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Broome County

Division of Solid Waste Management

In-Situ Reactive Zone Discontinuation Pilot Test Report

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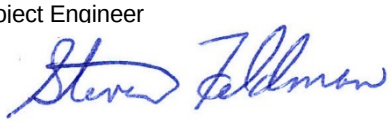

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In-Situ Reactive Zone Discontinuation Pilot Test Report

Colesville Landfill,
Broome County, New York
NYSDEC Site 704010

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Broome County Division of Solid Waste Management

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Tables

Figures

Appendices

1. Introduction

This summary report (report) was prepared on behalf of the Broome County Division of Solid Waste Management for the Colesville Landfill (Site), located in Broome County, New York (site) to evaluate and document the In-Situ Reactive Zone (IRZ) Discontinuation Pilot Test (hereinafter referred to as the "discontinuation pilot test") activities completed at the Site from October 2012 through September 2014.

Remediation and monitoring activities at the Site are being conducted pursuant to the Record of Decision (ROD) issued in March 1991 and Explanation of Significant Differences (ESDs) that were issued in September 2000 and July 2004, respectively. Discontinuation pilot test activities were performed consistent with the LTM Plan (ARCADIS G&M, Inc. 2002), LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003), Interim Remedial Action Report (ARCADIS G&M, Inc. 2004), the Proposed Modifications to the Long Term Monitoring Program (ARCADIS G&M, Inc. 2005), and the In-Situ Reactive Zone Discontinuation Pilot Test Work Plan [ARCADIS of New York Inc. 2012]), which were approved by the United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC). These documents provide a detailed description of the LTM program, methodology, and rationale. Where applicable these elements are either summarized or incorporated by reference herein.

This report summarizes the groundwater quality monitoring, spring water and sediment quality monitoring and data evaluation conducted during the discontinuation pilot test. Additional information regarding the progress of the discontinuation pilot test is also included in the Semi-Annual and Annual Operational Monitoring Reports (ARCADIS 2013, ARCADIS 2014a, ARCADIS 2014b, and ARCADIS 2015). Following the detailed data analysis and discussion is a summary of findings, conclusions, and recommendations.

2. Discontinuation Pilot Test Objectives

As discussed in the IRZ Discontinuation Pilot Test Work Plan (Appendix B), the discontinuation pilot test included the temporary discontinuation of carbon injections and temporary shutdown of the groundwater extraction system to evaluate the resulting effect on groundwater and spring water quality. The objectives of the discontinuation pilot test were to:

- Demonstrate that there is little to no benefit to groundwater quality by continuing injections and groundwater extraction and treatment.

- Document the response of groundwater geochemistry including the evaluation of alternate electron acceptors such as dissolved iron and manganese.

- Evaluate if nearby springs (e.g., SP-3) have a positive response to the discontinuation of injections, including a reduction in visible iron staining and reduction in overall spring water volume.

- Evaluate VOC and metal concentration trends in spring water relative to NYSDEC Division of Technical and Operational Guidance Series (TOGS) 1.1.1 Water Quality Standards and Guidance Values (NYS WQS); and,

- Evaluate metal concentration trends in sediment relative to NYSDEC Screening and Assessment of Contaminated Sediments (NYSDEC 2014).

A discussion of the performance monitoring results relative to the discontinuation pilot test objectives is provided below.

3. Methodology

The following section provides a summary of the environmental effectiveness and discontinuation pilot test monitoring methodology. The site plan and monitoring locations are provided on Figure 1 and Figure 2 and the sampling schedule is summarized in Appendix B. An electronic copy of the discontinuation pilot test laboratory analytical results and groundwater sampling logs are included in the recent Semi-Annual and Annual Operational Monitoring Reports (ARCADIS 2013, ARCADIS 2014a, ARCADIS 2014b, and ARCADIS 2015) for the Site.

3.1 Groundwater Monitoring

The primary monitoring wells monitored and evaluated throughout the discontinuation pilot test included monitoring wells GMMW-2, GMMW-5, GMMW-6, TW-1, and downgradient mid-plume monitoring well PW-4. In addition, monitoring wells GMMW-7 and PW-7, which are located upgradient of the discontinuation pilot test area, were used as background wells to document the geochemistry of landfill impacted groundwater. Other landfill perimeter monitoring wells, plume boundary monitoring wells and the groundwater extraction wells were also sampled to assess overall

groundwater quality trends during the discontinuation pilot test and determine if contingent restart of the treatment systems was necessary.

Historical data collected to establish baseline conditions during the Enhanced Reductive Dechlorination Pilot Test (ARCADIS G&M, Inc. 1999) are representative of conditions prior to the initiation of the IRZ injections. The December 7, 1998 analytical results for monitoring well GMMW-5 was considered as baseline conditions for the IRZ discontinuation pilot test.

Groundwater samples were collected from monitoring wells utilizing PDB samplers (VOCs and dissolved gases) or as grab samples utilizing bailers or whale pump (TOC and alternate electron acceptors) in accordance with the LTM Plan (ARCADIS G&M, Inc. 2002) and/or the Proposed Modifications to the Long-Term Monitoring Program (ARCADIS G&M, Inc. 2005). Groundwater samples were submitted to the laboratory for analysis of VOCs and geochemical parameters, including total organic carbon, alternate electron acceptors, methane, ethene and ethane, and field analyzed for pH, temperature and specific conductance.

3.2 Surface Water Monitoring

Surface water samples were collected at the SW-2, SW-3, SW-4, and F-6 locations throughout the discontinuation pilot test. Surface water samples were collected as direct grab samples from the North Stream at areas collocated with the spring samples and at locations further downgradient of the springs in accordance with the LTM Plan (ARCADIS G&M, Inc. 2002) and/or the Proposed Modifications to the Long-Term Monitoring Program (ARCADIS G&M, Inc. 2005). Surface water samples were submitted to the laboratory for analysis of VOCs and metals and field analyzed for pH, temperature and specific conductance.

3.3 Spring Water and Sediment Monitoring

Spring water samples were collected at the SP-2, SP-3 and SP-4 locations throughout the discontinuation pilot test. Spring water samples were collected as grab samples, where feasible, or with a peristaltic pump consistent with the USEPA and NYSDEC-approved LTM Plan (ARCADIS G&M, Inc. 2002), LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003), Interim Remedial Action Report (ARCADIS G&M, Inc. 2004), and the Proposed Modifications to the Long Term Monitoring Program (ARCADIS G&M, Inc. 2005). Spring water samples were submitted for laboratory analysis of VOCs and total metals and field analyzed for pH,

temperature and specific conductance. In addition to the above, a spring water inspection was completed on a quarterly basis to evaluate the presence and appearance/condition of existing springs. Photographs were also taken when appropriate.

Sediment samples were collected within the North Stream in the vicinity of SP-3. All sediment samples were homogenized in a stainless steel bowl prior to collection and were laboratory analyzed for total metals. Measures were taken to decant off the liquid during the sample collection process in an attempt to avoid future analysis of samples with a high percent moisture content.

4. Discontinuation Pilot Test Monitoring Results and Evaluation

4.1 Groundwater Quality

Table 1 provides a summary of the VOC analytical results and Table 2 provides a summary of the geochemical monitoring results including general chemistry, field parameters and dissolved gas parameters for the discontinuation pilot test. In addition, Figures A-1 through A-10 provided in Appendix A present the concentration of tetrachloroethylene (PCE)-related degradation compounds versus time or trichloroethane (TCA)-related degradation compounds versus time for monitoring wells GMMW-2, GMMW-5, GMMW-6, W-5, and TW-1. The concentration of VOCs has been converted into micromoles per liter (umol/L) by dividing the mass based concentration of a compound by the molecular weight. This conversion allows for the VOCs to be compared on a molecular basis as opposed to a mass basis. Because anaerobic IRZs are constantly releasing adsorbed phase mass and degrading mass to daughter compounds with different molecular weights, the evaluation of anaerobic IRZs on a molecular basis is the appropriate methodology for analyzing the data. As mentioned previously, in order to evaluate the geochemical analytical results relative to baseline conditions, the December 7, 1998 analytical results for monitoring well GMMW-5 have been provided in the same table.

As shown in Table 1 and on Figures A-1 through A-10, TVOCs concentrations in monitoring wells GMMW-2, GMMW-5, GMMW-6, PW-4, and TW-1 have remained generally stable to decreasing during the discontinuation pilot test. Specifically, the September 2014 TVOC concentration in mid-plume monitoring wells were 100 ug/L (GMMW-2), 67 ug/L (GMMW-5), 315 ug/L (GMMW-6), 28 ug/L (PW-4), and 98 ug/L (TW-1) compared to the September 2012 TVOC concentration of 164 ug/L (GMMW-2), 122 ug/L (GMMW-5), 417 ug/L (GMMW-6), 42 ug/L (PW-4), and 131 ug/L (TW-1).

The September 2014 TVOC concentrations in landfill perimeter monitoring wells GWWM-7, W-6, W-7, and W-13, remained stable to decreasing, when compared to data collected since the start of the discontinuation pilot test, at 131 ug/L, 22 ug/L, 1.2 ug/L and below the limits of detection (0.0 ug/L), respectively. The TVOC concentrations for landfill perimeter monitoring well PW-7, continue to fluctuate at elevated concentrations. This is consistent with the data collected since the start of the discontinuation pilot test, but concentrations through September 2014 have increased when compared to historical data. Monitoring well PW-7 was sampled subsequent to the completion of the IRZ discontinuation pilot test, and the June 2015 results exhibited a substantial decrease in TVOC concentrations to approximately 56 ug/L. The results are provided in Appendix C.

The TVOC concentrations for plume boundary monitoring wells W-16S, W-17S and W-18, and the off-site monitoring wells W-14S and W-20S remained stable at 41 ug/L, 0.75 ug/L, 57 ug/L, 1.5 ug/L and 0.0 ug/L, respectively.

TVOC concentrations at recovery wells GMPW-3, GMPW-4 and GMPW-5 of 48 ug/L, 152 ug/L and 2.8 ug/L, respectively, were stable when compared to data collected since the start of the discontinuation pilot test.

Geochemical analytical data indicate that the groundwater geochemistry has slowly began to shift towards baseline conditions, but remains moderately to strongly anaerobic in and immediately downgradient of the reagent injection wells. Baseline conditions, as documented prior to the 1998 Enhanced Reductive Dechlorination (ERD) pilot test, showed that anaerobic and reducing environments were present in groundwater beneath and immediately adjacent to the landfill. The occurrence of reductive dechlorination mechanisms during baseline conditions was evidenced by relatively elevated concentrations of ethene and ethane. The current enhancement of anaerobic conditions is most likely attributed to the endogenous decay of the in-situ microbial population (e.g., recycling of decaying biomass generated through previous operation of the carbon injection system). This observation is supported by the following:

- Nitrate concentrations in groundwater monitoring wells in close proximity to and downgradient of the anaerobic IRZ are considerably below the baseline concentration of 0.632 mg/L, at non-detect concentrations. The non-detect concentrations of nitrate is an indicator of reducing conditions. As shown in Table 2, nitrate concentrations were stable within injection and monitoring wells during

the discontinuation pilot test evaluation period and well below the baseline concentration.

- Dissolved (filtered) iron concentrations remained elevated and significantly higher than baseline conditions in close proximity to the anaerobic IRZ. The highest dissolved iron concentrations were observed in close proximity to the injection well network at monitoring wells TW-1 (82.2 mg/L), GMMW-5 (32.4 mg/L) and W-5 (55.4 mg/l). The concentration of dissolved iron at monitoring well GMMW-2 (0.16 mg/L), located downgradient of TW-1, is similar to the baseline data from GMMW-5. The presence of elevated dissolved iron is an indicator of reducing conditions. With the exception of GMMW-2 and GMMW-7, data collected during the discontinuation pilot test evaluation period indicate that dissolved iron concentrations remained significantly higher than baseline conditions.

- Dissolved (filtered) manganese concentrations remained elevated and higher than baseline conditions in close proximity to and downgradient of the anaerobic IRZ. The highest dissolved manganese concentrations are observed downgradient of the injection well network at monitoring wells GMMW-2 (5.31 mg/L) and GMMW-6 (11 mg/l). The presence of elevated dissolved manganese is an indicator of reducing conditions. As shown in Table 2, with the exception of TW-1, dissolved manganese concentrations were stable to increasing during the discontinuation pilot test evaluation period, and above the baseline concentration.

- Methane concentrations in general decreased during the discontinuation pilot test evaluation period. However, methane concentrations remained elevated and significantly higher (average of 3,880 ug/L) when compared to baseline conditions (0.45 ug/L) in close proximity to and downgradient of the anaerobic IRZ. The presence of methane at elevated concentrations is an indicator of strongly reducing conditions.

- The concentration of TOC generally decreased during the discontinuation pilot test evaluation period to the approximate levels observed during baseline conditions. The concentration of TOC is below recommended levels to support enhanced reductive dechlorination (20 mg/L); however, select locations remained slightly elevated (e.g., >10 mg/L), which likely represents the endogenous decay of the microbial population.

In summary, when combined with VOC, ethene, and ethane analytical data, the geochemical data confirms that the geochemistry remains conducive for enhanced

reductive dechlorination which is likely being facilitated by the endogenous decay of in-situ bacteria. As a result, complete dechlorination continues to occur despite the discontinuation of injections on May 1, 2012. Future monitoring is anticipated to show that the anaerobic IRZ has achieved the objective of degrading sufficient VOC mass such that once baseline conditions are re-established, ongoing reductive dechlorination will maintain stable to decreasing VOC concentrations. In addition, the data indicate that shutdown of the groundwater extraction and treatment system has not resulted in an adverse impact to groundwater quality.

4.2 Spring Water Quality

The embankment of the North Stream was inspected for springs during the discontinuation pilot study on a quarterly schedule. During these inspections, minor iron hydroxide staining was observed around the SP-2, SP-3 and SP-4 area, with a higher degree of staining observed at the SP-3 area. However, the concentration of iron in spring samples at SP-3 have decreased when compared with results prior to the discontinuation pilot test (i.e., July 2012; ARCADIS 2014a). In general, no spring water was observed around the SP-4 area. These observations have been generally consistent with conditions prior to the beginning of the discontinuation pilot test.

Spring water quality analytical results are summarized in Table 4. As shown in Table 4, TVOC concentrations at the SP-3 and SP-4 spring water locations decreased when compared to the beginning of the discontinuation pilot test, and 1,1-dichloroethane, 1,2-dichloroethane, cis-1,2-dichloroethene, chlorobenzene, and chloroethane were detected at concentrations above NYSDEC Part 703 WQS, but are consistent with historical data. Despite the presence of VOCs in spring water, non-detect to trace concentrations of VOCs are present in the surface water (Table 3). These data continue to demonstrate that VOCs detected in the spring water are not adversely impacting surface water quality in the North Stream.

4.3 Sediment Quality

Sediment quality analytical results are summarized in Table 5. As shown in Table 5, sediment samples collected during the discontinuation pilot test have metals concentrations that are generally consistent with the background sediment sample (SP-2-SED [opposite bank]). The metals results for sediment samples were also evaluated relative to Table 1a of the NYSDEC Draft Screening and Assessment of Contaminated Sediment document (NYSDEC 2013), which characterizes freshwater sediment as either Class A (low risk to aquatic life), Class B (slightly to moderately

contaminated and additional testing is required to evaluate the potential risks to aquatic life, and Class C (sediments are considered to be highly contaminated and likely to pose a risk to aquatic life). The metals concentrations exhibited at the SP-3-SED location during the pilot test period fall under the Class A designation, with the exception of four metals that fall within or exceed the limits of the Class B designation.

The sediment sample (SP-3-SED) collected on September 19, 2013 had select metals concentrations that exceed the background sediment sample (SP-1-SED [upstream of the SP-3]) and the NYSDEC Freshwater Sediment Screening Value. It should be noted that the SP-3-SED sample exhibited a percent moisture content of 82.1, which we believe resulted in a positive bias (i.e., distorted higher than the true value) of the results. When the moisture content is very high, the metals in the sediment pore water are included in the analysis. When the sample results are normalized to a dry weight basis the result is a very high concentration of metals in the sediment.

Because of the potential for a positive bias in the September 2013 SP-3-SED results, resampling of the sediment at the SP-3 location was conducted as part of the December 2013 sampling event. Three sediment samples were collect during the December 2013 sampling event to further investigate the high metal concentrations that were detected during the September 2013 sampling event. One sediment sample (SP-3-SED) was collected relatively close to the September 2013 sampling location, in the vicinity of an impacted area along the North stream bank. The second sediment sample (SP-3-SED-STREAM) was collected close to the North Stream, to assess sediment quality in the area where SP-3 spring water infiltrates into the North Stream. The third sediment sample (SP-3-SED 3") was collected in the vicinity of the SP-3-SED sample, at a depth of approximately 3 inches below ground surface, to assess if the sediment/soil deeper than 3 inches is impacted. During the March 2014 event, two sediment samples (SP-3-SED) were collected near SP-3 in the vicinity of an impacted area along the North Stream bank. The first sample was collected from the surficial layer of sediment (SP-3-SED) and the second sample [SP-3-SED (2)] was collected in the vicinity of the SP-3-SED sample, after the surficial layer (approximately 1 inch) of stained sediment was removed. Metals results for December 2013 sediment sample SP-3-SED 3" were lower when compared to the December 2013 SP-3-SED results. In addition, metals concentrations for SP-3-SED 3" were below the background sediment sample (SP-1-SED [upstream of the SP-3]) and SEL.

Similarly to the September 2013 sediment sample, the March 2014 sample exhibited a high percent moisture content (71.4 percent) which likely resulted in a positive bias of the results.

Metals results for the sediment sample SP-3-SED collected on September 9, 2014, at the end of the pilot test period, were significantly below the background sediment sample (SP-1-SED [upstream of the SP-3]), and fall under the Class A designation, with the exception of arsenic which falls within the limits of the Class B designation.

The results indicate that the sediment is generally categorized as Class A (low risk to aquatic life). The results also indicate that sediment/soil impacts are mostly limited to the surface and that limited excavation of the surficial sediment is a viable interim measure.

4.4 Surface Water Quality

Surface water quality analytical results are summarized in Table 3. As shown in Table 3, surface water quality remained consistent when compared to historical data. The TVOC concentration at the SW-2 sampling location was below the limits of detection. The metals concentrations at the F-6, SW-3 and SW-4 sampling locations were also consistent with the background, upgradient sample SW-2, and historical data. These data indicate that surface water quality is not being adversely impacted by the landfill.

5. Conclusions

Based on the data obtained during the discontinuation pilot test, ARCADIS concludes the following:

- The concentration of VOCs decreased or remained stable when compared with historical data.

- Enhanced and/or natural attenuation mechanisms (e.g., reductive dechlorination completed through a biologically mediated pathway) continue to degrade chlorinated VOCs within the discontinuation pilot test area despite the discontinuation of carbon injections as evidenced by stable VOC concentrations within the discontinuation pilot test area and elevated ethene and/or ethane.

- The concentration of methane decreased but remained elevated when compared to baseline conditions within discontinuation pilot test evaluation monitoring wells.

In addition, the presence of elevated concentrations of reduced forms of other species of alternate electron acceptors (e.g., dissolved iron, dissolved manganese and nitrite) indicate that the groundwater geochemistry remained moderate to strongly anaerobic in the vicinity of and downgradient of the injection wells during the discontinuation pilot test. The results corroborate VOC and ethane/ethene analytical data and indicate that enhanced attenuation through reductive dechlorination continues to occur despite the discontinuation of injections on May 1, 2012.

- The concentration of TOC generally decreased to below recommended levels to support enhanced reductive dechlorination (20 mg/L) but to the approximate levels observed during baseline conditions. In addition, select locations remained slightly elevated (e.g., >10 mg/L), which likely represents the endogenous decay of the microbial population.

- There have not been any discernible changes in the appearance of spring areas thus far relative to the implementation of the discontinuation pilot test.

- VOC and metals concentrations in surface water continue to be low or non-detect and consistent with historical data, despite the presence of VOCs and metals in the spring water at concentrations above NYSDEC WQS.

- The sediment samples (SP-3-SED) collected during the discontinuation pilot test have metal concentrations significantly lower than the background sediment sample (SP-1-SED [upstream of the SP-3]) and the NYSDEC Freshwater Sediment Screening Value. The results indicate that the sediment is generally categorized as Class A (low risk to aquatic life). The results also indicate that sediment/soil impacts are mostly limited to the surface and that limited excavation of the surficial sediment is a viable interim measure.

6. Recommendations

Based on the data obtained during the pilot test evaluation period, ARCADIS recommends the following:

- Conduct natural attenuation plume monitoring for residual VOCs via groundwater/surface water/spring water monitoring according to the draft Site Management Plan (SMP) (Broome County 2015, with consideration for

sampling of additional natural attenuation parameters in the downgradient monitoring wells.

- Continue to inspect the former spring locations and the embankment of the North Stream.

- Continue to monitor sediment quality relative to potential ecological risk. Broome County will also continue to visually monitor and remove the surficial sediment, as necessary, to reduce the risk to the environment.

7. Project Schedule

The current monitoring schedule outlined in the draft SMP was verbally approved by the USEPA and NYSDEC during a meeting on October 30, 2014. OM&M of the ARI and PT systems is temporarily discontinued as part of the IRZ Discontinuation Pilot Test Work Plan and will be restarted if groundwater quality data indicates that restart of either or both systems is necessary for the protection of public health or the environment.

8. References

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Tables

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	GMMW-2 12/18/2012	GMMW-2 3/27/2013	GMMW-2 6/19/2013	GMMW-2 9/18/2013	GMMW-2 12/17/2013	GMMW-2 3/20/2014	GMMW-2 6/19/2014	GMMW-2 9/8/2014
1,1,1-Trichloroethane		**1.2**	**1.4**	**1.4**	**1.6**	**1.4**	**1.5**	**1.2**	**1.2 J**
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		**49**	**49**	**44**	**52**	**49**	**44**	**38**	**32**
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0 B
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		**0.37 J**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.37 J**
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.32 J**
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<10	<10	**3.6 J**	<10	**1.5 J**
Benzene		**2.1**	**2.1**	**1.9**	**1.8**	**2.0**	**1.9**	**1.9**	**1.7 J**
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		**25**	**29**	**28**	**27**	**24**	**28**	**26**	**25**
Chloroethane		**14**	**18**	**11**	**18**	**15**	**11**	**11**	**9.2**
Chloroform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene		**20**	**27**	**22**	**23**	**23**	**25**	**17**	**13**
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		<1.0	**0.53 J**	**0.21 J**	<1.0	**0.72 J**	<1.0	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Isopropylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate		<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<2.5	<10
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Methylene Chloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.40 J**
Styrene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.34 J**
Toluene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.45 J**
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		**13**	**14**	**13**	**13**	**13**	**13**	**13**	**12**
Trichlorofluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		**6.1**	**6.2**	**5.6**	**6.9**	**6.1**	**4.0**	**2.8**	**2.3 J**
Xylenes (total)		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Total VOCs		**131 J**	**147 J**	**127 J**	**143**	**134 J**	**132 J**	**111**	**100 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	GMMW-5 12/18/2012	GMMW-5 3/26/2013	GMMW-5 6/19/2013	GMMW-5 9/18/2013	GMMW-5 12/17/2013	GMMW-5 3/19/2014	GMMW-5 6/19/2014	GMMW-5 9/8/2014
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		<1.0	**0.43 J**	**1.1**	**3.2**	**5.3**	**2.8**	**3.6**	**0.92 J**
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		**0.21 J**	<1.0	<1.0	<1.0	<1.0	<1.0	**0.52 J**	<5.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10	<10	<10	<10 J
2-Hexanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<10	<10	**4.1 J**	<10	<10 J
Benzene		**0.69 J**	<1.0	**0.58 J**	**0.77 J**	**1.0**	**0.70 J**	**1.5**	**0.88 J**
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		**10**	**4.2 J**	**5.6**	**6.9**	**5.3 J**	**4.4 J**	**9.8**	**5.2**
Chloroethane		**27**	**29**	**32**	**71**	**73 J**	**45 J**	**96**	**55**
Chloroform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.59 J**	**0.32 J**
cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	**1.3**	**1.4**	**1.6**	**2.3**	**1.2 J**
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		**0.30 J**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.26 J**
Isopropylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate		<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<2.5	<10
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Methylene Chloride		<1.0	<1.0	<1.0	<1.0	<1.0 B	**0.49 J**	<1.0 B	<5.0
Styrene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Toluene		**2.7**	<1.0	**0.71 J**	**0.66 J**	**0.56 J**	<1.0	**0.74 J**	**0.74 J**
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		<1.0	**0.49 J**	**0.88 J**	**0.73 J**	**1.2**	**1.0**	**1.3**	**0.72 J**
Trichlorofluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		<1.0	<1.0	<1.0	<1.0	**1.3**	<1.0	**1.2**	**0.46 J**
Xylenes (total)		**1.6 J**	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	**1.0 J**
Total VOCs		**43 J**	**34 J**	**41 J**	**85 J**	**89 J**	**60 J**	**118 J**	**67 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	GMMW-6 12/18/2012	GMMW-6 3/26/2013	GMMW-6 6/19/2013	GMMW-6 9/18/2013	GMMW-6 12/17/2013	GMMW-6 3/20/2014	GMMW-6 6/19/2014	GMMW-6 9/8/2014
1,1,1-Trichloroethane		**0.92 J**	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,1,2-Trichloroethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,1-Dichloroethane		**120 D**	**110 J**	**93**	**69**	**59**	**36**	**32**	**29**
1,1-Dichloroethene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,2-Dibromoethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,2-Dichlorobenzene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,2-Dichloroethane		**0.81 J**	<2.0	**0.80 J**	<2.0	<4.0	<4.0	<4.0	**0.82 J**
1,2-Dichloropropane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	**0.60 J**
1,3-Dichlorobenzene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
1,4-Dichlorobenzene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
2-Butanone		<10	<20	<20	<20	<40	<40	<40	<10
2-Hexanone		<5.0	<10	<10	<10	<20	<20	<20	<10
4-Methyl-2-pentanone		<5.0	<10	<10	<10	<20	<20	<20	<10
Acetone		<10	<20	<20	<20	<40	<40	<40	<10
Benzene		**5.2**	**5.0**	**4.8**	**5.6**	**5.9**	**6.0**	**6.3**	**6.9**
Bromodichloromethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Bromoform		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Bromomethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Carbon Disulfide		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<10
Carbon Tetrachloride		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Chlorobenzene		**22**	**26**	**26**	**27 J**	**28**	**34**	**31**	**29**
Chloroethane		**140 D**	**150**	**140**	**270 D**	**270**	**260**	**290**	**230 D**
Chloroform		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Chloromethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	**0.22 J**
cis-1,2-Dichloroethene		**8.3**	**13**	**12**	**5.0**	**5.8**	**3.9 J**	**4.9**	**4.6 J**
cis-1,3-Dichloropropene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Cyclohexane		**2.9**	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<10
Dibromochloromethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Dichlorodifluoromethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Ethylbenzene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	**0.63 J**
Isopropylbenzene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	**0.23 J**
Methyl acetate		<1.0	<2.0	<2.0	<2.0	<4.0	<10	<10	<10
Methyl tert-butyl ether		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Methylcyclohexane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<10
Methylene Chloride		**3.2**	**4.6**	**3.4**	**3.5**	<4.1 B	**5.0**	**5.2**	**3.8 J**
Styrene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Tetrachloroethene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Toluene		**2.1**	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	**0.87 J**
trans-1,2-Dichloroethene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	**1.1 J**
trans-1,3-Dichloropropene		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Trichloroethene		**7.1**	**5.3**	**9.6**	**4.0 J**	**5.4**	**5.6**	**4.4**	**3.4 J**
Trichlorofluoromethane		<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<5.0
Vinyl Chloride		**7.8**	**7.7**	**8.0**	**3.9**	<4.0	<4.0	<4.0	**2.7 J**
Xylenes (total)		**1.2 J**	<4.0	<4.0	<4.0	<8.0	<8.0	<8.0	**1.6 J**
Total VOCs		**322 DJ**	**322 J**	**298 J**	**388 DJ**	**374**	**351 J**	**374**	**315 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	GMMW-7 9/18/2013	GMMW-7 3/20/2014	GMMW-7 9/8/2014	PW-3 9/17/2013	PW-3 9/5/2014
1,1,1-Trichloroethane		**3.6**	**2.9**	**0.59 J**	**2.6**	**2.7 J**
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<5.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<5.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<5.0	<1.0	<5.0
1,1-Dichloroethane		**78**	**59**	**51**	**30**	**27**
1,1-Dichloroethene		<1.0	**0.40 J**	<5.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichloroethane		**0.45 J**	<1.0	**0.54 J**	<1.0	<5.0
1,2-Dichloropropane		<1.0	<1.0	<5.0	<1.0	**0.72 J**
1,3-Dichlorobenzene		<1.0	<1.0	<5.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<5.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10 J
2-Hexanone		<5.0	<5.0	<10	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<5.0	<10	<5.0	<10 J
Acetone		<10	**3.9 J**	<10	<10	<10 J
Benzene		**1.3**	**1.3**	**0.80 J**	**0.67 J**	**1.4 J**
Bromodichloromethane		<1.0	<1.0	<5.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<5.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<5.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<10	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<5.0	<1.0	<5.0
Chlorobenzene		**18**	**16**	**4.4 J**	**2.5**	**5.7**
Chloroethane		**23**	**11**	**14**	**3.6**	**3.7 J**
Chloroform		<1.0	<1.0	<5.0	**0.35 J**	**0.36 J**
Chloromethane		<1.0	<1.0	<5.0	<1.0	<5.0 J
cis-1,2-Dichloroethene		**46**	**34**	**39**	**16**	**26**
cis-1,3-Dichloropropene		<1.0	<1.0	<5.0	<1.0	<5.0
Cyclohexane		<1.0	<1.0	<10	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<5.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	<5.0	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<5.0	<1.0	<5.0
Isopropylbenzene		<1.0	<1.0	<5.0	<1.0	<5.0
Methyl acetate		<1.0	<2.5	<10	<1.0	<10 J
Methyl tert-butyl ether		<1.0	<1.0	<5.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<10	<1.0	<10
Methylene Chloride		<1.0	**0.47 J**	**0.70 J**	<1.0	<5.0
Styrene		<1.0	<1.0	<5.0	<1.0	<5.0
Tetrachloroethene		<1.0	**0.36 J**	<5.0	**2.4**	**2.5 J**
Toluene		<1.0	<1.0	<5.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<1.0	**0.33 J**	<1.0	**0.36 J**
trans-1,3-Dichloropropene		<1.0	<1.0	<5.0	<1.0	<5.0
Trichloroethene		**23**	**19**	**4.9 J**	**20**	**12**
Trichlorofluoromethane		<1.0	<1.0	<5.0	<1.0	<5.0
Vinyl Chloride		**24**	**14**	**15**	<1.0	**1.5 J**
Xylenes (total)		<2.0	<2.0	<5.0	<2.0	<5.0
Total VOCs		**217 J**	**162 J**	**131 J**	**78 J**	**84 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	PW-4 12/18/2012	PW-4 3/26/2013	PW-4 6/19/2013	PW-4 9/20/2013	PW-4 12/17/2013	PW-4 3/20/2014	PW-4 6/19/2014	PW-4 9/5/2014
1,1,1-Trichloroethane		**5.8**	**4.5**	**4.8**	**4.5**	**4.8**	**4.2**	**3.2**	**3.6 J**
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		**7.7**	**4.8**	**4.8**	**5.5**	**9.5**	**4.3**	**2.3**	**4.5 J**
1,1-Dichloroethene		**0.30 J**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10	<10	<10	<10 J
2-Hexanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10 J
Acetone		<10	<10	<10	<10	<10	<10	<10	**1.3 J**
Benzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloroethane		**1.0**	<1.0	**1.0**	<1.0	**1.9**	<1.0	**0.55 J**	**0.68 J**
Chloroform		**0.53 J**	<1.0	**0.47 J**	**0.50 J**	**0.54 J**	**0.64 J**	**0.72 J**	**0.58 J**
Chloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0 J
cis-1,2-Dichloroethene		**4.4**	**2.9**	**3.4**	**4.8**	**9.2**	**5.3**	**1.8**	**2.6 J**
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		**0.69 J**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	**1.3**	<1.0	<1.0	**0.98 J**	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Isopropylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate		<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<2.5	<10 J
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Methylene Chloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Styrene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Toluene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		**14**	**10**	**10**	**13**	**15**	**12**	**11**	**15**
Trichlorofluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Xylenes (total)		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Total VOCs		**34 J**	**22**	**26 J**	**28 J**	**41 J**	**27 J**	**20 J**	**28 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	PW-5 9/17/2013	PW-5 9/5/2014	PW-7 3/27/2013	PW-7 9/17/2013	PW-7 6/19/2014	PW-7 9/5/2014	PW-13 9/17/2013	PW-13 9/5/2014
1,1,1-Trichloroethane		<1.0	<5.0	<2.0	**1.8**	<4.0	**1.3 J**	<1.0	**0.66 J**
1,1,2,2-Tetrachloroethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<5.0	**0.49 J**	**0.84 J**	<4.0	<10	<1.0	<5.0
1,1-Dichloroethane		<1.0	<5.0	**180**	**260 D**	**180**	**260**	**2.6**	**5.1**
1,1-Dichloroethene		<1.0	<5.0	<2.0	**1.1**	<4.0	**1.6 J**	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,2-Dibromoethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,2-Dichloroethane		<1.0	<5.0	<2.0	**1.1**	<4.0	<10	<1.0	<5.0
1,2-Dichloropropane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
2-Butanone		<10	<10 J	<20	<10	<40	<20 J	<10	<10 J
2-Hexanone		<5.0	<10 J	<10	<5.0	<20	<20 J	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<10 J	<10	<5.0	<20	<20 J	<5.0	<10 J
Acetone		<10	<10 J	<20	<10	<40	<20 J	<10	<10 J
Benzene		<1.0	<5.0	**1.9 J**	**2.6**	<4.0	**2.8 J**	<1.0	<5.0
Bromodichloromethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Bromoform		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Bromomethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Carbon Disulfide		<1.0	<10	<2.0	<1.0	<4.0	<20	<1.0	<10
Carbon Tetrachloride		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Chlorobenzene		<1.0	<5.0	**15**	**28**	**29**	**27**	**1.0**	**1.3 J**
Chloroethane		<1.0	<5.0	**81**	**110 D**	**84**	**100**	**2.2**	**0.79 J**
Chloroform		<1.0	<5.0	<2.0	<1.0	<4.0	**0.58 J**	<1.0	<5.0
Chloromethane		<1.0	<5.0 J	<2.0	<1.0	<4.0	<10 J	<1.0	<5.0 J
cis-1,2-Dichloroethene		<1.0	<5.0	**79**	**150 D**	**100**	**180**	<1.0	**0.74 J**
cis-1,3-Dichloropropene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Cyclohexane		<1.0	<10	<2.0	<1.0	<4.0	<20	<1.0	<10
Dibromochloromethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<5.0	<2.0	**0.78 J**	<4.0	<10	<1.0	<5.0
Ethylbenzene		<1.0	<5.0	<2.0	**3.1**	<4.0	<10	<1.0	<5.0
Isopropylbenzene		<1.0	<5.0	<2.0	**0.83 J**	<4.0	**0.46 J**	<1.0	<5.0
Methyl acetate		<1.0	<10 J	<2.0	<1.0	<10	<20 J	<1.0	<10 J
Methyl tert-butyl ether		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Methylcyclohexane		<1.0	<10	<2.0	<1.0	<4.0	<20	<1.0	<10
Methylene Chloride		<1.0	<5.0	**2.0**	**2.2**	<4.0 B	**1.9 J**	<1.0	<5.0
Styrene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Tetrachloroethene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Toluene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<5.0	<2.0	<1.0	<4.0	**1.0 J**	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Trichloroethene		<1.0	<5.0	**9.4**	**17**	**15**	**21**	**1.1**	**1.3 J**
Trichlorofluoromethane		<1.0	<5.0	<2.0	<1.0	<4.0	<10	<1.0	<5.0
Vinyl Chloride		<1.0	<5.0	**31**	**40**	**27**	**33**	<1.0	<5.0
Xylenes (total)		<2.0	<5.0	<4.0	**0.85 J**	<8.0	<10	<2.0	<5.0
Total VOCs		NA	NA	**400 J**	**620 DJ**	**435**	**631 J**	**6.9**	**9.9 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	W-5 9/18/2013	W-5 9/8/2014	W-6 9/17/2013	W-6 9/5/2014	W-7 9/17/2013	W-7 9/5/2014	W-13 9/17/2013	W-13 9/5/2014
1,1,1-Trichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1-Dichloroethane		**11**	**7.3**	**10**	**7.3**	**2.7**	**0.57 J**	<1.0	<5.0
1,1-Dichloroethene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichloroethane		<1.0	**0.41 J**	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichloropropane		<1.0	**0.63 J**	<1.0	**0.49 J**	<1.0	<5.0	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10 J	<10	<10 J	<10	<10 J
2-Hexanone		<5.0	<10	<5.0	<10 J	<5.0	<10 J	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<10	<5.0	<10 J	<5.0	<10 J	<5.0	<10 J
Acetone		<10	<10	<10	<10 J	<10	<10 J	<10	<10 J
Benzene		**5.6**	**5.0 J**	**1.2**	**0.68 J**	**0.57 J**	<5.0	<1.0	<5.0
Bromodichloromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Bromoform		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Bromomethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Carbon Disulfide		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Carbon Tetrachloride		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Chlorobenzene		**4.1**	**4.2 J**	**5.7**	**4.7 J**	**2.1**	<5.0	<1.0	<5.0
Chloroethane		**92**	**58**	**2.1**	**1.3 J**	**3.3**	**0.27 J**	<1.0	<5.0
Chloroform		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Chloromethane		<1.0	**0.26 J**	<1.0	<5.0 J	<1.0	<5.0 J	<1.0	<5.0 J
cis-1,2-Dichloroethene		**1.7**	**1.7 J**	**2.5**	**1.7 J**	**0.84 J**	<5.0	<1.0	<5.0
cis-1,3-Dichloropropene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Cyclohexane		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Dibromochloromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<5.0	**1.2**	<5.0	<1.0	<5.0	<1.0	<5.0
Ethylbenzene		<1.0	**0.58 J**	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Isopropylbenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Methyl acetate		<1.0	<10	<1.0	<10 J	<1.0	<10 J	<1.0	<10 J
Methyl tert-butyl ether		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Methylcyclohexane		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Methylene Chloride		**1.0**	**1.1 J**	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Styrene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Tetrachloroethene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Toluene		<1.0	**0.38 J**	<1.0	**0.23 J**	<1.0	<5.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	**0.64 J**	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Trichloroethene		**0.73 J**	**1.0 J**	**4.6**	**4.5 J**	**0.71 J**	**0.36 J**	<1.0	<5.0
Trichlorofluoromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Vinyl Chloride		<1.0	**0.45 J**	**1.5**	**0.93 J**	<1.0	<5.0	<1.0	<5.0
Xylenes (total)		**0.79 J**	**1.8 J**	<2.0	<5.0	<2.0	<5.0	<2.0	<5.0
Total VOCs		**117 J**	**83 J**	**29**	**22 J**	**10 J**	**1.2 J**	NA	NA

