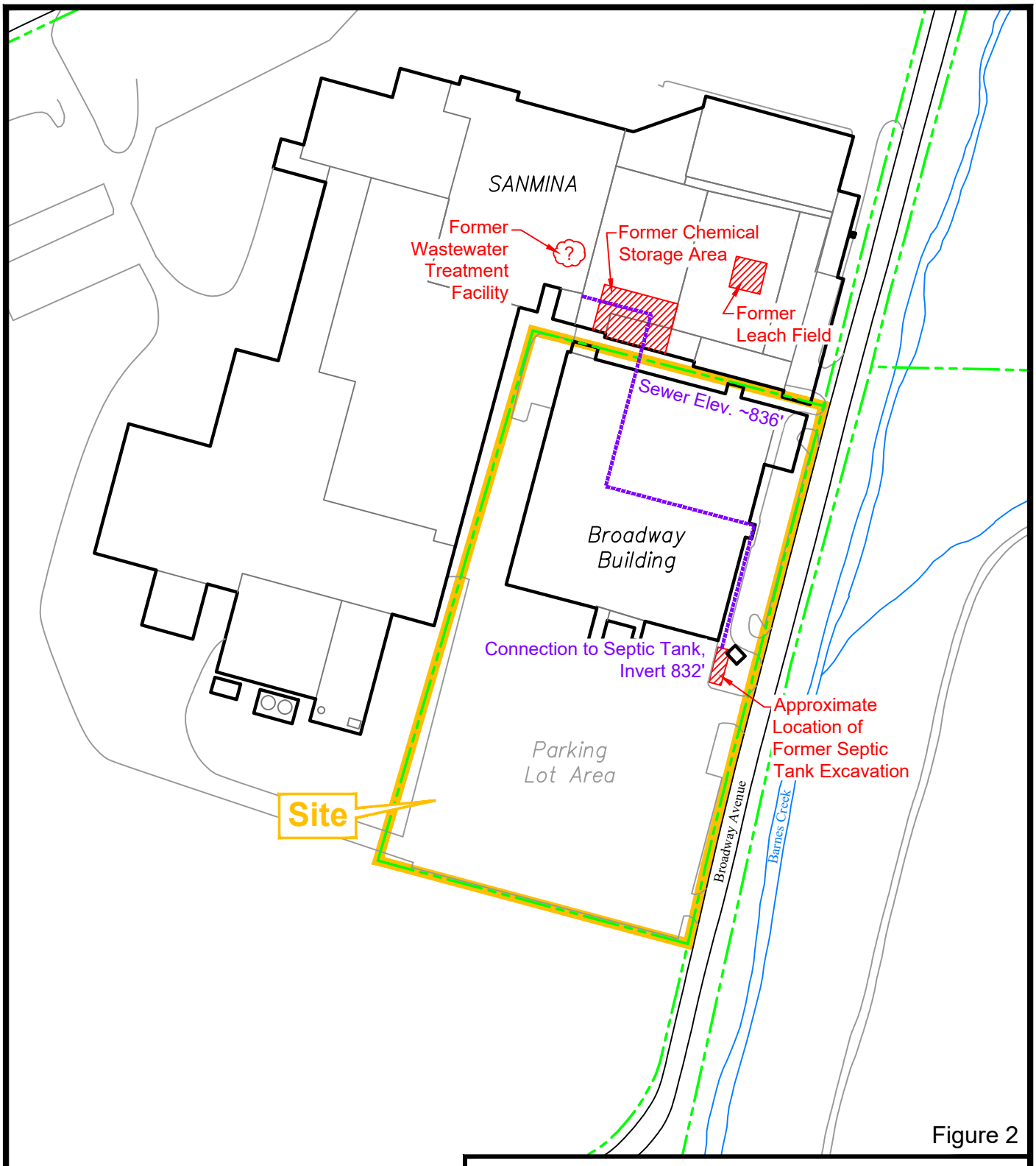
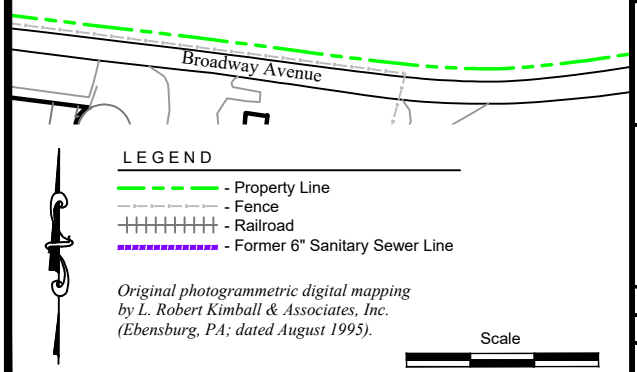


Figure 2



LEGEND

- Property Line
- Fence
- Railroad
- Former 6" Sanitary Sewer Line

Original photogrammetric digital mapping by L. Robert Kimball & Associates, Inc. (Ebensburg, PA; dated August 1995).

Scale

0 150'

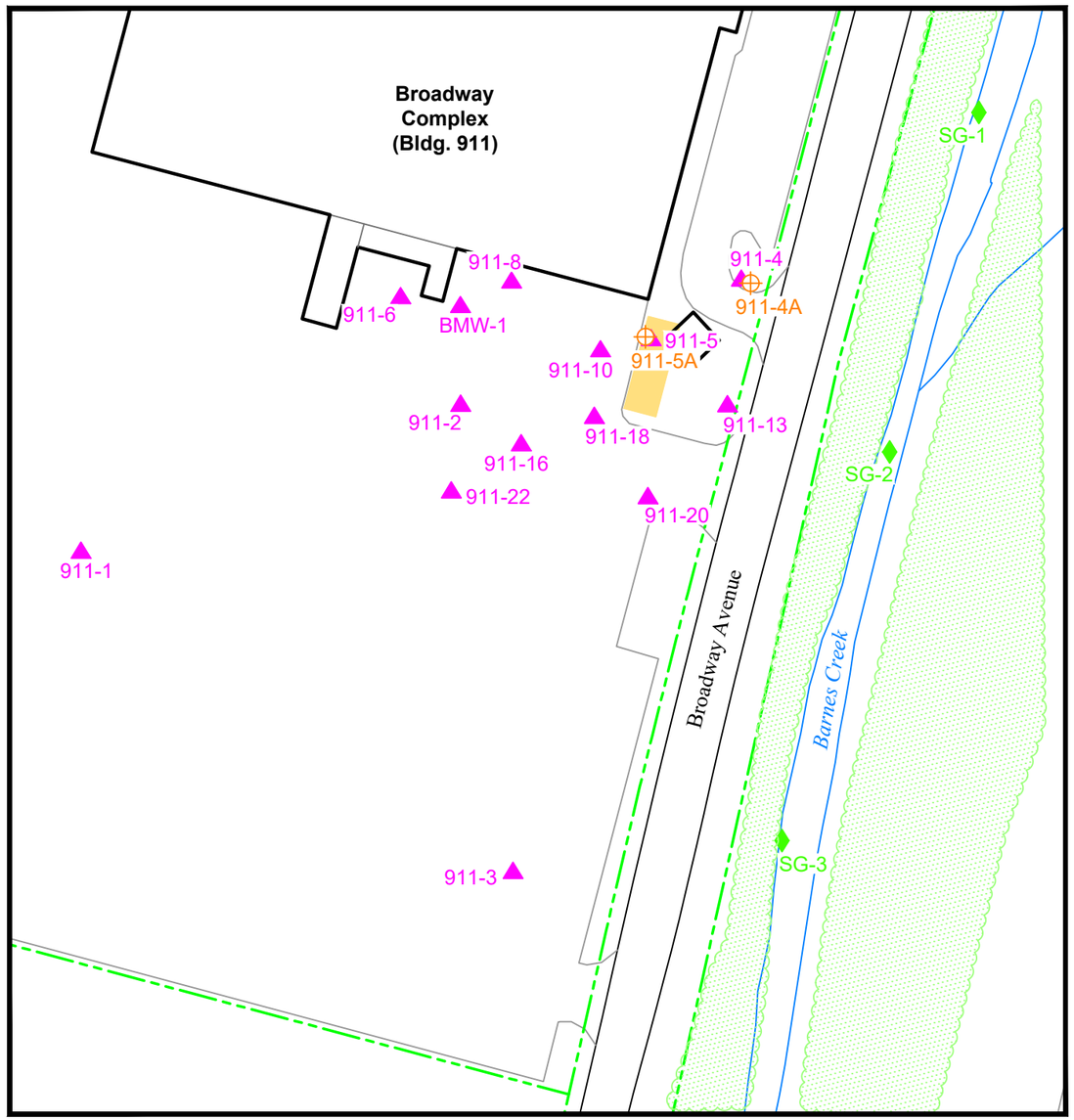
IBM

Corporate Environmental Affairs

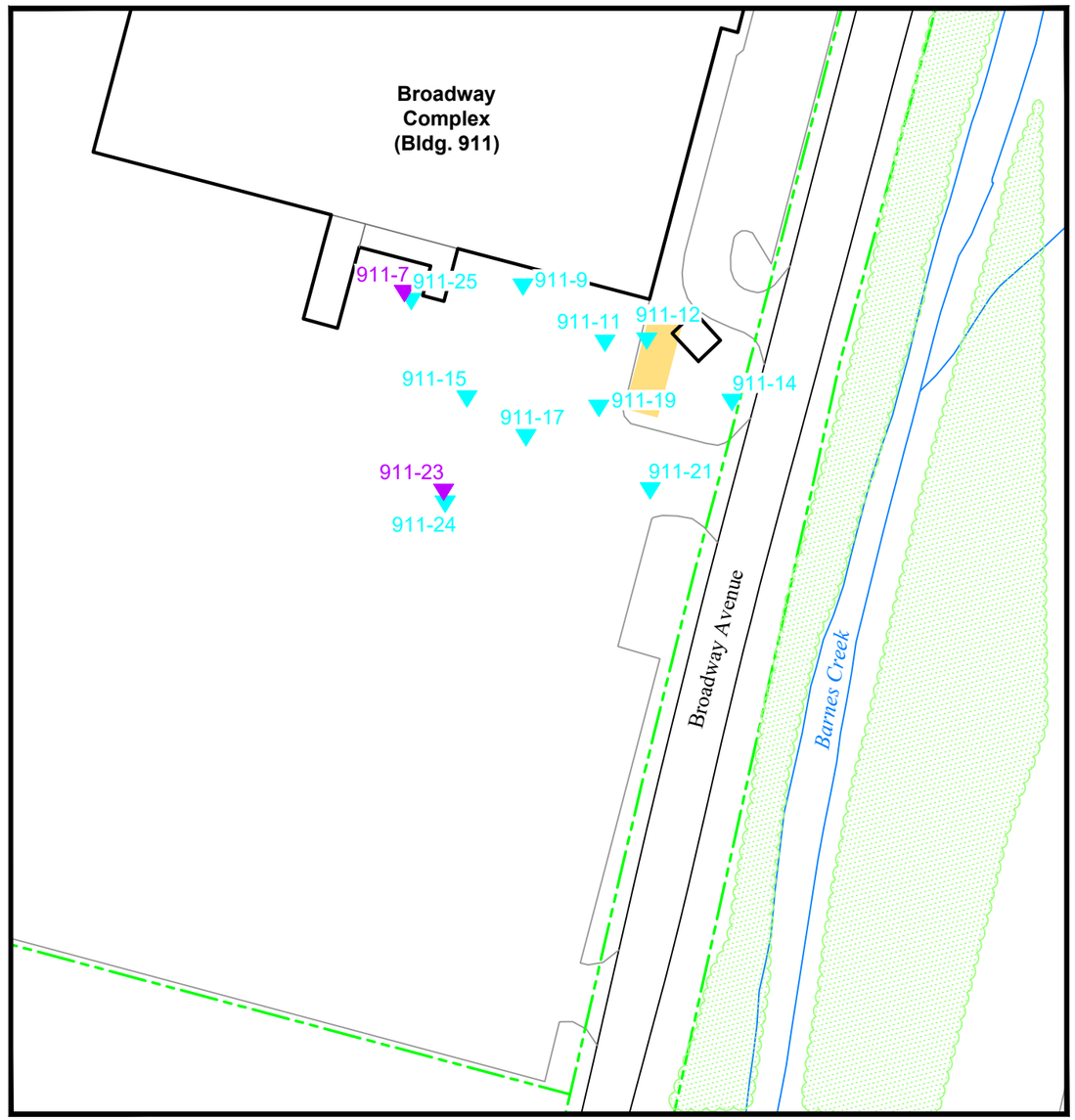
Broadway Complex Site Map
Owego, New York