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	W-14S 9/17/2013	W-14S 9/5/2014	W-16S 9/17/2013	W-16S 9/5/2014	W-17S 9/17/2013	W-17S 9/5/2014	W-18 9/17/2013	W-18 9/5/2014
1,1,1-Trichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	**8.1**	**6.0**
1,1,2,2-Tetrachloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1-Dichloroethane		<1.0	<5.0	**12**	**11**	<1.0	**0.38 J**	**16**	**15**
1,1-Dichloroethene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichloropropane		<1.0	<5.0	<1.0	**0.60 J**	<1.0	<5.0	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
2-Butanone		<10	<10 J	<10	<10 J	<10	<10 J	<10	<10 J
2-Hexanone		<5.0	<10 J	<5.0	<10 J	<5.0	<10 J	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<10 J	<5.0	<10 J	<5.0	<10 J	<5.0	<10 J
Acetone		<10	**1.5 J**	<10	<10 J	<10	<10 J	<10	<10 J
Benzene		<1.0	<5.0	**1.3**	**1.7 J**	<1.0	<5.0	<1.0	<5.0
Bromodichloromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Bromoform		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Bromomethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Carbon Disulfide		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Carbon Tetrachloride		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Chlorobenzene		<1.0	<5.0	**19**	**19**	<1.0	<5.0	<1.0	<5.0
Chloroethane		<1.0	<5.0	**8.4**	**4.4 J**	<1.0	<5.0	<1.0	**0.71 J**
Chloroform		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	**0.41 J**	**0.36 J**
Chloromethane		<1.0	<5.0 J	<1.0	<5.0 J	<1.0	<5.0 J	<1.0	<5.0 J
cis-1,2-Dichloroethene		<1.0	<5.0	**1.5**	**1.4 J**	<1.0	<5.0	**15**	**15**
cis-1,3-Dichloropropene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Cyclohexane		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Dibromochloromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Ethylbenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Isopropylbenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Methyl acetate		<1.0	<10 J	<1.0	<10 J	<1.0	<10 J	<1.0	<10 J
Methyl tert-butyl ether		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Methylcyclohexane		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Methylene Chloride		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Styrene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Tetrachloroethene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Toluene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Trichloroethene		<1.0	<5.0	**2.9**	**2.6 J**	<1.0	**0.37 J**	**19**	**20**
Trichlorofluoromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Vinyl Chloride		<1.0	<5.0	<1.0	**0.55 J**	<1.0	<5.0	<1.0	<5.0
Xylenes (total)		<2.0	<5.0	<2.0	<5.0	<2.0	<5.0	<2.0	<5.0
Total VOCs		NA	**1.5 J**	**45**	**41 J**	NA	**0.75 J**	**59 J**	**57 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	W-20S 9/17/2013	W-20S 9/5/2014	GMPW-3 9/20/2013	GMPW-3 9/5/2014	GMPW-4 9/20/2013	GMPW-4 9/5/2014	GMPW-5 9/19/2013	GMPW-5 9/5/2014
1,1,1-Trichloroethane		<1.0	<5.0	**3.6**	**2.8 J**	**7.8**	**6.3**	<1.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,1-Dichloroethane		<1.0	<5.0	**11**	**9.8**	**29**	**38**	<1.0	<5.0
1,1-Dichloroethene		<1.0	<5.0	<1.0	<5.0	**0.61 J**	**0.65 J**	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,2-Dichloroethane		<1.0	<5.0	<1.0	<5.0	<1.0	**0.44 J**	<1.0	<5.0
1,2-Dichloropropane		<1.0	<5.0	<1.0	<5.0	<1.0	**0.71 J**	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10 J	<10	<10 J	<10	<10 J
2-Hexanone		<5.0	<10	<5.0	<10 J	<5.0	<10 J	<5.0	<10 J
4-Methyl-2-pentanone		<5.0	<10	<5.0	<10 J	<5.0	<10 J	<5.0	<10 J
Acetone		<10	<10	<10	<10 J	<10	<10 J	<10	**2.8 J**
Benzene		<1.0	<5.0	<1.0	**0.53 J**	<1.0	**3.2 J**	<1.0	<5.0
Bromodichloromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Bromoform		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Bromomethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Carbon Disulfide		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Carbon Tetrachloride		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Chlorobenzene		<1.0	<5.0	**3.4**	**2.9 J**	**4.7**	**16**	<1.0	<5.0
Chloroethane		<1.0	<5.0	**3.1**	**3.7 J**	**14**	**20**	<1.0	<5.0
Chloroform		<1.0	<5.0	<1.0	**0.42 J**	<1.0	**0.28 J**	<1.0	<5.0
Chloromethane		<1.0	<5.0	<1.0	<5.0 J	<1.0	<5.0 J	<1.0	<5.0 J
cis-1,2-Dichloroethene		<1.0	<5.0	**10**	**8.4**	**14**	**24**	<1.0	<5.0
cis-1,3-Dichloropropene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Cyclohexane		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Dibromochloromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<5.0	**0.83 J**	<5.0	**1.1**	<5.0	<1.0	<5.0
Ethylbenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Isopropylbenzene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Methyl acetate		<1.0	<10	<1.0	<10 J	<1.0	<10 J	<1.0	<10 J
Methyl tert-butyl ether		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Methylcyclohexane		<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10
Methylene Chloride		<1.0	<5.0	<1.0	**0.46 J**	**0.59 J**	**1.4 J**	<1.0	<5.0
Styrene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Tetrachloroethene		<1.0	<5.0	**0.66 J**	**0.52 J**	**0.40 J**	**0.59 J**	<1.0	<5.0
Toluene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<5.0	<1.0	<5.0	<1.0	**0.50 J**	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Trichloroethene		<1.0	<5.0	**20**	**18**	**31**	**36**	<1.0	<5.0
Trichlorofluoromethane		<1.0	<5.0	<1.0	<5.0	<1.0	<5.0	<1.0	<5.0
Vinyl Chloride		<1.0	<5.0	<1.0	**0.74 J**	**3.1**	**4.0 J**	<1.0	<5.0
Xylenes (total)		<2.0	<5.0	<2.0	<5.0	<2.0	<5.0	<2.0	<5.0
Total VOCs		NA	NA	**53 J**	**48 J**	**106 J**	**152 J**	NA	**2.8 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Constituents (units in ug/L)	Location ID: / Date:	TW-1 12/18/2012	TW-1 3/27/2013	TW-1 6/19/2013	TW-1 9/18/2013	TW-1 12/17/2013	TW-1 3/20/2014	TW-1 6/19/2014	TW-1 9/8/2014
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		<1.0	<1.0	**4.8**	<1.0	**12**	**0.61 J**	**6.3**	**1.8 J**
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		**0.25 J**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.43 J**
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.39 J**
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<10	<10	**4.2 J**	<10	**1.5 J**
Benzene		**3.1**	**3.6**	**2.2**	**5.5**	**2.3**	**5.5**	**3.0**	**4.4 J**
Bromodichloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		**5.5**	**4.3**	**12**	**6.0**	**13**	**7.2**	**13**	**12**
Chloroethane		**63**	**70**	**41**	**97**	**43**	**78**	**57**	**66**
Chloroform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene		**1.7**	**1.4**	**2.7**	**2.1**	**3.1**	**2.2**	**2.1**	**1.6 J**
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		**1.4**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.82 J**
Isopropylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.22 J**
Methyl acetate		<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<2.5	<10
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Methylene Chloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.63 J**
Styrene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Toluene		**0.85 J**	**0.75 J**	**0.52 J**	**0.93 J**	<1.0	**0.85 J**	**0.52 J**	**0.71 J**
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.59 J**
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		**0.81 J**	**0.55 J**	**5.4**	**0.55 J**	**6.1**	**0.84 J**	**3.1**	**1.6 J**
Trichlorofluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		**1.1**	**0.92 J**	**2.8**	**1.2**	**3.6**	**0.91 J**	**1.6**	**0.98 J**
Xylenes (total)		<2.0	**1.5 J**	<2.0	**1.9 J**	<2.0	**3.5**	**2.2**	**4.4 J**
Total VOCs		**78 J**	**83 J**	**71 J**	**115 J**	**83**	**104 J**	**89 J**	**98 J**

Notes and abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds Detected in Groundwater, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.(1)

Notes and abbreviations:

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
D	Concentration is based on a diluted sample analysis.
J	Concentration is an estimated value.
NA	not applicable
ug/L	micrograms per liter
VOCs	volatile organic compounds
<	analyte below detection limit
(1)	Data presented in this table corresponds to discontinuation pilot test's two-year operating period (September 2012 to September 2014).

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	GMMW-2 12/18/2012	GMMW-2 3/27/2013	GMMW-2 6/19/2013	GMMW-2 9/18/2013	GMMW-2 12/17/2013	GMMW-2 3/20/2014	GMMW-2 6/19/2014	GMMW-2 9/8/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	**1.5**	**2.6**	**0.49 J**	**1.4**	**2.5**	**2.8**	**1.4**	**3.0**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.50**	**6.83**	**6.61**	**6.44**	**6.56**	**6.37**	**7.46**	**7.97**
Specific Conductance	mmhos/cm	**0.420**	**0.622**	**0.619**	**0.544**	**0.596**	**0.665**	**0.669**	**0.671**	**0.636**
Temperature	deg C	**13.0**	**9.9**	**10.4**	**11.8**	**11.8**	**7.1**	**10.0**	**14.4**	**13.9**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	**380**	**420**	**540**	**310**	**260**	**350**	**430**	<10,000
Ethene	ng/L	**7,700**	**3,000**	**1,900**	**1,800**	**1,600**	**1,600**	**1,500**	**1,300**	**1,700 J**
Methane	ug/L	**0.45**	**13,000**	**12,000**	**13,000**	**13,000**	**12,000 D**	**10,000 D**	**8,300 D**	**4,800 D**
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	**0.200**	--	**0.500**	--	**0.410**	--	**4.89 J**
Iron (Filtered)	mg/L	**0.455**	--	<0.05	--	**0.067**	--	**0.091**	--	**0.16 B**
Manganese	mg/L	**2.15**	--	**1.50**	--	**2.20**	--	**3.90**	--	**5.18 J**
Manganese (Filtered)	mg/L	**1.79**	--	**1.5**	--	**2.1**	--	**3.7**	--	**5.31**
Nitrate	mg/L	**0.632**	--	**0.039 J**	--	<0.05	--	**0.024 J**	--	<1
Nitrite	mg/L	**0.026**	--	R	--	<0.05	--	<0.05	--	<1
Sulfate	mg/L	**4.38**	--	**4.7 J**	--	**6.1**	--	--	--	**6.4**

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	GMMW-5 12/18/2012	GMMW-5 3/26/2013	GMMW-5 6/19/2013	GMMW-5 9/18/2013	GMMW-5 12/17/2013	GMMW-5 3/19/2014	GMMW-5 6/19/2014	GMMW-5 9/8/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	**17.3**	**12.4**	**21.2**	**6.2**	**6.5**	**6.0**	**4.4**	**4.3**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.42**	**6.46**	**6.71**	**6.62**	**6.94**	**6.46**	**7.50**	**8.05**
Specific Conductance	mmhos/cm	**0.420**	**0.299**	**0.336**	**0.379**	**0.488**	**0.451**	**0.504**	**0.471**	**0.526**
Temperature	deg C	**13.0**	**9.9**	**9.3**	**15.2**	**14.3**	**6.7**	**11.8**	**16.3**	**13.2**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	**7,900**	**8,300**	**12,000**	**15,000**	**15,000**	**8,100**	**9,200**	**39,000 J**
Ethene	ng/L	**7,700**	**53**	**150**	**280**	**710**	**2,500**	**330**	**1,600**	<50,000
Methane	ug/L	**0.45**	**12,000**	**4,500**	**3,600**	**3,700**	**2,700 D**	**3,100 D**	**2,900 D**	**3,100**
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	**19.4 J**	--	**24.8**	--	**30.1 J**	--	**115 J**
Iron (Filtered)	mg/L	**0.455**	--	**23.8 J**	--	**0.42**	--	**40.5 J**	--	**32.4**
Manganese	mg/L	**2.15**	--	**1.20 J**	--	**1.80 J**	--	**2.40**	--	**4.80 J**
Manganese (Filtered)	mg/L	**1.79**	--	**1.6 J**	--	**2.3 J**	--	**3.0**	--	**3.64**
Nitrate	mg/L	**0.632**	--	**0.051**	--	**0.02 J**	--	<0.05	--	<1
Nitrite	mg/L	**0.026**	--	R	--	<0.05	--	**0.036 J**	--	<1
Sulfate	mg/L	**4.38**	--	**3.9 J**	--	**5.0**	--	--	--	**3.4**

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	GMMW-6 12/18/2012	GMMW-6 3/26/2013	GMMW-6 6/19/2013	GMMW-6 9/18/2013	GMMW-6 12/17/2013	GMMW-6 3/20/2014	GMMW-6 6/19/2014	GMMW-6 9/8/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	**3.1**	**3.8**	**4.1**	**3.8**	**4.8**	**5.0**	**3.7**	**4.6**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.58**	**6.72**	**6.74**	**6.55**	**6.69**	**6.45**	**7.35**	**7.80**
Specific Conductance	mmhos/cm	**0.420**	**0.858**	**0.826**	**0.815**	**0.989**	**1.020**	**1.098**	**1.097**	**1.019**
Temperature	deg C	**13.0**	**9.9**	**9.0**	**13.1**	**12.9**	**7.4**	**7.3**	**12.9**	**11.9**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	**16,000**	**11,000**	**11,000**	**18,000**	**26,000**	**26,000**	**21,000**	**28,000**
Ethene	ng/L	**7,700**	**12,000**	**15,000**	**12,000**	**4,900**	**5,400**	**3,400**	**4,200**	**6,500 J**
Methane	ug/L	**0.45**	**9,000**	**4,600**	**8,200**	**12,000**	**11,000 D**	**8,500 D**	**6,600 D**	**4,700 D**
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	**17.8**	--	**18.8**	--	**21.0**	--	**374 J**
Iron (Filtered)	mg/L	**0.455**	--	**14.8**	--	**19.1**	--	**12.9**	--	**22.4**
Manganese	mg/L	**2.15**	--	**8.50**	--	**8.20 J**	--	**10.5**	--	**11.9 J**
Manganese (Filtered)	mg/L	**1.79**	--	**8.7**	--	**9.2 J**	--	**11.1**	--	**11**
Nitrate	mg/L	**0.632**	--	R	--	**0.08**	--	<0.05	--	<1
Nitrite	mg/L	**0.026**	--	R	--	<0.05	--	<0.05	--	<1
Sulfate	mg/L	**4.38**	--	**13.4 J**	--	**32.9**	--	--	--	**<2**

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	GMMW-7 9/18/2013	GMMW-7 3/20/2014	GMMW-7 9/8/2014	PW-3 9/17/2013	PW-3 9/5/2014
GENERAL CHEMISTRY							
IRZ	in-situ reactive zone						
Total Organic Carbon	mg/L	**6.6**	**1.3**	**1.3**	<1.0	--	--
FIELD PARAMETERS							
pH	Standard units	**6.88**	**6.74**	**6.30**	**6.69**	**6.43**	**6.74**
Specific Conductance	mmhos/cm	**0.420**	**0.295**	**0.388**	**0.348**	**0.491**	**0.516**
Temperature	deg C	**13.0**	**12.2**	**9.4**	**11.6**	**14.2**	**14.3**
DISSOLVED GASES							
Ethane	ng/L	**2,590**	**230**	**440**	**370 J**	**--**	--
Ethene	ng/L	**7,700**	**2,100**	**3,500**	**6,600**	**--**	--
Methane	ug/L	**0.45**	**910**	**1,200 D**	**500 D**	--	--
MISCELLANEOUS							
Iron	mg/L	**0.493**	**2.10**	**5.30**	**5.36 J**	--	--
Iron (Filtered)	mg/L	**0.455**	**1.3**	**0.82**	**0.26**	--	--
Manganese	mg/L	**2.15**	**0.890**	**0.670 J**	**1.07 J**	--	--
Manganese (Filtered)	mg/L	**1.79**	**0.88**	**0.78 J**	**1.2 J**	--	--
Nitrate	mg/L	**0.632**	**0.18**	**0.11**	<1	--	--
Nitrite	mg/L	**0.026**	<0.05	<0.05	<1	--	--
Sulfate	mg/L	**4.38**	**12.4**	--	**10.7**	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	PW-4 12/18/2012	PW-4 3/26/2013	PW-4 6/19/2013	PW-4 9/20/2013	PW-4 12/17/2013	PW-4 3/20/2014	PW-4 6/19/2014	PW-4 9/5/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	<1.0	**2.8**	**0.64 J**	**1.3**	**0.84 J**	**1.5**	**1.3**	**1.5**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.73**	**6.39**	**6.07**	**5.82**	**6.18**	**5.65**	**6.66**	**5.88**
Specific Conductance	mmhos/cm	**0.420**	**0.531**	**0.541**	**0.555**	**0.678**	**0.893**	**0.688**	**0.774**	**0.603**
Temperature	deg C	**13.0**	**10.9**	**9.0**	**12.2**	**12.6**	**8.4**	**8.0**	**10.9**	**11.4**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	**98**	**33**	**150**	<200	<200	<200	**12 J**	<1,000
Ethene	ng/L	**7,700**	**22 J**	**47**	**130**	<200	<200	<200	**120 J**	<1,000
Methane	ug/L	**0.45**	**3.0**	**1.1**	**1.8**	**0.24**	**0.16 J**	**5.9 J**	**3.6**	<1.0
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	--	--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	PW-5 9/17/2013	PW-5 9/5/2014	PW-7 3/27/2013	PW-7 9/17/2013	PW-7 6/19/2014	PW-7 9/5/2014
GENERAL CHEMISTRY								
IRZ	in-situ reactive zone							
Total Organic Carbon	mg/L	**6.6**	<1.0	<1.0	<1.0	--	**0.9 J**	--
FIELD PARAMETERS								
pH	Standard units	**6.88**	**7.83**	**7.59**	**6.35**	**6.13**	**7.04**	**6.00**
Specific Conductance	mmhos/cm	**0.420**	**0.277**	**0.292**	**0.306**	**0.275**	**0.316**	**0.283**
Temperature	deg C	**13.0**	**13.1**	**21.4**	**11.2**	**22.0**	**11.9**	**10.7**
DISSOLVED GASES								
Ethane	ng/L	**2,590**	<1,000	<1,000	**260**	--	--	--
Ethene	ng/L	**7,700**	<1,000	<1,000	**2,000**	--	--	--
Methane	ug/L	**0.45**	**1.6**	**1.5**	**500**	--	--	--
MISCELLANEOUS								
Iron	mg/L	**0.493**	--	--	**189**	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	**20.5**	--	--	--
Manganese	mg/L	**2.15**	--	--	**7.5**	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	**7.2**	--	--	--
Nitrate	mg/L	**0.632**	--	--	**0.55 J**	--	--	--
Nitrite	mg/L	**0.026**	--	--	R	--	--	--
Sulfate	mg/L	**4.38**	--	--	**18.4 J**	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	PW-13 9/17/2013	PW-13 9/5/2014	W-5 9/18/2013	W-5 9/8/2014	W-6 9/17/2013	W-6 9/5/2014	W-7 9/17/2013	W-7 9/5/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	--	--	**5.9**	**8.2**	--	--	--	--
FIELD PARAMETERS										
pH	Standard units	**6.88**	**5.86**	**5.92**	**6.34**	**6.59**	**6.20**	**6.24**	**6.36**	**6.30**
Specific Conductance	mmhos/cm	**0.420**	**0.150**	**0.137**	**0.991**	**1.006**	**0.495**	**0.505**	**0.476**	**0.531**
Temperature	deg C	**13.0**	**10.5**	**10.3**	**10.9**	**12.8**	**10.7**	**10.2**	**11.4**	**10.3**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	--	--	**8,400**	**7,800**	--	--	--	--
Ethene	ng/L	**7,700**	--	--	**1,000**	**940 J**	--	--	--	--
Methane	ug/L	**0.45**	--	--	**4,800**	**3,200 D**	--	--	--	--
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	--	**83.6**	**75.3 J**	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	**49.7**	**55.4**	--	--	--	--
Manganese	mg/L	**2.15**	--	--	**2.70**	**2.14 J**	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	**1.2**	**1.26**	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	<0.05	<1	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	<0.05	<1	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	<5	**2.4**	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	W-13 9/17/2013	W-13 9/5/2014	W-14S 9/17/2013	W-14S 9/5/2014	W-16S 9/17/2013	W-16S 9/5/2014	W-17S 9/17/2013	W-17S 9/5/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	--	--	--	--	--	--	--	--
FIELD PARAMETERS										
pH	Standard units	**6.88**	**5.69**	**5.88**	**5.62**	**5.92**	**5.79**	**6.21**	**6.37**	**6.28**
Specific Conductance	mmhos/cm	**0.420**	**0.280**	**0.291**	**0.042**	**0.05**	**0.318**	**0.450**	**0.241**	**0.19**
Temperature	deg C	**13.0**	**10.7**	**12.1**	**14.1**	**13.1**	**13.2**	**12.9**	**13.2**	**11.6**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	--	--	--	--	--	--	--	--
Ethene	ng/L	**7,700**	--	--	--	--	--	--	--	--
Methane	ug/L	**0.45**	--	--	--	--	--	--	--	--
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	--	--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	W-18 9/17/2013	W-18 9/5/2014	W-20S 9/17/2013	W-20S 9/5/2014
GENERAL CHEMISTRY						
IRZ	in-situ reactive zone					
Total Organic Carbon	mg/L	**6.6**	--	--	--	--
FIELD PARAMETERS						
pH	Standard units	**6.88**	**6.20**	**6.29**	**6.08**	**6.07**
Specific Conductance	mmhos/cm	**0.420**	**0.379**	**0.498**	**0.113**	**0.087**
Temperature	deg C	**13.0**	**15.5**	**15.2**	**13.6**	**12.9**
DISSOLVED GASES						
Ethane	ng/L	**2,590**	--	--	--	--
Ethene	ng/L	**7,700**	--	--	--	--
Methane	ug/L	**0.45**	--	--	--	--
MISCELLANEOUS						
Iron	mg/L	**0.493**	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	TW-1 12/18/2012	TW-1 3/27/2013	TW-1 6/19/2013	TW-1 9/18/2013	TW-1 12/17/2013	TW-1 3/20/2014	TW-1 6/19/2014	TW-1 9/8/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	**24.5**	<1.0	<1.0	**17.8**	**23.3**	**20.2**	**22.6**	**11.8**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.34**	**6.71**	**6.64**	**6.53**	**6.46**	**6.40**	**7.33**	**6.45**
Specific Conductance	mmhos/cm	**0.420**	**1.099**	**1.137**	**0.695**	**1.179**	**0.670**	**1.154**	**0.977**	**0.998**
Temperature	deg C	**13.0**	**10.6**	**9.1**	**14.2**	**13.1**	**6.2**	**9.6**	**14.4**	**12.9**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	**6,500**	**4,100**	**3,200**	**3,500**	**2,600**	**5,100**	**3,000**	**6,700**
Ethene	ng/L	**7,700**	**260**	**400**	**2,700**	**190 J**	**3,000**	**320**	**2,500**	**2,100**
Methane	ug/L	**0.45**	**9,500**	**7,400**	**2,400**	**6,700**	**2,200 D**	**7,700 D**	**4,300 D**	**3,600 D**
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	**87.9**	--	**76.0**	--	**98.3**	--	**89.6 J**
Iron (Filtered)	mg/L	**0.455**	--	**87.3**	--	**74.9**	--	**86.6**	--	**82.2**
Manganese	mg/L	**2.15**	--	**5.20 J**	--	**8.70**	--	**4.40 J**	--	**5.12 J**
Manganese (Filtered)	mg/L	**1.79**	--	**7.4 J**	--	**6.1**	--	**5.1 J**	--	**5.19**
Nitrate	mg/L	**0.632**	--	**0.11 J**	--	<0.05	--	<0.05	--	<1
Nitrite	mg/L	**0.026**	--	R	--	<0.05	--	**0.069**	--	<1
Sulfate	mg/L	**4.38**	--	**24.1 J**	--	**32.1**	--	--	--	**10**

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	IW-3 12/18/2012	IW-3 3/28/2013	IW-3 6/18/2013	IW-3 9/19/2013	IW-3 12/18/2013	IW-3 3/18/2014	IW-3 6/18/2014	IW-3 9/8/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	**9.1**	**6.4**	**3.6**	**5.7**	**5.6**	**6.1**	**4.3**	**3.0**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.13**	**6.68**	**6.73**	**6.37**	**7.17**	**6.64**	**6.99**	**6.62**
Specific Conductance	mmhos/cm	**0.420**	--	**0.600**	**0.516**	**0.539**	**0.538**	**0.486**	**0.526**	**0.643**
Temperature	deg C	**13.0**	--	**8.1**	**13.6**	--	**6.9**	**10.0**	**14.1**	**13.2**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	--	--	--	--	--	--	--	--
Ethene	ng/L	**7,700**	--	--	--	--	--	--	--	--
Methane	ug/L	**0.45**	--	--	--	--	--	--	--	--
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	--	--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	IW-8 3/27/2013	IW-8 6/18/2013	IW-8 9/19/2013	IW-8 12/18/2013	IW-8 3/18/2014	IW-8 6/18/2014	IW-8 9/8/2014
GENERAL CHEMISTRY									
IRZ	in-situ reactive zone								
Total Organic Carbon	mg/L	**6.6**	**65.9**	**49.4**	**61**	**67.6**	**23.6**	**32.2**	**11.7**
FIELD PARAMETERS									
pH	Standard units	**6.88**	**6.65**	**6.46**	**6.34**	**6.50**	**6.35**	**6.94**	**6.23**
Specific Conductance	mmhos/cm	**0.420**	**1.048**	**0.973**	**0.926**	**0.904**	**0.772**	**0.886**	**0.740**
Temperature	deg C	**13.0**	**10.4**	**13.4**	--	**5.4**	**9.6**	**16.2**	**10.8**
DISSOLVED GASES									
Ethane	ng/L	**2,590**	--	--	--	--	--	--	--
Ethene	ng/L	**7,700**	--	--	--	--	--	--	--
Methane	ug/L	**0.45**	--	--	--	--	--	--	--
MISCELLANEOUS									
Iron	mg/L	**0.493**	--	--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	IW-13 12/19/2012	IW-13 3/28/2013	IW-13 6/18/2013	IW-13 9/19/2013	IW-13 12/18/2013	IW-13 3/20/2014	IW-13 6/18/2014	IW-13 9/8/2014
GENERAL CHEMISTRY										
IRZ	in-situ reactive zone									
Total Organic Carbon	mg/L	**6.6**	**61.1**	**46.2**	**29.4**	**19.4**	**29.9**	**13.5**	**7.6**	**4.5**
FIELD PARAMETERS										
pH	Standard units	**6.88**	**6.28**	**6.66**	**6.54**	**6.49**	**6.55**	**6.35**	**7.10**	**6.23**
Specific Conductance	mmhos/cm	**0.420**	--	**0.921**	**0.784**	**0.668**	**0.688**	**0.635**	**0.649**	**0.600**
Temperature	deg C	**13.0**	--	**10.3**	**12.9**	--	**7.9**	**9.8**	**14.3**	**12.9**
DISSOLVED GASES										
Ethane	ng/L	**2,590**	--	--	--	--	--	--	--	--
Ethene	ng/L	**7,700**	--	--	--	--	--	--	--	--
Methane	ug/L	**0.45**	--	--	--	--	--	--	--	--
MISCELLANEOUS										
Iron	mg/L	**0.493**	--	--	--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Parameters	Units	Typical Baseline Values for Discontinuation Pilot Test Area [2]	GMPW-3 9/20/2013	GMPW-3 9/5/2014	GMPW-4 9/20/2013	GMPW-4 9/5/2014	GMPW-5 9/19/2013	GMPW-5 9/5/2014
GENERAL CHEMISTRY								
IRZ	in-situ reactive zone							
Total Organic Carbon	mg/L	**6.6**	--	--	--	--	--	--
FIELD PARAMETERS								
pH	Standard units	**6.88**	**6.12**	**6.76**	**6.56**	**6.59**	**7.34**	**6.85**
Specific Conductance	mmhos/cm	**0.420**	**0.767**	**0.271**	**0.681**	**0.706**	**0.207**	**0.215**
Temperature	deg C	**13.0**	**13.2**	**15.1**	**13.9**	**12.6**	**13.1**	**16.8**
DISSOLVED GASES								
Ethane	ng/L	**2,590**	**--**	**--**	**--**	**--**	**--**	**--**
Ethene	ng/L	**7,700**	**--**	**--**	**--**	**--**	**--**	**--**
Methane	ug/L	**0.45**	--	--	--	--	--	--
MISCELLANEOUS								
Iron	mg/L	**0.493**	--	--	--	--	--	--
Iron (Filtered)	mg/L	**0.455**	--	--	--	--	--	--
Manganese	mg/L	**2.15**	--	--	--	--	--	--
Manganese (Filtered)	mg/L	**1.79**	--	--	--	--	--	--
Nitrate	mg/L	**0.632**	--	--	--	--	--	--
Nitrite	mg/L	**0.026**	--	--	--	--	--	--
Sulfate	mg/L	**4.38**	--	--	--	--	--	--

Notes and abbreviations on last page.

Table 2. Concentrations of General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.(1)

Notes and abbreviations:

Bold constituent detected above method detection limit.

B	Compound considered non-detect at the listed value due to associated blank contamination.
D	Concentration is based on a diluted sample analysis.
deg C	degrees Celsius
IRZ	in-situ reactive zone
J	Concentration is an estimated value.
mg/L	milligrams per liter
mmhos/cm	millimhos per centimeter
ng/L	nanograms per liter
R	The sample results are rejected; due to significant quality control problems, the analysis is invalid and provides no information as to whether the compound is present or not.
ug/L	micrograms per liter
--	not analyzed or collected
<	Analyte below detection limit.

(1) Data presented in this table corresponds to discontinuation pilot test's two-year operating period (September 2012 to September 2014).

(2) Values represent data from Monitoring Well GMMW-5 collected on December 7, 1998.

Table 3. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, In-Situ Reactive Zone Discontinuation Pilot Test Report Colesville Landfill, Broome County, New York.[1]

Constituents	Sample ID: / Date:	F-6 3/28/2013	F-6 9/19/2013	F-6 3/19/2014	F-6 9/9/2014	SW-2 3/28/2013	SW-2 9/19/2013	SW-2 3/19/2014	SW-2 9/9/2014
Volatile organic compounds (VOCs) (Units in ug/L)									
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		<1.0	<1.0	<1.0	**0.31 J**	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<10	<10	<10	<10	<10
Benzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Bromodichloromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chloroform		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chloromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Isopropylbenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate		<1.0	<1.0	<2.5	<10	<1.0	<1.0	<2.5	<10
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<10
Methylene Chloride		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Styrene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Toluene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Trichlorofluoromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Xylenes (total)		<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<5.0
Total VOCs		NA	NA	NA	**0.31 J**	NA	NA	NA	NA

See notes on the next page.

Table 3. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, In-Situ Reactive Zone Discontinuation Pilot Test Report Colesville Landfill, Broome County, New York.[1]

Constituents	Sample ID: / Date:	F-6 3/28/2013	F-6 9/19/2013	F-6 3/19/2014	F-6 9/9/2014	SW-2 3/28/2013	SW-2 9/19/2013	SW-2 3/19/2014	SW-2 9/9/2014
Metals (Units in mg/L)									
Aluminum		**0.077 J**	<0.200	**0.130 J**	<0.100	**0.13 J**	<0.200	**0.240**	<0.100
Antimony		<0.020	<0.0200	<0.0200	<0.0600	<0.020	<0.0200	<0.0200	<0.0600
Arsenic		<0.010	<0.0100	<0.0150	<0.0100	<0.010	<0.0100	<0.0150	<0.0100
Barium		**0.0066**	**0.00890**	**0.00770**	<0.0200	**0.0067**	**0.00780**	**0.00790**	<0.0200
Beryllium		<0.0020	<0.00200	<0.00200	<0.00300	<0.0020	<0.00200	<0.00200	<0.00300
Cadmium		<0.0010	<0.00100	<0.00200	<0.00500	<0.0010	<0.00100	<0.00200	<0.00500
Calcium		**8.7**	**20.7**	**9.00**	**19.0**	**5.3**	**14.6**	**5.10**	**14.0**
Chromium		<0.0040	<0.00400	<0.00400	<0.0100	<0.0040	<0.00400	<0.00400	<0.0100
Cobalt		<0.0040	<0.00400	<0.00400	<0.0500	<0.0040	<0.00400	<0.00400	<0.0500
Copper		<0.010	<0.0100	<0.0100	<0.0200	<0.010	<0.0100	<0.0100	<0.0200
Iron		**0.16**	**0.0870**	**0.160**	<0.100	**0.16**	**0.0190 J**	**0.290**	<0.100
Lead		<0.0050	<0.00500	<0.0100	<0.00500	<0.0050	<0.00500	<0.0100	<0.00500
Magnesium		**2.4**	**4.50**	**2.60**	**4.46**	**1.9**	**3.60**	**1.90**	**3.61**
Manganese		**0.064**	**0.0900**	**0.0680**	**0.0517**	**0.025**	**0.00180 J**	**0.0650**	<0.0100
Mercury		<0.00020	<0.000200	<0.000200	<0.000200	<0.00020	<0.000200	<0.000200	<0.000200
Nickel		<0.010	<0.0100	<0.0100	<0.0400	<0.010	<0.0100	<0.0100	<0.0400
Potassium		**0.87**	**0.920**	**1.00**	<2.00	**0.92**	**0.870**	**0.990**	<2.00
Selenium		<0.015	<0.0150	<0.0250	<0.0100	<0.015	<0.0150	<0.0250	<0.0100
Silver		<0.0030	<0.00300	<0.00600	<0.0100	<0.0030	<0.00300	<0.00600	<0.0100
Sodium		**5.1**	**6.20**	**5.40**	**6.68**	**4.9**	**6.10**	**4.90**	**6.14**
Thallium		<0.020	<0.0200	<0.0200	<0.0100	<0.020	<0.0200	<0.0200	<0.0100
Vanadium		<0.0050	<0.00500	<0.00500	<0.0500	<0.0050	<0.00500	<0.00500	<0.0500
Zinc		<0.010	<0.0100	<0.0100	<0.0200	**0.0016 J**	<0.0100	**0.00160 J**	<0.0200

Notes and abbreviations:

Bold constituent detected above method detection limit.

J	Concentration is an estimated value.
mg/L	milligrams per liter
ug/L	micrograms per liter
NA	not applicable
<	Analyte below detection limit.
(1)	Data presented in this table corresponds to discontinuation pilot test's two year operating period (September 2012 to September 2014).

Table 3. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, In-Situ Reactive Zone Discontinuation Pilot Test Report Colesville Landfill, Broome County, New York.[1]

Constituents	Sample ID: / Date:	SW-3 3/28/2013	SW-3 9/19/2013	SW-3 3/19/2014	SW-3 9/9/2014	SW-4 3/28/2013	SW-4 9/19/2013	SW-4 3/19/2014	SW-4 9/9/2014
Volatile organic compounds (VOCs) (Units in ug/L)									
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		<1.0	**0.72 J**	<1.0	**1.4 J**	**0.49 J**	**0.82 J**	<1.0	**1.0 J**
1,1-Dichloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloropropane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone		<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone		<5.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<10
Acetone		<10	<10	<10	<10	<10	<10	<10	**1.4 J**
Benzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Bromodichloromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Bromoform		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chloroethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chloroform		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Chloromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	**0.34 J**	<1.0	<1.0	<1.0	<5.0
cis-1,3-Dichloropropene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<10
Dibromochloromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Isopropylbenzene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate		<1.0	<1.0	<2.5	<10	<1.0	<1.0	<2.5	<10
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<10
Methylene Chloride		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Styrene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Toluene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
trans-1,3-Dichloropropene		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		<1.0	<1.0	<1.0	**0.27 J**	<1.0	<1.0	<1.0	<5.0
Trichlorofluoromethane		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<5.0
Xylenes (total)		<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<5.0
Total VOCs		NA	**0.72 J**	NA	**2.01 J**	**0.49 J**	**0.82 J**	NA	**2.4 J**

See notes on the next page.

Table 3. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, In-Situ Reactive Zone Discontinuation Pilot Test Report Colesville Landfill, Broome County, New York.[1]

Constituents	Sample ID: / Date:	SW-3 3/28/2013	SW-3 9/19/2013	SW-3 3/19/2014	SW-3 9/9/2014	SW-4 3/28/2013	SW-4 9/19/2013	SW-4 3/19/2014	SW-4 9/9/2014
Metals (Units in mg/L)									
Aluminum		**0.11 J**	<0.200	**0.210**	<0.100	**0.085 J**	<0.200	**0.150 J**	<0.100
Antimony		<0.020	<0.0200	<0.0200	<0.0600	<0.020	<0.0200	<0.0200	<0.0600
Arsenic		<0.010	<0.0100	<0.0150	<0.0100	<0.010	<0.0100	<0.0150	<0.0100
Barium		**0.0065**	**0.00810**	**0.00760**	<0.0200	**0.0066**	**0.00830**	**0.00770**	<0.0200
Beryllium		<0.0020	<0.00200	<0.00200	<0.00300	<0.0020	<0.00200	<0.00200	<0.00300
Cadmium		<0.0010	<0.00100	<0.00200	<0.00500	<0.0010	<0.00100	<0.00200	<0.00500
Calcium		**7.2**	**17.9**	**7.20**	**17.2**	**7.9**	**19.2**	**7.90**	**17.0**
Chromium		<0.0040	<0.00400	<0.00400	<0.0100	<0.0040	<0.00400	<0.00400	<0.0100
Cobalt		<0.0040	<0.00400	<0.00400	<0.0500	<0.0040	<0.00400	<0.00400	<0.0500
Copper		<0.010	<0.0100	<0.0100	<0.0200	<0.010	<0.0100	<0.0100	<0.0200
Iron		**0.13**	<0.0500	**0.240**	<0.100	**0.18**	**0.0670**	**0.210**	<0.100
Lead		<0.0050	<0.00500	<0.0100	<0.00500	<0.0050	<0.00500	<0.0100	<0.00500
Magnesium		**2.2**	**4.00**	**2.30**	**4.12**	**2.3**	**4.20**	**2.40**	**4.03**
Manganese		**0.021**	**0.00530**	**0.0530**	**0.0133**	**0.061**	**0.0790**	**0.0710**	**0.0535**
Mercury		<0.00020	<0.000200	<0.000200	<0.000200	<0.00020	<0.000200	<0.000200	<0.000200
Nickel		<0.010	<0.0100	<0.0100	<0.0400	<0.010	<0.0100	<0.0100	<0.0400
Potassium		**0.91**	**0.830**	**0.960**	<2.00	**0.87**	**0.910**	**0.960**	<2.00
Selenium		<0.015	<0.0150	<0.0250	<0.0100	<0.015	<0.0150	<0.0250	<0.0100
Silver		<0.0030	<0.00300	<0.00600	<0.0100	<0.0030	<0.00300	<0.00600	<0.0100
Sodium		**5.0**	**6.20**	**5.00**	**6.50**	**5.0**	**6.00**	**5.10**	**6.14**
Thallium		<0.020	<0.0200	<0.0200	<0.0100	<0.020	<0.0200	<0.0200	<0.0100
Vanadium		<0.0050	<0.00500	<0.00500	<0.0500	<0.0050	<0.00500	<0.00500	<0.0500
Zinc		<0.010	<0.0100	**0.00170 J**	<0.0200	<0.010	<0.0100	**0.00180 J**	<0.0200

Notes and abbreviations:

Bold constituent detected above method detection limit.

J	Concentration is an estimated value.
mg/L	milligrams per liter
ug/L	micrograms per liter
NA	not applicable
<	Analyte below detection limit.
(1)	Data presented in this table corresponds to discontinuation pilot test's two year operating period (September 2012 to September 2014).

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York. [1]

Constituents (units in ug/L)	Sample ID:	SP-2	SP-2	SP-2	SP-2	SP-2	SP-3	SP-3	SP-3	SP-3	SP-3	SP-3	SP-3
	Date:	3/28/2013	6/19/2013	9/19/2013	12/18/2013	3/19/2014	3/28/2013	6/19/2013	9/19/2013	12/18/2013	3/19/2014	6/19/2014	9/9/2014
	NYSDEC Part 703 WQS												
1,1,1-Trichloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	**41**	**23**	**22**	**26**	**34**	**25**	**10**
1,1-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane	0.04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane	0.0006	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane	0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloropropane	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
2-Butanone	50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Hexanone	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
Acetone	50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromodichloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide	60	<1.0	<1.0	<1.0	<1.0	**0.73 J**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0	**3.5**	**1.7**	**3.1**	**1.5**	**2.7**	**3.0**	**1.9 J**
Chloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	**7.0**	**2.4**	**5.0**	**4.6**	**5.9**	**6.0**	**1.8 J**
Chloroform	7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0	**14**	**7.8**	**6.5**	**6.1**	**9.8**	**9.4**	**2.3 J**
cis-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Dibromochloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Isopropylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate	NA	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<2.5	<2.5	<10
Methyl tert-butyl ether	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Methylene Chloride	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Styrene	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Toluene	6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0	**4.8**	**4.2**	**3.5**	**3.2**	**3.8**	**2.8**	**1.2 J**
Trichlorofluoromethane	0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride	2	<1.0	<1.0	<1.0	<1.0	<1.0	**2.1**	<1.0	**1.5**	**1.7**	**2.4**	**2.0**	**0.47 J**
Xylenes (total)	5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Total VOCs	NA	NA	NA	NA	NA	**0.73 J**	**72**	**39**	**42**	**43**	**59**	**48**	**18 J**

See notes on last page.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York. [1]

Constituents (units in ug/L)	Sample ID: / Date:	NYSDEC Part 703 WQS	SP-2 3/28/2013	SP-2 6/19/2013	SP-2 9/19/2013	SP-2 12/18/2013	SP-2 3/19/2014	SP-3 3/28/2013	SP-3 6/19/2013	SP-3 9/19/2013	SP-3 12/18/2013	SP-3 3/19/2014	SP-3 6/19/2014	SP-3 9/9/2014
Metals (Units in mg/L)														
Aluminum		0.100	**0.39**	**0.720**	**1.50**	**2.40**	**5.10**	<0.20	<0.200	<0.200	<0.200	<0.200	<0.200	<0.100
Antimony		0.003	<0.020	<0.0200	<0.0200	<0.0200	<0.0200	<0.020	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0600
Arsenic		0.15	<0.010	<0.0100	<0.0100	<0.0100	<0.0150	<0.010	<0.0100	<0.0100	<0.0100	<0.0150	<0.0150	<0.0100
Barium		1	**0.0087**	**0.0130**	**0.0190**	**0.0320**	**0.0460**	**0.015**	**0.0140**	**0.0170**	**0.0150**	**0.0170**	**0.0190**	<0.0200
Beryllium		0.003	<0.0020	<0.00200	<0.00200	<0.00200	<0.00200	<0.0020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00300
Cadmium		0.01	<0.0010	<0.00100	<0.00100	<0.00100	<0.00200	<0.0010	<0.00100	<0.00100	<0.00100	<0.00200	<0.00200	<0.00500
Calcium		NA	**7.20**	**7.30**	**7.70**	**7.80**	**8.90**	**21.3**	**22.6**	**24.0**	**22.0**	**21.8**	**27.2**	**24.0**
Chromium		0.05	<0.0040	<0.00400	**0.00180 J**	**0.00240 J**	**0.00570**	<0.0040	<0.00400	<0.00400	<0.00400	<0.00400	<0.00400	<0.0100
Cobalt		0.005	<0.0040	**0.000640 J**	**0.00110 J**	**0.00220 J**	**0.00530**	**0.0013 J**	**0.000650 J**	**0.000870 J**	**0.00110 J**	**0.00130 J**	**0.00130 J**	<0.0500
Copper		NA	<0.010	<0.0100	**0.00240 J**	**0.00440 J**	**0.00890 J**	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200
Iron		0.3	**0.51**	**0.930**	**2.30**	**3.60**	**9.00**	**0.84**	**0.570**	**1.80**	**2.10**	**7.70**	**1.30**	**1.17**
Lead		0.025	<0.0050	<0.00500	<0.00500	**0.00430 J**	**0.0120**	<0.0050	<0.00500	<0.00500	<0.00500	<0.0100	<0.0100	<0.00500
Magnesium		35	**2.0**	**1.80**	**2.20**	**2.40**	**3.20**	**5.0**	**5.10**	**5.40**	**5.10**	**5.20**	**6.00**	**5.61**
Manganese		0.3	**0.12**	**0.200**	**0.580**	**0.850**	**1.20**	**1.4**	**0.920**	**1.60**	**1.30**	**1.50**	**2.20**	**1.67**
Mercury		0.0000007	<0.00020	<0.000200	<0.000200	NA	<0.000200	<0.00020	<0.000200	<0.000200	--	<0.000200	<0.000200	<0.000200
Nickel		0.1	<0.010	<0.0100	**0.00350 J**	**0.00590 J**	**0.00960 J**	**0.0019 J**	<0.0100	**0.00160 J**	**0.00170 J**	<0.0100	**0.00180 J**	<0.0400
Potassium		NA	**0.75**	**0.410 J**	**1.30**	**1.30**	**1.90**	**1.1**	**1.40**	**1.20**	**1.10**	**1.20**	**1.50**	<2.00
Selenium		0.0046	<0.015	<0.0150	<0.0150	<0.0150	<0.0250	<0.015	<0.0150	<0.0150	<0.0150	<0.0250	<0.0250	<0.0100
Silver		0.0001	<0.0030	<0.00300	<0.00300	<0.00300	<0.00600	<0.0030	<0.00300	<0.00300	<0.00300	<0.00600	<0.00600	<0.0100
Sodium		20	**4.5**	**5.00**	**4.20**	**4.10**	**4.20**	**3.8**	**4.40**	**3.90**	**4.00**	**3.50**	**3.70**	**4.74**
Thallium		0.008	<0.020	<0.0200	<0.0200	<0.0200	<0.0200	<0.020	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0100
Vanadium		0.014	<0.0050	<0.00500	**0.00200 J**	**0.00320 J**	**0.00770**	<0.0050	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0500
Zinc		0.066	**0.0023 J**	**0.00630 J**	**0.00820 J**	**0.0150**	**0.0250**	**0.0020 J**	**0.00490 J**	**0.00330 J**	**0.00240 J**	**0.00240 J**	**0.00580 J**	<0.0200

See notes on last page.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York. [1]

Constituents (units in ug/L)	Sample ID: / Date:	NYSDEC Part 703 WQS	SP-4 3/28/2013	SP-4 6/19/2013	SP-4 9/19/2013	SP-4 12/18/2013	SP-4 3/19/2014	SP-4 6/19/2014	SP-4 9/9/2014
1,1,1-Trichloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-trichloro-1,2,2-trifluoroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1,2-Trichloroethane		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,1-Dichloroethane		5	**14**	**4.7**	**3.6**	**27**	**40**	**25**	**9.3**
1,1-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2,4-Trichlorobenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromo-3-chloropropane		0.04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dibromoethane		0.0006	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,2-Dichloroethane		0.6	**0.51 J**	**0.46 J**	<1.0	**0.97 J**	**0.94 J**	**0.67 J**	**0.71 J**
1,2-Dichloropropane		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,3-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
1,4-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
2-Butanone		50	<10	<10	<10	<10	<10	<10	<10
2-Hexanone		50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
4-Methyl-2-pentanone		NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
Acetone		50	<10	**4.5 J**	<10	<10	<10	<10	**1.3 J**
Benzene		10	<1.0	**0.45 J**	**0.85 J**	**1.1**	**0.96 J**	**0.60 J**	**0.95 J**
Bromodichloromethane		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromoform		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Bromomethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Carbon Disulfide		60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Carbon Tetrachloride		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chlorobenzene		5	**4.0**	**3.6**	**6.9**	**5.1**	**5.4**	**4.2**	**7.1**
Chloroethane		5	**55**	**35**	**76**	**73**	**43**	**34**	**46**
Chloroform		7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Chloromethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
cis-1,2-Dichloroethene		5	**0.88 J**	<1.0	<1.0	**2.7**	**4.9**	**2.8**	**1.5 J**
cis-1,3-Dichloropropene		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Cyclohexane		NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Dibromochloromethane		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Dichlorodifluoromethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Ethylbenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Isopropylbenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methyl acetate		NA	<1.0	<1.0	<1.0	<1.0	<2.5	<2.5	<10
Methyl tert-butyl ether		10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Methylcyclohexane		NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10
Methylene Chloride		5	<1.0	<1.0	<1.0	<1.0	**0.48 J**	<1.0	<5.0
Styrene		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Tetrachloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Toluene		6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
trans-1,2-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.37 J**
trans-1,3-Dichloropropene		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Trichloroethene		5	**0.78 J**	<1.0	<1.0	**1.8**	**4.2**	**2.7**	**0.80 J**
Trichlorofluoromethane		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
Vinyl Chloride		2	<1.0	<1.0	<1.0	**3.7**	**3.5**	**1.5**	**0.99 J**
Xylenes (total)		5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Total VOCs		NA	**75 J**	**49 J**	**87 J**	**115 J**	**103 J**	**72 J**	**69 J**

See notes on last page.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York. [1]

Constituents (units in ug/L)	Sample ID:	SP-4	SP-4	SP-4	SP-4	SP-4	SP-4	SP-4
	Date:	3/28/2013	6/19/2013	9/19/2013	12/18/2013	3/19/2014	6/19/2014	9/9/2014
	NYSDEC Part 703 WQS							
Metals (Units in mg/L)								
Aluminum	0.100	<0.20	**1.50**	**0.0970 J**	**0.130 J**	<0.200	<0.200	**4.12**
Antimony	0.003	<0.020	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0600
Arsenic	0.15	**0.023**	**0.0470**	**0.120**	**0.0990**	**0.0290**	**0.0360**	**0.243**
Barium	1	**0.065**	**0.120**	**0.100**	**0.0940**	**0.0570**	**0.0670**	**0.237**
Beryllium	0.003	<0.0020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00300
Cadmium	0.01	<0.0010	<0.00100	<0.00100	<0.00100	<0.00200	<0.00200	<0.00500
Calcium	NA	**61.8**	**70.0**	**66.5**	**67.6**	**56.5**	**57.8**	**64.8**
Chromium	0.05	<0.0040	**0.00290 J**	**0.00120 J**	<0.00400	<0.00400	<0.00400	<0.0100
Cobalt	0.005	**0.0012 J**	**0.00250 J**	**0.00110 J**	**0.00130 J**	**0.00110 J**	**0.000740 J**	<0.0500
Copper	NA	<0.010	**0.00170 J**	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200
Iron	0.3	**7.1**	**32.7**	**25.6**	**24.5**	**9.90**	**7.50**	**110**
Lead	0.025	<0.0050	<0.00500	<0.00500	<0.00500	<0.0100	<0.0100	**0.00750**
Magnesium	35	**14.7**	**16.6**	**15.0**	**16.1**	**13.8**	**12.8**	**14.8**
Manganese	0.3	**4.7**	**6.20**	**5.70**	**6.10**	**4.90**	**3.60**	**6.75**
Mercury	0.0000007	<0.00020	<0.000200	<0.000200	--	<0.000200	<0.000200	<0.000200
Nickel	0.1	<0.010	**0.00320 J**	<0.0100	<0.0100	<0.0100	<0.0100	<0.0400
Potassium	NA	**1.3**	**2.60**	**1.50**	**1.30**	**1.10**	**1.70**	**2.56**
Selenium	0.0046	<0.015	<0.0150	<0.0150	<0.0150	<0.0250	<0.0250	<0.0100
Silver	0.0001	<0.0030	<0.00300	**0.00190 J**	<0.00300	<0.00600	<0.00600	<0.0100
Sodium	20	**9.4**	**9.70**	**9.40**	**9.20**	**7.30**	**7.30**	**8.24**
Thallium	0.008	<0.020	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0100
Vanadium	0.014	<0.0050	**0.00270 J**	<0.00500	<0.00500	<0.00500	<0.00500	<0.0500
Zinc	0.066	<0.010	**0.0210**	<0.0100	**0.00160 J**	<0.0100	**0.00190 J**	**0.0276**

See notes on last page.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, IRZ Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Notes and Abbreviations:

Bold constituent detected above method detection limit.

	Concentration exceeds WQS.
IRZ	in-situ reactive zone
J	Concentration is an estimated value.
mg/L	milligrams per liter
ug/L	micrograms per liter
NA	not applicable
VOCs	volatile organic compounds
WQS	water quality standard
<	analyte below detection limit
--	not analyzed or collected
(1)	Data shown in the table represents all data relevant to the discontinuation pilot test's two-year operating period (September 2012 to September 2014).

Table 5. Concentrations of Metals Detected in Sediment Samples Associated with Springs, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

	NYSDEC Freshwater Sediment Screening Values[a]										
Location ID:					SED-1	SED-2	SED-2	SED-3	SED-3	SED-3	SED-3
Sample ID:					SP-1-SED	SP-2-SED	SP-2-SED	SP-3-SED	SP-3-SED	SP-3-SED	SP-3C-SED
					(Background)	(Opposite Bank)			(Outlet)	(Stream Sediment)	
Date:					9/19/2013 [2]	7/13/2012 [3]	7/13/2012	7/13/2012 [4]	8/8/2012 [5]	8/8/2012 [6]	3/28/2013 [7]
	Class A	**Class B**	**Class C**	**NOAA SQuiRT values[b]**							
Metals (Units in mg/kg)											
Arsenic	10	10 – 33	33	NA	**18.2**	--	--	--	**16.0**	**14.0**	**10.2**
Barium	NA	NA	NA	NA	**68.2**	--	--	--	<190 Q	<170 Q	**44.3**
Beryllium	NA	NA	NA	NA	**0.680**	--	--	--	<3.20	<2.80	**0.39**
Cadmium	1	1 – 5	5	NA	**0.160 J**	--	--	--	<3.20	<2.80	**0.19 J**
Calcium	NA	NA	NA	NA	**1,040**	--	--	--	**810**	**630**	**917**
Chromium	43	43 – 110	110	NA	**16.2**	**15.0 J**	**18.0 J**	**34.0 J**	**18.0 J**	**15.0 J**	**13.2**
Cobalt	NA	NA	NA	50+[c]	**16.3**	<32.0	<32.0	<83.0	<32.0	<28.0	**10.3**
Copper	32	32 – 150	150	NA	**24.4**	--	--	--	**21.0**	**19.0**	**18.9**
Iron	NA	NA	NA	20,000-40,000	**35,200**	**19,000 B**	**23,000 B**	**55,000 B**	**24,000**	**19,000**	**23,100**
Lead	36	36 – 130	130	NA	**19.9**	--	--	--	**12.0**	**19.0**	**14.1**
Magnesium	NA	NA	NA	NA	**3,790**	**2,700**	**2,800**	**4,600**	**2,900**	**2,500**	**3,260**
Manganese	NA	NA	NA	460-1100	**1,670**	**300**	**1,200**	**10,000**	**640**	**490**	**1,140**
Mercury	0.2	0.2 – 1	1	NA	<0.0270	--	--	--	<0.112	<0.0911	<0.026
Nickel	23	23 – 49	49	NA	**28.0**	--	--	--	**17.0 QJ**	**15.0 QJ**	**23.0**
Potassium	NA	NA	NA	NA	**819**	--	--	--	**730**	**490**	**793**
Selenium	NA	NA	NA	NA	<5.10	--	--	--	<3.90 Q	<3.40 Q	**0.60 J**
Silver	1	1 – 2.2	2.2	NA	<0.640	<32.0 Q	<32.0 Q	<83.0 Q	<32.0	<28.0	<0.65
Sodium	NA	NA	NA	NA	**37.1 J**	--	--	--	<320	<280	**30.0 J**
Thallium	NA	NA	NA	NA	**0.430 J**	--	--	--	<3.90	<3.40	<7.8
Vanadium	NA	NA	NA	NA	**16.8**	<190	<190	<500	<190	<170	13.0
Zinc	120	120 – 460	460	NA	**74.6**	--	--	--	**47.0**	**45.0**	**59.6**
Miscellaneous											
Percent Moisture (% by wt.)	NA	NA	NA	NA	**25.0**	**20.8**	**21.1**	**70**	**27.7**	**18.4**	**27.0**

Notes and abbreviations on last page.