DRAWN BY: JPB	DATE: 11/20/15	DRAWING NO. 29003-003-H2
CHECKED & APPROVED BY: RCW		

GROUNDWATER SCIENCES CORPORATION



Shallow Wells - Alluvium



Deep Wells - Alluvium

Figure 3

LEGEND

- ▲ - Shallow Groundwater Monitoring Well
- ▼ - Intermediate Groundwater Monitoring Well
- ▼ - Deep Groundwater Monitoring Well
- ♦ - Staff Gauge
- ⊕ - Soil Boring (approx. location)
- - - - Property Line
- ▭ - Approx. Location of Former Septic Tank Excavation

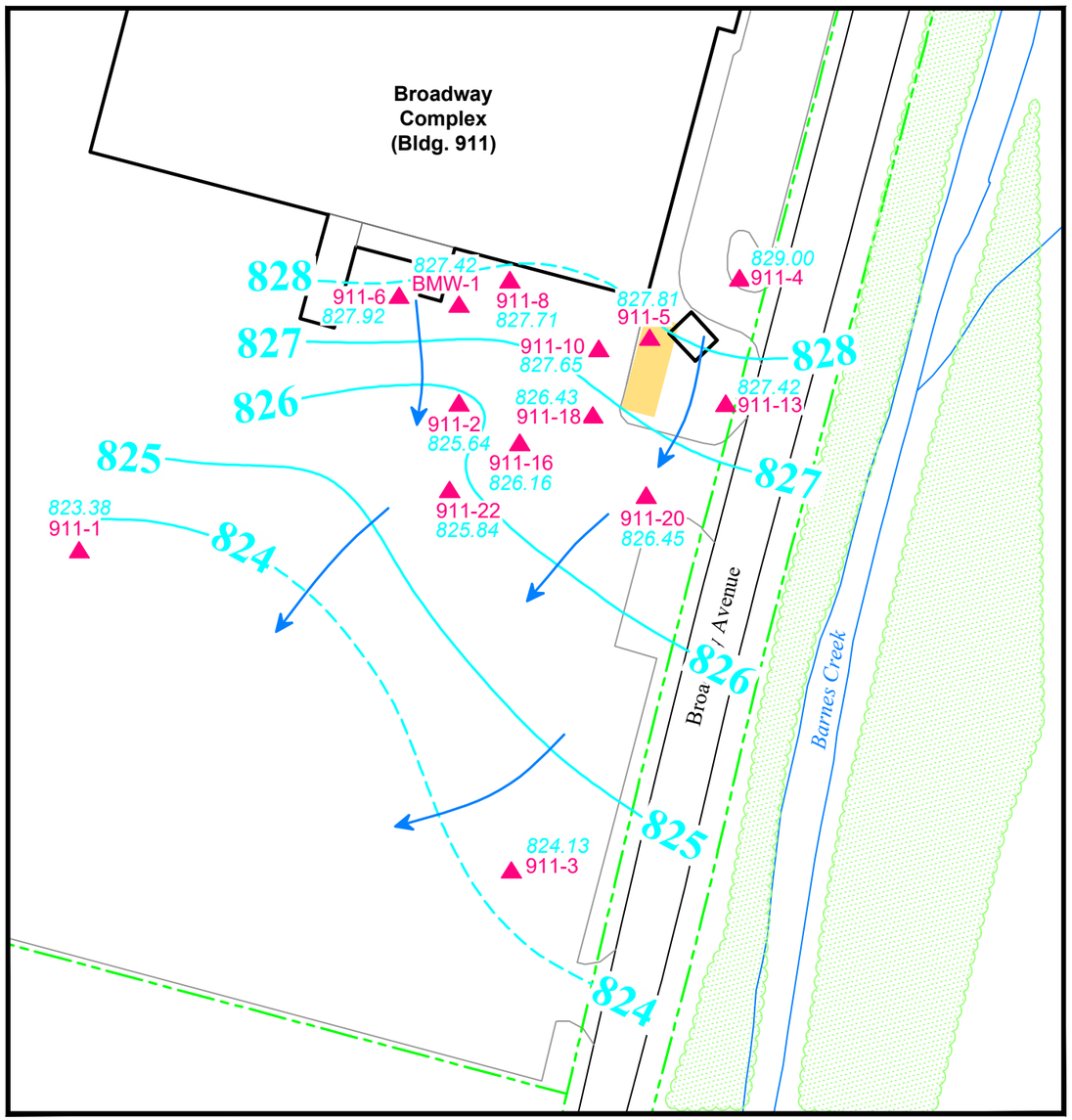
Scale
0 30' 60'

IBM
Corporate Environmental Affairs

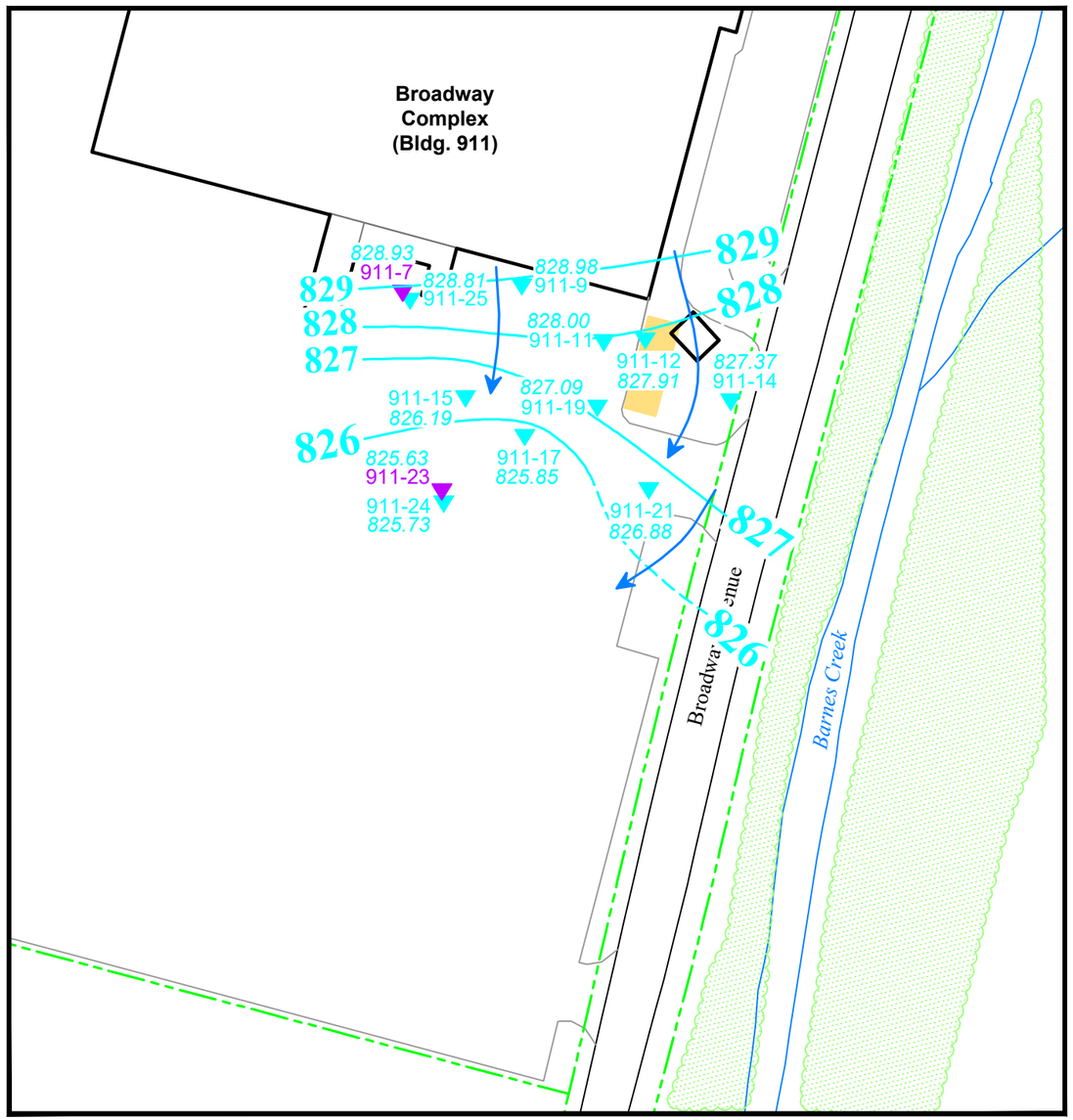
Well Location Maps

DRAWN BY: JPB	DATE: 11/30/15	DRAWING NO. 29003-003-A3
CHECKED & APPROVED BY: RCW		

GROUNDWATER SCIENCES CORPORATION



Shallow Wells - Alluvium



Deep Wells - Alluvium

Figure 4

LEGEND

- ▲ - Shallow Groundwater Monitoring Well
- ▼ - Intermediate Groundwater Monitoring Well
- ▼ - Deep Groundwater Monitoring Well
- Property Line
- Approx. Location of Former Septic Tank Excavation
- 824.26 - Potentiometric Water Level Elevation (feet amsl)
- 825 - Groundwater Elevation Contour (feet)
- Inferred Direction of Groundwater Flow

Scale
0 30' 60'

IBM
Corporate Environmental Affairs

Groundwater Elevation Contour Maps
October 10, 2019

DRAWN BY: JPB	DATE: 11/13/19	DRAWING NO. 29003-004-G1
CHECKED & APPROVED BY: CAR		

GROUNDWATER SCIENCES CORPORATION

ATTACHMENT A

Sampling Field Data Sheets

GROUNDWATER SCIENCES CORPORATION — ***Sampling Field Data Sheet***

GENERAL INFORMATION

Sample Location/Well ID: 911-10 Site: Broadway

Manhole/Standpipe/Other (circle one) If Other Explain: _____

Physical Well/Location Condition: parking lt

PURGING

Date: 10-10-19 Personnel: KD Air Temp: 59 Skies: clr Wnd Spd/Drctn: N/A

TD: 17.78 SWL: 8.90 TD – SWL 8.88 Required Purge Vol: (TD – SWL x C F (below)) 4.3 (gal)

Method: bailer Start Time: 13:27 Stop Time: 13:35 Volume Purged: 4.5 (gal)

Water Level at End of Purge (WLEP): ~~9~~9.77 Total Purge Time: 8 (minutes)

Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] = 9.78

Conversion Factors (well diameter – gallons per foot of water): *(¼ d^2 π) x 7.4805 = gal/ft (d = well diameter in feet)*

1 Vol: ½" – 0.01; ¾" – 0.023; 1" – 0.041; 1 ¼" – 0.063; 1 ½" – 0.092; 2" – 0.163; 3" – 0.367; 4" – 0.653; 6" – 1.47; 8" – 2.61; 10" – 4.08; 12" – 5.88

3 Vol: ½" – 0.03; ¾" – 0.069; 1" – 0.123; 1 ¼" – 0.189; 1 ½" – 0.276; 2" – 0.489; 3" – 1.101; 4" – 1.959; 6" – 4.41; 8" – 7.83; 10" – 12.24; 12" – 17.64

SAMPLING

Sample ID: B | 9 | 1 | 1 | 0 | 1 | 9 | 1 | 0 | 1 | 0

Sample Type (circle one): (Groundwater) Surface water Other _____

Date: 10-10-19 Personnel: KD Air Temp: 59 Skies: clr Wnd Spd/Drctn: N/A

WL Recovery (WL/time): ____/____; ____/____; ____/____; ____/____; ____/____

Sampled Depth Interval: _____ to _____ feet (gs or toc) Sampling Method: bailer

Field Data (in well or in line): START TIME: 13:40 STOP TIME: 13:42

Depth	pH	Sp. Cond.	Temp	DO	Eh	Clarity
Pg.1	7.81	703	19.9	N/A	N/A	71000

Sampler's Signature: _____ **Was this sample collected w/in 2 hrs of end of purge?** (Yes) No

LABORATORY INFORMATION

Laboratory: Eurofins Turnaround Time (TAT): Std Number of Containers: 1

Date Shipped or Delivered: 10-10-19 Method of Delivery to Laboratory: Fed Ex

Analyses Requested: VOCs by SW846 8260C

ADDITIONAL NOTES

GROUNDWATER SCIENCES CORPORATION *Sampling Field Data Sheet*

GENERAL INFORMATION

Sample Location/Well ID: 911-18 Site: Broadway

Manhole/Standpipe/Other (circle one) If Other Explain: _____

Physical Well/Location Condition: Parking Lot

PURGING

Date: 10-10-19 Personnel: KD Air Temp: _____ Skies: _____ Wnd Spd/Drctn: _____

TD: 17.61 SWL: 9.22 TD – SWL 8.39 Required Purge Vol: (TD – SWL x C F (below)) 4.1 (gal)