Table 5. Concentrations of Metals Detected in Sediment Samples Associated with Springs, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

	NYSDEC Freshwater Sediment Screening Values[a]										
Location ID:					SED-3	SED-3	SED-3	SED-3	SED-3	SED-3	SED-3
Sample ID:					SP-3-SED	SP-3-SED	SP-3-SED 3" (3 inch depth)	SP-3-SED-STREAM (Stream Sediment)	SP-3-SED	SP-3-SED (2)	SP-3-SED
Date:					9/19/2013 [7]	12/18/2013	12/18/2013 [8]	12/18/2013 [9]	3/19/2014	3/19/2014 [10]	9/9/2014
	Class A	**Class B**	**Class C**	**NOAA SQuiRT values[b]**							
Metals (Units in mg/kg)											
Arsenic	10	10 – 33	33	NA	**132**	**22.7**	**10.5**	**13.0**	**98.9**	**20.0**	**11.5**
Barium	NA	NA	NA	NA	**673**	**181**	**43.2**	**58.9**	**624**	**77.9**	**34.0**
Beryllium	NA	NA	NA	NA	**0.550 J**	<1.10	**0.390**	**0.660**	**0.690 J**	**0.520**	<0.421
Cadmium	1	1 – 5	5	NA	**1.50**	**0.370 J**	**0.0740 J**	**0.110 J**	**1.70 J**	**0.230 J**	<0.702
Calcium	NA	NA	NA	NA	**5,970**	**1,730 B**	**828 B**	**1,660 B**	**4,770**	**1,360**	**790**
Chromium	43	43 – 110	110	NA	**24.4**	**3.40**	**13.5**	**22.5**	**12.4 J**	**14.9**	**11.0**
Cobalt	NA	NA	NA	50+[c]	**93.2**	**25.9**	**10.5**	**16.0**	**83.0**	**16.6**	**7.70**
Copper	32	32 – 150	150	NA	**19.4**	**4.30 J**	**18.3**	**32.3**	**19.3**	**25.3**	**13.8**
Iron	NA	NA	NA	20,000-40,000	**204,000**	**35,500 B**	**23,600 B**	**41,000 B**	**154,000**	**36,800**	**23,200**
Lead	36	36 – 130	130	NA	**32.2**	**5.20 J**	**20.7**	**20.0**	**30.2**	**17.1**	**11.3**
Magnesium	NA	NA	NA	NA	**1,720**	**645 B**	**3,220 B**	**5,630 B**	**2,450**	**3,660**	**2,770**
Manganese	NA	NA	NA	460-1100	**88,800**	**20,700 B**	**894 B**	**1,160 B**	**66,500**	**5,510**	**668**
Mercury	0.2	0.2 – 1	1	NA	<0.110	<0.0230	<0.0220	<0.0380	<0.0660	<0.0260 J	<0.0440
Nickel	23	23 – 49	49	NA	**68.2**	**15.7 J**	**21.8**	**36.6**	**62.4**	**29.6**	**16.5**
Potassium	NA	NA	NA	NA	**1,340**	**434**	**856**	**1,230**	**1,140**	**709**	**617**
Selenium	NA	NA	NA	NA	**31.6**	<21.3	<4.70	<7.20	**22.7**	**1.20 J**	<1.40
Silver	1	1 – 2.2	2.2	NA	**15.4**	<2.70	<0.590	<0.900	<22.5	**0.370 J**	<1.40
Sodium	NA	NA	NA	NA	<869	<744	**33.7 J**	**52.6 J**	<524 B	**24.7 J**	<140
Thallium	NA	NA	NA	NA	**30.8 J**	<31.9	<7.10	<10.8	**14.0 J**	**1.60 J**	<1.40
Vanadium	NA	NA	NA	NA	**12.0**	**3.70**	**13.3**	**21.2**	**11.1**	**15.4**	**9.90**
Zinc	120	120 – 460	460	NA	**108**	**41.1 B**	**60.6 B**	**102 B**	**111**	**79.0**	**43.7**
Miscellaneous											
Percent Moisture (% by wt.)	NA	NA	NA	NA	**82.1**	**12.5**	**14.0**	**46.4**	**71.4**	**26.1**	**29.5**

Notes and abbreviations on last page.

Table 5. Concentrations of Metals Detected in Sediment Samples Associated with Springs, In-Situ Reactive Zone Discontinuation Pilot Test Report, Colesville Landfill, Broome County, New York.[1]

Notes and abbreviations:

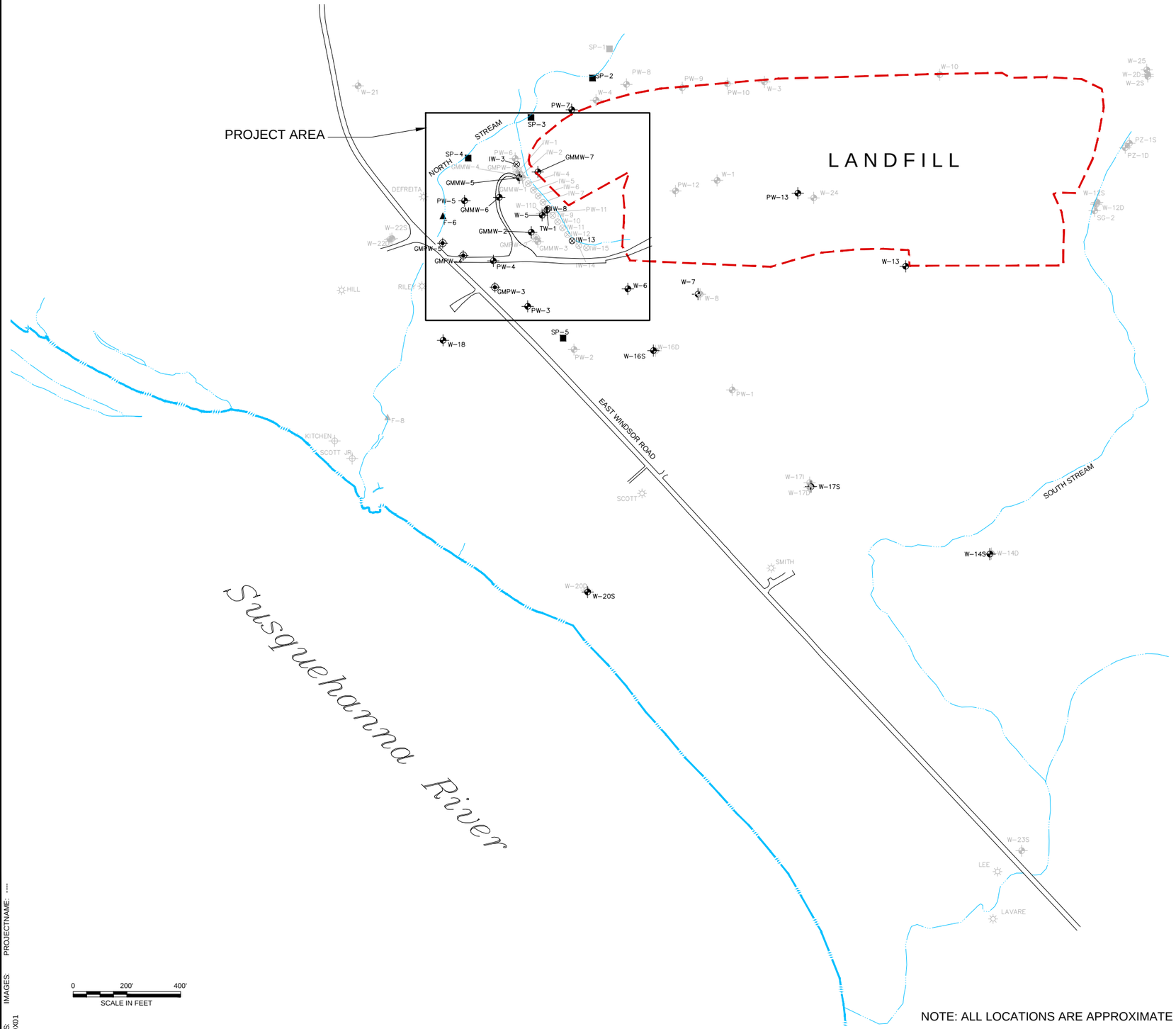
a	Values obtained from NYSDEC Technical Guidance for Screening Contaminated Sediments dated June 24, 2014.
b	Values obtained from NOAAs SQuiRT (Buchman, MF. 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle, WA. Office of Response and Restoration Division, NOAA, 34 pp.)
c	Value from Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario, Canada. Aug 1993. Value is LEL from Canadian Sediment Guidelines.
(1)	Data presented in this table corresponds to discontinuation pilot test's two-year operating period (September 2012 to September 2014). Additional data from prior to the start of the discontinuation pilot test (July to August 2012) is also provided for comparison purposes.
(2)	Background sediment sample collected by ARCADIS from SP-1 spring sample location upstream of the SP-2 spring sample location (see Figure 1).
(3)	Background sediment sample collected by Broome County upstream and on the opposite bank from SP-2 spring sample location.
(4)	Sediment/iron oxide film composite sample collected by Broome County from the SP-3 spring sample location.
(5)	Sample collected by Broome County from the SP-3 spring outlet area in close proximity to the North Stream.
(6)	Sample collected by Broome County from North Stream sediment at the SP-3 spring area.
(7)	Sediment composite sample collected by ARCADIS from SP-3 spring sample location as part of the spring water and sediment monitoring program of the In-Situ Reactive Zone Discontinuation Pilot Test.
(8)	Sample collected in the vicinity of SP-3-SED sample, at a minimum depth of 3 inches.
(9)	Sample collected as close as to the North Stream as possible.
(10)	Sample collected in the vicinity of SP-3-SED, after the top layer (approximately1inch) of all stained sediment was removed.

Bold constituent detected above method detection limit.

B	Analyte detected in the associated Method Blank.
J	Concentration is an estimated value
Class B	Considered to be slightly to moderately contaminated and additional testing required to evaluate the potential risks to aquatic life.
Class C	Considered to be highly contaminated and likely to pose a risk to aquatic life.
mg/kg	milligrams per kilogram
NA	not applicable
NOAA	National Oceanic and Atmospheric Administration
NYSDEC	New York State Department of Environmental Concervation
Q	Outlying QC recoveries were associates with this parameter.
SQuiRT	Screening Quick Reference Tables
	exceeds Class B sediments
	exceeds Class C sediments
	exceeds NOAA SQuiRT values
<	Analyte below detection limit.
--	not analyzed

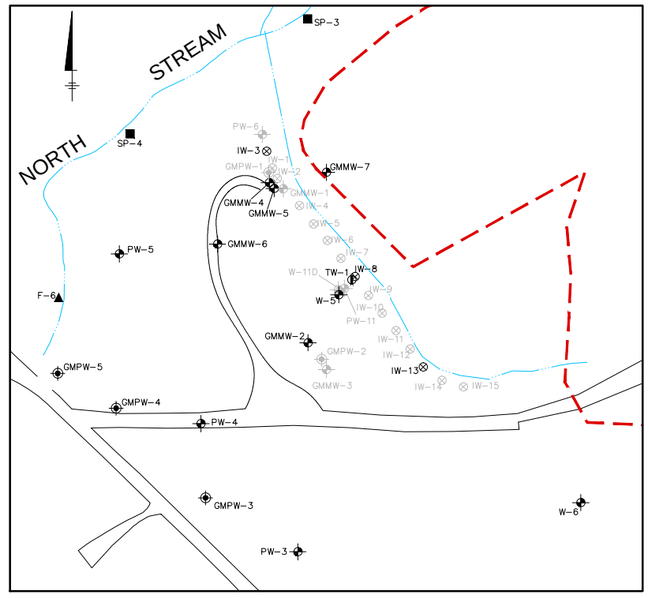
ARCADIS

Figures



EXPLANATION

BOLD	IN-SITU REACTIVE ZONE (IRZ) DISCONTINUATION PILOT TEST MONITORING WELL
W-24 GMMW-7	LOCATION AND DESIGNATION OF MONITORING WELL
SCOTT	LOCATION AND DESIGNATION OF EXISTING HOMEOWNER WELL
HILL	LOCATION AND DESIGNATION OF FORMER HOMEOWNER WELL
IW-2	LOCATION AND DESIGNATION OF INJECTION WELL
GMPW-3	LOCATION AND DESIGNATION OF PRODUCTION WELL
TW-1	LOCATION AND DESIGNATION OF TEST MONITORING WELL
F-6	LOCATION AND DESIGNATION OF SURFACE WATER SAMPLE
SP-2	LOCATION AND DESIGNATION OF SPRING SAMPLE AND CO-LOCATED SEDIMENT SAMPLE



SITE PLAN SHOWING PROJECT AREA

0 100' 200'
SCALE IN FEET

NOTE: ALL LOCATIONS ARE APPROXIMATE

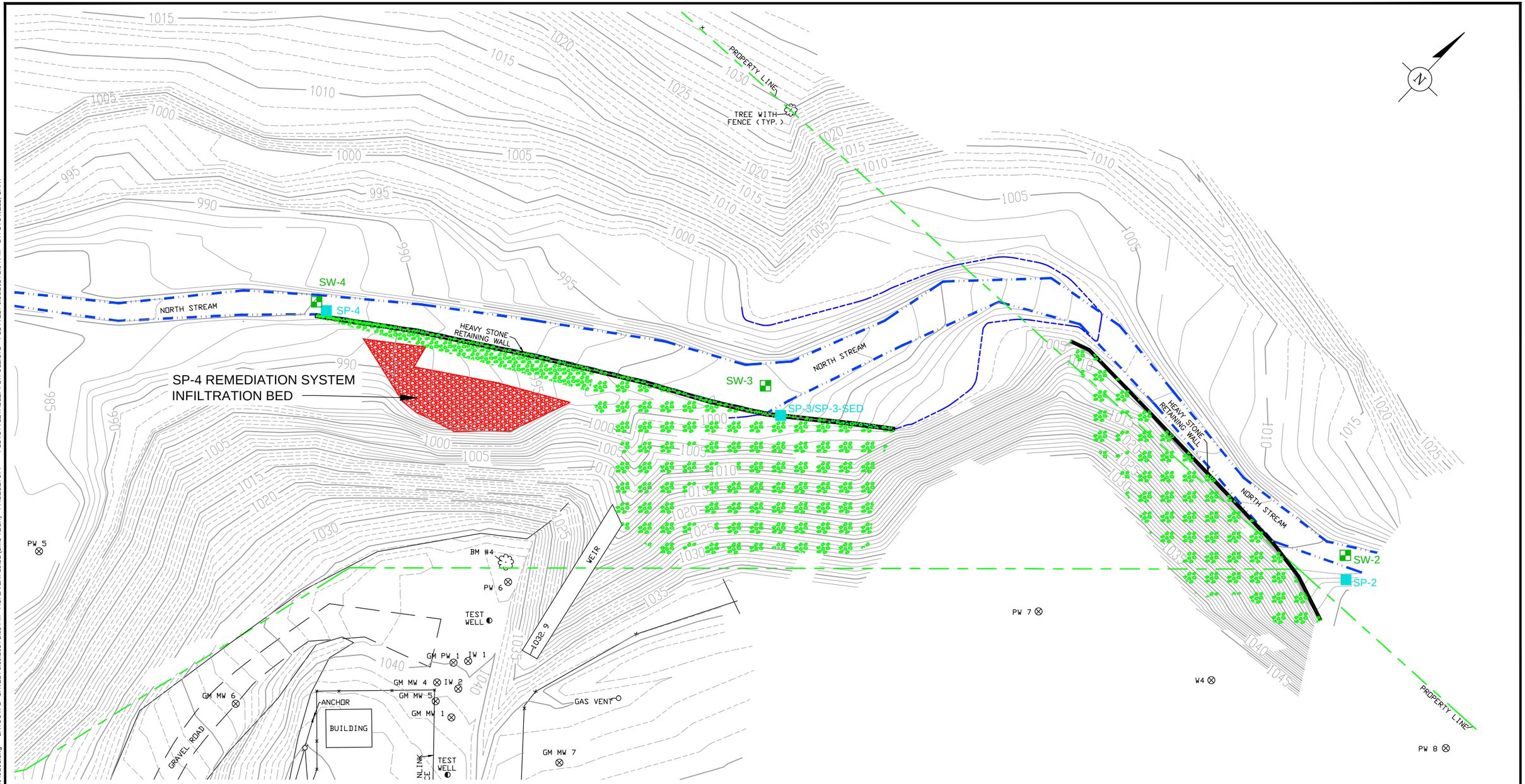
COLESVILLE LANDFILL
COLESVILLE, NEW YORK

SITE PLAN

ARCADIS

FIGURE
1

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVITY\00094900270000\4NY949B01.dwg LAYOUT: 1 SAVED: 11/20/2014 1:51 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ----
XREFS: IMAGES: PROJECTNAME: ----
X949X01
PLOTTED: 11/20/2014 2:22 PM BY: SANCHEZ, ADRIAN



LEGEND:

- SPRING WATER AND CO-LOCATED SEDIMENT SAMPLING LOCATION (APPROXIMATE)
- SURFACE WATER SAMPLING LOCATION (APPROXIMATE)
- RIP RAP
- RETAINING WALL
- NORTH STREAM

0 50' 100'