Method: bailer Start Time: 13:44 Stop Time: 13:48 Volume Purged: 4.5 (gal)

Water Level at End of Purge (WLEP): 9.29 Total Purge Time: 4 (minutes)

Conversion Factors (well diameter – gallons per foot of water): *(¼ d^2 π) x 7.4805 = gal/ft (d = well diameter in feet)*

1 Vol: ½" – 0.01; ¾" – 0.023; 1" – 0.041; 1 ¼" – 0.063; 1 ½" – 0.092; 2" – 0.163; 3" – 0.367; 4" – 0.653; 6" – 1.47; 8" – 2.61; 10" – 4.08; 12" – 5.88

3 Vol: ½" – 0.03; ¾" – 0.069; 1" – 0.123; 1 ¼" – 0.189; 1 ½" – 0.276; 2" – 0.489; 3" – 1.101; 4" – 1.959; 6" – 4.41; 8" – 7.83; 10" – 12.24; 12" – 17.64

SAMPLING

Sample ID: B 9 1 1 1 8 1 9 1 0 1 0

Sample Type: (Groundwater) (circle one) Surface water Other _____

Date: 10-10-19 Personnel: KD Air Temp: 57 Skies: Clr Wnd Spd/Drctn: N/A

WL Recovery (WL/time): _____/_____; _____/_____; _____/_____; _____/_____; _____/_____

Sampled Depth Interval: _____ to _____ feet (gs or toc) Sampling Method: bailer

Field Data (in well or in line): SAMPLE TIME: 13:55

Depth	*pH*	*Sp. Cond.*	*Temp*	*DO*	*Eh*	*Clarity*
pg.1	7.23	688	17.9	N/A	N/A	>1000

Sampler's Signature: _____ Was Sample collected w/in 2 hrs of End of Purge? (YES) NO

LABORATORY INFORMATION

Laboratory: Eurofins Turnaround Time (TAT): Std Number of Containers: 1

Date Shipped or Delivered: 10-11-19 Method of Delivery to Laboratory: Fed Ex

Analyses Requested:

- ☐ PA DEP Unleaded Gasoline
- ☐ PA DEP Leaded Gasoline
- ☐ PA DEP Diesel/Heating Oil
- ☐ PA DEP Used Motor Oil
- ☐ AACM Pesticides
- ☐ Nitrate
- ☐ Nitrite
- ☐ Ammonia
- ☐ PP VOCs
- ☐ PP SVOCs
- ☐ PP Metals
- ☐ PP Pest/PCBs
- ☐ TCL VOCs
- ☐ RCRA Metals
- ☐ TCLP Metals
- ☐ TCLP VOCs
- ☐ Attached Sheet
- ☐ 124&135 TMB
- ☐ N&Sec Butbz

OTHER: VOA's by SW846 8260C

ADDITIONAL NOTES

GROUNDWATER SCIENCES CORPORATION — *Sampling Field Data Sheet*

GENERAL INFORMATION

Sample Location/Well ID: 911-21 / mw1 Site: Broadway

(Manhole)/Standpipe/Other (circle one) If Other Explain: _____

Physical Well/Location Condition: parking lot

PURGING

Date: 10-10-19 Personnel: KD Air Temp: 58 Skies: clr Wnd Spd/Drctn: calm

TD: 39.17 SWL: 8.09 TD – SWL 31.08 Required Purge Vol: (TD – SWL x C F (below)) 15.2 (gal)

Method: bailer Start Time: 12:53 Stop Time: 13:08 Volume Purged: 15.5 (gal)

Water Level at End of Purge (WLEP): 8.70 Total Purge Time: 15 (minutes)

Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] = ~~7.2~~ 11.55

Conversion Factors (well diameter – gallons per foot of water): *(¼ d^2 π) x 7.4805 = gal/ft (d = well diameter in feet)*

1 Vol: ½" – 0.01; ¾" – 0.023; 1" – 0.041; 1 ¼" – 0.063; 1 ½" – 0.092; 2" – 0.163; 3" – 0.367; 4" – 0.653; 6" – 1.47; 8" – 2.61; 10" – 4.08; 12" – 5.88

3 Vol: ½" – 0.03; ¾" – 0.069; 1" – 0.123; 1 ¼" – 0.189; 1 ½" – 0.276; 2" – 0.489; 3" – 1.101; 4" – 1.959; 6" – 4.41; 8" – 7.83; 10" – 12.24; 12" – 17.64

SAMPLING

Sample ID: B 9 1 1 2 1 1 5 1 0 1 0

Sample Type: (Groundwater) Surface water Other _____ (circle one)

Date: 10-10-19 Personnel: KD Air Temp: 58 Skies: clr Wnd Spd/Drctn: N/A

WL Recovery (WL/time): ____/____; ____/____; ____/____; ____/____; ____/____

Sampled Depth Interval: _____ to _____ feet (gs or toc) Sampling Method: bailer

Field Data (in well or in line): START TIME: 13:20 STOP TIME: 13:23

Depth	pH	Sp. Cond.	Temp	DO	Eh	Clarity
pc.1	6.95	~~614~~ 479.8	18.3	N/A	N/A	7000

Sampler's Signature: _____ **Was this sample collected w/in 2 hrs of end of purge?** (Yes) No

LABORATORY INFORMATION

Laboratory: Eurofins Turnaround Time (TAT): Std Number of Containers: 1

Date Shipped or Delivered: 10-10-19 Method of Delivery to Laboratory: FedEx

Analyses Requested: VOCs by SW846 8260C

ADDITIONAL NOTES

GROUNDWATER SCIENCES CORPORATION — *Sampling Field Data Sheet*

GENERAL INFORMATION

Sample Location/Well ID: 9H-19 Site: Broadway

Manhole/Standpipe/Other (circle one) If Other Explain:

Physical Well/Location Condition: Parking Lot

PURGING

Date: 10-10-19 Personnel: KO Air Temp: 60 Skies: clr Wnd Spd/Drctn: N/A

TD: 34.24 SWL: 8.73 TD – SWL 25.51 Required Purge Vol: (TD – SWL x C F (below)) 12.5 (gal)

Method: bailer Start Time: 13:57 Stop Time: 14:08 Volume Purged: 12.5 (gal)

Water Level at End of Purge (WLEP): 9.82 Total Purge Time: 11 (minutes)

Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] = 11.28

Conversion Factors (well diameter – gallons per foot of water): *(¼ d^2 π) x 7.4805 = gal/ft (d = well diameter in feet)*

1 Vol: ½" – 0.01; ¾" – 0.023; 1" – 0.041; 1 ¼" – 0.063; 1 ½" – 0.092; 2" – 0.163; 3" – 0.367; 4" – 0.653; 6" – 1.47; 8" – 2.61; 10" – 4.08; 12" – 5.88

3 Vol: ½" – 0.03; ¾" – 0.069; 1" – 0.123; 1 ¼" – 0.189; 1 ½" – 0.276; 2" – 0.489; 3" – 1.101; 4" – 1.959; 6" – 4.41; 8" – 7.83; 10" – 12.24; 12" – 17.64

SAMPLING

Sample ID: B | 9 | 1 | 1 | 1 | 9 | 1 | 9 | 1 | 0 | 1 | 0

Sample Type: (circle one) Groundwater / Surface water / Other

Date: 10-10-19 Personnel: KO Air Temp: 60 Skies: Clr Wnd Spd/Drctn: N/A

WL Recovery (WL/time): ____/____; ____/____; ____/____; ____/____; ____/____

Sampled Depth Interval: ____ to ____ feet (gs or toc) Sampling Method: bailer

Field Data (in well or in line): START TIME: 14:10 STOP TIME: 14:12

Depth	pH	Sp. Cond.	Temp	DO	Eh	Clarity
pail	6.48	1047	16.4	N/A	N/A	7100

Sampler's Signature: Kelly O **Was this sample collected w/in 2 hrs of end of purge?** (Yes) No

LABORATORY INFORMATION

Laboratory: Eurofins Turnaround Time (TAT): Std Number of Containers: 1

Date Shipped or Delivered: 10/10/19 Method of Delivery to Laboratory: ~~UPS~~ FedEx

Analyses Requested: VOCs by SW8468260C - same for all

ADDITIONAL NOTES

GROUNDWATER SCIENCES CORPORATION — *Sampling Field Data Sheet*

GENERAL INFORMATION

Sample Location/Well ID: 91-05 Site: Broadway

Manhole/Standpipe/Other (circle one) If Other Explain: _____

Physical Well/Location Condition: parking lot

PURGING

Date: 10-10-19 Personnel: KD Air Temp: 55 Skies: Clr Wnd Spd/Drctn: N/A

TD: 17.58 SWL: 9.68 TD – SWL 7.90 Required Purge Vol: (TD – SWL x C F (below)) 38 (gal)

Method: bailer Start Time: 14:14 Stop Time: 14:19 Volume Purged: 4.0 (gal)

Water Level at End of Purge (WLEP): 9.80 Total Purge Time: 5 (minutes)

Water Level Required for 90% Recovery: TD - [(TD - SWL) x 0.90] = 10.47

Conversion Factors (well diameter – gallons per foot of water): *(¼ d^2 π) x 7.4805 = gal/ft (d = well diameter in feet)*

1 Vol: ½" – 0.01; ¾" – 0.023; 1" – 0.041; 1 ¼" – 0.063; 1 ½" – 0.092; 2" – 0.163; 3" – 0.367; 4" – 0.653; 6" – 1.47; 8" – 2.61; 10" – 4.08; 12" – 5.88

3 Vol: ½" – 0.03; ¾" – 0.069; 1" – 0.123; 1 ¼" – 0.189; 1 ½" – 0.276; 2" – 0.489; 3" – 1.101; 4" – 1.959; 6" – 4.41; 8" – 7.83; 10" – 12.24; 12" – 17.64

SAMPLING

Sample ID: BG110519101O

Sample Type: (Groundwater) Surface water Other _____ (circle one)

Date 10-10-19 Personnel: KD Air Temp: 59 Skies: Clr Wnd Spd/Drctn: N/A

WL Recovery (WL/time): ____/____; ____/____; ____/____; ____/____; ____/____

Sampled Depth Interval: _____ to _____ feet (gs or toc) Sampling Method: bailer

Field Data (in well or in line): START TIME: 14:23 STOP TIME: 14:25

Depth	pH	Sp. Cond.	Temp	DO	Eh	Clarity
pail	7.31	723	16.4	N/A	N/A	Good

Sampler's Signature: _____ **Was this sample collected w/in 2 hrs of end of purge?** (Yes) No

LABORATORY INFORMATION

Laboratory: Eurofins Turnaround Time (TAT): std Number of Containers: 1

Date Shipped or Delivered: 10-10-19 Method of Delivery to Laboratory: Fed Ex

Analyses Requested: VOCs by SW846 8260C

ADDITIONAL NOTES

ATTACHMENT B

Analytical Laboratory Reports
Eurofins Lancaster Laboratories Environmental

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

IBM c/o Groundwater Science Co
2601 Market Place St.
Suite 310
Harrisburg PA 17110-9340

Report Date: November 04, 2019 14:46

Project: Broadway - Owego

Account #: 06911
Group Number: 2069105
SDG: OWG99
PO Number: CAR09003.03
State of Sample Origin: NY

Electronic Copy To IBMc/o Groundwater Sciences Co Attn: Charles Rine

Respectfully Submitted,

Nicole L. Maljovec
Manager

(717) 556-7259

To view our laboratory's current scopes of accreditation please go to https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/ . Historical copies may be requested through your project manager.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
B91121191010 Grab Groundwater	10/10/2019 13:20	1174555
BMWX1191010 Grab Groundwater	10/10/2019 13:20	1174556
B91110191010 Grab Groundwater	10/10/2019 13:40	1174557
B91118191010 Grab Groundwater	10/10/2019 13:50	1174558
B91119191010 Grab Groundwater	10/10/2019 14:10	1174559
B91105191010 Grab Groundwater	10/10/2019 14:23	1174560
Trip Blank Water	10/10/2019	1174561

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **B91121191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:20
SDG#: OWG99-01