SCALE IN FEET

COLESVILLE LANDFILL
COLESVILLE, NEW YORK

SPRING WATER AND SURFACE WATER SAMPLING LOCATIONS ALONG THE NORTH STREAM

ARCADIS

FIGURE 2

Appendix A

Degradation Trend Figures

Figure A-1. Concentrations of PCE Daughter Products Versus Time in GMMW-5

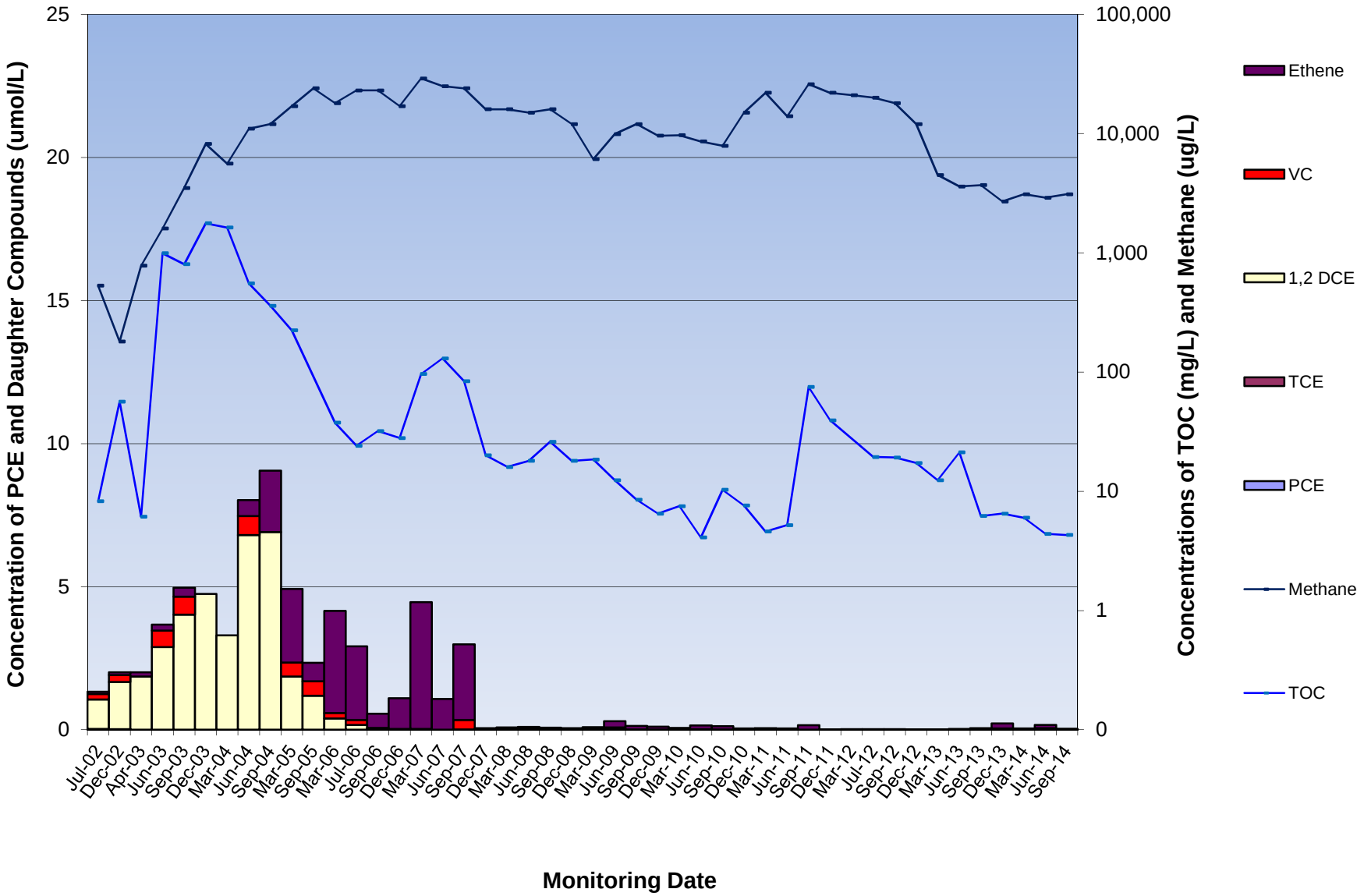


Figure A-2. Concentrations of PCE Daughter Products Versus Time in GMMW-6

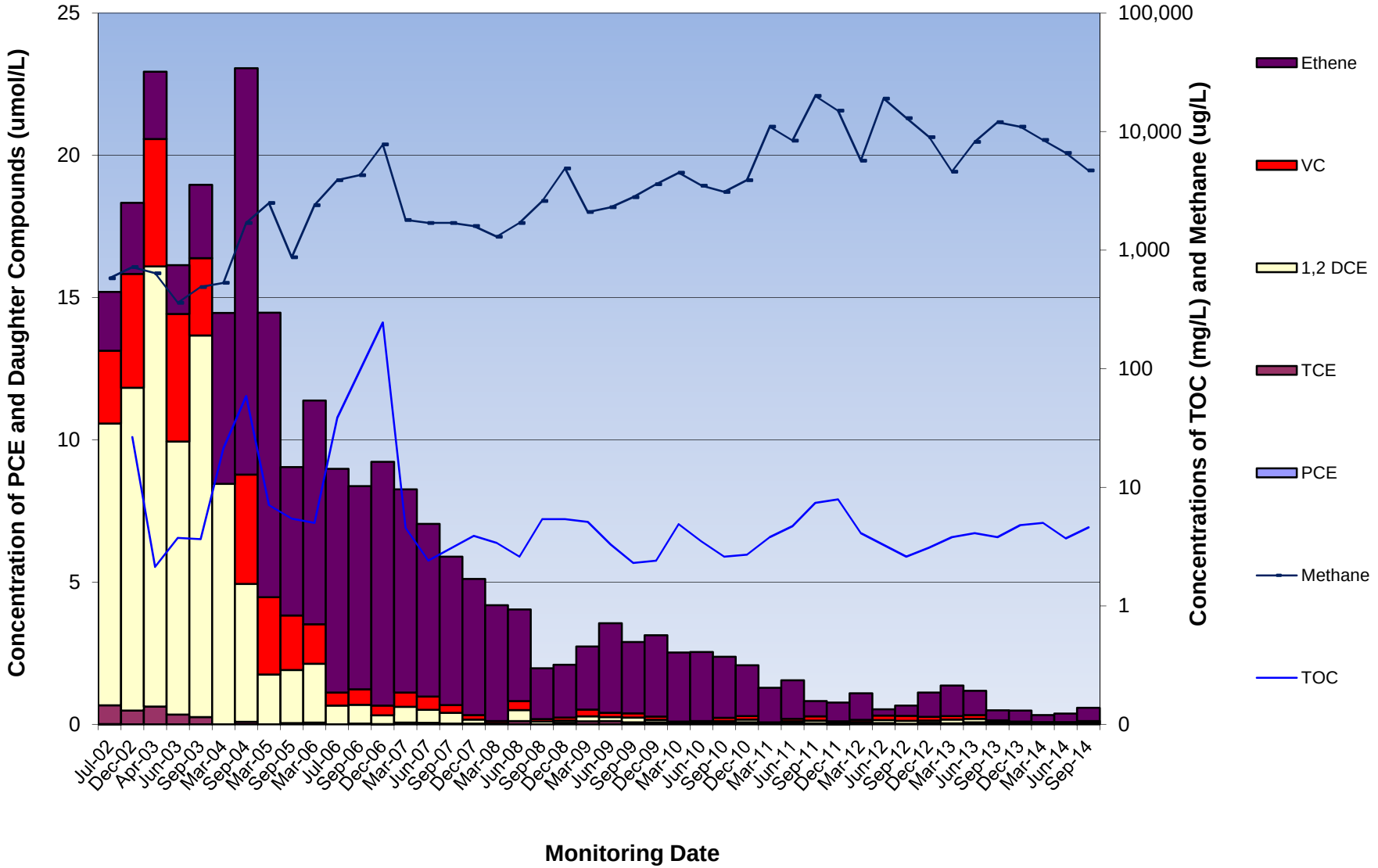


Figure A-3. Concentrations of PCE Daughter Products Versus Time in GMMW-2

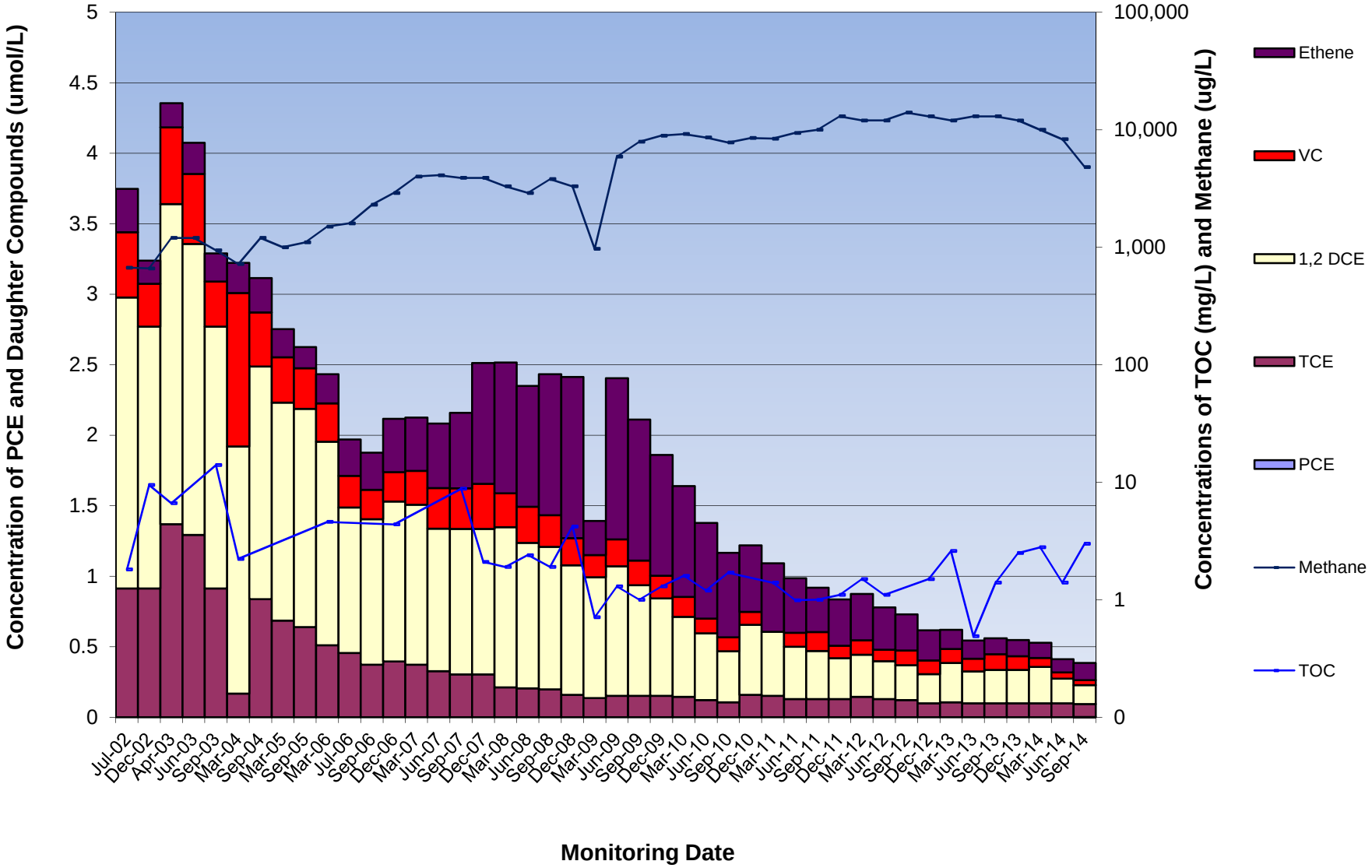


Figure A-4. Concentrations of PCE Daughter Products Versus Time in TW-1

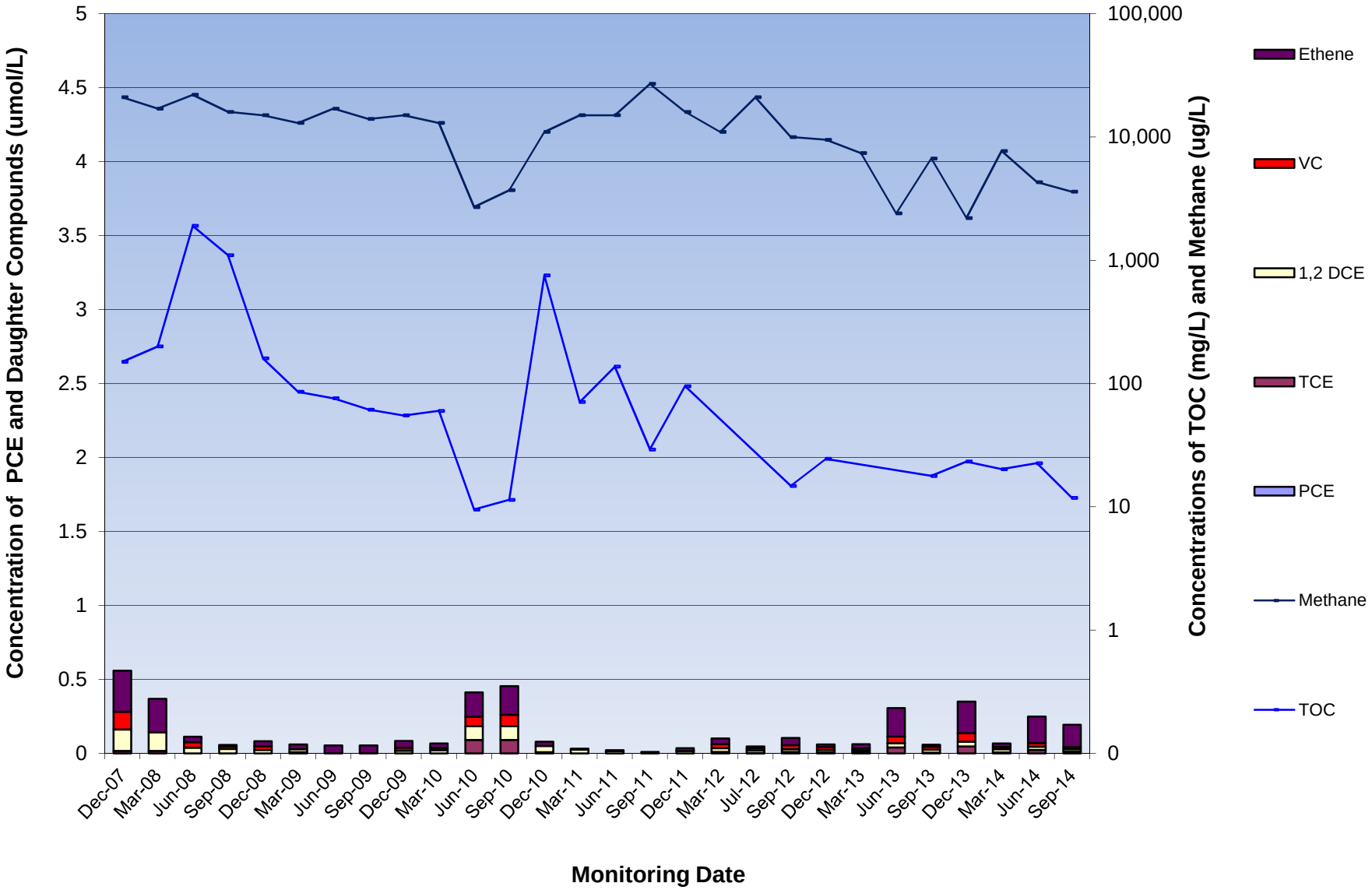


Figure A-5. Concentrations of PCE Daughter Products Versus Time in W-5

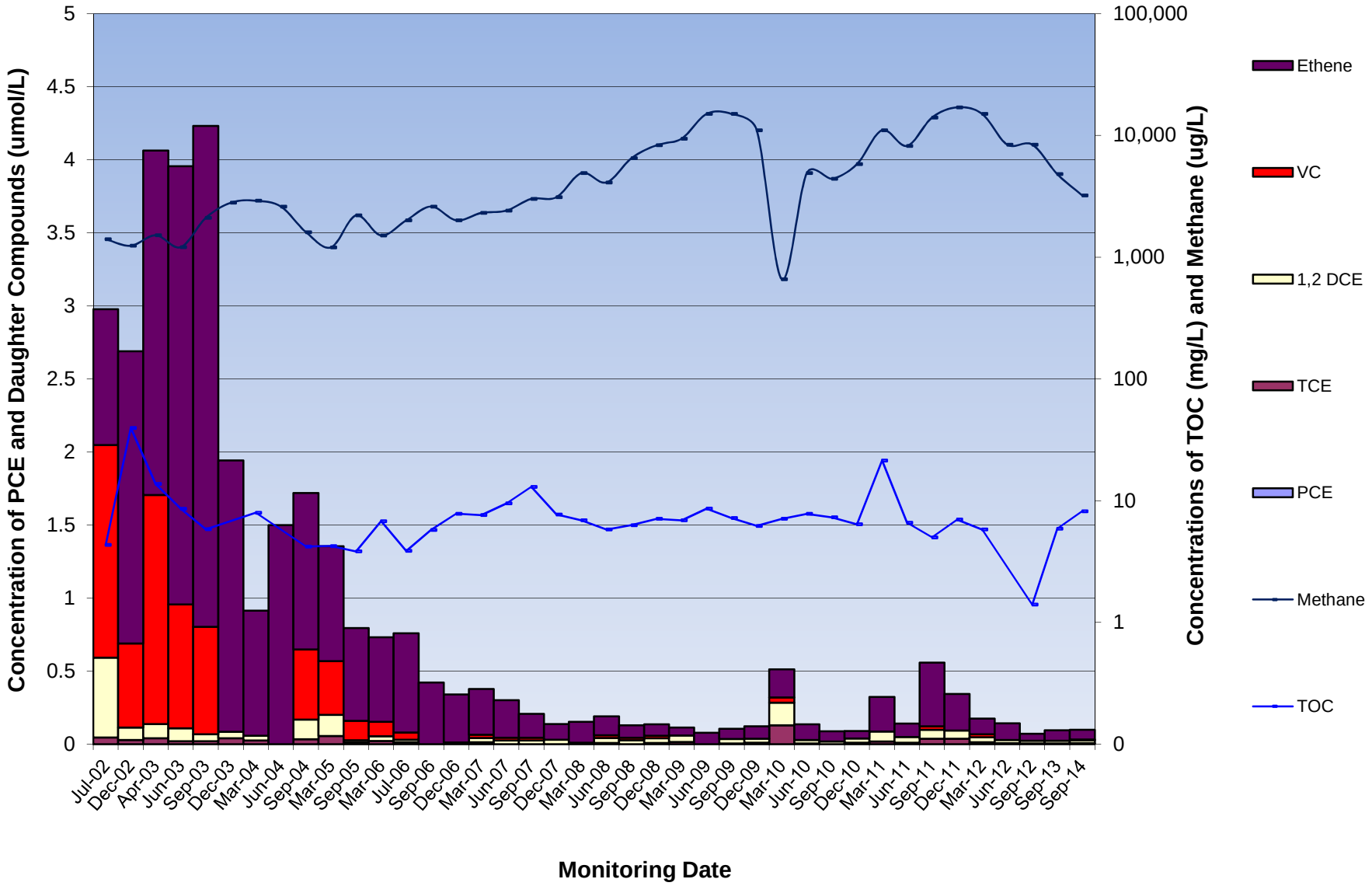


Figure A-6. Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-5

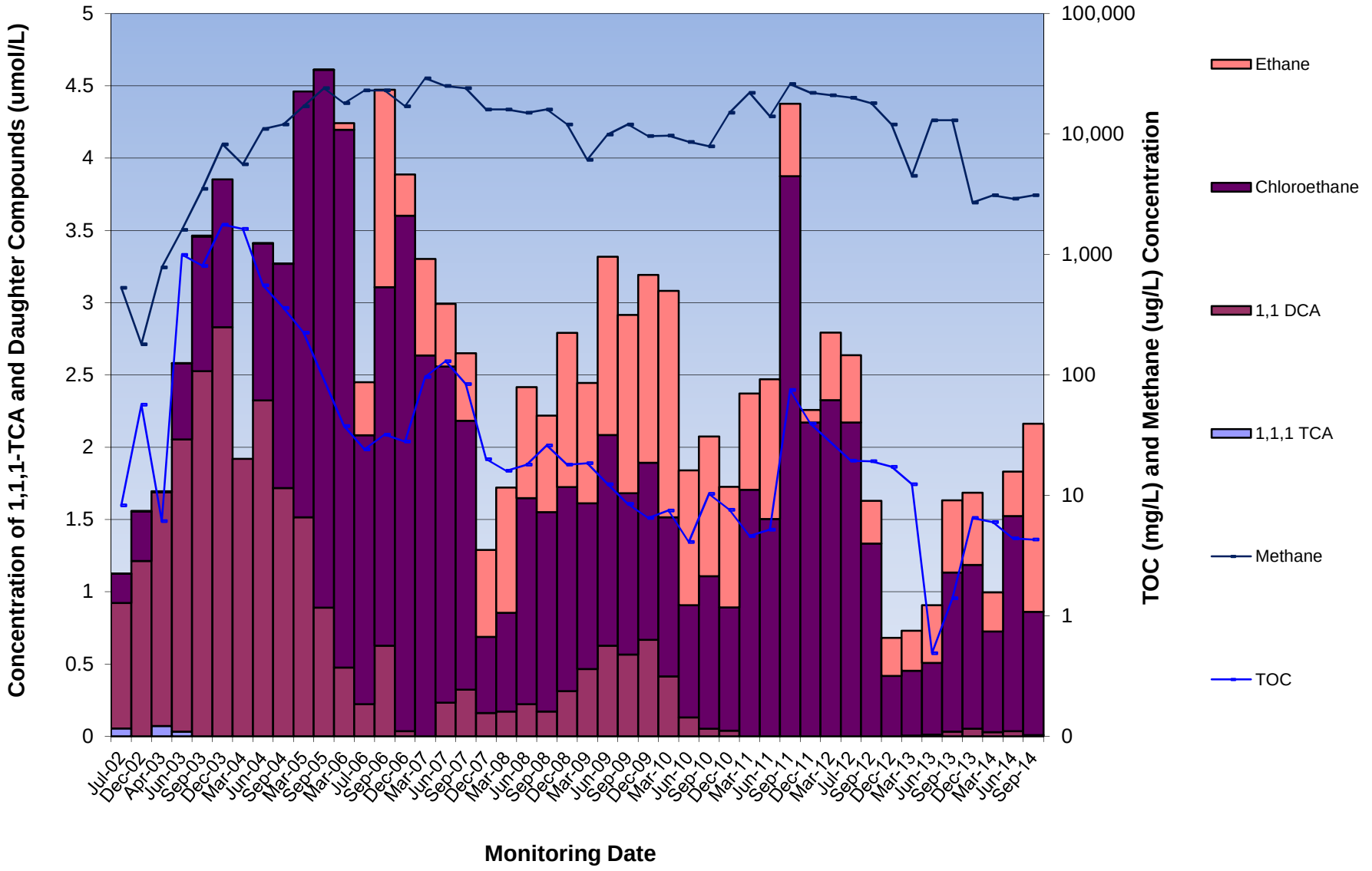


Figure A-7. Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-6

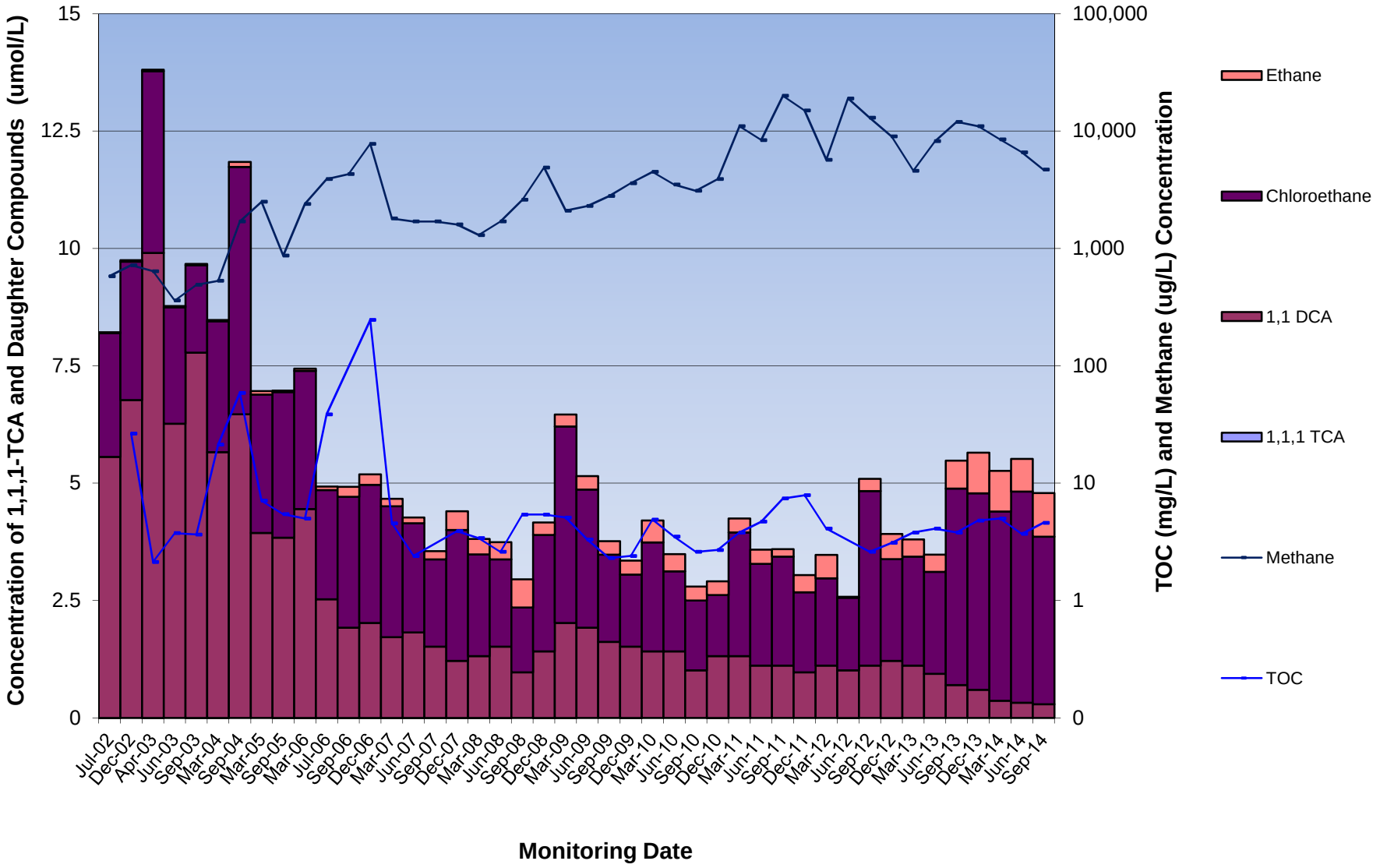


Figure A-8. Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-2

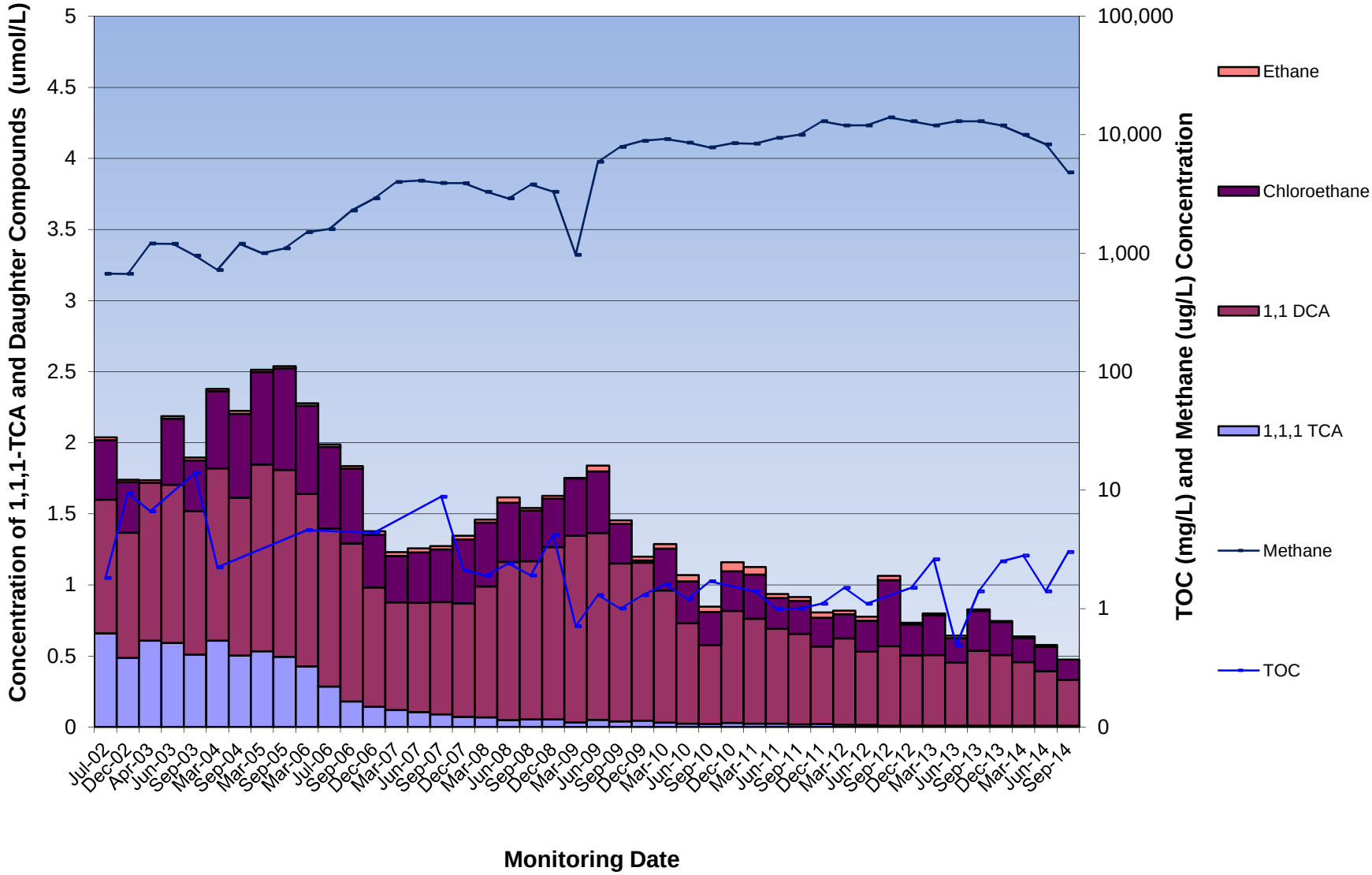


Figure A-9. Concentrations of 1,1,1-TCA Daughter Products Versus Time in TW-1

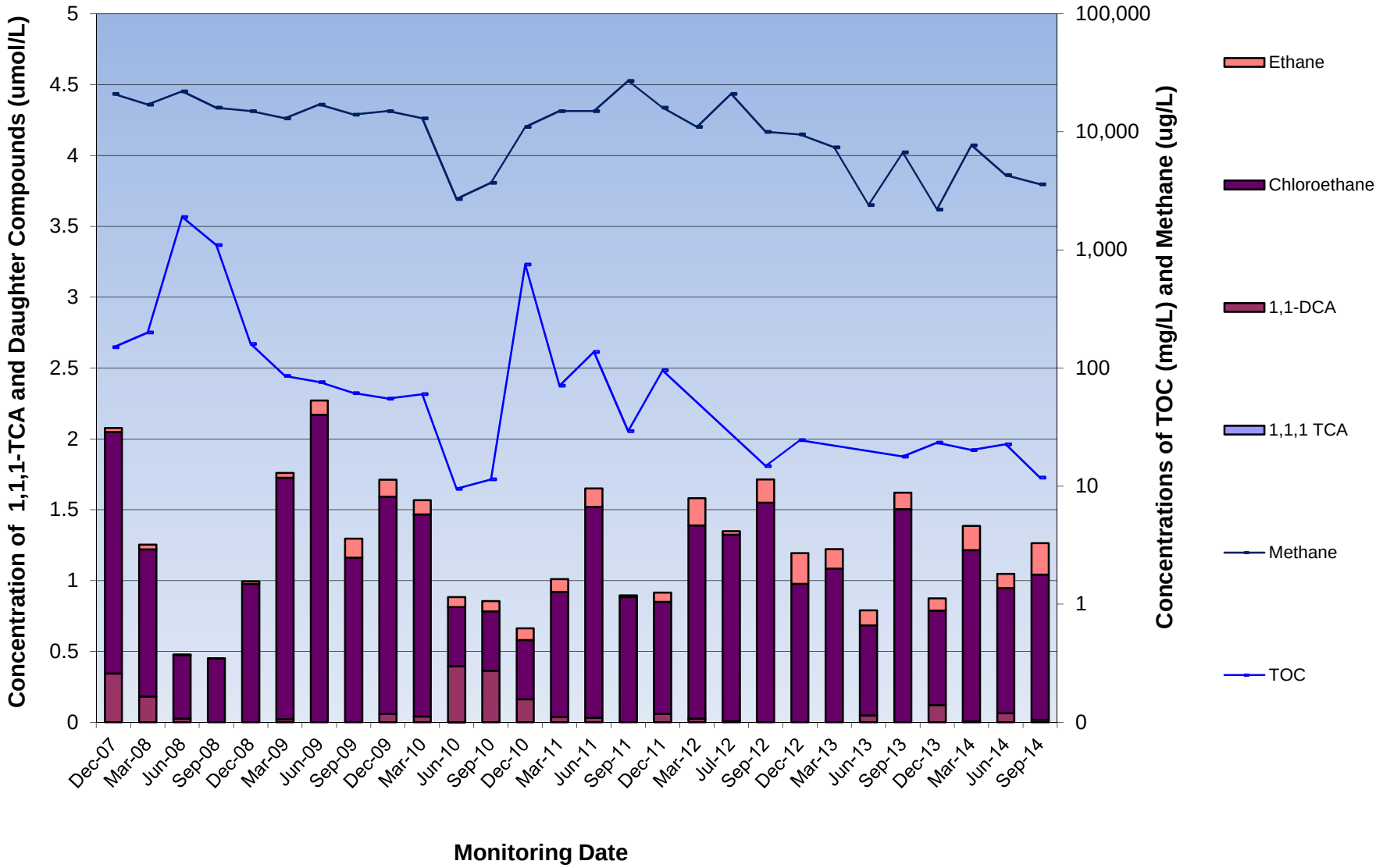
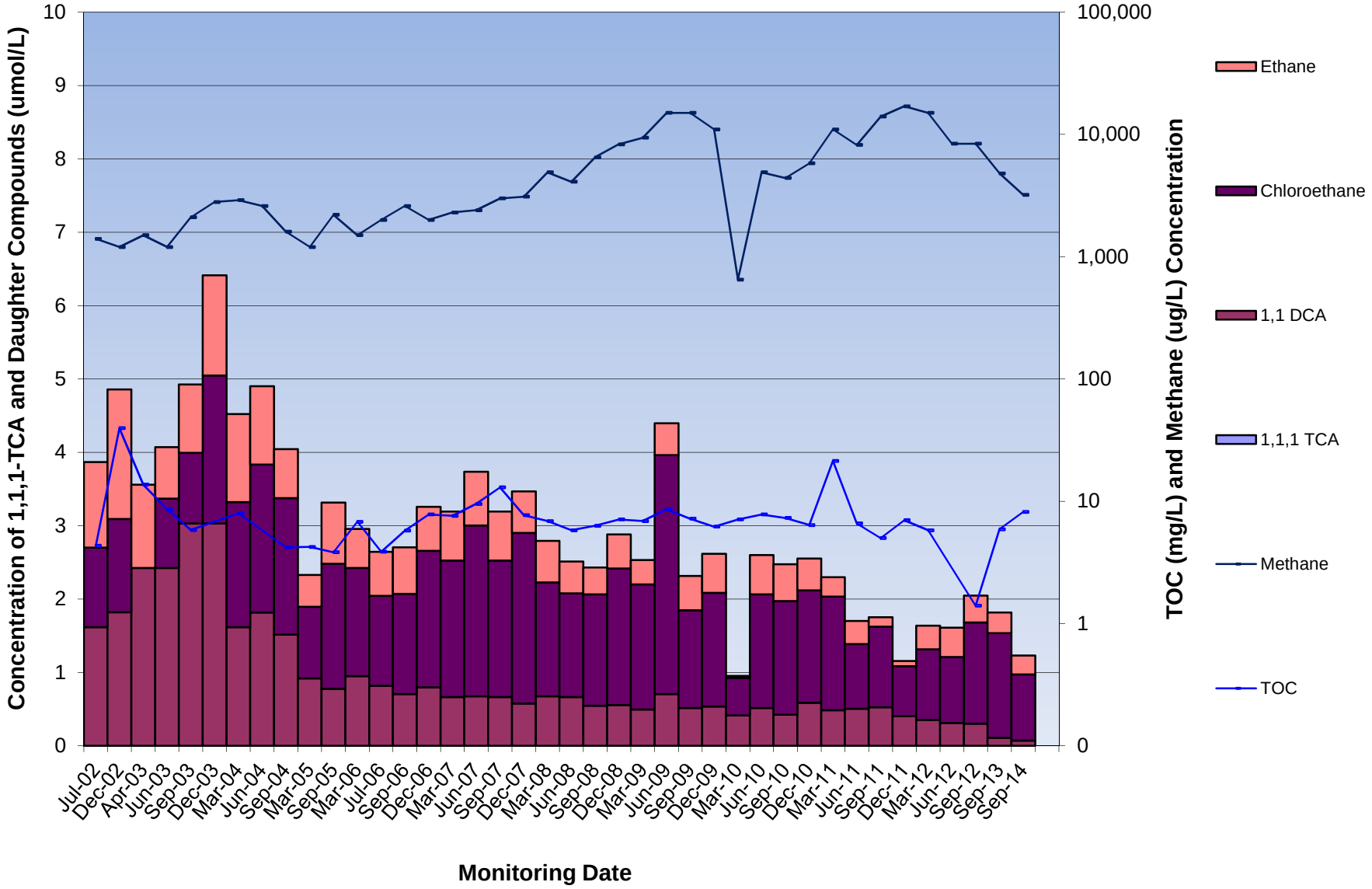


Figure A-10. Concentrations of 1,1,1-TCA Daughter Products Versus Time in W-5



Appendix B

IRZ Discontinuation Pilot Test Work Plan

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ENVIRONMENT

Mr. George Jacob, Remedial Project Manager
U.S. Environmental Protection Agency
Central New York Remediation Section
Emergency and Remedial Response Division
290 Broadway, 20th Floor
New York, NY 10007-1866

Subject:
In-Situ Reactive Zone Discontinuation Pilot Test Work Plan
Colesville Landfill Superfund Site
Colesville, New York

Date:
October 11, 2012

Contact:
Steven M. Feldman

Phone:
(631) 391-5244

Email:
Steven.Feldman@arcadis-us.com

Our ref:
NY000949.0025.00005

Dear Mr. Jacob:

In response to our September 25, 2012 conference call, and on behalf of the Broome County Division of Solid Waste Management, ARCADIS has developed this In-Situ Reactive Zone (IRZ) Discontinuation Pilot Test Work Plan (Work Plan) for the Colesville Landfill Superfund Site (Site) located in Colesville, New York. The temporary discontinuation of the automated reagent injection (ARI) system is being proposed to evaluate the resultant response on geochemical conditions in groundwater, volatile organic compound (VOC) concentration trends, and groundwater / surface water interactions. The pump-and-treat (PT) system will also be temporarily discontinued to evaluate the groundwater system under static (i.e., prior to active remediation) conditions. The specific objectives of the pilot test are to:

- Demonstrate that there is little to no benefit to groundwater quality by continuing injections and groundwater extraction and treatment;
- Document the response to groundwater geochemistry including the evaluation of alternate electron acceptors such as dissolved iron and manganese;
- Evaluate if nearby springs (e.g., SP-3) have a positive response to the discontinuation of injections, including a reduction in visible iron staining and reduction in overall spring water volume; and,

- Evaluate VOC and metals concentration trends in spring water relative to New York State Department of Environmental Conservation (NYSDEC) Division of Technical and Operational Guidance Series (TOGS) 1.1.1 Water Quality Standards and Guidance Values (NYS WQS).

- Evaluate VOC and metals concentration trends in sediment relative to NYSDEC Technical Guidance for Screening Contaminated Sediments.

In addition to the above, results of the discontinuation pilot test will be used to demonstrate that enhanced natural attenuation mechanisms, without the injection of additional organic carbon, are sufficient for the complete reductive dechlorination of residual chlorinated volatile organic compounds (CVOCs) at the Site, as proposed in the Focused Feasibility Study (FFS) Report (ARCADIS 2012).

A summary of current environmental conditions and the proposed pilot test methodology is provided below.

Current Conditions

The following subsections of this Work Plan briefly describe current conditions of site-wide groundwater quality, as presented in the FFS Report, spring water, surface water and sediment quality, PT system status and in-situ reactive zone (IRZ) status.

Site-Wide Groundwater Quality

Long-term site-wide groundwater monitoring data indicate that the dissolved phase plume is stable to decreasing in size and in general, site-wide total volatile organic compound (TVOC) concentrations remain stable to decreasing. A detailed description of TVOC concentration trends is provided in the FFS Report, including Figures 2-1 and 2-2.

Spring Water and Surface Water Quality

In response to communications with the USEPA which indicated that an expanded spring water and sediment sampling program was needed moving forward, Broome County initiated a baseline sampling program. Spring water samples were collected at the SP-2, SP-3 and SP-4 locations, and a surface water sample from the North Stream was collected in the vicinity of SP-3 during July and August of 2012. As shown in Table 1, spring water at SP-2 and SP-4 was non-detect for VOCs, with the

exception of toluene, during the July 2012 sampling event. Spring water at SP-3 exhibited detectable concentrations of select VOCs and metals during both sampling events; however, as shown in Table 2, the surface water sample collected in August 2012 from the North Stream within the vicinity of SP-3 was non-detect for all VOCs, except a minor detection of 1,1-dichloroethane; in addition, metals were significantly lower than the spring water sample from SP-3. These results continue to demonstrate that VOCs and metals detected in the spring water are not adversely impacting surface water quality in the North Stream.

Sediment Quality

In conjunction with the spring water sampling effort in July and August 2012, Broome County collected sediment samples from SP-2, SP-3 and within the North Stream in the vicinity of SP-3. A background sediment sample was also collected upstream and on the opposite bank from SP-2 as part of the July 2012 sampling event. As shown in Table 3, the sediment samples collected from SP-2 and SP-3 had slightly elevated metal concentrations when compared to the background sediment sample, while the SP-3 sediment/iron oxide film sample had significantly higher metal concentrations when compared to the background sediment. The sediment/iron oxide film sample also exhibited detections of VOCs. The SP-3 sediment sample collected in the North Stream had metal concentrations that were similar to background. Based on these results, it appears that the spring water is impacting the sediment quality within the areas of SP-2 and SP-3, based on the higher than background metal concentrations and VOCs detected in the iron oxide film. Further discussion of sediment quality relative to potential ecological risk is provided in the Mitigation and Monitoring of Potential Ecological Risk section of this Work Plan.

Groundwater Pump and Treat System

The PT system has been in operation since September 2002. The system currently extracts groundwater from GMPW-04 and GMPW-05 at average rates of 0.19 gallons per minute (gpm) and 0.14 gpm, respectively, and removes VOCs via a low profile air stripper to non-detectable levels. Since treatment system startup, approximately 3.74 pounds of TVOCs have been removed from the groundwater and the treatment system yearly mass removal rate has decreased from approximately 0.68 pounds per year (Operational Year 1) to 0.05 pounds per year (Operational Year 9). Overall, the groundwater extraction and treatment system removes negligible contaminant mass and has an overall limited effectiveness.

In-Situ Reactive Zone

Injections associated with the IRZ were initiated in September 2002 and are completed as necessary, based on the assessment of total organic carbon concentrations within select injection and monitoring wells. Figures 1-1 through 1-5 provide a summary of tetrachloroethene (PCE)-related daughter compounds and Figures 1-6 through 1-10 provide a summary of trichloroethane (TCA)-related daughter compounds in select groundwater monitoring wells within the area of the IRZ from September 2002 through July 2012. The concentrations of PCE-related daughter compounds have decreased an average of 92 percent and are currently at or below NYS WQS within monitoring wells GMMW-5, W-5, and TW-1 and slightly above NYS WQS within monitoring wells GMMW-2 and GMMW-6. The concentrations of TCA-related daughter compounds have decreased an average of 42 percent and are currently below USEPA maximum contaminant levels (MCLs) for all monitoring wells sampled at the site but are above NYS WQS for 1,1-dichloroethane and chloroethane in select monitoring wells.

Field and laboratory groundwater data from the most recent quarterly sampling event for wells TW-1, GMMW-2, GMMW-5, GMMW-6, and W-5 indicate that reducing conditions are being maintained within the IRZ. This is evidenced by the presence of reduced forms of alternate electron acceptors (i.e., methane) at a concentration significantly higher than baseline conditions. The presence of biodegradation end product concentrations in monitoring wells also indicates the continued occurrence of bioactivity and biodegradation of VOCs within the IRZ. Figures 1-1 through 1-10 show the concentration of methane, ethene, and ethane at select monitoring wells in the vicinity of the IRZ.

Overall, both PCE-related and TCA-related daughter compounds continue to exhibit overall decreasing trends compared to initiation of the IRZ injection and monitoring wells within the IRZ continue to exhibit reduced forms of alternate electron acceptors and biodegradation end products; however, trends within the last five years have started stabilizing and PCE-related and TCA-related daughter compound concentrations are decreasing at a much slower rate.

IRZ Discontinuation Pilot Test

As documented in the FFS and above, the existing remediation system (primarily the IRZ) has effectively reduced VOCs within site groundwater, as well as controlled their migration downgradient of the landfill. However, the overall declining trend has

stabilized and the rate of mass reduction within the IRZ and by the groundwater extraction and treatment system has significantly decreased. The iron oxide staining and elevated metal concentrations noted within the SP-3 sediment may also be exacerbated by the strongly reducing conditions created by the IRZ injections. These conditions are conducive for establishing higher total dissolved iron concentrations in groundwater, which once exposed to air, oxidize and precipitate to a solid form.

The primary elements of the discontinuation pilot test include:

- Temporary shutdown of all treatment system components with the exception of treatment at SP-5.
- A groundwater monitoring program.
- A spring water and sediment monitoring program;
- A contingency plan; and,
- Data evaluation and reporting.

A description of each of the pilot test program elements is provided below.

Pump-and-Treat System and Automated Reagent Injection System Shutdown

The treatment system will be shut down during the first quarter of Operational Year 11 (October-December 2012). Final operation and maintenance for both systems will be completed during the next quarterly sampling event. The system will be drained and certain mechanical components will be removed from service and stored (e.g., the recovery well pumps) to ensure that both systems are ready to be restarted, if required under the contingency plan.

Groundwater Monitoring Program

Groundwater monitoring during the period of the pilot test will be consistent with the USEPA and NYSDEC-approved LTM Plan (ARCADIS G&M, Inc. 2002), LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003), Interim Remedial Action Report (ARCADIS G&M, Inc. 2004), and the Proposed Modifications to the Long Term Monitoring Program (ARCADIS G&M, Inc. 2005).

Table 4 provides a summary of the proposed annual, semi-annual and quarterly sampling to be completed during the first year of the pilot test. Groundwater samples will be submitted to the laboratory for analysis of VOCs and geochemical parameters, including total organic carbon, alternate electron acceptors, methane, ethene and ethane, and field analyzed for pH, temperature and specific conductance.

The proposed monitoring program for Year 2 of the pilot test will be submitted to the USEPA and NYSDEC following review and evaluation of the first year results. However, as describe below, groundwater quality data will be continuously evaluated and additional sampling locations and/or frequency of sampling may be recommended throughout the duration of the pilot test.

Spring Water and Sediment Monitoring Program

Spring water sampling during the period of the pilot test will be consistent with the USEPA and NYSDEC-approved LTM Plan (ARCADIS G&M, Inc. 2002), LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS G&M, Inc. 2003), Interim Remedial Action Report (ARCADIS G&M, Inc. 2004), and the Proposed Modifications to the Long Term Monitoring Program (ARCADIS G&M, Inc. 2005). Table 4 provides a summary of the annual, semi-annual and quarterly spring water and sediment sampling to be completed. All spring water and surface water samples collected will be laboratory analyzed for VOCs and total metals and field analyzed for pH, temperature and specific conductance. All sediment samples collected will be laboratory analyzed for total metals.

In addition to the above, a spring water inspection will be completed on a quarterly basis to evaluate the presence and appearance/condition of existing springs. Photographs will be taken when appropriate. Spring water inspections will be documented in the Semi-Annual Monitoring Reports.

Contingency Plan

Analytical data will be evaluated on an ongoing basis to ensure that groundwater quality does not deteriorate as a result of shutting down the treatment system. Particular focus will be placed on monitoring wells located closest to the injection wells. Specifically, monitoring wells GMMW-5, TW-1, W-5, GMMW-6, and GMMW-2 will be used as the primary mechanism for determining whether a contingent action is warranted. Contingent activities could include:

- Supplemental groundwater monitoring.
- Injection of organic carbon at select injection wells; and/or,
- Restart of the PT system.

The decision to implement a contingent activity in the unlikely event of an abrupt change in groundwater quality will depend on several factors including, but not limited to:

- The duration of an increasing trend when compared to pre-shutdown conditions;
- Confirmatory groundwater monitoring of the observed trend; and,
- The magnitude of the groundwater quality change.

Recommendations for contingent activities will be made to the USEPA and NYSDEC in the Semi-Annual Monitoring Reports. If a significant change is observed, the USEPA and NYSDEC will be notified immediately.