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174555
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	0.9	5.0	1
11996	Benzene	71-43-2	N.D.	0.05	0.5	1
11996	n-Butylbenzene	104-51-8	N.D.	0.05	0.5	1
11996	sec-Butylbenzene	135-98-8	N.D.	0.06	0.5	1
11996	tert-Butylbenzene	98-06-6	N.D.	0.07	0.5	1
11996	Carbon Tetrachloride	56-23-5	N.D.	0.07	0.5	1
11996	Chlorobenzene	108-90-7	N.D.	0.06	0.5	1
11996	Chloroethane	75-00-3	N.D.	0.07	0.5	1
11996	Chloroform	67-66-3	N.D.	0.09	0.5	1
11996	1,2-Dichlorobenzene	95-50-1	N.D.	0.06	0.5	1
11996	1,3-Dichlorobenzene	541-73-1	N.D.	0.06	0.5	1
11996	1,4-Dichlorobenzene	106-46-7	N.D.	0.07	0.5	1
11996	Dichlorodifluoromethane	75-71-8	N.D.	0.05	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.7	0.07	0.5	1
11996	1,2-Dichloroethane	107-06-2	N.D.	0.05	0.5	1
11996	1,1-Dichloroethene	75-35-4	N.D.	0.06	0.5	1
11996	cis-1,2-Dichloroethene	156-59-2	0.8	0.05	0.5	1
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	0.06	0.5	1
11996	1,4-Dioxane	123-91-1	N.D.	20	100	1
11996	Ethylbenzene	100-41-4	N.D.	0.06	0.5	1
11996	Freon 113	76-13-1	N.D.	0.06	0.5	1
11996	Freon 123a	354-23-4	N.D.	0.06	0.5	1
11996	Methyl Ethyl Ketone	78-93-3	N.D.	0.6	5.0	1
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.05	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.07	0.5	1
11996	n-Propylbenzene	103-65-1	N.D.	0.06	0.5	1
11996	Tetrachloroethene	127-18-4	0.09 J	0.06	0.5	1
11996	Toluene	108-88-3	N.D.	0.07	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	3.3	0.06	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	N.D.	0.06	0.5	1
11996	Trichloroethene	79-01-6	2.4	0.06	0.5	1
11996	Trichlorofluoromethane	75-69-4	N.D.	0.05	0.5	1
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.06	0.5	1
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.06	0.5	1
11996	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
11996	m+p-Xylene	179601-23-1	N.D.	0.1	0.5	1
11996	o-Xylene	95-47-6	N.D.	0.05	0.5	1

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **B91121191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:20
SDG#: OWG99-01

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174555
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/21/2019 23:41	Miranda Campbell	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/21/2019 23:40	Miranda Campbell	1

*=This limit was used in the evaluation of the final result

Sample Description: **BMWX1191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:20
SDG#: OWG99-02

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174556
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	0.9	5.0	1
11996	Benzene	71-43-2	N.D.	0.05	0.5	1
11996	n-Butylbenzene	104-51-8	N.D.	0.05	0.5	1
11996	sec-Butylbenzene	135-98-8	N.D.	0.06	0.5	1
11996	tert-Butylbenzene	98-06-6	N.D.	0.07	0.5	1
11996	Carbon Tetrachloride	56-23-5	N.D.	0.07	0.5	1
11996	Chlorobenzene	108-90-7	N.D.	0.06	0.5	1
11996	Chloroethane	75-00-3	N.D.	0.07	0.5	1
11996	Chloroform	67-66-3	N.D.	0.09	0.5	1
11996	1,2-Dichlorobenzene	95-50-1	N.D.	0.06	0.5	1
11996	1,3-Dichlorobenzene	541-73-1	N.D.	0.06	0.5	1
11996	1,4-Dichlorobenzene	106-46-7	N.D.	0.07	0.5	1
11996	Dichlorodifluoromethane	75-71-8	N.D.	0.05	0.5	1
11996	1,1-Dichloroethane	75-34-3	0.7	0.07	0.5	1
11996	1,2-Dichloroethane	107-06-2	N.D.	0.05	0.5	1
11996	1,1-Dichloroethene	75-35-4	N.D.	0.06	0.5	1
11996	cis-1,2-Dichloroethene	156-59-2	0.7	0.05	0.5	1
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	0.06	0.5	1
11996	1,4-Dioxane	123-91-1	N.D.	20	100	1
11996	Ethylbenzene	100-41-4	N.D.	0.06	0.5	1
11996	Freon 113	76-13-1	N.D.	0.06	0.5	1
11996	Freon 123a	354-23-4	N.D.	0.06	0.5	1
11996	Methyl Ethyl Ketone	78-93-3	N.D.	0.6	5.0	1
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.05	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.07	0.5	1
11996	n-Propylbenzene	103-65-1	N.D.	0.06	0.5	1
11996	Tetrachloroethene	127-18-4	0.08 J	0.06	0.5	1
11996	Toluene	108-88-3	N.D.	0.07	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	3.0	0.06	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	N.D.	0.06	0.5	1
11996	Trichloroethene	79-01-6	2.2	0.06	0.5	1
11996	Trichlorofluoromethane	75-69-4	N.D.	0.05	0.5	1
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.06	0.5	1
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.06	0.5	1
11996	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
11996	m+p-Xylene	179601-23-1	N.D.	0.1	0.5	1
11996	o-Xylene	95-47-6	N.D.	0.05	0.5	1

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **BMWX1191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:20
SDG#: OWG99-02

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174556
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 00:02	Miranda Campbell	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/22/2019 00:01	Miranda Campbell	1

*=This limit was used in the evaluation of the final result

Sample Description: **B91110191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:40
SDG#: OWG99-03

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174557
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	4.5	25	5
11996	Benzene	71-43-2	N.D.	0.3	2.5	5
11996	n-Butylbenzene	104-51-8	N.D.	0.3	2.5	5
11996	sec-Butylbenzene	135-98-8	N.D.	0.3	2.5	5
11996	tert-Butylbenzene	98-06-6	N.D.	0.4	2.5	5
11996	Carbon Tetrachloride	56-23-5	N.D.	0.4	2.5	5
11996	Chlorobenzene	108-90-7	N.D.	0.3	2.5	5
11996	Chloroethane	75-00-3	N.D.	0.4	2.5	5
11996	Chloroform	67-66-3	N.D.	0.5	2.5	5
11996	1,2-Dichlorobenzene	95-50-1	N.D.	0.3	2.5	5
11996	1,3-Dichlorobenzene	541-73-1	N.D.	0.3	2.5	5
11996	1,4-Dichlorobenzene	106-46-7	N.D.	0.4	2.5	5
11996	Dichlorodifluoromethane	75-71-8	N.D.	0.3	2.5	5
11996	1,1-Dichloroethane	75-34-3	N.D.	0.4	2.5	5
11996	1,2-Dichloroethane	107-06-2	0.4 J	0.3	2.5	5
11996	1,1-Dichloroethene	75-35-4	N.D.	0.3	2.5	5
11996	cis-1,2-Dichloroethene	156-59-2	2.9	0.3	2.5	5
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	0.3	2.5	5
11996	1,4-Dioxane	123-91-1	N.D.	100	500	5
11996	Ethylbenzene	100-41-4	N.D.	0.3	2.5	5
11996	Freon 113	76-13-1	N.D.	0.3	2.5	5
11996	Freon 123a	354-23-4	N.D.	0.3	2.5	5
11996	Methyl Ethyl Ketone	78-93-3	N.D.	3.0	25	5
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.3	2.5	5
11996	Methylene Chloride	75-09-2	N.D.	0.4	2.5	5
11996	n-Propylbenzene	103-65-1	N.D.	0.3	2.5	5
11996	Tetrachloroethene	127-18-4	0.4 J	0.3	2.5	5
11996	Toluene	108-88-3	N.D.	0.4	2.5	5
11996	1,1,1-Trichloroethane	71-55-6	1.1 J	0.3	2.5	5
11996	1,1,2-Trichloroethane	79-00-5	N.D.	0.3	2.5	5
11996	Trichloroethene	79-01-6	210	3.0	25	50
11996	Trichlorofluoromethane	75-69-4	N.D.	0.3	2.5	5
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.3	2.5	5
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.3	2.5	5
11996	Vinyl Chloride	75-01-4	N.D.	0.5	2.5	5
11996	m+p-Xylene	179601-23-1	N.D.	0.5	2.5	5
11996	o-Xylene	95-47-6	N.D.	0.3	2.5	5

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **B91110191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:40
SDG#: OWG99-03

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174557
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 05:19	Miranda Campbell	5
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 05:41	Miranda Campbell	50
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/22/2019 05:18	Miranda Campbell	5
01163	GC/MS VOA Water Prep	SW-846 5030C	2	I192943AA	10/22/2019 05:40	Miranda Campbell	50

*=This limit was used in the evaluation of the final result

Sample Description: **B91118191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:50
SDG#: OWG99-04

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174558
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	4.5	25	5
11996	Benzene	71-43-2	N.D.	0.3	2.5	5
11996	n-Butylbenzene	104-51-8	N.D.	0.3	2.5	5
11996	sec-Butylbenzene	135-98-8	N.D.	0.3	2.5	5
11996	tert-Butylbenzene	98-06-6	N.D.	0.4	2.5	5
11996	Carbon Tetrachloride	56-23-5	N.D.	0.4	2.5	5
11996	Chlorobenzene	108-90-7	N.D.	0.3	2.5	5
11996	Chloroethane	75-00-3	N.D.	0.4	2.5	5
11996	Chloroform	67-66-3	N.D.	0.5	2.5	5
11996	1,2-Dichlorobenzene	95-50-1	N.D.	0.3	2.5	5
11996	1,3-Dichlorobenzene	541-73-1	N.D.	0.3	2.5	5
11996	1,4-Dichlorobenzene	106-46-7	N.D.	0.4	2.5	5
11996	Dichlorodifluoromethane	75-71-8	N.D.	0.3	2.5	5
11996	1,1-Dichloroethane	75-34-3	N.D.	0.4	2.5	5
11996	1,2-Dichloroethane	107-06-2	0.3 J	0.3	2.5	5
11996	1,1-Dichloroethene	75-35-4	0.4 J	0.3	2.5	5
11996	cis-1,2-Dichloroethene	156-59-2	9.3	0.3	2.5	5
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	0.3	2.5	5
11996	1,4-Dioxane	123-91-1	N.D.	100	500	5
11996	Ethylbenzene	100-41-4	N.D.	0.3	2.5	5
11996	Freon 113	76-13-1	N.D.	0.3	2.5	5
11996	Freon 123a	354-23-4	N.D.	0.3	2.5	5
11996	Methyl Ethyl Ketone	78-93-3	N.D.	3.0	25	5
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.3	2.5	5
11996	Methylene Chloride	75-09-2	N.D.	0.4	2.5	5
11996	n-Propylbenzene	103-65-1	N.D.	0.3	2.5	5
11996	Tetrachloroethene	127-18-4	N.D.	0.3	2.5	5
11996	Toluene	108-88-3	N.D.	0.4	2.5	5
11996	1,1,1-Trichloroethane	71-55-6	0.9 J	0.3	2.5	5
11996	1,1,2-Trichloroethane	79-00-5	N.D.	0.3	2.5	5
11996	Trichloroethene	79-01-6	210	3.0	25	50
11996	Trichlorofluoromethane	75-69-4	N.D.	0.3	2.5	5
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.3	2.5	5
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.3	2.5	5
11996	Vinyl Chloride	75-01-4	N.D.	0.5	2.5	5
11996	m+p-Xylene	179601-23-1	N.D.	0.5	2.5	5
11996	o-Xylene	95-47-6	N.D.	0.3	2.5	5

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **B91118191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 13:50
SDG#: OWG99-04

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174558
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 06:02	Miranda Campbell	5
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 06:23	Miranda Campbell	50
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/22/2019 06:01	Miranda Campbell	5
01163	GC/MS VOA Water Prep	SW-846 5030C	2	I192943AA	10/22/2019 06:22	Miranda Campbell	50

*=This limit was used in the evaluation of the final result

Sample Description: **B91119191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 14:10
SDG#: OWG99-05

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174559
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	23	130	25
11996	Benzene	71-43-2	N.D.	1.3	13	25
11996	n-Butylbenzene	104-51-8	N.D.	1.3	13	25
11996	sec-Butylbenzene	135-98-8	N.D.	1.5	13	25
11996	tert-Butylbenzene	98-06-6	N.D.	1.8	13	25
11996	Carbon Tetrachloride	56-23-5	N.D.	1.8	13	25
11996	Chlorobenzene	108-90-7	N.D.	1.5	13	25
11996	Chloroethane	75-00-3	N.D.	1.8	13	25
11996	Chloroform	67-66-3	N.D.	2.3	13	25
11996	1,2-Dichlorobenzene	95-50-1	N.D.	1.5	13	25
11996	1,3-Dichlorobenzene	541-73-1	N.D.	1.5	13	25
11996	1,4-Dichlorobenzene	106-46-7	N.D.	1.8	13	25
11996	Dichlorodifluoromethane	75-71-8	N.D.	1.3	13	25
11996	1,1-Dichloroethane	75-34-3	7.5 J	1.8	13	25
11996	1,2-Dichloroethane	107-06-2	N.D.	1.3	13	25
11996	1,1-Dichloroethene	75-35-4	22	1.5	13	25
11996	cis-1,2-Dichloroethene	156-59-2	100	1.3	13	25
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	1.5	13	25
11996	1,4-Dioxane	123-91-1	N.D.	500	2,500	25
11996	Ethylbenzene	100-41-4	N.D.	1.5	13	25
11996	Freon 113	76-13-1	N.D.	1.5	13	25
11996	Freon 123a	354-23-4	N.D.	1.5	13	25
11996	Methyl Ethyl Ketone	78-93-3	N.D.	15	130	25
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	1.3	13	25
11996	Methylene Chloride	75-09-2	N.D.	1.8	13	25
11996	n-Propylbenzene	103-65-1	N.D.	1.5	13	25
11996	Tetrachloroethene	127-18-4	2.7 J	1.5	13	25
11996	Toluene	108-88-3	N.D.	1.8	13	25
11996	1,1,1-Trichloroethane	71-55-6	74	1.5	13	25
11996	1,1,2-Trichloroethane	79-00-5	N.D.	1.5	13	25
11996	Trichloroethene	79-01-6	3,300	15	130	250
11996	Trichlorofluoromethane	75-69-4	N.D.	1.3	13	25
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.5	13	25
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.5	13	25
11996	Vinyl Chloride	75-01-4	N.D.	2.5	13	25
11996	m+p-Xylene	179601-23-1	N.D.	2.5	13	25
11996	o-Xylene	95-47-6	N.D.	1.3	13	25

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **B91119191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 14:10
SDG#: OWG99-05

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174559
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 06:45	Miranda Campbell	25
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 07:06	Miranda Campbell	250
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/22/2019 06:44	Miranda Campbell	25
01163	GC/MS VOA Water Prep	SW-846 5030C	2	I192943AA	10/22/2019 07:05	Miranda Campbell	250

*=This limit was used in the evaluation of the final result

Sample Description: **B91105191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 14:23
SDG#: OWG99-06

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174560
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	4.5	25	5
11996	Benzene	71-43-2	N.D.	0.3	2.5	5
11996	n-Butylbenzene	104-51-8	N.D.	0.3	2.5	5
11996	sec-Butylbenzene	135-98-8	N.D.	0.3	2.5	5
11996	tert-Butylbenzene	98-06-6	N.D.	0.4	2.5	5
11996	Carbon Tetrachloride	56-23-5	N.D.	0.4	2.5	5
11996	Chlorobenzene	108-90-7	N.D.	0.3	2.5	5
11996	Chloroethane	75-00-3	N.D.	0.4	2.5	5
11996	Chloroform	67-66-3	N.D.	0.5	2.5	5
11996	1,2-Dichlorobenzene	95-50-1	N.D.	0.3	2.5	5
11996	1,3-Dichlorobenzene	541-73-1	N.D.	0.3	2.5	5
11996	1,4-Dichlorobenzene	106-46-7	N.D.	0.4	2.5	5
11996	Dichlorodifluoromethane	75-71-8	N.D.	0.3	2.5	5
11996	1,1-Dichloroethane	75-34-3	N.D.	0.4	2.5	5
11996	1,2-Dichloroethane	107-06-2	N.D.	0.3	2.5	5
11996	1,1-Dichloroethene	75-35-4	N.D.	0.3	2.5	5
11996	cis-1,2-Dichloroethene	156-59-2	6.3	0.3	2.5	5
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	0.3	2.5	5
11996	1,4-Dioxane	123-91-1	N.D.	100	500	5
11996	Ethylbenzene	100-41-4	N.D.	0.3	2.5	5
11996	Freon 113	76-13-1	N.D.	0.3	2.5	5
11996	Freon 123a	354-23-4	N.D.	0.3	2.5	5
11996	Methyl Ethyl Ketone	78-93-3	N.D.	3.0	25	5
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.3	2.5	5
11996	Methylene Chloride	75-09-2	N.D.	0.4	2.5	5
11996	n-Propylbenzene	103-65-1	N.D.	0.3	2.5	5
11996	Tetrachloroethene	127-18-4	0.6 J	0.3	2.5	5
11996	Toluene	108-88-3	N.D.	0.4	2.5	5
11996	1,1,1-Trichloroethane	71-55-6	1.6 J	0.3	2.5	5
11996	1,1,2-Trichloroethane	79-00-5	N.D.	0.3	2.5	5
11996	Trichloroethene	79-01-6	380	3.0	25	50
11996	Trichlorofluoromethane	75-69-4	N.D.	0.3	2.5	5
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.3	2.5	5
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.3	2.5	5
11996	Vinyl Chloride	75-01-4	N.D.	0.5	2.5	5
11996	m+p-Xylene	179601-23-1	N.D.	0.5	2.5	5
11996	o-Xylene	95-47-6	N.D.	0.3	2.5	5

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **B91105191010 Grab Groundwater Broadway Owego**

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019 14:23
SDG#: OWG99-06

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174560
ELLE Group #: 2069105
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 07:27	Miranda Campbell	50
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/22/2019 07:48	Miranda Campbell	5
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/22/2019 07:26	Miranda Campbell	50
01163	GC/MS VOA Water Prep	SW-846 5030C	2	I192943AA	10/22/2019 07:47	Miranda Campbell	5

*=This limit was used in the evaluation of the final result

Sample Description: **Trip Blank Water**
Broadway Owego

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019
SDG#: OWG99-07TB

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174561
ELLE Group #: 2069105
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260C 25mL purge**		**ug/l**	**ug/l**	**ug/l**	
11996	Acetone	67-64-1	N.D.	0.9	5.0	1
11996	Benzene	71-43-2	N.D.	0.05	0.5	1
11996	n-Butylbenzene	104-51-8	N.D.	0.05	0.5	1
11996	sec-Butylbenzene	135-98-8	N.D.	0.06	0.5	1
11996	tert-Butylbenzene	98-06-6	N.D.	0.07	0.5	1
11996	Carbon Tetrachloride	56-23-5	N.D.	0.07	0.5	1
11996	Chlorobenzene	108-90-7	N.D.	0.06	0.5	1
11996	Chloroethane	75-00-3	N.D.	0.07	0.5	1
11996	Chloroform	67-66-3	N.D.	0.09	0.5	1
11996	1,2-Dichlorobenzene	95-50-1	N.D.	0.06	0.5	1
11996	1,3-Dichlorobenzene	541-73-1	N.D.	0.06	0.5	1
11996	1,4-Dichlorobenzene	106-46-7	N.D.	0.07	0.5	1
11996	Dichlorodifluoromethane	75-71-8	N.D.	0.05	0.5	1
11996	1,1-Dichloroethane	75-34-3	N.D.	0.07	0.5	1
11996	1,2-Dichloroethane	107-06-2	N.D.	0.05	0.5	1
11996	1,1-Dichloroethene	75-35-4	N.D.	0.06	0.5	1
11996	cis-1,2-Dichloroethene	156-59-2	N.D.	0.05	0.5	1
11996	trans-1,2-Dichloroethene	156-60-5	N.D.	0.06	0.5	1
11996	1,4-Dioxane	123-91-1	N.D.	20	100	1
11996	Ethylbenzene	100-41-4	N.D.	0.06	0.5	1
11996	Freon 113	76-13-1	N.D.	0.06	0.5	1
11996	Freon 123a	354-23-4	N.D.	0.06	0.5	1
11996	Methyl Ethyl Ketone	78-93-3	N.D.	0.6	5.0	1
11996	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.05	0.5	1
11996	Methylene Chloride	75-09-2	N.D.	0.07	0.5	1
11996	n-Propylbenzene	103-65-1	N.D.	0.06	0.5	1
11996	Tetrachloroethene	127-18-4	N.D.	0.06	0.5	1
11996	Toluene	108-88-3	N.D.	0.07	0.5	1
11996	1,1,1-Trichloroethane	71-55-6	N.D.	0.06	0.5	1
11996	1,1,2-Trichloroethane	79-00-5	N.D.	0.06	0.5	1
11996	Trichloroethene	79-01-6	N.D.	0.06	0.5	1
11996	Trichlorofluoromethane	75-69-4	N.D.	0.05	0.5	1
11996	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.06	0.5	1
11996	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.06	0.5	1
11996	Vinyl Chloride	75-01-4	N.D.	0.1	0.5	1
11996	m+p-Xylene	179601-23-1	N.D.	0.1	0.5	1
11996	o-Xylene	95-47-6	N.D.	0.05	0.5	1

A Report Limit Verification (RLV) standard is analyzed to confirm sensitivity of the instrument for samples with non-detect analytes associated with a continuing calibration verification standard exhibiting low response (outside the 20%D criteria). The RLV standard shows adequate sensitivity at

*=This limit was used in the evaluation of the final result

Sample Description: **Trip Blank Water**
Broadway Owego

Project Name: **Broadway - Owego**

Submittal Date/Time: 10/11/2019 11:07
Collection Date/Time: 10/10/2019
SDG#: OWG99-07TB

IBM c/o Groundwater Science Co
ELLE Sample #: GW 1174561
ELLE Group #: 2069105
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor

or below the reporting limit.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	VOCs- 25ml Water by 8260C/D	SW-846 8260C 25mL purge	1	I192943AA	10/21/2019 22:37	Miranda Campbell	1
01163	GC/MS VOA Water Prep	SW-846 5030C	1	I192943AA	10/21/2019 22:36	Miranda Campbell	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: IBM c/o Groundwater Science Co
Group Number: 2069105
Reported: 11/04/2019 14:46

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ug/l	ug/l	ug/l
Batch number: I192943AA	Sample number(s): 1174555-1174561		
Acetone	N.D.	0.9	5.0
Benzene	N.D.	0.05	0.5
n-Butylbenzene	N.D.	0.05	0.5
sec-Butylbenzene	N.D.	0.06	0.5
tert-Butylbenzene	N.D.	0.07	0.5
Carbon Tetrachloride	N.D.	0.07	0.5
Chlorobenzene	N.D.	0.06	0.5
Chloroethane	N.D.	0.07	0.5
Chloroform	N.D.	0.09	0.5
1,2-Dichlorobenzene	N.D.	0.06	0.5
1,3-Dichlorobenzene	N.D.	0.06	0.5
1,4-Dichlorobenzene	N.D.	0.07	0.5
Dichlorodifluoromethane	N.D.	0.05	0.5
1,1-Dichloroethane	N.D.	0.07	0.5
1,2-Dichloroethane	N.D.	0.05	0.5
1,1-Dichloroethene	N.D.	0.06	0.5
cis-1,2-Dichloroethene	N.D.	0.05	0.5
trans-1,2-Dichloroethene	N.D.	0.06	0.5
1,4-Dioxane	N.D.	20	100
Ethylbenzene	N.D.	0.06	0.5
Freon 113	N.D.	0.06	0.5
Freon 123a	N.D.	0.06	0.5
Methyl Ethyl Ketone	N.D.	0.6	5.0
Methyl Tertiary Butyl Ether	N.D.	0.05	0.5
Methylene Chloride	N.D.	0.07	0.5
n-Propylbenzene	N.D.	0.06	0.5
Tetrachloroethene	N.D.	0.06	0.5
Toluene	N.D.	0.07	0.5
1,1,1-Trichloroethane	N.D.	0.06	0.5
1,1,2-Trichloroethane	N.D.	0.06	0.5
Trichloroethene	N.D.	0.06	0.5
Trichlorofluoromethane	N.D.	0.05	0.5
1,2,4-Trimethylbenzene	N.D.	0.06	0.5
1,3,5-Trimethylbenzene	N.D.	0.06	0.5
Vinyl Chloride	N.D.	0.1	0.5
m+p-Xylene	N.D.	0.1	0.5
o-Xylene	N.D.	0.05	0.5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: IBM c/o Groundwater Science Co
Reported: 11/04/2019 14:46