Data Evaluation and Reporting

Data evaluation will be completed on a quarterly basis to ensure that a contingent activity is not warranted as described above. Interim reporting of the pilot test activities, progress, and data evaluations will be included as part of the Semi-Annual Monitoring Reports. After the scope of work described in this Work Plan has been completed, a summary report will be prepared that provides data evaluations, conclusions and recommendations. The summary report will be included as part of the Year 12 Annual Report.

Schedule

ARCADIS intends to start the pilot study in October 2012 (Year 11, Quarter 1), which will be initiated with the shutdown of the treatment systems. The pilot study will continue through the end of September 2014 (Year 12, Quarter 4). A schedule for the completion of the pilot study and associated milestones is included as Figure 2.

Mitigation and Monitoring of Potential Ecological Risk

ARCADIS, on behalf of Broome County, conducted an ecological screening of spring water and surface water in June 2010 in response to a USEPA finding that a protectiveness determination relative to ecological receptors could not be made until spring and surface water quality data were collected. The ARCADIS study concluded that VOCs did not exceed any of the NYS WQS (ARCADIS 2010). However, as described in earlier sections of the Work Plan, sampling conducted by Broome County and their contractor during the summer of 2012 currently indicate exceedences of VOCs relative to NYS WQS at the SP-3 area.

Sediment samples were not collected as part of the 2010 study, but were collected during the summer of 2012. Concentrations of iron in sediment samples associated with springs were slightly above the Lowest Effect Level (LEL) sediment screening value of 20,000 milligrams per kilogram (mg/kg). The sediment/iron oxide film composite sample at SP-3 exhibited an iron concentration of 55,000 mg/kg, which exceeds the Severe Effect Level (SEL) screening criteria. Results for manganese exhibited exceedences similar to those of iron when compared with the SEL and LEL for manganese of 460 mg/kg and 1,100 mg/kg, respectively. Various other metals (i.e., arsenic, chromium, copper and nickel) were detected at concentrations well below the SEL, but slightly higher than the LEL.

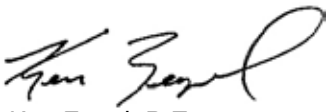
Based on these observations, the path forward for mitigation and monitoring of spring water and sediment is as follows:

- Mitigate the potential adverse impacts to wildlife by rendering the spring in the SP-3 area inaccessible.
- Inspect and monitor spring water quality during implementation of the IRZ Discontinuation Pilot Test.
- Monitor sediment quality since sediment impacts that may adversely impact benthic aquatic life are very isolated and do not warrant mitigation.
- Continue to assess site conditions and the effectiveness of the mitigation and monitoring measures in ensuring the protectiveness of ecological receptors.

If there are any questions, please do not hesitate to contact us.

Sincerely,

ARCADIS of New York, Inc.



Ken Zegel, P.E.
Senior Engineer

Steven M. Feldman
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Payson Long, NYSDEC
Julia Kenney, NYSDOH
Laurie Haskell, Broome County
Dan Schofield, Broome County

ARCADIS

Tables

Table 1 Concentrations of Volatile Organic Compounds and Metals Detected in Spring Water Samples
Colesville Landfill, Broome County, New York.

Constituents	Sample ID:	SP-2	SP-3	SP-3	SP-4
	Location ID:	SP-2	SP-3	SP-3	SP-4
	Date:	7/13/2012	7/13/2012	08/09/12	07/13/12
VOCs (units in ug/L)					
1,1,2-trichloro-1,2,2-trifluoroethane		<5.0 Q	<5.0 Q	<5.0 Q	<5.0 Q
1,4-Dioxane		<100 Q	<100 Q	<100 Q	<100 Q
2-Butanone		<10	<10	<10 Q	<10
2-Hexanone		<10	<10	<10	<10
4-Methyl-2-pentanone		<10	<10	<10	<10
Acetone		<10	<10	<10	<10
Carbon Disulfide		<5.0	<5.0	<5.0	<5.0
Cyclohexane		<5.0 Q	<5.0 Q	<5.0 Q	<5.0 Q
Methyl acetate		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
Methylcyclohexane		<5.0 Q	<5.0 Q	<5.0 Q	<5.0 Q
1,1,2,2-Tetrachloroethane		<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane		<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane		<5.0	<5.0	<5.0	<5.0
1,2,3-Trichlorobenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
1,2,4-Trichlorobenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
1,2,4-Trimethylbenzene		<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
1,2-Dibromo-3-chloropropane		<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane		<5.0	**76**	**100**	**2.2 J**
1,1-Dichloroethene		<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane		<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane		<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane		<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene		<5.0	<5.0	<5.0	<5.0
Benzene		<5.0	<5.0	<5.0	<5.0
Bromochloromethane		<5.0	<5.0	<5.0	<5.0
Bromodichloromethane		<5.0	<5.0	<5.0	<5.0
Bromoform		<5.0	<5.0	<5.0	<5.0
Bromomethane		<5.0	<5.0	<5.0	<5.0
n-Butylbenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
Carbon Tetrachloride		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
Chlorobenzene		<5.0	**42**	**49**	<5.0
Chloroethane		<5.0	**18**	**21**	<5.0
Chloroform		<5.0	<5.0	<5.0	<5.0
Chloromethane		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
cis-1,2-Dichloroethene		<5.0 Q	**24 Q**	**26**	<5.0 Q
cis-1,3-Dichloropropene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
Dibromochloromethane		<5.0	<5.0	<5.0	<5.0
Dichlorodifluoromethane		<5.0	<5.0	<5.0	<5.0
Ethylbenzene		<5.0	<5.0	<5.0	<5.0
Isopropylbenzene		<5.0	<5.0	<5.0	<5.0
Methylene Chloride		<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether		<5.0 Q	<5.0 Q	<5.0 Q	<5.0 Q
o-Xylene		<5.0	<5.0	<5.0	<5.0
m,p-Xylene		<5.0	<5.0	<5.0	<5.0
n-Propylbenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
sec-Butylbenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
Styrene		<5.0	<5.0	<5.0	<5.0
tert-Butylbenzene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q
trans-1,3-Dichloropropene		<5.0 Q	<5.0 Q	<5.0	<5.0 Q

See notes on next page.

Table 1 Concentrations of Volatile Organic Compounds and Metals Detected in Spring Water Samples
Colesville Landfill, Broome County, New York.

Constituents	Sample ID:	SP-2	SP-3	SP-3	SP-4
	Location ID:	SP-2	SP-3	SP-3	SP-4
	Date:	7/13/2012	7/13/2012	08/09/12	07/13/12
VOCs (units in ug/L) (cont.)					
Trichlorofluoromethane		<5.0 Q	<5.0 Q	<5.0 Q	<5.0 Q
Tetrachloroethene		<5.0 Q	<5.0 Q	<5.0 Q	<5.0 Q
Toluene		**12**	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene		<5.0	<5.0	<5.0	<5.0
Trichloroethene		<5.0	**7.0**	**7.8**	<5.0
Vinyl Chloride		<5.0	**21**	**25**	<5.0
Total VOCs		**12**	**190**	**230**	**2.2 J**
Metals (units in mg/L)					
Aluminum		--	--	<0.0500	--
Antimony		--	--	<0.0150	--
Arsenic		--	--	<0.0500 Q	--
Barium		--	--	<0.300	--
Beryllium		--	--	<0.00500	--
Cadmium		--	--	<0.00500	--
Calcium		--	--	**30.0**	--
Chromium		--	<0.0500	<0.0500	--
Cobalt		--	<0.0500	<0.0500	--
Copper		--	--	<0.0200	--
Iron		--	**16.0**	**16.0**	--
Lead		--	--	<0.00500	--
Magnesium		--	**7.00**	**6.50**	--
Manganese		--	**4.40**	**4.10**	--
Mercury		--	--	<0.000400	--
Nickel		--	--	<0.0300 Q	--
Potassium		--	--	**1.10**	--
Selenium		--	--	<0.0250 Q	--
Silver		--	<0.0500	<0.0500	--
Sodium		--	--	**3.80**	--
Thallium		--	--	<0.0150	--
Vanadium		--	<0.300	<0.00300	--
Zinc		--	--	**0.0270 Q**	--
Miscellaneous					
Dissolved oxygen (mg/L)		--	--	**8.45**	--
pH (SU)		--	**7.79**	**7.87**	--
General Chemistry (units in mg/L)					
Total Organic Carbon		--	<3	--	--

Notes:

Bold constituent detected above method detection limit.

<	Analyte below detection limit.
J	Analyte detected below quantitation limit.
Q	Outlying QC recoveries were associates with this parameter.
B	Analyte detected in the associated Method Blank
ug/L	Micrograms per liter
mg/L	Milligrams per liter
VOCs	Volatile organic compounds.
--	Not Analyzed

Table 2 Concentrations of Volatile Organic Compounds and Metals Detected in Surface Water Samples
Colesville Landfill, Broome County, New York.

Constituents	Sample ID:	SP-3
	Location ID:	SP-3 Stream
	Date:	8/8/2012
VOCs (units in ug/L)		
1,1,2-trichloro-1,2,2-trifluoroethane		<5.0 Q
1,4-Dioxane		<100 Q
2-Butanone		<10 Q
2-Hexanone		<10
4-Methyl-2-pentanone		<10
Acetone		<10
Carbon Disulfide		<5.0
Cyclohexane		<5.0 Q
Methyl acetate		<5.0
Methylcyclohexane		<5.0 Q
1,1,2,2-Tetrachloroethane		<5.0
1,1,1-Trichloroethane		<5.0
1,1,2-Trichloroethane		<5.0
1,2,3-Trichlorobenzene		<5.0
1,2,4-Trichlorobenzene		<5.0
1,2,4-Trimethylbenzene		<5.0
1,3,5-Trimethylbenzene		<5.0
1,2-Dibromo-3-chloropropane		<5.0
1,1-Dichloroethane		**3.0 J**
1,1-Dichloroethene		<5.0
1,2-Dibromoethane		<5.0
1,2-Dichlorobenzene		<5.0
1,2-Dichloroethane		<5.0
1,2-Dichloropropane		<5.0
1,3-Dichlorobenzene		<5.0
1,4-Dichlorobenzene		<5.0
Benzene		<5.0
Bromochloromethane		<5.0
Bromodichloromethane		<5.0
Bromoform		<5.0
Bromomethane		<5.0
n-Butylbenzene		<5.0
Carbon Tetrachloride		<5.0
Chlorobenzene		<5.0
Chloroethane		<5.0
Chloroform		<5.0
Chloromethane		<5.0
cis-1,2-Dichloroethene		<5.0
cis-1,3-Dichloropropene		<5.0
Dibromochloromethane		<5.0
Dichlorodifluoromethane		<5.0
Ethylbenzene		<5.0
Isopropylbenzene		<5.0
Methylene Chloride		<5.0
Methyl tert-butyl ether		<5.0 Q
o-Xylene		<5.0
m,p-Xylene		<5.0
n-Propylbenzene		<5.0
sec-Butylbenzene		<5.0
Styrene		<5.0
tert-Butylbenzene		<5.0
trans-1,3-Dichloropropene		<5.0
Trichlorofluoromethane		<5.0 Q
Tetrachloroethene		<5.0 Q
Toluene		<5.0

See notes on next page.

Table 2 Concentrations of Volatile Organic Compounds and Metals Detected in Surface Water Samples
Colesville Landfill, Broome County, New York.

Constituents	Sample ID:	SP-3
	Location ID:	SP-3 Stream
	Date:	8/8/2012
VOCs (units in ug/L) (cont.)		
trans-1,2-Dichloroethene		<5.0
Trichloroethene		<5.0
Vinyl Chloride		<5.0
Total VOCs		**3.0 J**
Metals (units in mg/L)		
Aluminum		<0.0500
Antimony		<0.0150
Arsenic		<0.0500 Q
Barium		<0.300
Beryllium		<0.00500
Cadmium		<0.00500
Calcium		**18.0**
Chromium		<0.0500
Cobalt		<0.0500
Copper		<0.0200
Iron		**0.280**
Lead		<0.00500
Magnesium		**3.80**
Manganese		**0.150**
Mercury		<0.000400
Nickel		<0.0300 Q
Potassium		**0.690**
Selenium		<0.0250 Q
Silver		<0.0500
Sodium		**5.60**
Thallium		<0.0150
Vanadium		<0.00300
Zinc		**0.0370 Q**
Miscellaneous		
Dissolved oxygen (mg/L)		**7.88**
pH (SU)		**7.8**
General Chemistry (units in mg/L)		
Total Organic Carbon		--

Notes:

Bold constituent detected above method detection limit.

<	Analyte below detection limit.
J	Analyte detected below quantitation limit.
Q	Outlying QC recoveries were associates with this parameter.
B	Analyte detected in the associated Method Blank
ug/L	Micrograms per liter
mg/L	Milligrams per liter
VOCs	Volatile organic compounds.
--	Not Analyzed

Table 3 Concentrations of Volatile Organic Compounds and Metals Detected in Sediment Samples
Colesville Landfill, Broome County, New York.

Constituents	Sample ID:	SP-2 Sed Upstream/Opp.Bank	SP-2 Sediment	SP-3 Sediment/Iron Oxide Film	SP-3 Sediment	SP-3 Stream Sediment
	Location ID:	SP-2	SP-2	SP-3	SP-3	SP-3
	Date:	7/13/2012	7/13/2012	7/13/2012	08/08/12	08/08/12
VOCs (units in ug/kg)						
1,1,2-trichloro-1,2,2-trifluoroethane		--	--	<17	--	--
1,4-Dioxane		--	--	<330	--	--
2-Butanone		--	--	<33	--	--
2-Hexanone		--	--	<33	--	--
4-Methyl-2-pentanone		--	--	<33	--	--
Acetone		--	--	<33	--	--
Carbon Disulfide		--	--	<17	--	--
Cyclohexane		--	--	<17	--	--
Methyl acetate		--	--	<17	--	--
Methylcyclohexane		--	--	<17	--	--
1,1,2,2-Tetrachloroethane		--	--	<17	--	--
1,1,1-Trichloroethane		--	--	<17	--	--
1,1,2-Trichloroethane		--	--	<17	--	--
1,2,3-Trichlorobenzene		--	--	<17	--	--
1,2,4-Trichlorobenzene		--	--	<17	--	--
1,2,4-Trimethylbenzene		--	--	<17	--	--
1,3,5-Trimethylbenzene		--	--	<17	--	--
1,2-Dibromo-3-chloropropane		--	--	<17	--	--
1,1-Dichloroethane		--	--	**39**	--	--
1,1-Dichloroethene		--	--	<17	--	--
1,2-Dibromoethane		--	--	<17	--	--
1,2-Dichlorobenzene		--	--	<17	--	--
1,2-Dichloroethane		--	--	<17	--	--
1,2-Dichloropropane		--	--	<17	--	--
1,3-Dichlorobenzene		--	--	<17	--	--
1,4-Dichlorobenzene		--	--	<17	--	--
Benzene		--	--	<17	--	--
Bromochloromethane		--	--	<17	--	--
Bromodichloromethane		--	--	<17	--	--
Bromoform		--	--	<17	--	--
Bromomethane		--	--	<17	--	--
n-Butylbenzene		--	--	<17	--	--
Carbon Tetrachloride		--	--	<17	--	--
Chlorobenzene		--	--	<17	--	--
Chloroethane		--	--	<17	--	--
Chloroform		--	--	**8.6 J**	--	--
Chloromethane		--	--	<17	--	--
cis-1,2-Dichloroethene		--	--	**7.0 J**	--	--
cis-1,3-Dichloropropene		--	--	<17	--	--
Dibromochloromethane		--	--	<17	--	--
Dichlorodifluoromethane		--	--	<17	--	--
Ethylbenzene		--	--	<17	--	--
Isopropylbenzene		--	--	<17	--	--
Methylene Chloride		--	--	<17	--	--
Methyl tert-butyl ether		--	--	<17	--	--
o-Xylene		--	--	<17	--	--
m,p-Xylene		--	--	<17	--	--
n-Propylbenzene		--	--	<17	--	--
sec-Butylbenzene		--	--	<17	--	--
Styrene		--	--	<17	--	--
tert-Butylbenzene		--	--	<17	--	--
trans-1,3-Dichloropropene		--	--	<17	--	--

See notes on next page.

Table 3 Concentrations of Volatile Organic Compounds and Metals Detected in Sediment Samples
Colesville Landfill, Broome County, New York.

Constituents	Sample ID:	SP-2 Sed Upstream/Opp.Bank	SP-2 Sediment	SP-3 Sediment/Iron Oxide Film	SP-3 Sediment	SP-3 Stream Sediment
	Location ID:	SP-2	SP-2	SP-3	SP-3	SP-3
	Date:	7/13/2012	7/13/2012	7/13/2012	08/08/12	08/08/12
VOCs (units in ug/kg) (cont.)						
Trichlorofluoromethane		--	--	<17	--	--
Tetrachloroethene		--	--	<17	--	--
Toluene		--	--	<17	--	--
trans-1,2-Dichloroethene		--	--	<17	--	--
Trichloroethene		--	--	**6.3 J**	--	--
Vinyl Chloride		--	--	<17	--	--
Total VOCs		--	--	**61 J**	--	--
Metals (units in mg/kg)						
Aluminum		--	--	--	**9,000**	**8,100**
Antimony		--	--	--	<6.50	<5.60
Arsenic		--	--	--	**16.0**	**14.0**
Barium		--	--	--	<190 Q	<170 Q
Beryllium		--	--	--	<3.20	<2.80
Cadmium		--	--	--	<3.20	<2.80
Calcium		--	--	--	**810**	**630**
Chromium		**15.0 J**	**18.0 J**	**34.0 J**	**18.0 J**	**15.0 J**
Cobalt		<32.0	<32.0	<83.0	<32.0	<28.0
Copper		--	--	--	**21.0**	**19.0**
Iron		**19,000 B**	**23,000 B**	**55,000 B**	**24,000**	**19,000**
Lead		--	--	--	**12.0**	**19.0**
Magnesium		**2,700**	**2,800**	**4,600**	**2,900**	**2,500**
Manganese		**300**	**1,200**	**10,000**	**640**	**490**
Mercury		--	--	--	<0.112	<0.0911
Nickel		--	--	--	**17.0 QJ**	**15.0 QJ**
Potassium		--	--	--	**730**	**490**
Selenium		--	--	--	<3.90 Q	<3.40 Q
Silver		<32.0 Q	<32.0 Q	<83.0 Q	<32.0	<28.0
Sodium		--	--	--	<320	<280
Thallium		--	--	--	<3.90	<3.40
Vanadium		<190	<190	<500	<190	<170
Zinc		--	--	--	**47.0**	**45.0**

Notes:

Bold constituent detected above method detection limit.

J	Analyte detected below quantitation limit.
Q	Outlying QC recoveries were associates with this parameter.
B	Analyte detected in the associated Method Blank
ug/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
VOCs	Volatile organic compounds.
--	Not Analyzed

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Table 4. IRZ Discontinuation Pilot Test Environmental Monitoring Schedule, Year 1, Colesville Landfill, Broome County, New York.

Sampling Event	Sampling Location	Analysis/Parameter									
		VOCs	Alternative Electron Acceptors[(1)]	Metals	Ethene	Ethane	Methane	TOC	pH	Temperature	Specific Conductance
Quarterly Groundwater Monitoring (December 2012/June 2013)	GMMW-2	L	---	---	L	L	L	L	F	F	F
	GMMW-5	L	---	---	L	L	L	L	F	F	F
	GMMW-6	L	---	---	L	L	L	L	F	F	F
	PW-4	L	---	---	L	L	L	L	F	F	F
	IW-3	---	---	---	---	---	---	L	F	F	F
	IW-8	---	---	---	---	---	---	L	F	F	F
	IW-13	---	---	---	---	---	---	L	F	F	F
	TW-1	L	---	---	L	L	L	L	F	F	F
Semi-Annual Groundwater Monitoring (March 2013)	GMMW-2	L	L	---	L	L	L	L	F	F	F
	GMMW-5	L	L	---	L	L	L	L	F	F	F
	GMMW-6	L	L	---	L	L	L	L	F	F	F
	PW-4	L	---	---	L	L	L	L	F	F	F
	IW-3	---	---	---	---	---	---	L	F	F	F
	IW-8	---	---	---	---	---	---	L	F	F	F
	IW-13	---	---	---	---	---	---	L	F	F	F
	TW-1	L	L	---	L	L	L	L	F	F	F
	PW-7	L	L	---	L	L	L	L	F	F	F
Annual Groundwater Monitoring (September 2013)	GMMW-2	L	L	---	L	L	L	L	F	F	F
	GMMW-5	L	L	---	L	L	L	L	F	F	F
	GMMW-6	L	L	---	L	L	L	L	F	F	F
	GMMW-7	L	L	---	L	L	L	L	F	F	F
	PW-3	L	---	---	---	---	---	---	F	F	F
	PW-4	L	---	---	L	L	L	L	F	F	F
	PW-5	L	---	---	L	L	L	L	F	F	F
	PW-7	L	---	---	---	---	---	---	F	F	F
	PW-13	L	---	---	---	---	---	---	F	F	F
	IW-3	---	---	---	---	---	---	L	F	F	F
	IW-8	---	---	---	---	---	---	L	F	F	F
	IW-13	---	---	---	---	---	---	L	F	F	F
	TW-1	L	L	---	L	L	L	L	F	F	F
	W-5	L	L	---	L	L	L	L	F	F	F
	GMPW-3	L	---	---	---	---	---	---	F	F	F
	GMPW-4	L	---	---	---	---	---	---	F	F	F
	GMPW-5	L	---	---	---	---	---	---	F	F	F
	W-6	L	---	---	---	---	---	---	F	F	F
	W-7	L	---	---	---	---	---	---	F	F	F
	W-16S	L	---	---	---	---	---	---	F	F	F
	W-18	L	---	---	---	---	---	---	F	F	F
	W-13	L	---	---	---	---	---	---	F	F	F
	W-14S	L	---	---	---	---	---	---	F	F	F
	W-17S	L	---	---	---	---	---	---	F	F	F
	W-20S	L	---	---	---	---	---	---	F	F	F

See notes on last page.

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Table 4. IRZ Discontinuation Pilot Test Environmental Monitoring Schedule, Year 1, Colesville Landfill, Broome County, New York.

Sampling Event	Sampling Location	Analysis/Parameter									
		VOCs	Alternative Electron Acceptors[1]	Metals	Ethene	Ethane	Methane	TOC	pH	Temperature	Specific Conductance
Quarterly Spring Water Monitoring[2] (December 2012/March 2013/June 2013/September 2013)	SP-2	L	---	L	---	---	---	---	F	F	F
	SP-3	L	---	L	---	---	---	---	F	F	F
	SP-4	L	---	L	---	---	---	---	F	F	F
	SP-5 Influent	L	---	L	---	---	---	---	F	F	F
	SP-5 Effluent	L	---	L	---	---	---	---	F	F	F
Semi-Annual Surface Water Monitoring (March 2013/September 2013)	SW-2	L	---	L	---	---	---	---	F	F	F
	SW-3	L	---	L	---	---	---	---	F	F	F
	SW-4	L	---	L	---	---	---	---	F	F	F
	F-6	L	---	L	---	---	---	---	F	F	F
Semi-Annual Sediment Monitoring (March 2013/September 2013)	SP-3-SED	---	---	L	---	---	---	---	---	---	---

Notes

(1) Alternate Electron Receptors - Includes dissolved (ferrous) iron, dissolved (manganous) manganese, total iron, total manganese, nitrate, nitrite and sulfate

(2) Spring water samples will not be collected when a lack of flow makes sampling impracticable.

VOCs - Volatile Organic Compounds
TOC - Total Organic Carbon
L - Laboratory analysis
F - Field measurement using a water quality meter
--- Indicates no sample to be collected

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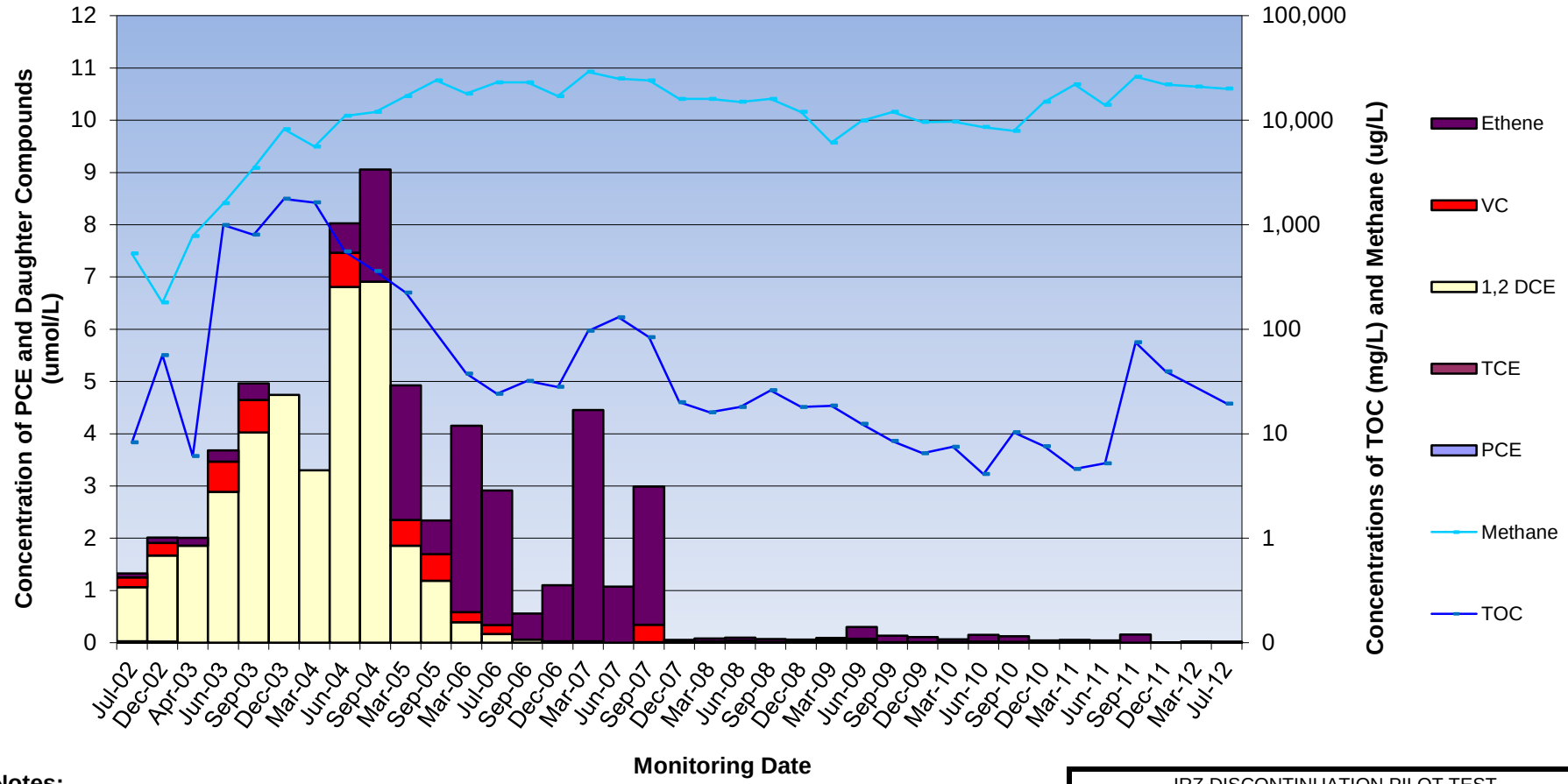
Figures



Notes:

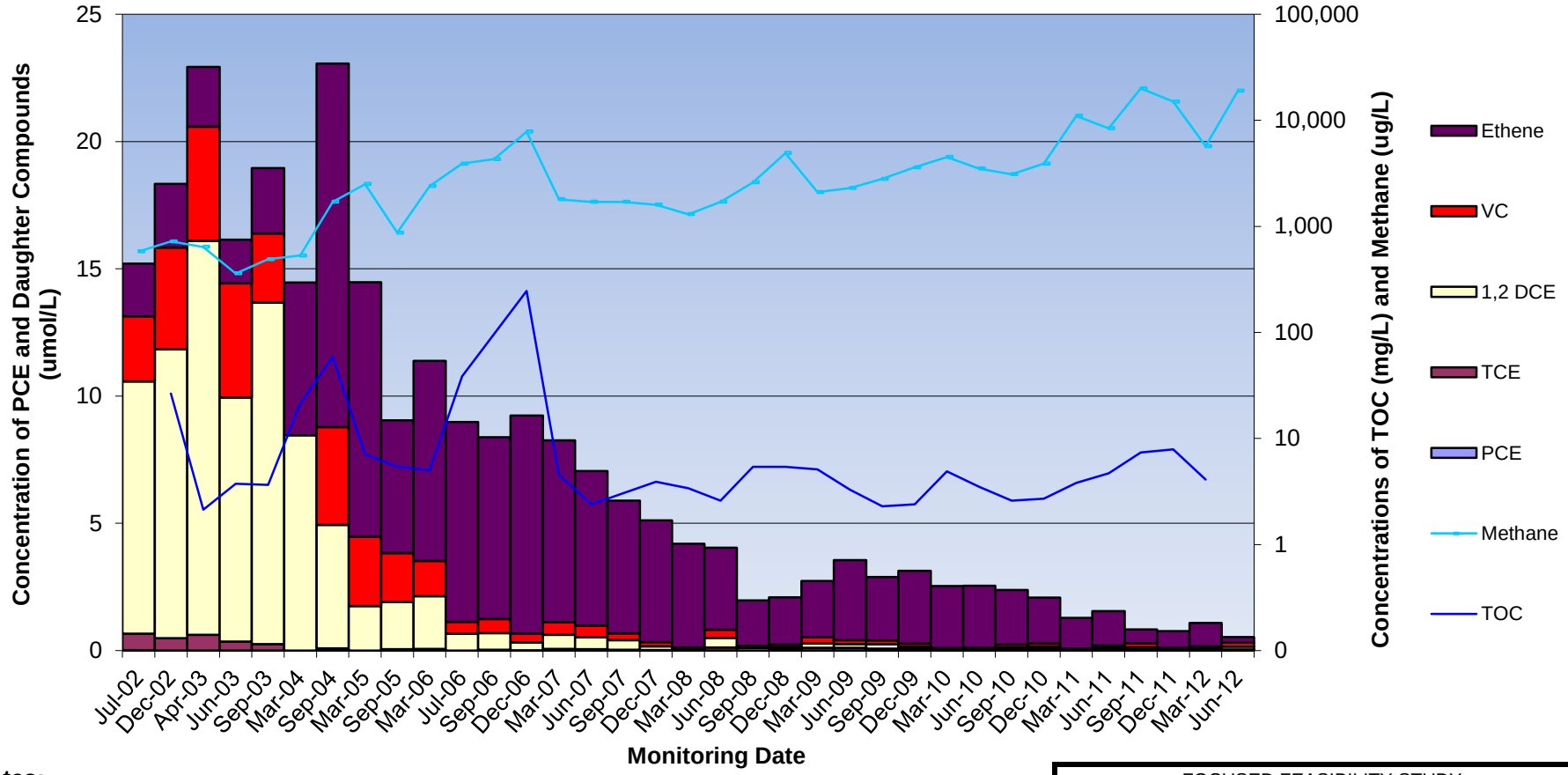
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

IRZ DISCONTINUATION PILOT TEST
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of PCE Daughter Products Versus Time in GMMW-05

ARCADIS

FIGURE 1-1



Notes:

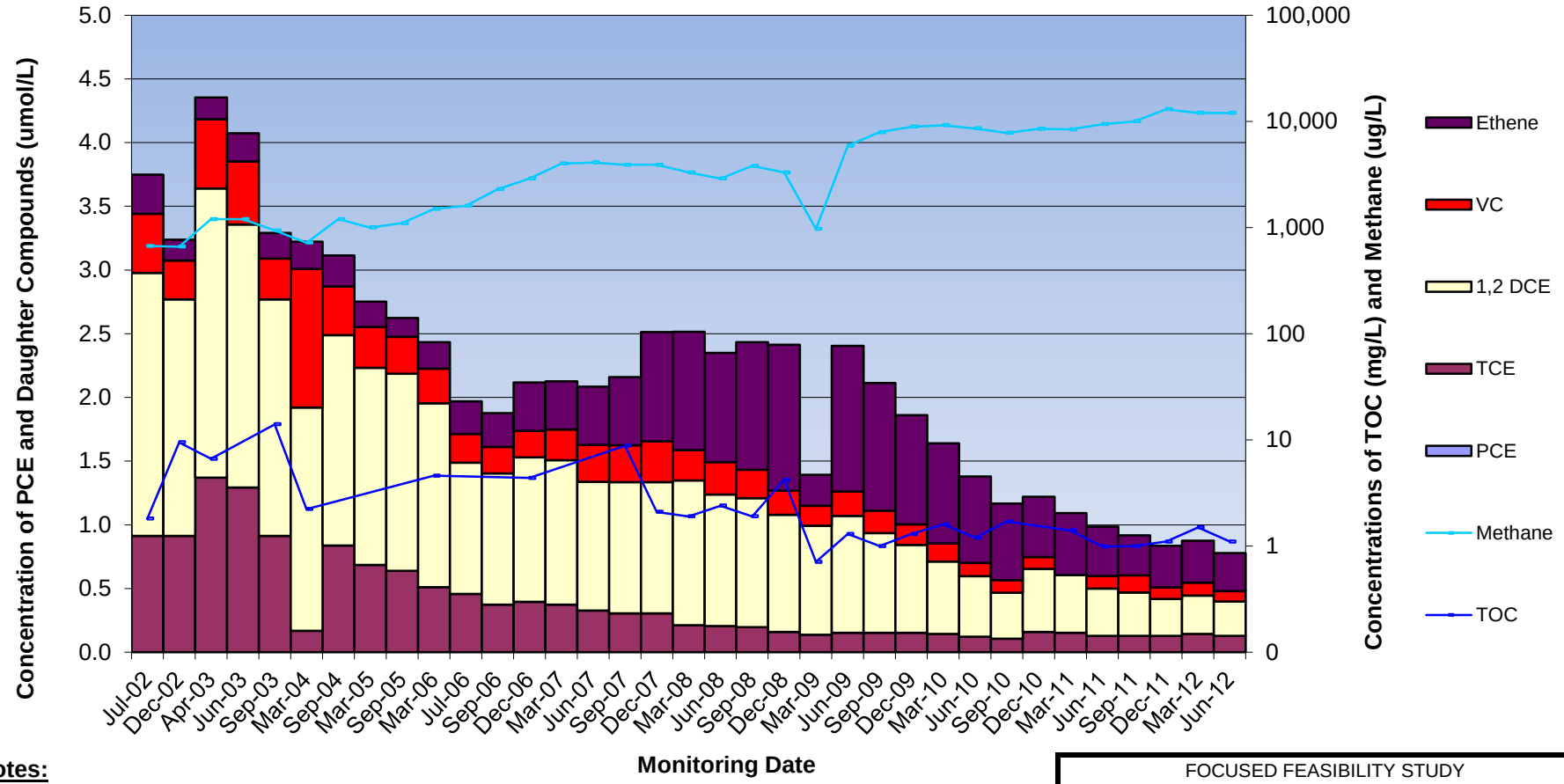
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of PCE Daughter Products Versus Time in GMMW-06

ARCADIS

FIGURE 1-2



Notes:

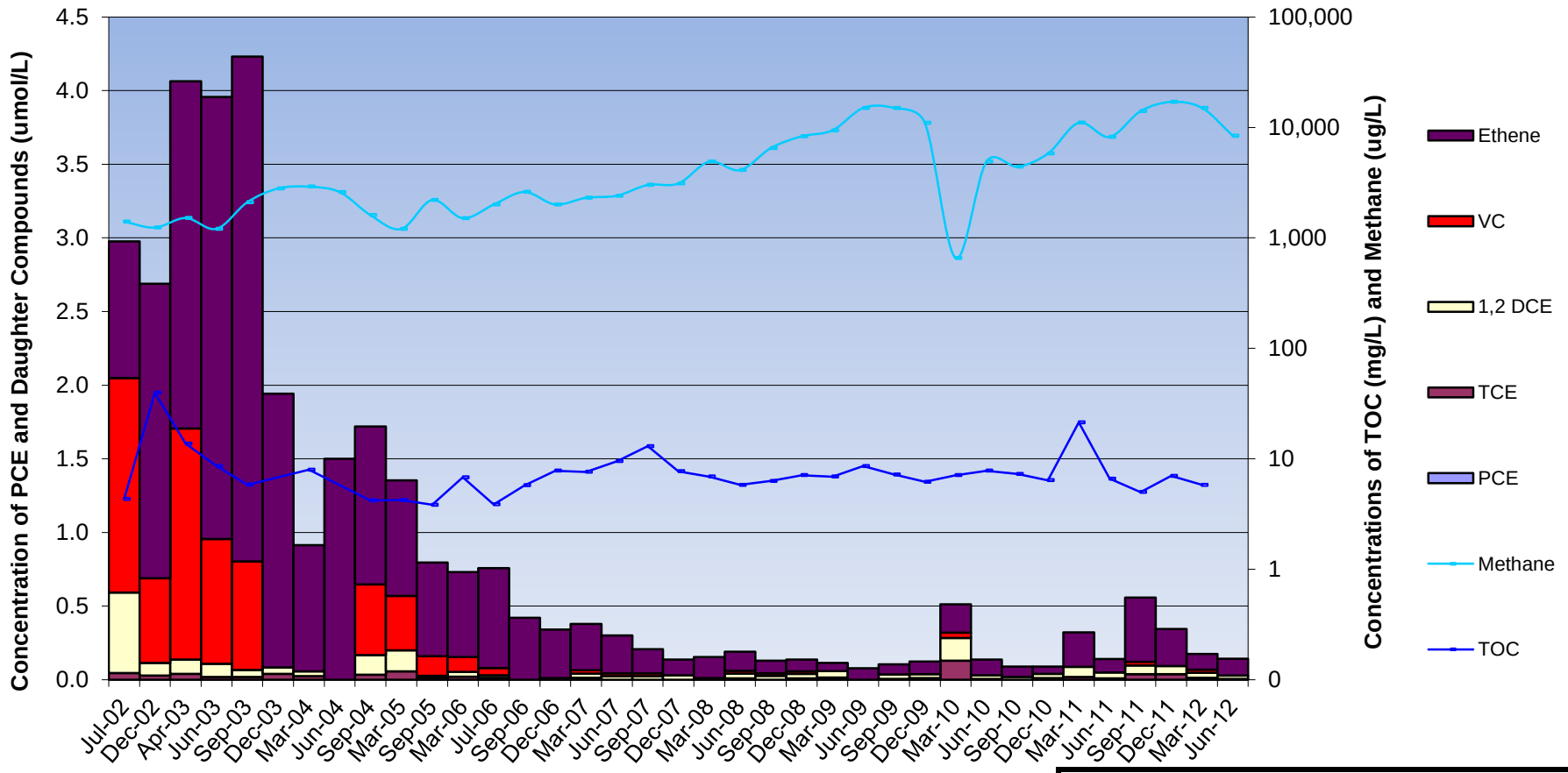
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of PCE Daughter Products Versus Time in GMMW-02

ARCADIS

FIGURE 1-3



Notes:

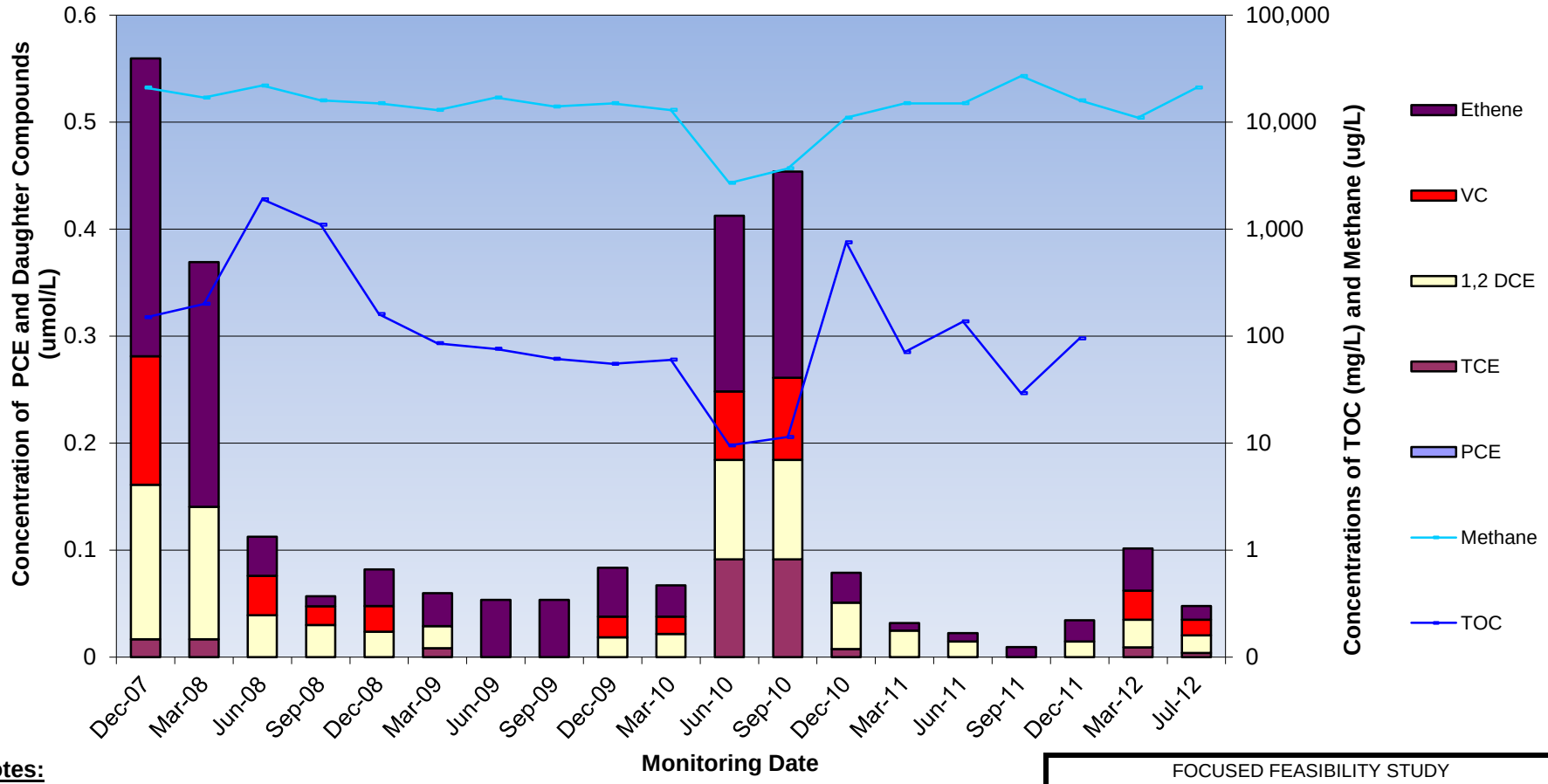
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of PCE Daughter Products Versus Time in W-05

ARCADIS

FIGURE 1-4



Notes:

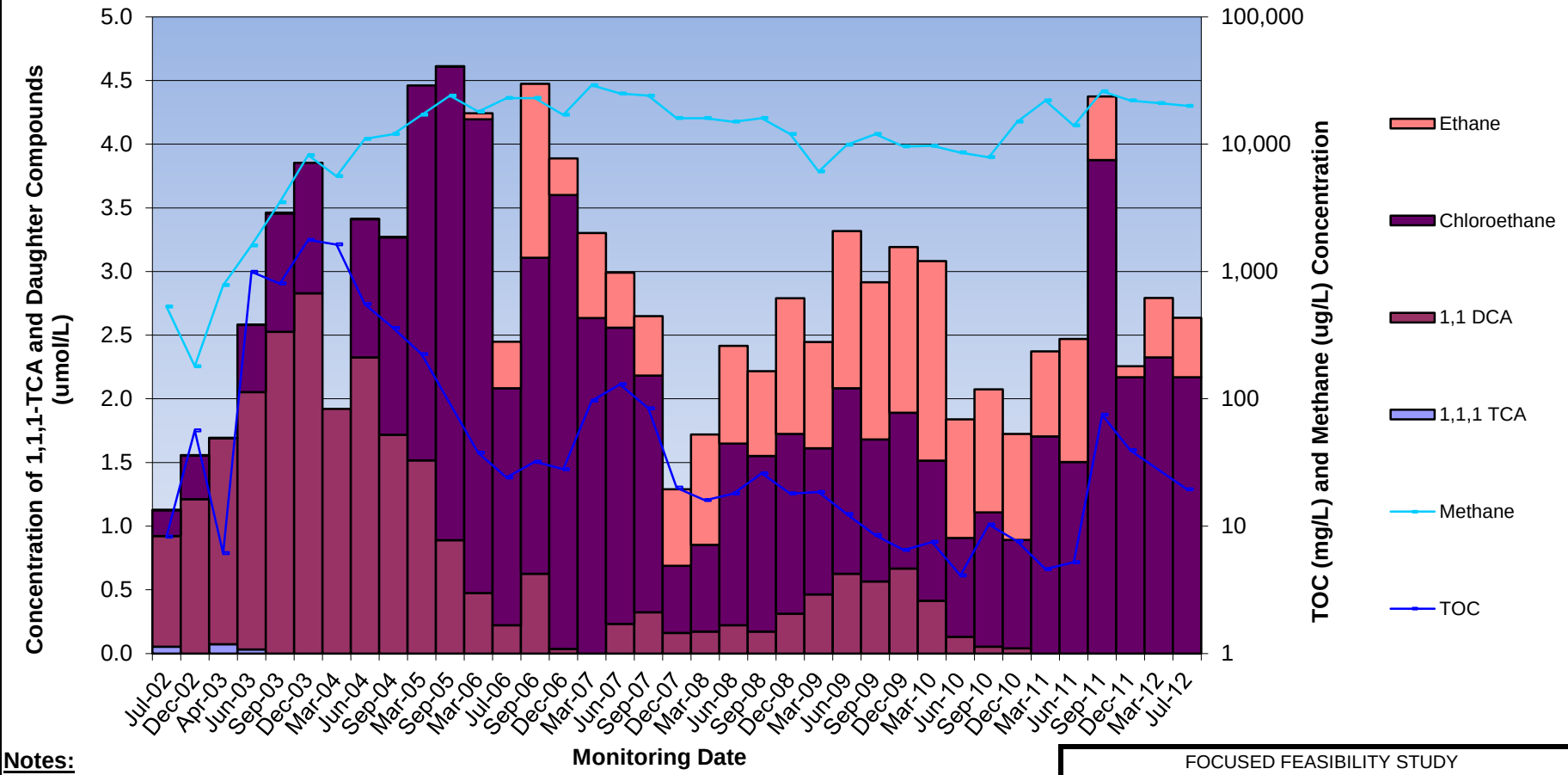
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of PCE Daughter Products Versus Time in TW-01

ARCADIS

FIGURE 1-5



Notes:

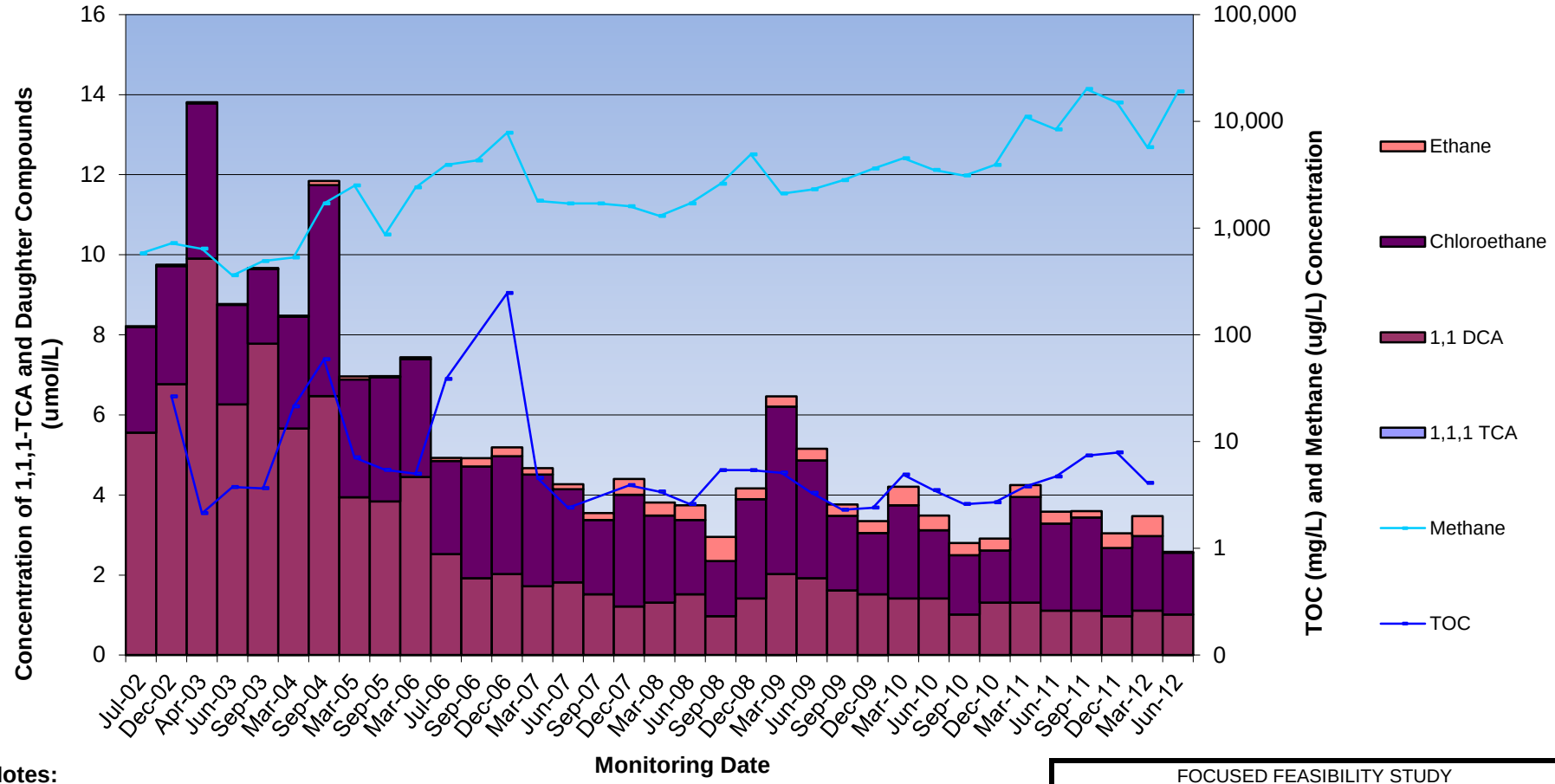
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-05

ARCADIS

FIGURE 1-6



Notes:

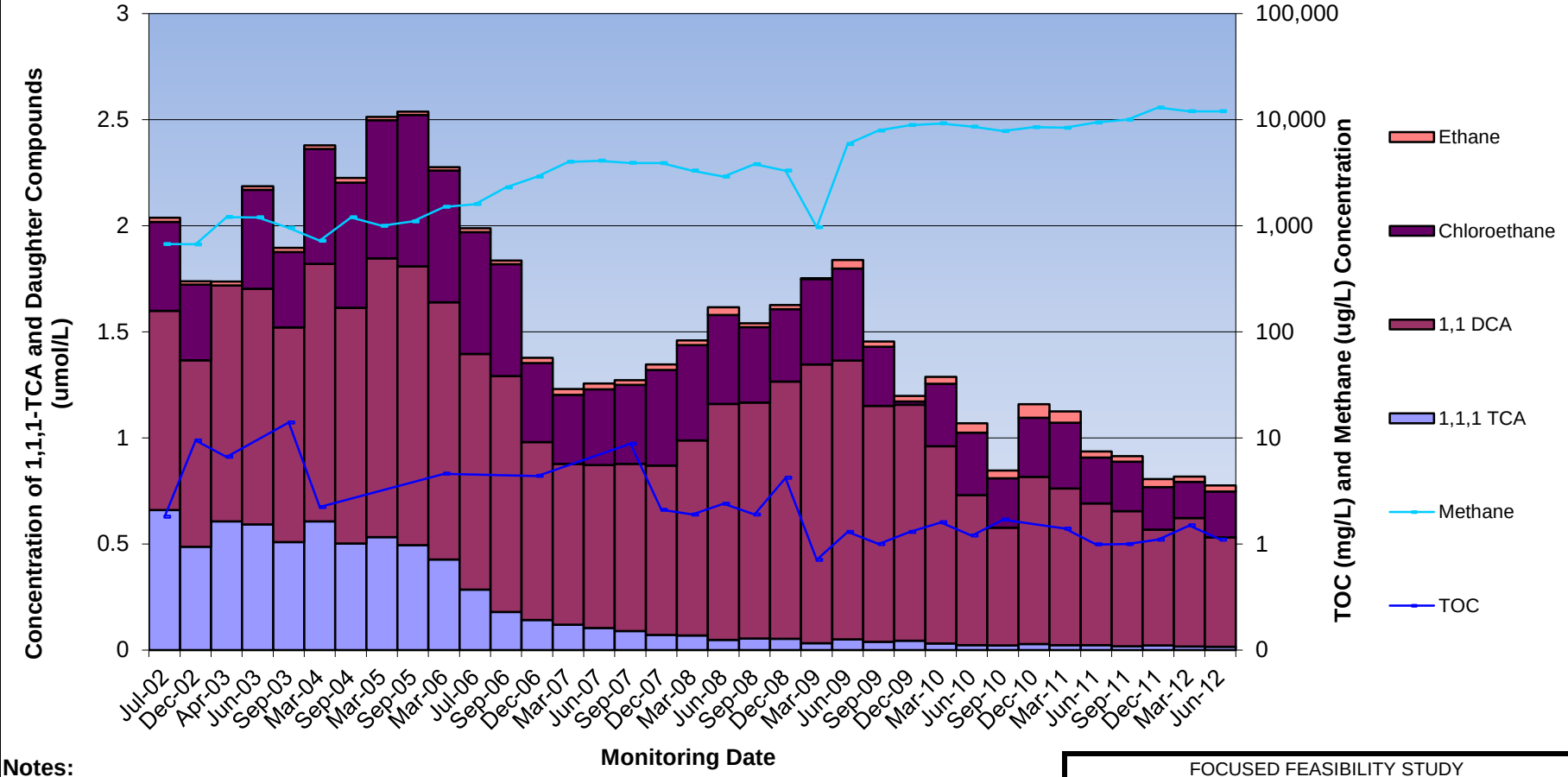
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-06

ARCADIS

FIGURE 1-7



Notes:

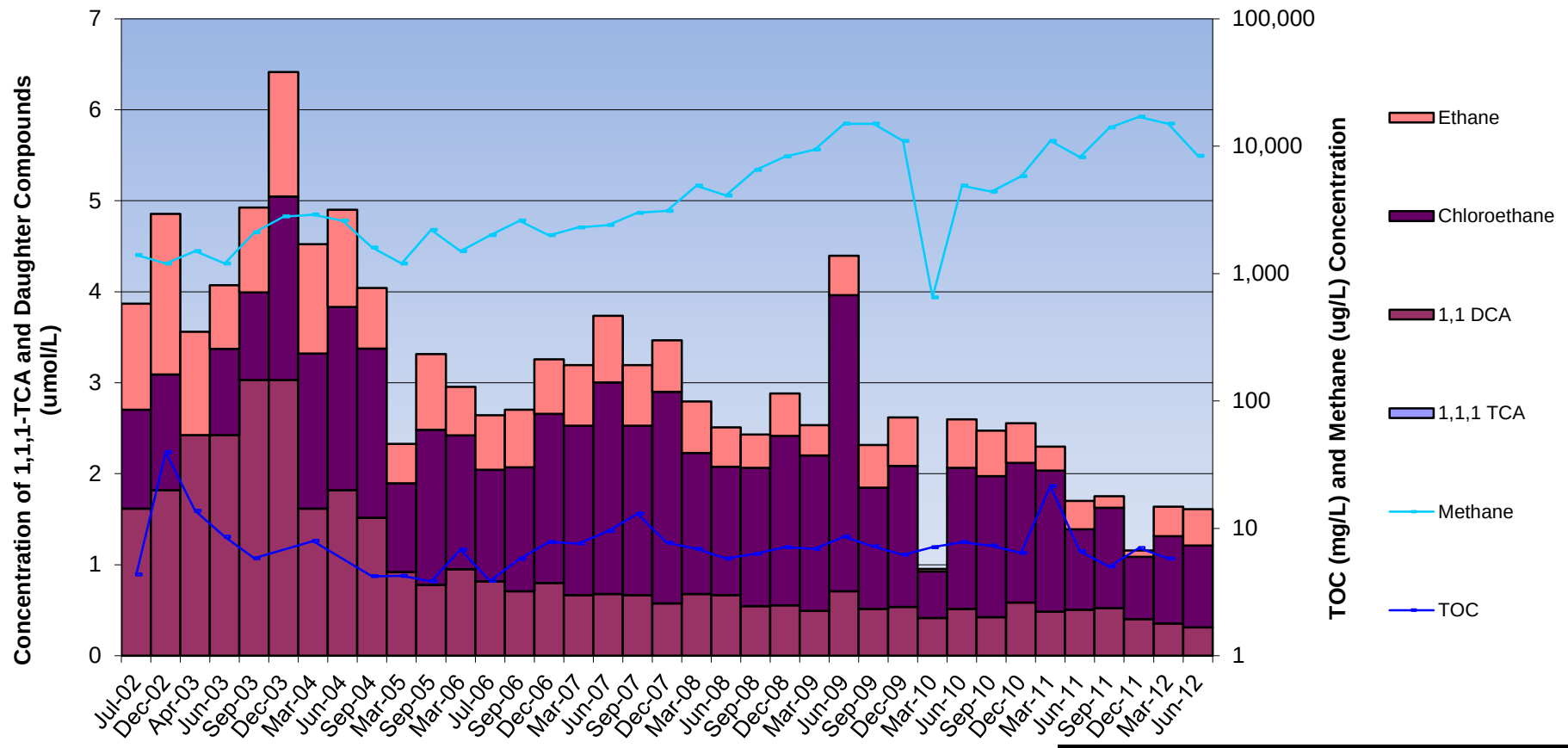
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of 1,1,1-TCA Daughter Products Versus Time in GMMW-02

ARCADIS

FIGURE 1-8



Notes:

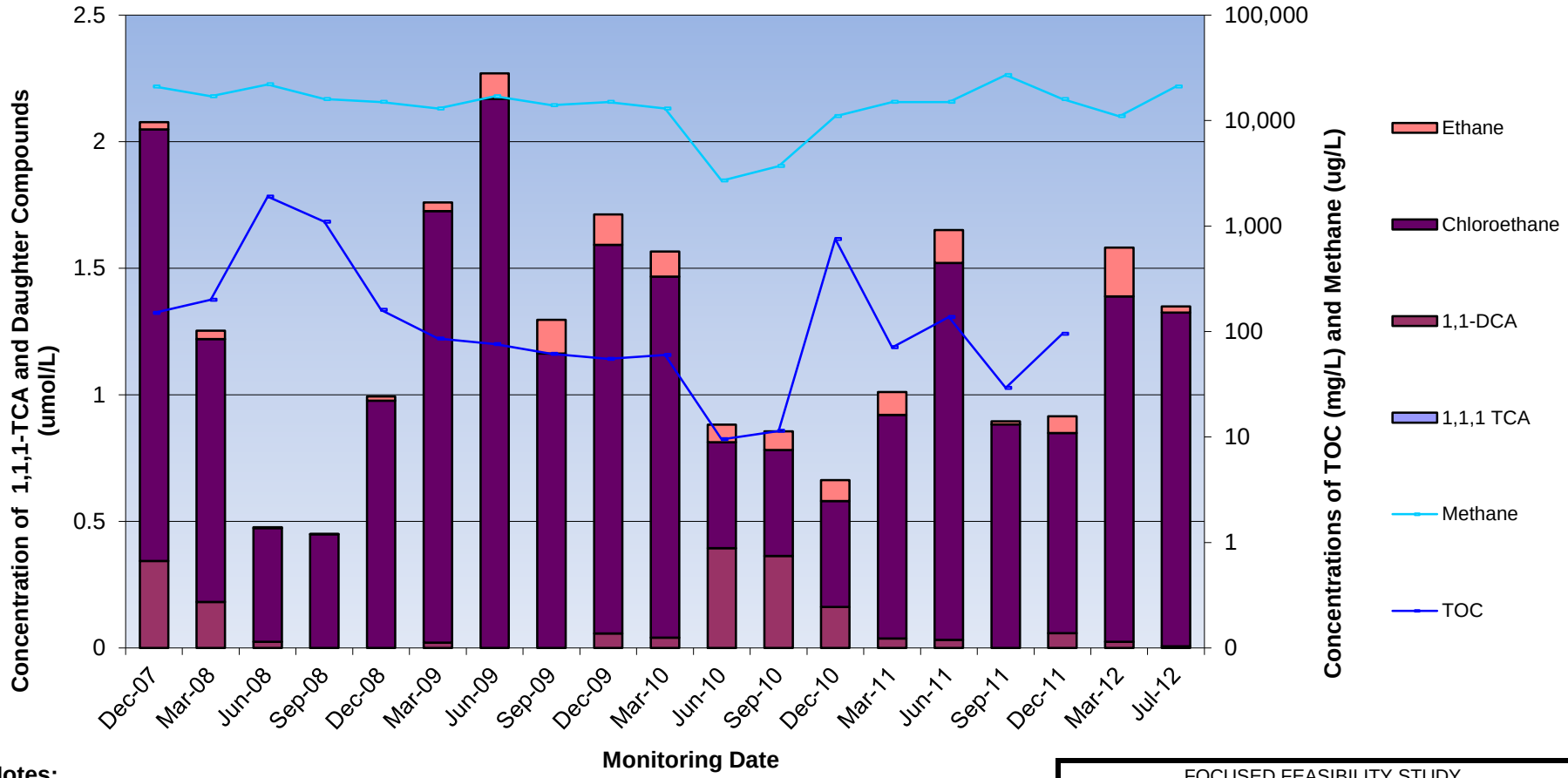
mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

Concentrations of 1,1,1-TCA Daughter Products Versus Time in W-05

ARCADIS

FIGURE 1-9



Notes:

mg/L - Milligrams per liter.
ug/L - Micrograms per liter.
umol/L - Micromoles per liter.

FOCUSED FEASIBILITY STUDY
COLESVILLE LANDFILL
BROOME COUNTY, NEW YORK

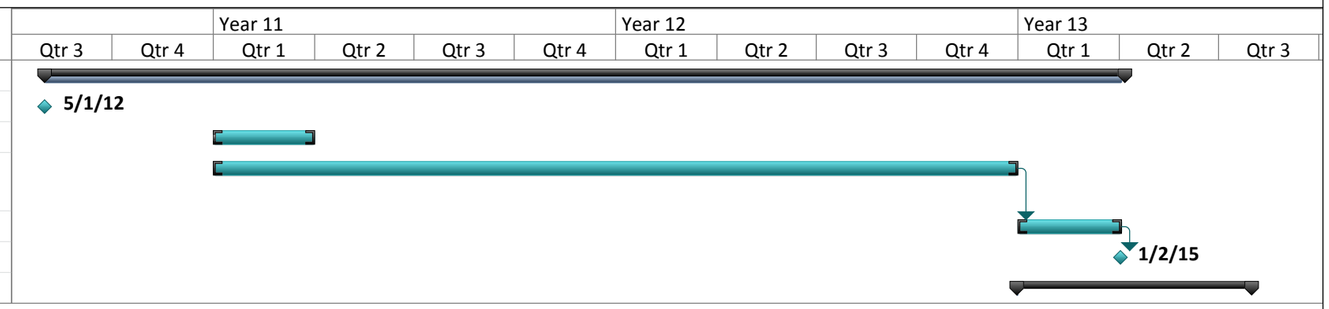
Concentrations of 1,1,1-TCA Daughter Products Versus Time in TW-01

ARCADIS

FIGURE 1-10

Figure 2. IRZ Discontinuation Pilot Test Schedule, Colesville Landfill, Broome County, New York.