Group Number: 2069105

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: I192943AA	Sample number(s): 1174555-1174561								
Acetone	37.5	36.58	37.5	37.55	98	100	60-146	3	30
Benzene	5.00	5.21	5.00	5.27	104	105	80-120	1	30
n-Butylbenzene	5.00	5.06	5.00	5.14	101	103	74-123	2	30
sec-Butylbenzene	5.00	5.12	5.00	5.20	102	104	80-120	2	30
tert-Butylbenzene	5.00	5.13	5.00	5.18	103	104	79-120	1	30
Carbon Tetrachloride	5.00	5.40	5.00	5.41	108	108	64-141	0	30
Chlorobenzene	5.00	5.37	5.00	5.36	107	107	80-120	0	30
Chloroethane	5.00	4.12	5.00	4.12	82	82	63-120	0	30
Chloroform	5.00	5.40	5.00	5.44	108	109	80-120	1	30
1,2-Dichlorobenzene	5.00	5.25	5.00	5.30	105	106	80-120	1	30
1,3-Dichlorobenzene	5.00	5.23	5.00	5.33	105	107	80-120	2	30
1,4-Dichlorobenzene	5.00	5.28	5.00	5.32	106	106	80-120	1	30
Dichlorodifluoromethane	5.00	3.41	5.00	3.49	68	70	43-123	3	30
1,1-Dichloroethane	5.00	5.26	5.00	5.30	105	106	74-120	1	30
1,2-Dichloroethane	5.00	5.72	5.00	5.71	114	114	69-122	0	30
1,1-Dichloroethene	5.00	5.18	5.00	5.28	104	106	80-131	2	30
cis-1,2-Dichloroethene	5.00	5.50	5.00	5.53	110	111	80-122	1	30
trans-1,2-Dichloroethene	5.00	5.14	5.00	5.18	103	104	80-122	1	30
1,4-Dioxane	125	138.67	125	144.65	111	116	65-169	4	30
Ethylbenzene	5.00	5.18	5.00	5.24	104	105	80-120	1	30
Freon 113	5.00	4.93	5.00	4.92	99	98	75-133	0	30
Freon 123a	5.00	5.00	5.00	5.03	100	101	80-123	1	30
Methyl Ethyl Ketone	37.5	36.87	37.5	38.25	98	102	59-141	4	30
Methyl Tertiary Butyl Ether	5.00	4.82	5.00	4.89	96	98	69-120	1	30
Methylene Chloride	5.00	5.21	5.00	5.30	104	106	80-120	2	30
n-Propylbenzene	5.00	5.19	5.00	5.31	104	106	74-122	2	30
Tetrachloroethene	5.00	5.41	5.00	5.48	108	110	80-120	1	30
Toluene	5.00	5.22	5.00	5.25	104	105	80-120	1	30
1,1,1-Trichloroethane	5.00	5.21	5.00	5.33	104	107	78-126	2	30
1,1,2-Trichloroethane	5.00	5.69	5.00	5.78	114	116	80-120	2	30
Trichloroethene	5.00	5.22	5.00	5.30	104	106	80-120	2	30
Trichlorofluoromethane	5.00	4.23	5.00	4.32	85	86	62-136	2	30
1,2,4-Trimethylbenzene	5.00	5.00	5.00	5.08	100	102	80-120	2	30
1,3,5-Trimethylbenzene	5.00	5.05	5.00	5.15	101	103	80-120	2	30
Vinyl Chloride	5.00	4.10	5.00	4.18	82	84	60-125	2	30
m+p-Xylene	10	10.49	10	10.63	105	106	80-120	1	30
o-Xylene	5.00	5.06	5.00	5.10	101	102	80-120	1	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: IBM c/o Groundwater Science Co
Group Number: 2069105
Reported: 11/04/2019 14:46

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 25ml Water by 8260C/D
Batch number: I192943AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
1174555	104	104	97	95
1174556	104	106	98	96
1174557	102	105	98	96
1174558	103	105	98	96
1174559	104	107	98	96
1174560	104	105	98	97
1174561	103	104	98	96
Blank	104	105	97	95
LCS	101	103	98	98
LCSD	101	102	99	98
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Acct. # 10911 For Eurofins Lancaster Laboratories Environmental use only Group # 20009105 Sample # 1745557 61

Instructions on reverse side correspond with circled numbers.

COC # 020598

Client Information

Client: IBM Acct #: 6911

Project Name/#: Broadway Owego SSOW #:

IBM PM: Project State: NY

P.O. #: Sampler: Kelly Devine

For Compliance: ☐ Yes ☐ No

Check One:

☐ Routine Lab GW ☐ Routine GTF O&M

☐ Non-Routine Investigation ☐ Non-Routine Upgrades/Installs

OU: _____ (Endicott Non-Routine only)

For Lab Use Only

SCR# 250209

Preservation Codes

H = HCl T = Thiosulfate

N = HNO_3 B = NaOH

S = H_2SO_4 O = Other

F = Field Filtered

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Matrix: Soil	Matrix: Sediment	Matrix: Potable Water	Matrix: Ground Water	Matrix: NPDES	Matrix: Surface Water	Matrix: Oil	Matrix: Air	Total # of Containers	Analyses Requested: Preservation and Filtration Codes #	VOCs by SW846 8260C
B911211910	10-7-19	13:30	X					GW					3		X
B MW X 1191010		13:20													
B911019101010		13:40													
B911181910 10		13:50													
B911191910 10		14:10													
B911052910 10		14:23													
Trip Blank													2		

Turnaround Time Requested (TAT) (please circle)

Standard Rush

(Rush TAT is subject to Lancaster Laboratories approval and surcharges.)

Date results are needed: _____

E-mail: CMinc@groundwaterscience.com

Is EDD Needed?: _____

Data Package Options (please circle if required)

Type I (Validation/NJ Reg) TX TRRP-13 NY ASP A

Type III (Reduced NJ) MA MCP NY ASP B

Type VI (Raw Data Only) CT RCP

SDG Complete? Yes No

Relinquished by	Date	Time	Received by	Date	Time
	10/7/19	4:30		10/7/19	12:00
	10-10-19	16:00			
				10/11/19	11:07

Site-specific QC (MS/MSD/Dup)? Yes (No)

(If yes, indicate QC sample and submit triplicate volume.)

Temperature upon receipt 3.0 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 262780

Group Number(s): 2069105

Client: IBM

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Date:	10/11/2019
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	NY		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	Total Trip Blank Qty:	2
Samples Chilled:	Yes	Trip Blank Type:	HCl
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Jessenia Colon Martinez

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	192099059	3.0	IR	Wet	Y	Loose/Bag	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

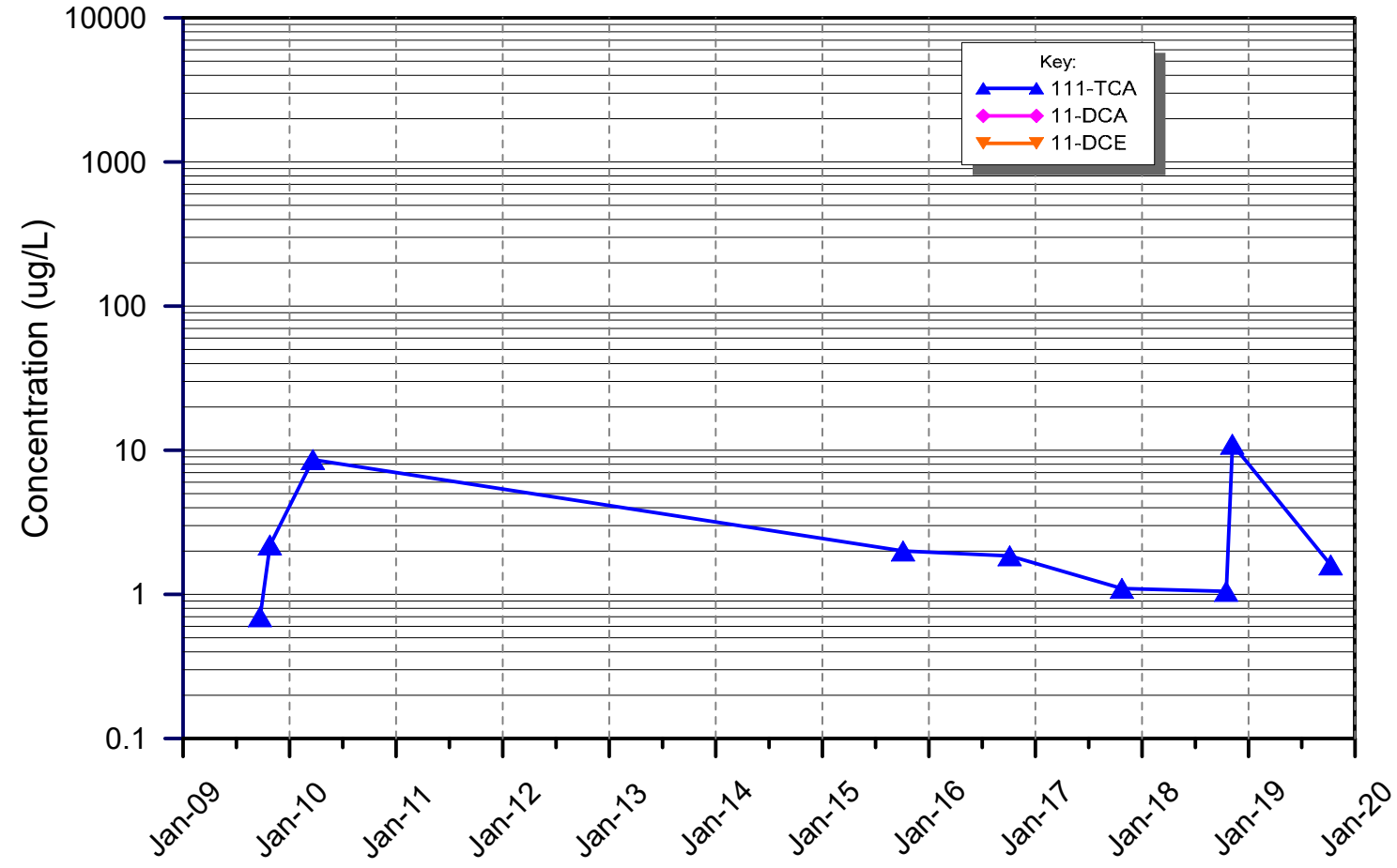
Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

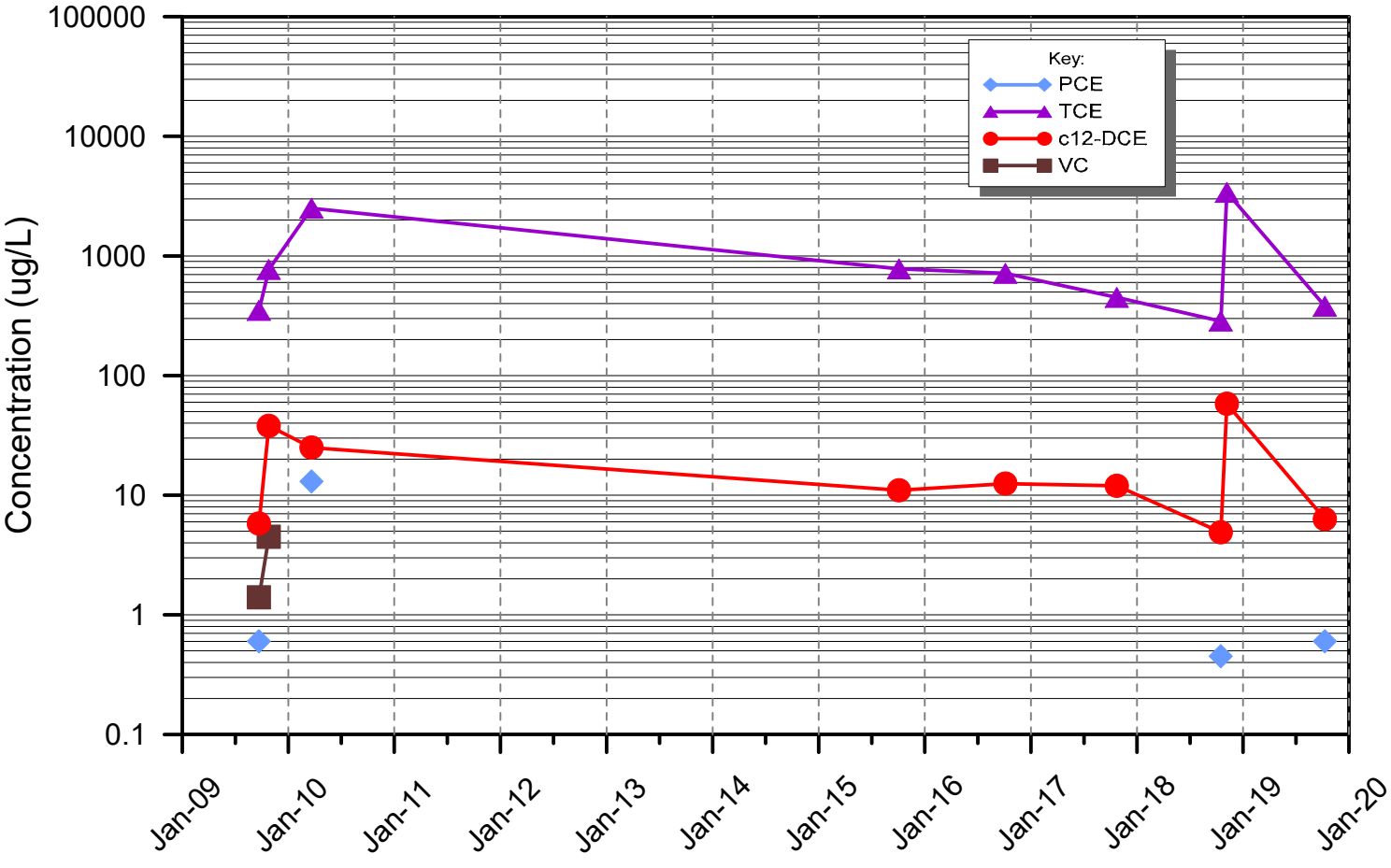
ATTACHMENT C

Graphs of Time versus VOC Concentrations

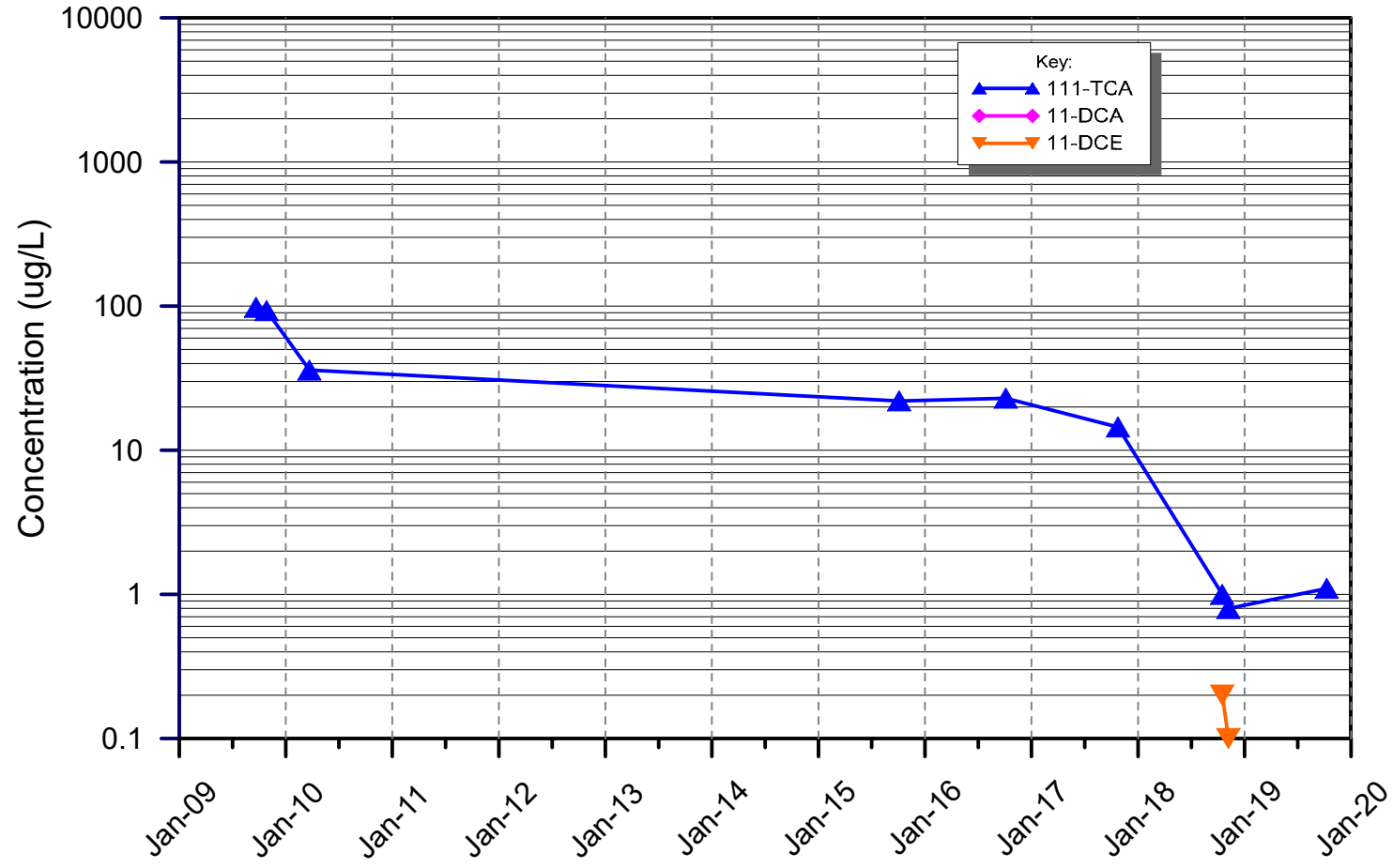
"J" qualified (estimated) results were plotted as actual values. Results of duplicate analyses were averaged.

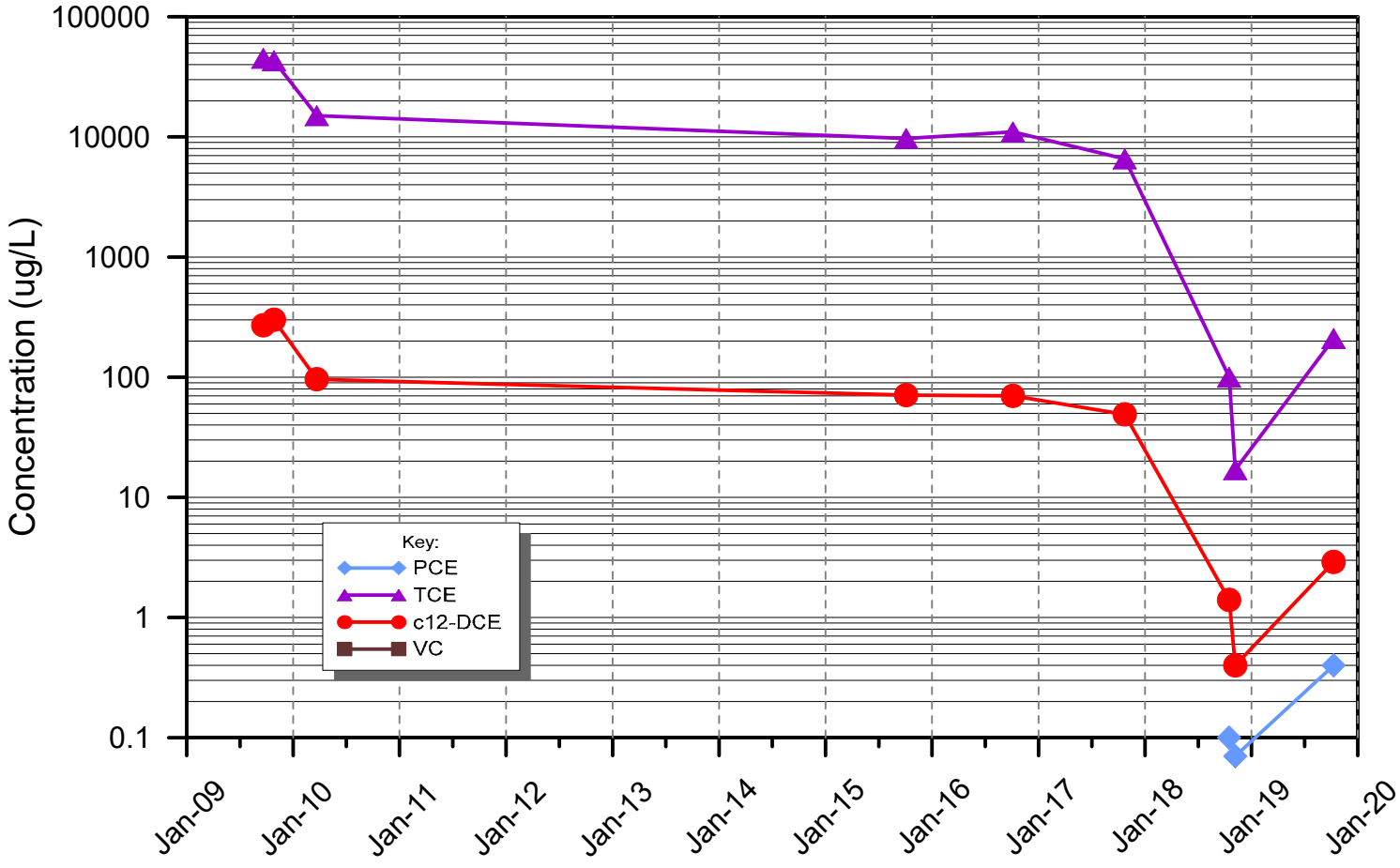
Broadway Complex Site
Well 911-05



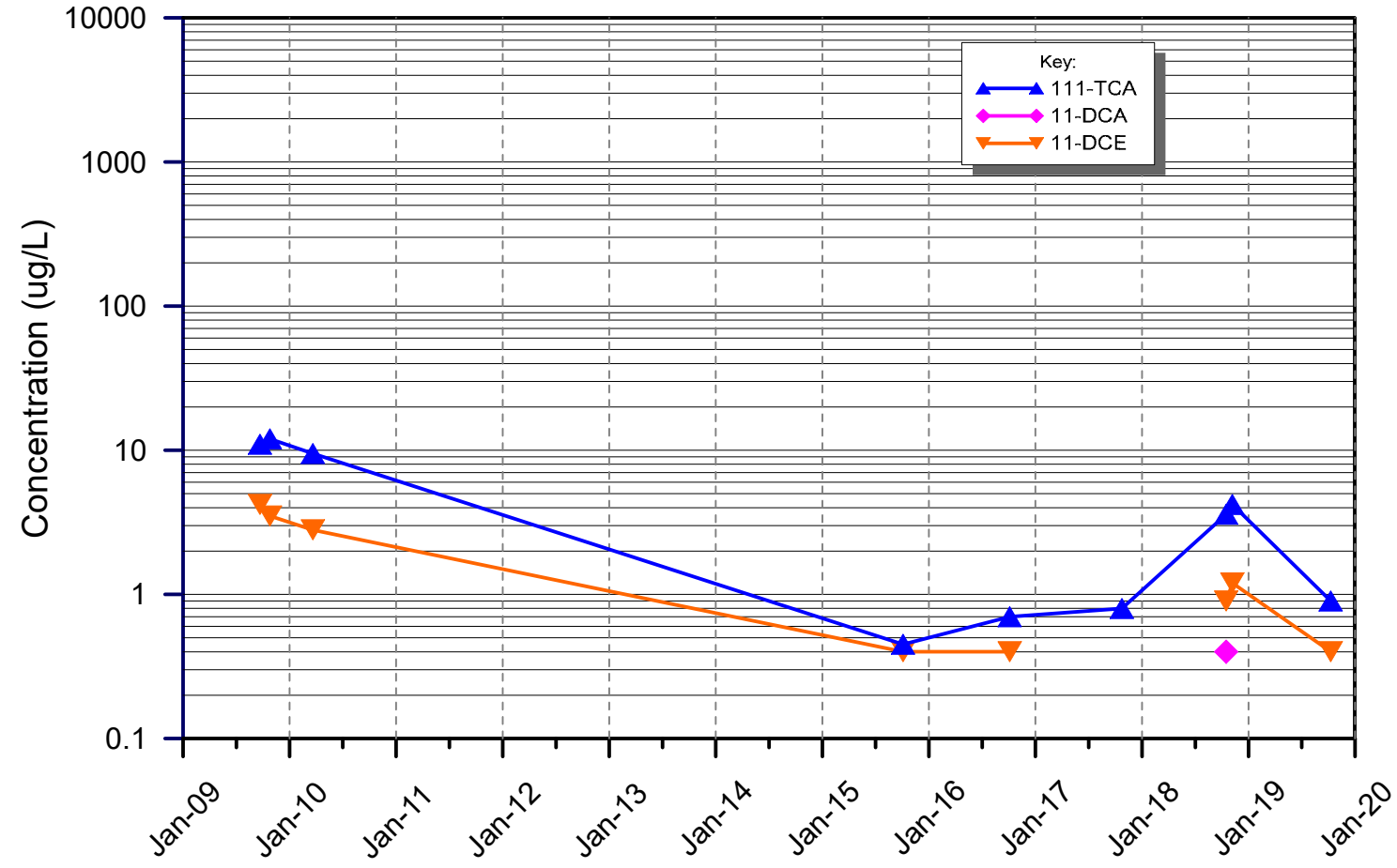


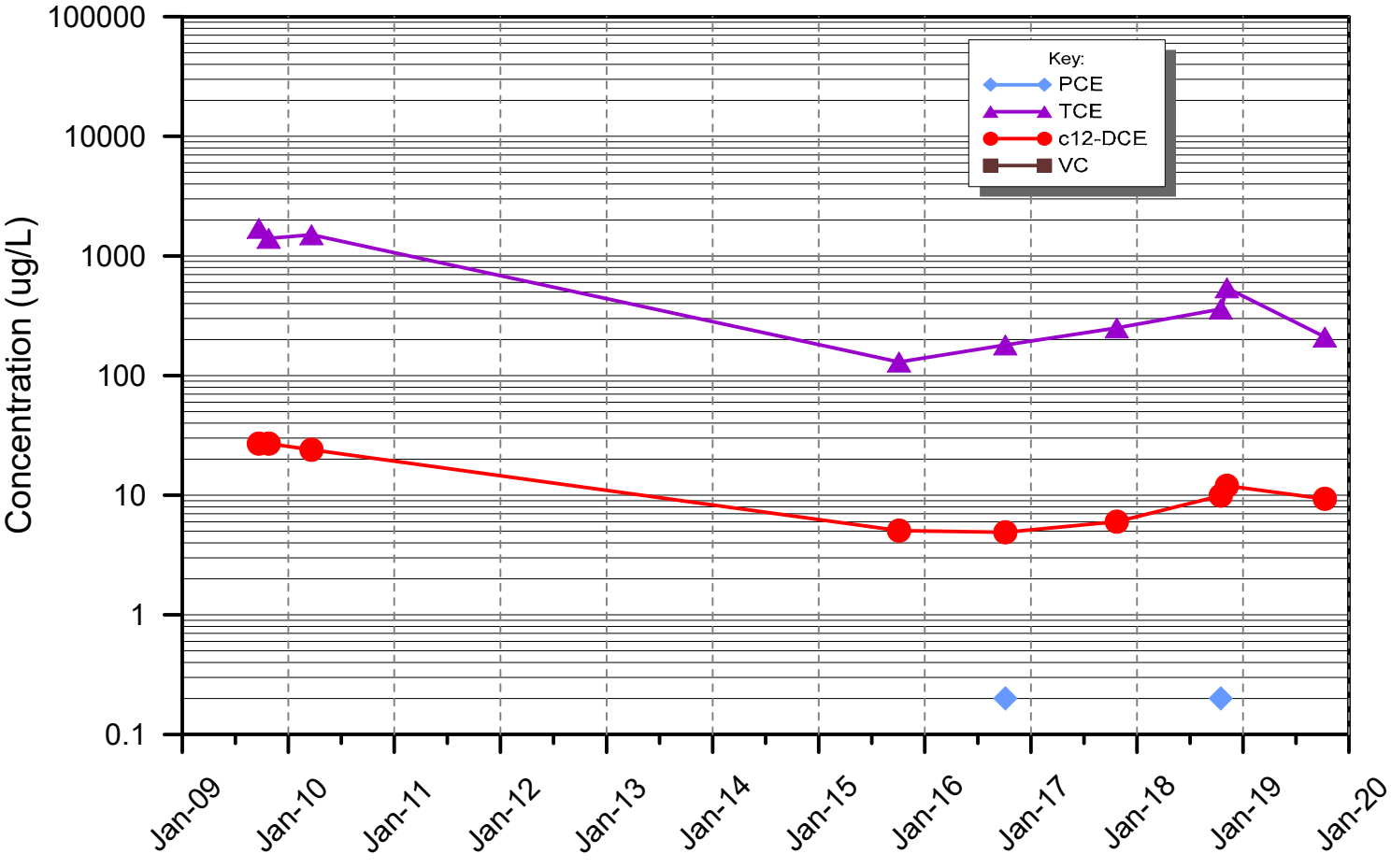
Broadway Complex Site
Well 911-10



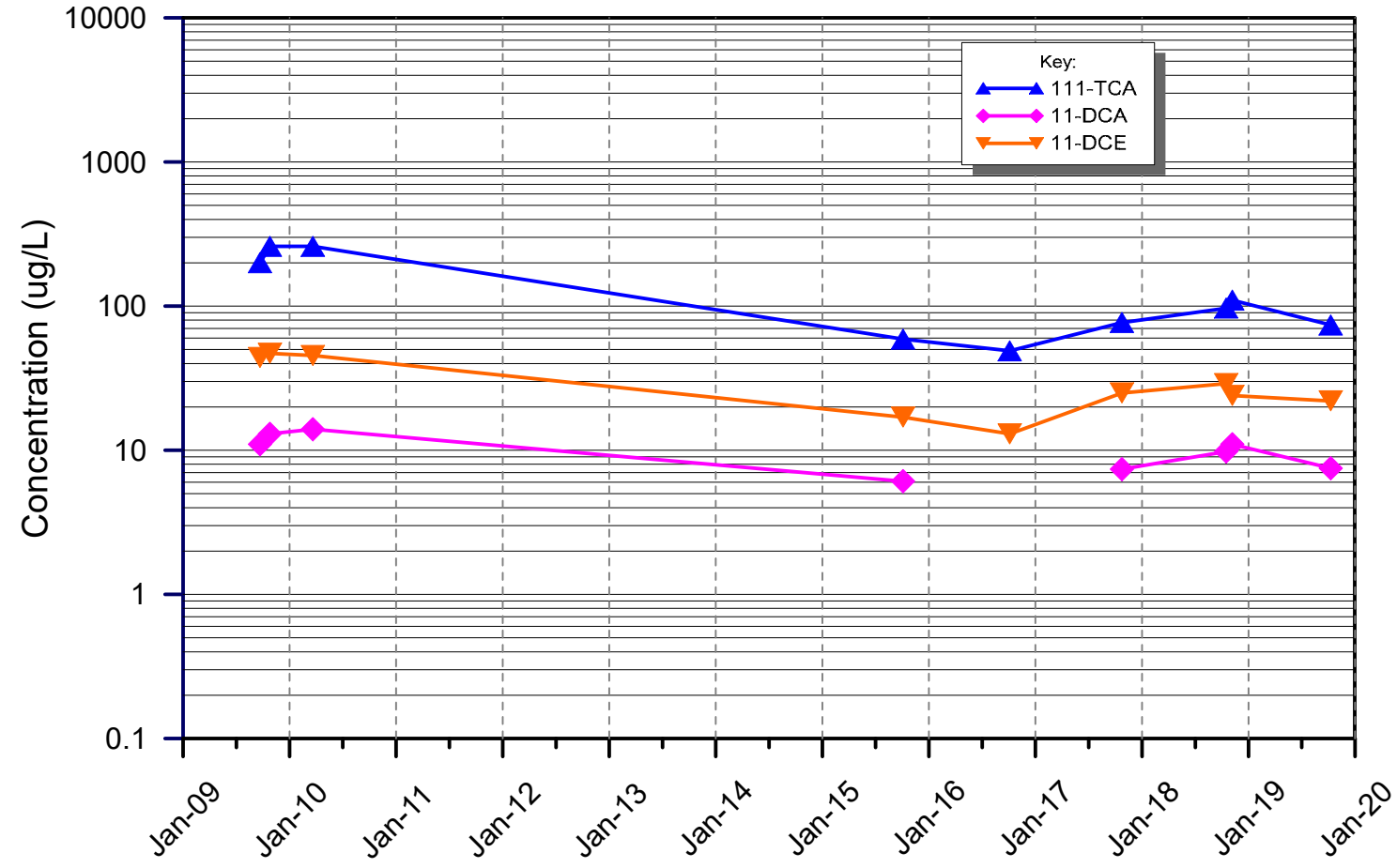


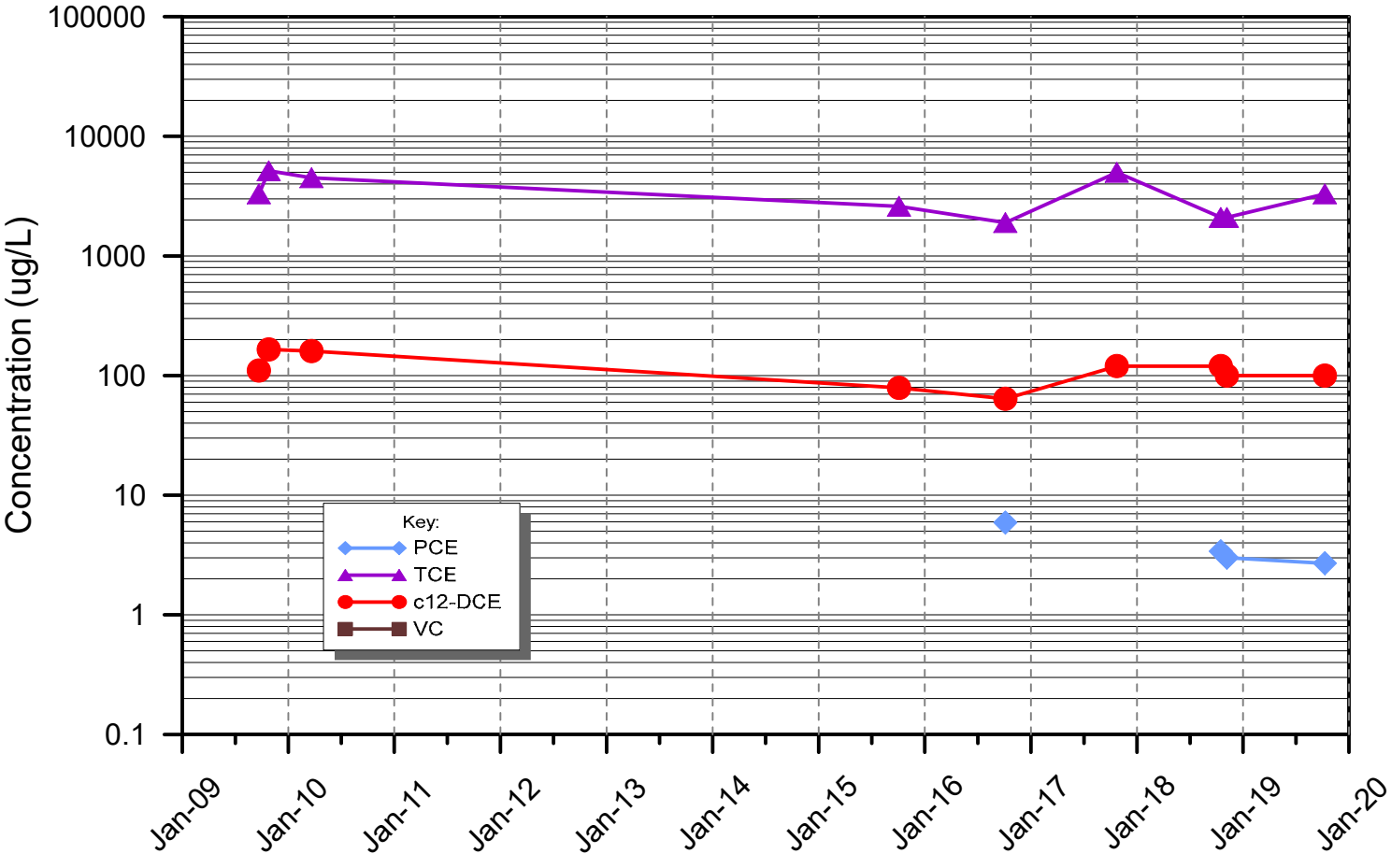
Broadway Complex Site
Well 911-18





Broadway Complex Site
Well 911-19





Broadway Complex Site
Well 911-21