ID	Task Name	Duration	Start	Finish
1	**IRZ Discontinuation Pilot Test**	**700 days**	**Tue 5/1/12**	**Mon 1/5/15**
2	Final IRZ Injection	0 days	Tue 5/1/12	Tue 5/1/12
3	Shutdown PT & ARI Systems	66 days	Mon 10/1/12	Mon 12/31/12
4	Groundwater, Spring Water, Surface Water & Sediment Monitoring Program	522 days	Mon 10/1/12	Tue 9/30/14
5	Prepare Summary Report (Year 12 Annual Report)	68 days	Wed 10/1/14	Fri 1/2/15
6	Submit Final Summary Report to EPA	0 days	Fri 1/2/15	Fri 1/2/15
7	**USEPA 5-Year Review Period**	**153 days**	**Tue 9/30/14**	**Thu 4/30/15**



Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
Split		External Tasks		Inactive Summary		Manual Summary		Progress	
Milestone		External Milestone		Manual Task		Start-only			
Summary		Inactive Task		Duration-only		Finish-only			

Appendix C

June 2015 Monitoring Results for PW-7

ALS Environmental
ALS Group USA, Corp
1565 Jefferson Rd, Building 300, Suite 360
Rochester, NY 14623
T: 585-288-5380
F: 585-288-8475
www.alsglobal.com

July 09, 2015

Analytical Report for Service Request No: R1504589

Ms. Laurie Haskell
Broome County Division of Solid Waste Management
60 Hawley St.
P.O. Box 1766
Binghamton, NY 13902

Laboratory Results for: Colesville/Part 360 Baseline

Dear Ms. Haskell:

Enclosed are the results of the sample(s) submitted to our laboratory on June 10, 2015. For your reference, these analyses have been assigned our service request number **R1504589**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7473. You may also contact me via email at Tracy.Christ@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Tracy Christ

Tracy Christ
Project Manager

ALS ENVIRONMENTAL

Client:	Broome County Division of SWM	**Service Request No.:**	R1504589
Project:	Colesville	**Date Received:**	6/10/15
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One sample was received for analysis at ALS Environmental on 6/10/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator between 1°C and 6°C upon receipt at the laboratory.

Volatile Organics- 8260C

The Continuing Calibration Verification (CCV) standard exceeded 20% difference for Aceton and Iodomethane. All detected concentrations for these compounds in samples associated with their relevant CCV should be considered as estimated.

No other analytical or quality control problems were encountered during analysis.

Inorganics & Metals

No analytical or quality control problems were encountered during analysis.

CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1504589

Lab ID	Client ID
R1504589-001	PW-7

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U	Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.
J	Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).
B	Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.
E	Inorganics- Concentration is estimated due to the serial dilution was outside control limits.
E	Organics- Concentration has exceeded the calibration range for that specific analysis.
D	Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.
*	Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.
H	Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.
#	Spike was diluted out.
+	Correlation coefficient for MSA is <0.995.
N	Inorganics- Matrix spike recovery was outside laboratory limits.
N	Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.
S	Concentration has been determined using Method of Standard Additions (MSA).
W	Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.
P	Concentration >40% (25% for CLP) difference between the two GC columns.
C	Confirmed by GC/MS
Q	DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).
X	See Case Narrative for discussion.
MRL LOQ	Method Reporting Limit. Also known as: Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.
MDL	Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).
LOD	Limit of Detection. A value at or above the MDL which has been verified to be detectable.
ND	Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	New Hampshire ID # 294100 A/B
Delaware Accredited	Nebraska Accredited	
DoD ELAP #65817	New Jersey ID # NY004	Pennsylvania ID# 68-786
Florida ID # E87674	New York ID # 10145	Rhode Island ID # 158
Illinois ID #200047	North Carolina #676	Virginia #460167

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9014 Cyanide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Reactivity	SW846 Ch7, 7.3.4.2
9034 Sulfide Acid Soluble	9030B
9056A Bomb (Halogens)	5050A
9066 Manual Distillation	9065
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7196A	3060A
7199	3060A
9056A Halogens/Halides	5050
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction

For analytical methods not listed, the preparation method is the same as the analytical method reference.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	6/10/15 1210
Sample Matrix:	Water	**Date Received:**	6/10/15
Sample Name:	PW-7		
Lab Code:	R1504589-001	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	**44.0**		mg/L	2.0	1	NA	6/16/15 10:05	
Ammonia as Nitrogen, undistilled	350.1	**0.129**		mg/L	0.050	1	NA	6/12/15 16:51	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2001(2011)	2.0	U	mg/L	2.0	1	NA	6/12/15 11:01	
Bromide	300.0	1.0	U	mg/L	1.0	10	NA	6/11/15 11:27	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	**1.6**		mg/L	1.0	1	NA	6/16/15 20:58	
Chemical Oxygen Demand, Total	410.4	**10.3**		mg/L	5.0	1	NA	6/18/15 13:00	
Chloride	300.0	**6.7**		mg/L	2.0	10	NA	6/11/15 11:27	
Chromium, Hexavalent	7196A	0.010	U	mg/L	0.010	1	NA	6/11/15 09:59	
Color, True	SM 2120 B-2001(2011)	**13.0**		ColorUnits	1.0	1	NA	6/11/15 21:00	
Conductivity, Field	120.1	150		µMHOS/cm		1	NA	6/10/15 12:10	
Cyanide, Total	9012B	0.010	U	mg/L	0.010	1	6/16/15	6/17/15 11:28	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	54.5		mg/L		1	NA		
Nitrate as Nitrogen	Calculation	**1.14**		mg/L	0.05	1	NA		
Nitrate+Nitrite as Nitrogen	353.2	**1.14**		mg/L	0.050	1	NA	6/15/15 18:32	
Nitrite as Nitrogen	353.2	0.010	U	mg/L	0.010	1	NA	6/11/15 21:02	
Nitrogen, Total Kjeldahl (TKN)	351.2	**2.24**		mg/L	0.20	1	6/19/15	6/19/15 17:43	
pH, Field	SM 4500-H+ B	6.74		pH Units		1	NA	6/10/15 12:10	
Phenolics, Total Recoverable	9066	0.0050	U	mg/L	0.0050	1	NA	6/19/15 10:10	
Redox Potential, Field	ASTM D1498-00	85		mV		1	NA	6/10/15 12:10	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	**88**		mg/L	10	1	NA	6/12/15 10:43	
Sulfate	300.0	**12.0**		mg/L	2.0	10	NA	6/11/15 11:27	
Temperature, Field	SM 2550 B	14.7		deg C		1	NA	6/10/15 12:10	
Turbidity, Field	180.1	5.3		NTU		1	NA	6/10/15 12:10	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	6/10/15 1210
Sample Matrix:	Water	**Date Received:**	6/10/15
Sample Name:	PW-7		
Lab Code:	R1504589-001	**Basis:**	NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Aluminum, Total	6010C	100	U	µg/L	100	1	6/15/15	6/19/15 02:48	
Antimony, Total	6010C	60	U	µg/L	60	1	6/15/15	6/19/15 02:48	
Arsenic, Total	6010C	10	U	µg/L	10	1	6/15/15	6/19/15 02:48	
Barium, Total	6010C	20	U	µg/L	20	1	6/15/15	6/19/15 02:48	
Beryllium, Total	6010C	3.0	U	µg/L	3.0	1	6/15/15	6/19/15 02:48	
Boron, Total	6010C	200	U	µg/L	200	1	6/15/15	6/19/15 02:48	
Cadmium, Total	6010C	5.0	U	µg/L	5.0	1	6/15/15	6/19/15 02:48	
Calcium, Total	6010C	**15800**		µg/L	1000	1	6/15/15	6/19/15 02:48	
Chromium, Total	6010C	10	U	µg/L	10	1	6/15/15	6/19/15 02:48	
Cobalt, Total	6010C	50	U	µg/L	50	1	6/15/15	6/19/15 02:48	
Copper, Total	6010C	20	U	µg/L	20	1	6/15/15	6/19/15 02:48	
Iron, Total	6010C	**1640**		µg/L	100	1	6/15/15	6/19/15 02:48	
Lead, Total	6010C	5.0	U	µg/L	5.0	1	6/15/15	6/19/15 02:48	
Magnesium, Total	6010C	**3600**		µg/L	1000	1	6/15/15	6/19/15 02:48	
Manganese, Total	6010C	**3600**		µg/L	10	1	6/15/15	6/19/15 02:48	
Mercury, Total	7470A	0.20	U	µg/L	0.20	1	6/18/15	6/18/15 14:41	
Nickel, Total	6010C	40	U	µg/L	40	1	6/15/15	6/19/15 02:48	
Potassium, Total	6010C	2000	U	µg/L	2000	1	6/15/15	6/19/15 16:04	
Selenium, Total	6010C	10	U	µg/L	10	1	6/15/15	6/19/15 02:48	
Silver, Total	6010C	10	U	µg/L	10	1	6/15/15	6/19/15 02:48	
Sodium, Total	6010C	**4200**		µg/L	1000	1	6/15/15	6/19/15 16:04	
Thallium, Total	6010C	10	U	µg/L	10	1	6/15/15	6/19/15 02:48	
Vanadium, Total	6010C	50	U	µg/L	50	1	6/15/15	6/19/15 02:48	
Zinc, Total	6010C	20	U	µg/L	20	1	6/15/15	6/19/15 02:48	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	6/10/15 1210
Sample Matrix:	Water	**Date Received:**	6/10/15
		Date Analyzed:	6/15/15 16:22
Sample Name:	PW-7	**Units:**	µg/L
Lab Code:	R1504589-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	449044
Data File Name:	I:\ACQUDATA\msvoa10\data\061515\A9518.D\	**Instrument Name:**	R-MS-10
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U	5.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	**0.36**	J	5.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U	5.0	0.25	
79-00-5	1,1,2-Trichloroethane	5.0	U	5.0	0.34	
75-34-3	1,1-Dichloroethane (1,1-DCA)	**25**		5.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	5.0	U	5.0	0.57	
96-18-4	1,2,3-Trichloropropane	5.0	U	5.0	0.70	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	5.0	U	5.0	0.74	
106-93-4	1,2-Dibromoethane	5.0	U	5.0	0.24	
95-50-1	1,2-Dichlorobenzene	5.0	U	5.0	0.21	
107-06-2	1,2-Dichloroethane	5.0	U	5.0	0.36	
78-87-5	1,2-Dichloropropane	5.0	U	5.0	0.20	
106-46-7	1,4-Dichlorobenzene	5.0	U	5.0	0.20	
78-93-3	2-Butanone (MEK)	10	U	10	0.81	
591-78-6	2-Hexanone	10	U	10	1.7	
108-10-1	4-Methyl-2-pentanone	10	U	10	0.67	
67-64-1	Acetone	10	U	10	1.3	
107-13-1	Acrylonitrile	100	U	100	1.4	
71-43-2	Benzene	5.0	U	5.0	0.20	
74-97-5	Bromochloromethane	5.0	U	5.0	0.32	
75-27-4	Bromodichloromethane	5.0	U	5.0	0.32	
75-25-2	Bromoform	5.0	U	5.0	0.42	
74-83-9	Bromomethane	5.0	U	5.0	0.29	
75-15-0	Carbon Disulfide	10	U	10	0.22	
56-23-5	Carbon Tetrachloride	5.0	U	5.0	0.45	
108-90-7	Chlorobenzene	**0.54**	J	5.0	0.29	
75-00-3	Chloroethane	**11**		5.0	0.24	
67-66-3	Chloroform	5.0	U	5.0	0.25	
74-87-3	Chloromethane	5.0	U	5.0	0.21	
124-48-1	Dibromochloromethane	5.0	U	5.0	0.31	
74-95-3	Dibromomethane	5.0	U	5.0	0.32	
75-09-2	Methylene Chloride	5.0	U	5.0	0.60	
100-41-4	Ethylbenzene	5.0	U	5.0	0.20	
74-88-4	Iodomethane	10	U	10	0.98	
100-42-5	Styrene	5.0	U	5.0	0.20	
127-18-4	Tetrachloroethene (PCE)	5.0	U	5.0	0.30	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	6/10/15 1210
Sample Matrix:	Water	**Date Received:**	6/10/15
		Date Analyzed:	6/15/15 16:22
Sample Name:	PW-7	**Units:**	µg/L
Lab Code:	R1504589-001	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	449044
Data File Name:	I:\ACQUDATA\msvoa10\data\061515\A9518.D\	**Instrument Name:**	R-MS-10
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
108-88-3	Toluene	5.0	U	5.0	0.20	
79-01-6	Trichloroethene (TCE)	**4.6**	J	5.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	5.0	U	5.0	0.20	
108-05-4	Vinyl Acetate	10	U	10	1.1	
75-01-4	Vinyl Chloride	**2.6**	J	5.0	0.32	
156-59-2	cis-1,2-Dichloroethene	**12**		5.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	5.0	U	5.0	0.24	
179601-23-1	m,p-Xylenes	5.0	U	5.0	0.33	
95-47-6	o-Xylene	5.0	U	5.0	0.20	
156-60-5	trans-1,2-Dichloroethene	5.0	U	5.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	5.0	U	5.0	0.20	
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U	5.0	0.70	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	90	85-122	6/15/15 16:22	
Dibromofluoromethane	100	89-119	6/15/15 16:22	
Toluene-d8	91	87-121	6/15/15 16:22	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R1504589-MB	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0	U	mg/L	2.0	1	NA	6/16/15 10:05	
Ammonia as Nitrogen, undistilled	350.1	0.050	U	mg/L	0.050	1	NA	6/12/15 16:28	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2001(2011)	2.0	U	mg/L	2.0	1	NA	6/12/15 18:34	
Bromide	300.0	0.10	U	mg/L	0.10	1	NA	6/11/15 10:17	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	1.0	U	mg/L	1.0	1	NA	6/16/15 11:42	
Chemical Oxygen Demand, Total	410.4	5.0	U	mg/L	5.0	1	NA	6/18/15 13:00	
Chloride	300.0	0.20	U	mg/L	0.20	1	NA	6/11/15 10:17	
Chromium, Hexavalent	7196A	0.010	U	mg/L	0.010	1	NA	6/11/15 09:59	
Cyanide, Total	9012B	0.010	U	mg/L	0.010	1	6/16/15	6/17/15 11:02	
Nitrate+Nitrite as Nitrogen	353.2	0.050	U	mg/L	0.050	1	NA	6/15/15 18:25	
Nitrite as Nitrogen	353.2	0.010	U	mg/L	0.010	1	NA	6/11/15 20:51	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U	mg/L	0.20	1	6/19/15	6/19/15 17:30	
Phenolics, Total Recoverable	9066	0.0050	U	mg/L	0.0050	1	NA	6/19/15 10:10	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10	U	mg/L	10	1	NA	6/12/15 10:43	
Sulfate	300.0	0.20	U	mg/L	0.20	1	NA	6/11/15 10:17	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R1504589-MB	**Basis:**	NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed	Note
Aluminum, Total	6010C	100	U	µg/L	100	1	6/15/15	6/18/15 23:53	
Antimony, Total	6010C	60	U	µg/L	60	1	6/15/15	6/18/15 23:53	
Arsenic, Total	6010C	10	U	µg/L	10	1	6/15/15	6/18/15 23:53	
Barium, Total	6010C	20	U	µg/L	20	1	6/15/15	6/18/15 23:53	
Beryllium, Total	6010C	3.0	U	µg/L	3.0	1	6/15/15	6/18/15 23:53	
Boron, Total	6010C	200	U	µg/L	200	1	6/15/15	6/18/15 23:53	
Cadmium, Total	6010C	5.0	U	µg/L	5.0	1	6/15/15	6/18/15 23:53	
Calcium, Total	6010C	1000	U	µg/L	1000	1	6/15/15	6/18/15 23:53	
Chromium, Total	6010C	10	U	µg/L	10	1	6/15/15	6/18/15 23:53	
Cobalt, Total	6010C	50	U	µg/L	50	1	6/15/15	6/18/15 23:53	
Copper, Total	6010C	20	U	µg/L	20	1	6/15/15	6/18/15 23:53	
Iron, Total	6010C	100	U	µg/L	100	1	6/15/15	6/18/15 23:53	
Lead, Total	6010C	5.0	U	µg/L	5.0	1	6/15/15	6/18/15 23:53	
Magnesium, Total	6010C	1000	U	µg/L	1000	1	6/15/15	6/18/15 23:53	
Manganese, Total	6010C	10	U	µg/L	10	1	6/15/15	6/18/15 23:53	
Mercury, Total	7470A	0.20	U	µg/L	0.20	1	6/18/15	6/18/15 14:00	
Nickel, Total	6010C	40	U	µg/L	40	1	6/15/15	6/18/15 23:53	
Potassium, Total	6010C	2000	U	µg/L	2000	1	6/15/15	6/19/15 15:51	
Selenium, Total	6010C	10	U	µg/L	10	1	6/15/15	6/18/15 23:53	
Silver, Total	6010C	10	U	µg/L	10	1	6/15/15	6/18/15 23:53	
Sodium, Total	6010C	1000	U	µg/L	1000	1	6/15/15	6/19/15 15:51	
Thallium, Total	6010C	10	U	µg/L	10	1	6/15/15	6/18/15 23:53	
Vanadium, Total	6010C	50	U	µg/L	50	1	6/15/15	6/18/15 23:53	
Zinc, Total	6010C	20	U	µg/L	20	1	6/15/15	6/18/15 23:53	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	6/15/15 14:58
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1506705-01	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	449044
Data File Name:	I:\ACQUDATA\msvoa10\data\061515\A9515.D\	**Instrument Name:**	R-MS-10
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
630-20-6	1,1,1,2-Tetrachloroethane	5.0	U	5.0	0.22	
71-55-6	1,1,1-Trichloroethane (TCA)	5.0	U	5.0	0.36	
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U	5.0	0.25	
79-00-5	1,1,2-Trichloroethane	5.0	U	5.0	0.34	
75-34-3	1,1-Dichloroethane (1,1-DCA)	5.0	U	5.0	0.20	
75-35-4	1,1-Dichloroethene (1,1-DCE)	5.0	U	5.0	0.57	
96-18-4	1,2,3-Trichloropropane	5.0	U	5.0	0.70	
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	5.0	U	5.0	0.74	
106-93-4	1,2-Dibromoethane	5.0	U	5.0	0.24	
95-50-1	1,2-Dichlorobenzene	5.0	U	5.0	0.21	
107-06-2	1,2-Dichloroethane	5.0	U	5.0	0.36	
78-87-5	1,2-Dichloropropane	5.0	U	5.0	0.20	
106-46-7	1,4-Dichlorobenzene	5.0	U	5.0	0.20	
78-93-3	2-Butanone (MEK)	10	U	10	0.81	
591-78-6	2-Hexanone	10	U	10	1.7	
108-10-1	4-Methyl-2-pentanone	10	U	10	0.67	
67-64-1	Acetone	10	U	10	1.3	
107-13-1	Acrylonitrile	100	U	100	1.4	
71-43-2	Benzene	5.0	U	5.0	0.20	
74-97-5	Bromochloromethane	5.0	U	5.0	0.32	
75-27-4	Bromodichloromethane	5.0	U	5.0	0.32	
75-25-2	Bromoform	5.0	U	5.0	0.42	
74-83-9	Bromomethane	5.0	U	5.0	0.29	
75-15-0	Carbon Disulfide	10	U	10	0.22	
56-23-5	Carbon Tetrachloride	5.0	U	5.0	0.45	
108-90-7	Chlorobenzene	5.0	U	5.0	0.29	
75-00-3	Chloroethane	5.0	U	5.0	0.24	
67-66-3	Chloroform	5.0	U	5.0	0.25	
74-87-3	Chloromethane	5.0	U	5.0	0.21	
124-48-1	Dibromochloromethane	5.0	U	5.0	0.31	
74-95-3	Dibromomethane	5.0	U	5.0	0.32	
75-09-2	Methylene Chloride	5.0	U	5.0	0.60	
100-41-4	Ethylbenzene	5.0	U	5.0	0.20	
74-88-4	Iodomethane	10	U	10	0.98	
100-42-5	Styrene	5.0	U	5.0	0.20	
127-18-4	Tetrachloroethene (PCE)	5.0	U	5.0	0.30	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Broome County Division of Solid Waste Management	**Service Request:**	R1504589
Project:	Colesville/Part 360 Baseline	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Analyzed:	6/15/15 14:58
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ1506705-01	**Basis:**	NA

Volatile Organic Compounds by GC/MS

Analytical Method:	8260C	**Analysis Lot:**	449044
Data File Name:	I:\ACQUDATA\msvoa10\data\061515\A9515.D\	**Instrument Name:**	R-MS-10
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	MRL	MDL	Note
108-88-3	Toluene	5.0	U	5.0	0.20	
79-01-6	Trichloroethene (TCE)	5.0	U	5.0	0.22	
75-69-4	Trichlorofluoromethane (CFC 11)	5.0	U	5.0	0.20	
108-05-4	Vinyl Acetate	10	U	10	1.1	
75-01-4	Vinyl Chloride	5.0	U	5.0	0.32	
156-59-2	cis-1,2-Dichloroethene	5.0	U	5.0	0.30	
10061-01-5	cis-1,3-Dichloropropene	5.0	U	5.0	0.24	
179601-23-1	m,p-Xylenes	5.0	U	5.0	0.33	
95-47-6	o-Xylene	5.0	U	5.0	0.20	
156-60-5	trans-1,2-Dichloroethene	5.0	U	5.0	0.33	
10061-02-6	trans-1,3-Dichloropropene	5.0	U	5.0	0.20	
110-57-6	trans-1,4-Dichloro-2-butene	5.0	U	5.0	0.70	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	87	85-122	6/15/15 14:58	
Dibromofluoromethane	96	89-119	6/15/15 14:58	
Toluene-d8	95	87-121	6/15/15 14:58	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Broome County Division of Solid Waste Management
Project: Colesville/Part 360 Baseline
Sample Matrix: Water

Service Request: R1504589
Date Analyzed: 6/11/15 - 6/19/15

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Analyte Name	Method	Lab Control Sample R1504589-LCS1 Result	Spike Amount	% Rec	% Rec Limits
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	18.0	20.0	90	81 - 112
Ammonia as Nitrogen, undistilled	350.1	0.505	0.500	101	90 - 110
Biochemical Oxygen Demand (BOD)	SM 5210 B-2001(2011)	217	198	110	85 - 115
Bromide	300.0	1.05	1.00	105	90 - 110
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	9.55	10.0	95	76 - 123
Chemical Oxygen Demand, Total	410.4	45.2	50.0	90	90 - 110
Chloride	300.0	2.15	2.00	108	90 - 110
Chromium, Hexavalent	7196A	0.106	0.100	106	80 - 120
Cyanide, Total	9012B	0.102	0.100	102	85 - 115
Nitrate+Nitrite as Nitrogen	353.2	0.482	0.500	96	90 - 110
Nitrite as Nitrogen	353.2	0.239	0.250	96	90 - 110
Nitrogen, Total Kjeldahl (TKN)	351.2	2.43	2.50	97	90 - 110
Phenolics, Total Recoverable	9066	0.0393	0.0400	98	85 - 115
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	882	914	97	90 - 110
Sulfate	300.0	2.11	2.00	105	90 - 110

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Broome County Division of Solid Waste Management
Project: Colesville/Part 360 Baseline
Sample Matrix: Water

Service Request: R1504589
Date Analyzed: 6/17/15

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Analyte Name	Method	Lab Control Sample R1504589-LCS2 Result	Spike Amount	% Rec	% Rec Limits
Cyanide, Total	9012B	0.402	0.400	101	85 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Broome County Division of Solid Waste Management
Project: Colesville/Part 360 Baseline
Sample Matrix: Water

Service Request: R1504589
Date Analyzed: 6/18/15 - 6/19/15

Lab Control Sample Summary
Inorganic Parameters

Units: µg/L
Basis: NA

Analyte Name	Method	Lab Control Sample R1504589-LCS Result	Spike Amount	% Rec	% Rec Limits
Aluminum, Total	6010C	1870	2000	93	80 - 120
Antimony, Total	6010C	450	500	90	80 - 120
Arsenic, Total	6010C	36.1	40	90	80 - 120
Barium, Total	6010C	2080	2000	104	80 - 120
Beryllium, Total	6010C	47.8	50.0	96	80 - 120
Boron, Total	6010C	955	1000	96	80 - 120
Cadmium, Total	6010C	50.0	50.0	100	80 - 120
Calcium, Total	6010C	1970	2000	98	80 - 120
Chromium, Total	6010C	199	200	99	80 - 120
Cobalt, Total	6010C	496	500	99	80 - 120
Copper, Total	6010C	264	250	106	80 - 120
Iron, Total	6010C	1010	1000	101	80 - 120
Lead, Total	6010C	502	500	100	80 - 120
Magnesium, Total	6010C	1990	2000	99	80 - 120
Manganese, Total	6010C	494	500	99	80 - 120
Mercury, Total	7470A	0.845	1.00	84	80 - 120
Nickel, Total	6010C	505	500	101	80 - 120
Potassium, Total	6010C	19200	20000	96	80 - 120
Selenium, Total	6010C	995	1010	98	80 - 120
Silver, Total	6010C	50.2	50	100	80 - 120
Sodium, Total	6010C	19100	20000	95	80 - 120
Thallium, Total	6010C	1970	2000	98	80 - 120
Vanadium, Total	6010C	503	500	101	80 - 120
Zinc, Total	6010C	503	500	101	80 - 120

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Broome County Division of Solid Waste Management
Project: Colesville/Part 360 Baseline
Sample Matrix: Water

Service Request: R1504589
Date Analyzed: 6/15/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 449044

Analyte Name	Lab Control Sample RQ1506705-02 Result	Spike Amount	% Rec	% Rec Limits
1,1,1,2-Tetrachloroethane	20.8	20.0	104	79 - 119
1,1,1-Trichloroethane (TCA)	19.4	20.0	97	71 - 123
1,1,2,2-Tetrachloroethane	20.9	20.0	104	74 - 127
1,1,2-Trichloroethane	18.9	20.0	95	79 - 117
1,1-Dichloroethane (1,1-DCA)	19.1	20.0	95	76 - 128
1,1-Dichloroethene (1,1-DCE)	21.3	20.0	107	74 - 135
1,2,3-Trichloropropane	20.2	20.0	101	68 - 136
1,2-Dibromo-3-chloropropane (DBCP)	21.8	20.0	109	69 - 135
1,2-Dibromoethane	20.6	20.0	103	81 - 123
1,2-Dichlorobenzene	20.8	20.0	104	80 - 119
1,2-Dichloroethane	18.3	20.0	91	72 - 130
1,2-Dichloropropane	18.8	20.0	94	80 - 119
1,4-Dichlorobenzene	20.3	20.0	102	79 - 119
2-Butanone (MEK)	19.6	20.0	98	66 - 129
2-Hexanone	21.2	20.0	106	61 - 131
4-Methyl-2-pentanone	19.8	20.0	99	68 - 129
Acetone	15.5	20.0	78	51 - 146
Acrylonitrile	95.1	100	95	75 - 133
Benzene	19.4	20.0	97	76 - 118
Bromochloromethane	19.2	20.0	96	81 - 126
Bromodichloromethane	19.9	20.0	100	79 - 122
Bromoform	23.4	20.0	117	65 - 138
Bromomethane	17.5	20.0	88	41 - 159
Carbon Disulfide	21.2	20.0	106	63 - 141
Carbon Tetrachloride	20.5	20.0	102	66 - 128
Chlorobenzene	20.6	20.0	103	80 - 121
Chloroethane	18.6	20.0	93	71 - 128
Chloroform	18.7	20.0	94	76 - 120
Chloromethane	18.6	20.0	93	64 - 140
Dibromochloromethane	21.5	20.0	107	79 - 125
Dibromomethane	19.4	20.0	97	79 - 120
Methylene Chloride	16.4	20.0	82	73 - 122
Ethylbenzene	18.5	20.0	93	76 - 120

Results flagged with an asterisk (*) indicate values outside control criteria.

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Broome County Division of Solid Waste Management
Project: Colesville/Part 360 Baseline
Sample Matrix: Water

Service Request: R1504589
Date Analyzed: 6/15/15

Lab Control Sample Summary
Volatile Organic Compounds by GC/MS

Analytical Method: 8260C

Units: µg/L
Basis: NA

Analysis Lot: 449044

Analyte Name	Lab Control Sample RQ1506705-02 Result	Spike Amount	% Rec	% Rec Limits
Iodomethane	11.9	20.0	60	34 - 148
Styrene	20.5	20.0	103	81 - 122
Tetrachloroethene (PCE)	19.0	20.0	95	69 - 124
Toluene	19.2	20.0	96	77 - 120
Trichloroethene (TCE)	19.6	20.0	98	76 - 123
Trichlorofluoromethane (CFC 11)	20.2	20.0	101	69 - 130
Vinyl Acetate	17.6	20.0	88	43 - 165
Vinyl Chloride	19.2	20.0	96	69 - 136
cis-1,2-Dichloroethene	19.0	20.0	95	80 - 121
cis-1,3-Dichloropropene	19.7	20.0	98	77 - 125
m,p-Xylenes	41.1	40.0	103	78 - 123
o-Xylene	19.9	20.0	99	77 - 131
trans-1,2-Dichloroethene	20.9	20.0	105	78 - 124
trans-1,3-Dichloropropene	19.9	20.0	99	72 - 123
trans-1,4-Dichloro-2-butene	19.5	20.0	97	47 - 173

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

FIELD MONITORING REPORT

PROJECT Colesville Landfill Well LAB ID 110

SAMPLE POINT ID PW-7

PURGE INFORMATION

Well Depth (ft.) 61.20 Purge Date 6/9/15 Purge Method Pump

SWL (ft.) 41.43 Start Time 1432 Stop Time 1520

Standing Water (ft.) 19.77 Volume Purged gal. 9.6 # casings 3

Well Constant (gal/ft.) 0.163 Observations EXTREMELY TURBID BROWN

Well Volume (gal.) 3.2 to orange turbid - (Fe bacteria)

SAMPLING INFORMATION

Sample Method Bailer

Date 6/10/15 Time 1210 SWL 41.43

Appearance Slight rust tint to turbid, rust orange

Weather Conditions P Sun 63°

Sampling Technician (Print) BRIAN MACKIN Signature Brian Mackin

Meter	Parameter	Unit	Replicate 1	Replicate 2
Myron	pH	unit	6.74	673
	Conductivity	µmhos/cm	150	150
	Temperature	Degrees Celsius	14.7	14.7
	Redox	millivolts	85	
LaMotte	Turbidity	NTU	5.3	

Calibration Date/Time 6/10/15 1130

OBSERVATIONS

Well sampled for Part 360 Baseline parameters

Sampling procedures were performed in accordance with all applicable protocols.

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

24598

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 1

Project Name: Colesville Well Sampling
Project Number:
Project Manager: Laurie Hartell
Report CC:
Company/Address: Colesville Landfill, Colesville NY
Phone #:
Email:
Sampler's Signature: Brian Mackin
Sampler's Printed Name: BRIAN MACKIN

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs • 8260 • 624 • CLP	GC/MS SVOAs • 8270 • 625	GC VOAs • 8021 • 601/602	PESTICIDES • 8081 • 608	PCBs • 8082 • 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	Part 360 Baseline						REMARKS/ ALTERNATE DESCRIPTION
PW-7		6/10/15	1210	W	12								1						110

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS
Metals
Bottles say "Colsville Residents" but are not.
#110 used for PW-7

Cr+6

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day

REQUESTED REPORT DATE
_____

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
Edata ____ Yes ____ No

INVOICE INFORMATION
PO #
BILL TO:

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Brian Mackin	Signature:	Signature:	Signature: David Mac	Signature:	
Printed Name: BRIAN MACKIN	Printed Name: Kyle Lee	Printed Name:	Printed Name: ALS	Printed Name:	
Firm: ALS	Firm: ALS	Firm:	Firm: 6/10/15 / 1700	Firm:	
Date/Time: 6/10/15 1400	Date/Time: 6/10/15 1400	Date/Time:	Date/Time:	Date/Time:	Date/Time:

R1504589 5
Broome County Division of Solid Waste Management
Colesville

Distribution: White - Lab Copy; Yellow - Return to Originator

Cooler Receipt and Preservation Check Form

Project/Client Broome County Folder Number R15-4589

Cooler received on 6-10-15 by: KE COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	Y (N)	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y (N) NA
3	Did all bottles arrive in good **condition** (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (**Wet Ice**) **Dry Ice Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 6-10-15 Time: 17:06 ID: IR#3 (IR#5) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	4.6						
Correction Factor (°C)	-1.6						
Corrected Temp (°C)	3.0						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by KE on 6-10-15 at 17:08
5035 samples placed in storage location: _____ by _____ on _____ at _____

PC Secondary Review: [signature]

Cooler Breakdown: Date: 6/11/15 Time: 1237 by: DW

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
2. Did all bottle labels and tags agree with custody papers? (YES) NO
3. Were correct containers used for the tests indicated? (YES) NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated (N/A)

Explain any discrepancies:

pH	Reagent	Yes	No	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH	✓		WC1401226	4/16				
≤2	HNO_3	✓		BD526143D	5/16				
≤2	H_2SO_4	✓		WC1401616	4/16				
<4	$NaHSO_4$								
Residual Chlorine (-)	For CN Phenol and 522	✓		If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol).					
	$Na_2S_2O_3$	-	-						
	ZnAcetate	-	-						
	HCl	**	**	4114050	4/16				

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

Bottle lot numbers: S-022-002, 031615-2ABI, 00561374, 020215-2AHO, 122214-2AAW
Other Comments:

1 Cr+6 7196
BOD
NO_3
6-10-15 12:10

PC Secondary Review: [signature]

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter