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Subject: Operational Year 3 Annual Monitoring Report, Colesville Landfill, Broome County, New York. (Site No. 704010).

Dear Mr. Jacob:

On behalf of Broome County, ARCADIS is providing the Operational Year 3 Annual Monitoring Report for the Colesville Landfill, Broome County, New York.

Please feel free to contact me if you have any questions or comments.

Sincerely,

ARCADIS G&M, Inc.

Fellman.

Steven M. Feldman Project Manager

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Colesville Landfill, Broome County, New York NYSDEC Site 704010



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Operational Year 3 Annual Monitoring Report

Colesville Landfill, Broome County, New York NYSDEC Site 704010

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1. Introduction

This Operational Year 3, Quarter Number 4 Annual Monitoring Report (Report) was prepared on behalf of the Broome County Division of Solid Waste Management to evaluate and document long-term monitoring (LTM) activities at the Colesville Landfill, located in Broome County, New York (site), Remediation and monitoring activities are being conducted pursuant to the Record of Decision (ROD) and Explanation of Significant Difference (ESD) that were issued in March 1991 and September 2000, respectively. LTM activities (which include environmental effectiveness and remediation system performance monitoring) were performed in accordance with the LTM Plan (ARCADIS G&M, Inc. 2002), LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS 2003), Interim Remedial Action Report (ARCADIS 2004), and the Proposed Modifications to Long-Term Monitoring Program (ARCADIS 2005) which were approved by the United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC). Where applicable these elements are either summarized or incorporated by reference herein.

This report provides the data collected from the September 2005 water-level measurement round and the results of groundwater quality monitoring conducted during Operational Year 3, Quarter Number 4 (annual monitoring event). A description of the operation, maintenance, and monitoring (OM&M) associated with the Groundwater Remediation System during Operational Year 3, Quarter Number 4 has also been included. In addition, this report describes SP-5 Spring Water Remediation System OM&M activities conducted during this quarter. Included in the analysis of results is a summary and discussion of all data collected during Operational Year 3 (September 2004 through September 2005). Following the detailed data analysis and discussion is a summary of findings, conclusions, and recommendations.

2. Methodology

The following section provides a summary of the environmental effectiveness and remedial system performance monitoring methodology for Operational Year 3, Quarter Number 4. A site plan, which shows the location of environmental effectiveness monitoring, is provided on Figure 1.

2.1 Environmental Effectiveness Monitoring

The environmental effectiveness monitoring performed during Operational Year 3, Quarter Number 4 included the following:

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- Water-level (hydraulic) measurements were collected from 18 monitoring wells on September 13, 2005.
- In accordance with the Proposed Modifications to Long-Term Monitoring Program (ARCADIS 2005), the following groundwater monitoring was completed:
 - Groundwater samples (annual monitoring list of wells with the exception of monitoring well PW-5 [see below]) were collected using passive diffusive bag (PDB) samplers from 16 monitoring wells during the week of September 12, 2005 and selectively analyzed for volatile organic compounds (VOCs) and dissolved gases. In addition, grab samples were collected from select wells and analyzed for total organic carbon (TOC).
 - Groundwater samples were collected using low-flow (i.e., Micropurge) sampling techniques from monitoring wells GMMW-7 and PW-5 during the week of September 12, 2005 and were analyzed for VOCs, dissolved gases, and TOC.
 - Groundwater samples were collected using low-flow sampling techniques from monitoring wells GMMW-2, GMMW-6, W-6, W-16S, W-18, and W-20S during the week of September 12, 2005 and were analyzed for VOCs and 1,4-Dioxane. For clarity, these samples were labeled with the suffix "LF" at the end of each sampling designation.

The depth to groundwater in monitoring wells was measured using methods consistent with those described in the LTM Plan.

Monitoring wells were purged and sampled using methods described in the LTM Plan and Proposed Modifications to Long-Term Monitoring Program.

2.2 Groundwater Remediation System Performance Monitoring

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Groundwater Remediation System performance monitoring activities during Operational Year 3, Quarter Number 4 were as follows:

• Pump-and-treat (PT) system production well influent and effluent samples were collected during the OM&M quarterly site visit on September 13, 2005 and selectively analyzed for VOCs and total iron.

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- One vapor sample from the PT system air stripper effluent was collected during the OM&M quarterly site visit on September 13, 2005 and analyzed for VOCs.
- Total organic carbon (TOC) samples were collected from injection wells IW-2, IW-8, and IW-13 on September 13, 2005.
- PT system operating parameters were recorded during the quarterly OM&M site visit.
- Automated reagent injection (ARI) system operating parameters were recorded during each injection event.

PT system groundwater samples were collected as grab samples directly from production wells GMPW-3, GMPW-4 and GMPW-5, the combined influent water to the low profile air stripper, and the combined effluent after the cartridge filters. The effluent air sample was collected as a grab sample directly from the designated point located on the low profile air stripper stack.

2.3 Spring Water Remediation System Performance Monitoring

SP-5 Spring Water Remediation System OM&M was conducted on September 15, 2005. System OM&M was conducted in accordance with the LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS 2003) and consisted of recording field parameters (discharge flowrate and depth to water in treatment unit) and the collection of an influent and effluent spring water sample for analysis of VOCs. The influent sample was collected after removing three well volumes from the influent monitoring well, which is located within the SP-5 treatment unit and screened below the liquid phase granular activated carbon (LPGAC) zone. The treatment system effluent sample was collected as a grab sample from the discharge pipe prior to entering the riprap-lined outlet. All spring water samples were analyzed for VOCs using USEPA Method 8260.

3. Groundwater Flow

Water-level measurements were made from existing wells on September 16, 2005. Water-level elevation data for Operational Year 3, Quarter Number 4 is provided in Table 1. A summary of water-level elevation data for Operational Year 3 is included in this table. Water-level elevations and the groundwater flow direction for the September 2005 monitoring event are shown on Figure 1. As shown on Figure 1, the groundwater flow direction in the project area (i.e., adjacent to the landfill western

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perimeter) and site-wide in the Operational Year 3, Quarter Number 4 round was consistent with previous rounds. The groundwater flow direction in the project area is toward the southwest from the western perimeter of the landfill. The groundwater flow direction in areas further to the east of the project area is toward the south/southwest.

Water-level elevation data for Operational Year 3 was similar to prior rounds of data. Seasonal fluctuations are observed during each operating quarter; however, the data generally indicate groundwater flow directions consistent with that observed during the Operational Year 3, Quarter Number 4 monitoring event.

4. Groundwater Quality

The following sections describe the analytical results for groundwater samples collected during the September 2005 monitoring round (Operational Year 3, Quarter Number 4). A discussion of analytical results for all data collected during Operational Year 3 is also provided. Groundwater analytical data for Operational Year 3, Quarter Number 4 is provided in Tables 2 and 3. A summary of all analytical data collected during Operational Year 3 is also provided on the referenced tables.

4.1 Volatile Organic Compounds

A comparison of Operational Year 3, Quarter Number 4 groundwater analytical results to previous analytical data indicate that the dissolved phase plume continues to be stable and that the anaerobic in-situ reactive zone (IRZ) is completely degrading contaminant mass. Data also indicate that groundwater monitoring with PDB samplers are a suitable alternative to low-flow sampling techniques at the site. For discussion purposes, the results of PDB collected groundwater samples will be used for the comparative analysis of data provided below.

Plume boundary, landfill interior, and landfill perimeter monitoring data indicate that the dissolved phase plume is stable. As shown in Table 2, total VOC (TVOC) concentrations for plume boundary monitoring wells W-17S and W-18 remained stable at 0.0 micrograms per liter (ug/L) and 69.0 ug/L, respectively. Offsite monitoring well W-20S remained stable at 0.0 ug/L. Background monitoring well W-14S also remained stable at 0.0 ug/L. Landfill perimeter monitoring wells W-13, PW-7, and W-6 remained stable at 0.0 ug/L, 16.4 ug/L, and 72.2, ug/L, respectively. Landfill perimeter monitoring well W-13 exhibited stable concentrations at 29.4 ug/L. Newly installed landfill interior monitoring well GMMW-7 had a TVOC concentration of 715.5 ug/L.

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In general, TVOC concentrations in mid-plume monitoring wells which would be affected first by the IRZ were stable to decreasing during the current reporting period. Specifically, mid-plume monitoring wells W-16S, PW-3, and PW-4 (located furthest from the IRZ), remained stable with TVOC concentrations of 66.7 ug/L, 134.9 ug/L, and 71.1 ug/L, respectively. TVOC concentrations in mid-plume monitoring wells GMMW-5, GMMW-6, W-5 and GMMW-2 decreased to 520.2 ug/L, 969.7 ug/L, 223.6 ug/L and 482.4 ug/L, respectively; mid-plume monitoring well PW-5 decreased to 3.6 ug/L.

As discussed in the Proposed Modifications to Long-Term Monitoring Program (ARCADIS 2005), a subset of monitoring wells were sampled using both low-flow and PDB sampler techniques to compare the two methods. Specifically, monitoring wells GMMW-2, GMMW-6, W-6, W-16S, W-18, and W-20S were selected to make this comparison during the Year 3, Quarter Number 4 monitoring event. Table 2 provides the results of this comparison. For wells sampled using the low-flow methodology, a suffix of "LF" was added to the sample identification. As shown in Table 2, the two methods provided comparable results with an average margin of error of 5-percent.

A comparative analysis of groundwater analytical data for VOCs during Operational Year 3 continue to corroborate historical data and indicate that the dissolved phase plume is stable with the exception of September 2005 data collected from monitoring well W-7 (see Section 10). This observation provides continued evidence that ongoing natural attenuation processes are effectively controlling the further migration of the plume. Data also indicate that the IRZ is completely degrading mass, particularly at the downgradient edge in the vicinity of GMMW-6.

PT system analytical results for VOCs are provided in Table 4. Groundwater analytical results for PT system production wells GMPW-3, GMPW-4, and GMPW-5 are consistent with prior rounds of data. Specifically, TVOC concentrations for the Operational Year 3, Quarter Number 4 sampling round were as follows: GMPW-3 (283.6 ug/L), GMPW-4 (388.2 μ g/L) and GMPW-5 (16.3 ug/L). A complete evaluation of performance monitoring conducted on the PT system is provided in Section 7.1.2 of this report.

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4.2 1,4-Dioxane

As shown in Table 2, groundwater samples collected from monitoring wells GMMW-2, GMMW-6, W-6, W-16S, W-18, and W-20S were analyzed for presence of 1,4-Dioxane. 1,4-Dioxane was not detected in any of the sampled monitoring wells.

4.3 Indicators of Reducing Conditions

Groundwater analytical results for biogeochemical parameters and field parameters were collected in accordance with the LTM plan and are provided in Table 3. In summary, field and laboratory groundwater data for Wells GMMW-5 and GMMW-6 indicate that strongly reducing conditions are being maintained within the IRZ. This is evidenced by the presence of reduced forms of alternate electron acceptors (i.e., methane). Further details of the ARI system performance monitoring are provided in Section 7.2.2 of this report.

4.4 Evidence of Biodegradation

Table 3 provides the results of biodegradation end product concentrations in monitoring wells and indicates the continued occurrence of bioactivity and biodegradation of VOCs within the IRZ. Specifically, the concentration of ethene within monitoring wells GMMW-5 and GMMW-6 continue to be elevated when compared to baseline conditions. GMMW-5 is located closest to the ARI injection wells and would be expected to be the first well to exhibit increases in biodegradation end products. Ethene results for monitoring well GMMW-6 remained elevated during Operational Year 3, Quarter Number 4 and continue to indicate that the IRZ has extended to the vicinity of this well. Additional details on the results of biogeochemical monitoring as evidence of Groundwater Remediation System performance and effectiveness are discussed in Section 7.2.2 of this report.

5. Spring Water Quality

Spring water monitoring was not conducted during Operational Year 3, Quarter Number 4 as outlined in the LTM Plan. Nonetheless, Table 5 presents the analytical results for spring sampling locations SP-2 and SP-3 during Operational Year 3. As shown in Table 5, spring water quality remained relatively stable during the reporting year with VOC concentrations below or slightly above the limits of detection.

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6. Surface Water Quality

A surface water sample was inadvertently not collected at the former SP-4 spring location during Operational Year 3, Quarter Number 4 and will be collected during the Operational Year 4, Quarter Number 1 monitoring event. Nonetheless, Table 6 presents the analytical results for surface water sampling location F-6 and SP-4 during Operational Year 3. As shown in Table 6, surface water quality remained stable during the reporting year with VOC concentrations below or slightly above the limits of detection. The data continue to indicate that surface water is not being adversely impacted by the dissolved phase groundwater plume or the former SP-4 spring water location.

7. Groundwater Remediation System Performance

The following section describes the results of the Groundwater Remediation System performance monitoring conducted during Operational Year 3, Quarter Number 4. A brief summary of system performance during Operational Year 3 is also provided.

7.1 PT System

The following section describes the results of the PT system performance monitoring conducted during Operational Year 3, Quarter Number 4. Included in the discussion is a brief summary of system performance during Operational Year 3.

7.1.1 Summary of Operation, Maintenance, and Monitoring

During the Operational Year 3, Quarter Number 4 system operation, the PT system shutdowns or periods of intermittent operation due to mechanical problems were as follows:

- As noted in the Operational Year 3, Quarter Number 3 report the PT system did not operate between June 31, 2005 and August 1, 2005 due to a motor failure of air compressor AC-200. The compressor motor was inspected and repaired on August 1, 2005.
- During the week of July 25, 2005, recovery wells GMPW-3, GWMP-4, and GMPW-5 were redeveloped due to a noticeable decline in production (see discussion in previous Operation Year 3 quarterly reports). Following redevelopment and replacement of the AC-200 motor, the PT system was

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restarted on August 1, 2005. A significant increase in production capacity was noted following the redevelopment activities.

PT system OM&M for Operational Year 3, Ouarter Number 4 was conducted on September 13, 2005 and included operation and maintenance of system equipment, the collection of system performance samples (water and vapor), and recording system operating parameters. As referenced above, redevelopment of recovery wells GMPW-3. GMPW-4, and GMPW-5 was also conducted during the reporting period. Table 7 provides a summary of the recorded system operating parameters for the current operating period as well as an annual summary for Operational Year 3. As shown in Table 7, the total effluent groundwater recovery rate for Operational Year 3, Quarter Number 4 was approximately 0.28-gallon per minute (gpm), with individual recovery rates of 0.05-gpm, 0.15-gpm, and 0.13-gpm for production wells GMPW-3, GMPW-4, and GMPW-5, respectively. The average individual recovery well rates during Operational Year 3, Quarter Number 4 continued to be lower when compared to previous operation. As discussed in previous quarterly reports, the decline in production was the result of well screen fouling, or a similar well condition problem. However, as referenced above, all recovery wells were redeveloped during the week of July 25, 2005. Recovery rate measurements recorded, following redevelopment, indicate that the well maintenance effort was successful. Specifically, individual recovery rates increased to at or near system startup conditions.

A total of 33,099 gallons of groundwater was recovered during Operational Year 3, Quarter Number 4 and a total of 939,149 gallons of groundwater has been recovered since system startup. The low profile air stripper operated in accordance with the design specifications and had a blower discharge pressure of 8.5-inches of water column (i.w.c.) and a low profile air stripper blower flowrate of 336 standard cubic feet per minute (scfm).

Overall system performance during Operational Year 3 was generally lower when compared to previous operation due to the well condition troubleshooting and rehabilitation measures referenced herein and within previous reports. Accordingly, the PT system operated continuously but at a reduced capacity. As shown in Table 7, the total effluent groundwater recovery rate for Operational Year 3 was approximately 0.30-gpm, with individual recovery rates of 0.03-gpm, 0.17-gpm, and 0.12-gpm for production wells GMPW-3, GMPW-4, and GMPW-5, respectively. A total of 158,200 gallons of groundwater was recovered during Operational Year 3.

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7.1.2 Results of Performance Sampling

PT system performance sampling for Operational Year 3, Quarter Number 4 was conducted on September 13, 2005. Five groundwater samples and one vapor sample were collected during the quarterly sampling round. Groundwater samples collected included individual production well samples (GMPW-3, GMPW-4 and GMPW-5), total influent, and total effluent after the cartridge filters. The vapor sample was collected from the effluent stack of the low profile air stripper.

Table 4 provides a summary of the PT system performance sampling groundwater analytical results for the Operational Year 3, Quarter Number 4 monitoring event as well as a summary of all data for Operational Year 3. As shown in Table 4, all groundwater VOCs were treated to below their respective Best Professional Judgment (BPJ) limits via the low profile air stripper during Operational Year 3, Quarter Number 4. Total iron after the cartridge filters was 1.38 mg/L for the fourth quarter sampling event, which is above the BPJ recommended daily average limit of 0.61 mg/L and the recommended daily limit of 1.2 mg/L. It should be noted that the cartridge filters were replaced immediately following the sampling event. Based on the total groundwater recovered during the reporting period and total influent groundwater concentration, an estimated 0.05 pounds (lbs) of VOC mass were removed from the subsurface during the quarterly reporting period, as shown in Table 8. A total of approximately 1.62 lbs of VOCs have been removed from the subsurface since system startup.

Table 9 provides a summary of the PT system performance sampling vapor analytical results for the Operational Year 3, Quarter Number 4 monitoring event as well as a summary of all data for Operational Year 3. As shown in Table 9, there were no constituents of concern (COCs) detected above the detection limit in the air stripper effluent vapor sample during Operational Year 3, Quarter Number 4. To be conservative, a NYSDEC DAR-1 air model was calculated using the detection limit of all COCs detected in the influent groundwater. All COCs were below their respective short-term guidance concentrations (SGCs) and annual guidance concentrations (AGCs). Appendix B contains the NYSDEC DAR-1 AGC screening simulation based on the hand calculations provided in the NYSDEC DAR-1 AGC/SGC tables dated December 22, 2003.

As shown in Table 4, the PT system operated effectively during Operational Year 3 and treated influent VOCs to below their respective BPJ limits during each operational period. Total iron after the cartridge filters had two exceedances over its BPJ recommended daily average limit due to fouling of the cartridge filter units. The cartridge filters continue to be inspected during regular O&M visits to assess the

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changeout frequency needed for efficient operation. As shown in Table 8, a total of approximately 0.42 lbs of VOC mass were recovered during Operational Year 3. Although an annual summary of NYSDEC DAR-1 screening simulations has not been provided herein, all COCs were below their respective SGCs and AGCs during each operating period of Operational Year 3.

7.2 ARI System

The following section describes the results of the ARI system performance monitoring conducted during Operational Year 3, Quarter Number 4. A brief summary of ARI system performance for Operational Year 3 has also been provided.

7.2.1 Summary of Operation, Maintenance, and Monitoring

The ARI system was operated continuously during the Operational Year 3, Quarter Number 4 period with minor shutdowns to perform routine system OM&M and during PT system troubleshooting activities.

Two reagent injections were completed during Operational Year 3, Quarter Number 4. The injection beginning on June 27, 2005 was interrupted during the PT system troubleshooting activities referenced herein. This injection was completed on August 3, 2005 following restart of the PT system. Based on the number of injection events, quantity of molasses solution delivered to each injection well, and molasses solution percentage, approximately 5,440-gallons of molasses solution were delivered to the subsurface during Operational Year 3, Quarter Number 4. A total of 66,714-gallons of molasses solution have been injected since system startup. Appendix C provides a summary of the recorded system operating parameters for each of the injection events for Operational Year 3, Quarter Number 4.

Despite intermittent system shutdowns for routine OM&M and equipment repair, the ARI system operated effectively during Operational Year 3 and delivered a sufficient quantity of organic carbon to the subsurface to maintain the anaerobic IRZ. Based on the number of injection events, quantity of molasses solution delivered to each injection well, and molasses solution percentage, approximately 16,330-gallons of molasses solution was delivered to the subsurface during Operational Year 3.

7.2.2 Results of Performance Sampling

ARI system performance sampling was conducted on September 13, 2005 and included the collection of TOC samples from injection wells IW-2, IW-8, and IW-13.

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In addition to performance sampling conducted explicitly for ARI system monitoring, analytical results from select wells sampled under the environmental effectiveness monitoring program were also utilized to determine the effectiveness of the ARI system.

As discussed previously, Tables 2 and 3 summarize the results of VOCs, and biogeochemical and field parameters, respectively, for the ARI system performance monitoring and environmental effectiveness Operational Year 3, Quarter Number 4 sampling event. Analytical results and field parameters indicate that geochemical conditions in the current area of ARI system influence exhibit low ORP, sufficient TOC within injection wells, elevated chlorinated VOC (CVOC) degradation products (i.e., ethene and ethane), and elevated reduced forms of alternate electron acceptors (i.e., methane). Operational Year 3, Quarter Number 4 analytical data provide strong evidence that VOCs are being completely degraded within the IRZ along the downgradient flow path.

Key observations for Operational Year 3, Quarter Number 4 are as follows:

- The TOC concentration in injection wells IW-2, IW-8, and IW-13 remain elevated, indicating that sufficient organic carbon is being delivered to the subsurface.
- The ethene concentration in monitoring well GMMW-5 remained elevated [9,000 nanograms per liter (ng/L)] when compared to baseline conditions.
- The methane concentration in monitoring well GMMW-5 increased to 24,000 μg/L.
- Ethane and ethene concentrations in monitoring well GMMW-6 remained elevated at 930 and 73,000 ng/L, respectively.
- The methane concentration in monitoring well GMMW-6 remained elevated (870 ug/L) when compared to baseline conditions.

As referenced previously, TVOC concentrations remained stable within well GMMW-5 during Operational Year 3, Quarter Number 4 when compared to the previous quarter analytical results. TVOC concentrations in well GMMW-6 remained stable when making the same comparison.

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The anaerobic IRZ continued to be maintained and completely degrade VOC mass during Operational Year 3, as evidenced by strongly reducing conditions in the vicinity of the injection wells, observation of degradation end products, and observation of reduced forms of alternate electron acceptors.

A summary of key observations for Operational Year 3 are as follows:

- Elevated TOC observed within injection wells and in well GMMW-5 indicates that sufficient organic carbon is being delivered to the subsurface to maintain the anaerobic IRZ.
- Ethene concentrations in monitoring well GMMW-5 remained an order of magnitude above baseline conditions during the operational year.
- Methane concentrations in monitoring well GMMW-5 increased to 24,000 ug/L during the operational year; and,
- Ethene concentrations in monitoring well GMMW-6 remained significantly above baseline conditions during the operational year.

Figure D-1 (see Appendix D) presents a summary of groundwater data for monitoring well GMMW-6 since the baseline monitoring event conducted in July 2002. As shown on Figure D-1, the decline in contaminant mass (primarily 1,2-DCE) corresponds to a significant increase in methane and degradation end product (ethene). This trend is typical for successful IRZs.

8. Spring Water Remediation System Performance

SP-5 Spring Water Remediation System OM&M was conducted on September 15, 2005 in accordance with the LTM Plan Addendum for Spring Water Remediation Systems (ARCADIS 2003). SP-5 Spring Water Remediation System Operational Year 3, Quarter Number 4 analytical results are provided in Table 10. A summary of all analytical results for Operational Year 3 is also provided. As shown in Table 10, nearly all effluent COCs were treated to below their respective BPJ limits via the LPGAC during the operating quarter with the exception of a slight exceedance of chloroethane. As a result of the exceedance, the LPGAC was replaced during the subsequent quarterly operating period.

 Table 11 contains the SP-5 Spring Water Remediation System operational parameters

 recorded during the current operation quarter and provides a summary of Operational

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Year 3 data. As shown in Table 11, the recorded instantaneous flowrate was 1.13 gpm for the Operational Year 3, Quarter Number 4 monitoring event. Approximately 118,973 gallons of spring water was treated and approximately 0.09 lbs of mass was recovered during the Operational Year 3, Quarter Number 4 operating period. An estimated 788,198 gallons of spring water has been treated and an estimated 0.59 lbs of VOC mass has been recovered since system startup.

As shown in Tables 10 and 11, the SP-5 Spring Water Remediation system operated effectively during Operational Year 3 and reduced groundwater VOCs to below their respective BPJ limits during each operational period, with the exception of the slight chloroethane exceedance referenced above. An estimated 528,582 gallons of spring water was treated and an estimated 0.37 lbs of VOC mass was recovered during Operational Year 3.

9. Conclusions

Based on the data obtained from the Operational Year 3, Quarter Number 4 monitoring and overall system performance during Operational Year 3, ARCADIS concludes the following:

- The groundwater flow direction in the project area (i.e., adjacent to the landfill western perimeter) and site-wide in the September 2005 round was consistent with previous rounds. The groundwater flow direction in the project area is toward the southwest from the western perimeter of the landfill. The groundwater flow direction in areas further to the east of the project area is toward the south/southwest.
- The anaerobic IRZ established downgradient of the injection transect is successfully reducing the concentration of site-related VOCs through enhanced reductive dechlorination. TVOC analytical results in monitoring well GMMW-6 decreased significantly during the operational year while the concentration of methane and ethene remained elevated.
- Site-wide groundwater analytical data for VOCs is consistent with site historical data and indicate that the dissolved phase plume is stable. This observation provides continued evidence that ongoing natural attenuation processes are effectively controlling the further migration of the plume in areas beyond the present-day influence of the IRZ.

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- The PT system is operating as designed and is treating recovered groundwater VOCs to below BPJ limits prior to discharge.
- Sufficient organic carbon was delivered to the subsurface to maintain the IRZ as evidenced through the analytical data.
- The SP-5 Spring Water Remediation System is operating as designed and is treating spring water VOCs to below BPJ limits prior to discharge.
- PDB and low-flow sampling techniques produced comparable analytical data with an average deviation of 5-percent.
- 1,4-Dioxane was not detected in any of the sampled monitoring wells during the Operational Year 3, Quarter Number 3 and Quarter Number 4 monitoring events despite the presence of 1,1,1-TCA in site groundwater.

10. Recommendations

ARCADIS recommends the following based on the findings presented herein:

- Based on the comparative analysis of PDB and low-flow sampling techniques provided herein, it is recommended that the use of PDBs be employed at the Site in accordance with the Proposed Modifications to Long-Term Monitoring Program (ARCADIS 2005).
- Based on the results for 1,4-Dioxane during the Operational Year 3, Quarter Number 3 and Quarter Number 4 monitoring events, it is recommended that the sampling of 1,4-Dioxane be discontinued.
- Resample monitoring well W-7 during the Operational Year 4, Quarter Number 2 monitoring event as a result of the anomalous increase in TVOC concentrations.
- Resample surface water in the vicinity of the former SP-4 spring location during the Operational Year 4, Quarter Number 1 monitoring event.
- Based on recent experience at similar sites using enhanced biodegradation as a remedial measure for groundwater, it is recommended that larger volumes of a more dilute electron donor solution be injected into the subsurface. The benefits of the recommended methodology are as follows:

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Colesville Landfill, Broome County, New York

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- Injection of a larger volume ensures complete coverage of the target zone and enhances contact with adsorbed phase contaminant mass.
- Injection at a more dilute solution strength reduces the risk of pH fluctuations caused by fermentation of excess organic carbon.
- The proposed methodology requires less frequent injections and optimizes the use of electron donor solution.

11. Project Schedule

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Groundwater environmental effectiveness monitoring is scheduled to be conducted for Operational Year 4 on the quarterly schedule set forth in the Proposed Modifications to Long-Term Monitoring Program (ARCADIS 2005). System OM&M of the Groundwater Remediation System will continue to be performed on a quarterly basis consistent with the LTM Plan. In accordance with the methodology outlined in the Interim Remedial Action Report, monitoring of spring location SP-4 will be conducted from the North Stream, immediately downgradient of the former spring location.

Colesville Landfill, Broome County, New York

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12. References

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Water-Level Measurements Collected During Operational Year 3, Colesville Landfill, Broome County, New York. Table 1.

		12/7/2004	12/7/2004	6/21/2005	6/21/2005		
Well	MP Elevation	Depth to Water	Water-Level Elevation	Depth to Water	Water-Level Elevation	MP	
Identification	(feet above msl)	(feet below MP)	(feet above msl)	(feet below MP)	(feet above msl)	Description	
GMMW-2	1030.95	37.65	063.30	AM	AM	Inner casing	
GMMW-5	1043.66	46.65	10.766	47.78	995.88	Inner casing	
GMMW-6	1033.56	37.17	996.39	37.77	995.79	Inner casing	
GMMW-7	1045.43	MN	WN	MN	WN	Inner casing	
PW-3	988.92	10.11	978.81	10.92	978.00	Inner casing	
PW-4	1001.75	16.48	985.27	16.15	985.60	Inner casing	
PW-5	986.12	AM	AM	AM	AM	Inner casing	
W-5	1051.41	50.58	1000.83	50.35	1001.06	Inner casing	
N-6	1050.38	48.05	1002.33	47.35	1003.03	Inner casing	
PW-7	1042.47	38.75	1003.72	39.46	1003.01	Inner casing	
V-7	1049.12	40.67	1008.45	40,87	1008.25	Inner casing	
PW-10	1049.29	35.91	1013.38	35.17	1014.12	Inner casing	
PW-13	1072.41	59.84	1012.57	58.73	1013.68	Inner casing	
W-13	1053.43	44.96	1008.47	44.64	1008.79	Inner casing	
W-14S	957.68	7.58	950.10	9.41	948.27	Inner casing	
W-16S	990.33	8.66	981.67	10.59	979.74	Outer casing	
W-17S	959.13	8.85	950.28	10.43	948.70	Inner casing	
W-18	973.56	11.88	961.68	11.46	962.10	Inner casing	
W-20S	952.88	7.75	945.13	10.00	942.88	Inner casing	
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Measuring point. Not measured. Anomalous measurement.

AM NA MM AM

Water-Level Measurements Collected During Operational Year 3, Colesville Landfill, Broome County, New York. Table 1.

		9/13/2005	9/13/2005		
Well	MP Elevation	Depth to Water	Water-Level Elevation	MP	
Identification	(feet above msl)	(feet below MP)	(feet above msl)	Description	
GMMW-2	1030.95	36.38	994.57	Inner casing	
GMMW-5	1043.66	47.16	996.50	Inner casing	
GMMW-6	1033.56	38.84	994.72	Inner casing	
GMMW-7	1045.43	46.89	998.54	Inner casing	
PW-3	988.92	13.09	975.83	Inner casing	
PW-4	1001.75	17.88	983.87	Inner casing	
PW-5	986.12	AM	AM	Inner casing	
W-5	1051.41	50.90	1000.51	Inner casing	
0-W	1050.38	49.02	1001.36	Inner casing	
PW-7	1042.47	38.79	1003.68	Inner casing	
<i>L-W</i>	1049.12	42.24	1006.88	Inner casing	
PW-10	1049.29	AM	AM	Inner casing	
PW-13	1072.41	60.41	1012.00	Inner casing	
W-13	1053.43	46.43	1007.00	Inner casing	
W-14S	957.68	11.34	946.34	Inner casing	
W-16S	990.33	10.08	980.25	Outer casing	
W-17S	959.13	12.26	946.87	Inner casing	
W-18	973.56	10.67	962.89	Ininer casing	
W-20S	952.88	11.81	941.07	Inner casing	
	-				
msł	Mean sea level.				
МР	Measuring point.				
MN	Not measured.				
AM	Anomalous measurement.				

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ARCADIS Table 2. Concentrations of Volatile Organic Compounds and 1,4-Dioxane Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

MMW-05 15/2005	<5.0	<5.0	47	<5.0	<5.0	<5.0	<5.0	45	240	Ŝ	150	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.2	<5.0	<5.0	32	NA	520.2
GMMW-05 GI 6/21/2005 9/	<10	· <10	88	<10	<10	<10	<10	28	240	<10	96	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	23	<10	475.0
GMMW-05 3/24/2005	<10	<10	150	<10	<10	<10	<10	25	190	<10	180	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	31	NA	576.0
GMMVV-05 12/7/2004	<10	<10	110	<10	<10	<10	<10	11	06	<10	360	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	577.0
GMMW-02-LF ¹ 9/15/2005	40.)	<5.0J	110	<5.0J	<5.0J	<5.0J	<5.00	39J	34.1	<5.0J	150J	<5.0J	<5.0J	<5.0J	<5.0J	<5.0J	<5.0J	<5.0J	<5.0J	<5.0J	78J	17.1	86.0>	468
GMMW-02 9/15/2005	38	<1.0	110	2.0	<1.0	<1.0	3.4	40	37	<1.0	150	<1.0	o.1>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	84	18	NA	482.4
GMMW-02 6/22/2005	57	<1.0	130	2.7	<1.0	<1.0	4.0	42	45	<1.0	150	1.9	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	100	22	<1.0	556.6
GMMW-02 3/24/2005	57	<1.0	120	2.8	<1.0	<1.0	3.6	38	40	<1.0	150	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	06	20	NA	623.3
GMMVV-02 12/8/2004	62	<1.0	120	2.3	<1.0	<1.0	3.6	4	38	<1.0	150	1.5	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	110	21	NA	554.4
Sample ID: Date:																								
Constituents (units in ug/L)	1,1,1-Trichtoroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	1,2-Dichloropropane	Benzene	Chlorobenzene	Chloroethane	Chloroform	cis-1,2-Dichloroethene	Dichlorodifluoromethane	Ethylbenzene	Methylene chloride	Methyl tert-butyl ether	Naphthalene	o-Xylene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	Trichloroethene	Viny! chloride	1,4-Dioxane	Total VOCs

Bold Constituent detected above MDL.

VOCs Volatile Organic Compounds.

Micrograms per liter. ng/L

Field replicate.

Estimated value.

Method detection limit. MDL

Not analyzed. 4 L

Samples GMMW-02-LF and GMMW-06 were inadvertently mislabeled by the reporting laboratory or in the field. Accordingly, all data values for these samples have been qualified as estimated values.

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ARCADIS Table 2. Concentrations of Volatile Organic Compounds and 1,4-Dioxane Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

	-		0010000	00 10 10 100	CAMANAN DE 1		CLARK OF LET	CAMANAL 07			
constituents (units in ug/L)	Sample IU. Date:	12/9/2004	3/24/2005	GWINIVY-UD	9/15/2005	9/15/2005	9/15/2005	9/14/2005	3/23/2005	9/15/2005	
1,1,1-Trichloroethane		<10	<10	<10	4.2J	3.6	3.8	16	13	16	
1,1,2-Trichloroethane		<10	<10	<10	2.4.)	2.6	2.6	2.2	<1.0	<1.0	
1,1-Dichloroethane		520	390	370	380J	390	390	240	37	40	
1,1-Dichloroethene		<10	<10	<10	1.2.1	1.3	1.4	2.6	<1.0	<1.0	
1,2-Dichloroethane		40	<10	<10	<1.0	2.8	<1.0	2.4	<1.0	<1.0	
1,2-Dichloropropane		<10	<10	<10	<1.0J	<1.0	1.2	<1.0	<1.0	<1.0	
Benzene		<10	<10	<10	LT.1	5.9	9	1.8	<1.0	<1.0	
Chlorobenzene		38	31	32	43J	34	36	19	<1.0	<1.0	
Chloroethane		250	190	120	200	150	150	79	9.6	6.5	
Chloroform		<10	<10	<10	1.3J	<1.0	1.3	1.2	1.7	1.6	
cis-1,2-Dichloroethene		290	170	200	180J	190	190	200	42	39	
Dichlorodifluoromethane		<10	<10	<10	4.6J	3.9	3.9	<1.0	<1.0	<1.0	
Ethylbenzene		<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Methylene chloride		21	16	<10	<1.0J	<1.0	1	<1.0	2.0	1.6	
Methyl tert-butyl ether		<10	<10	<10	13.)	11	<1.0	4.3	<1.0	<1.0	
Naphthalene		<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
o-Xylene		<10	<10	<10	1.4.)	<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene		13	<10	<10	<1.0	<1.0	<1.0	<1.0	2.7	3.3	
Toluene		¢10	<10	<10	2.1J	1.5	1.5	<1.0	<1.0	<1.0	
trans-1,2-Dichloroethene		<10	<10	<10	2.1J	1.8	<1.0	<1.0	<1.0	<1.0	
Trichloroethene		16	<10	10	6.7J	9.0	9.2	59	23	25	
Vinyl chłoride		230	170	94	120J	110	110	88	<1.0	1.9	
1,4-Dioxane		NA	NA	<1.0	NA	<0.98	NA	NA	NA	NA	
Total VOCs		1,378.0	967.0	826.0	969.7	917.4	917.9	715.5	131.0	134.9	

Bold Constituent detected above MDL.

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VOCs Volatile Organic Compounds.

Micrograms per liter. ng/L

Field replicate.

Method detection limit. Estimated value: ~

Not analyzed. MDL

L NA

Samples GMMW-02-LF and GMMW-06 were inadvertently mislabeled by the reporting laboratory or in the field. Accordingly, all data values for these samples have been qualified as estimated values.

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ARCADIS Table 2. Concentrations of Volatile Organic Compounds and 1,4-Dioxane Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

										L	10.101	10.05
Constituents (units in ug/L)	Sample ID: Date:	PW-04 12/9/2004	PW-04 3/24/2005	PW-04 6/21/2005	PW-04 9/14/2005	PW-05 3/25/2005	PW-05 9/15/2005	PW-07 9/13/2005	PW-13 9/13/2005	c0-W	3/24/2005	6/22/2005
1,1,1-Trichloroethane		22	8	21	16	<1.0	<. 1.0	<1.0 1.0	<1.0	2	2.4	7.4
1,1,2-Trichloroethane		<1.0	< <u>1.0</u>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		16	13	23	13	5.7	ŗ	4.4	5.6	97	91	120
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	~1. 0	<1.0	<1.0	<1.0	<1.0	<1.0 ►	<1.0
1.2-Dichloroethane		<1.0	<1.0 1.0	<1.0 1	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0
1.2-Dichloropropane		0.1∧	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.8	3.3	4.9
Chlorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.8	14	23	23	25
Chloroethane		4.6	4.6	9.7	4.9	1.4	ک	6.9	4.7	87	63	51
Chloroform		1.7	1.6	1.3	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		15	15	25	15	60	3.6	⊽	2.1	7.8	14	36
Dichlorodifluoromethane		2.0	<1.0	1.7	2	٢	v	⊽	۰ ۲	1.4	۲	2:3
Ethvlbenzene		0.1×	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene chloride		<1.0	<1.0	<1.0 1	<1.0	<1.0	<1.0	<1.0	<1.0	<2.8	1.8	<1.0
Methyl tert-butyl ether		<1.0 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<u>م</u>	<1.0	<1.0
Naphthalene		o.1⊳	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 -	<1.0	<1.0
o-Xviene		<1.0 1.0	<1.0	<1.0	<1.0	<1.0	<1.0 1	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	≤1.0	<1.0
Toluene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	2.1	<1.0
trans-1.2-Dichloroethene		1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 .1	<1.0	<1.0	<1.0	<1.0
Trichloroethene		28	20	27	21	2.8	<1.0	1.3	n	5.9	7.4	9.9
Vinyt chloride		< <u>1.0</u>	<1.0	1.7	<1.0	2.3	<1.0	<1.0 1	<1.0	16	23	7.2
1,4-Dioxane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.0
Total VOCs		91.1	72.2	110.4	71.1	72.2	3.6	16.4	29.4	245.3	231.0	260.4

Bold Constituent detected above MDL.

VOCs Volatile Organic Compounds.

Micrograms per liter. ng/L

Field replicate.

Estimated value.

Method detection limit. MDL

Not analyzed. ₹ -

Samples GMMW-02-LF and GMMW-06 were inadvertently mislabeled by the reporting laboratory or in the field. Accordingly, all data values for these samples have been qualified as estimated values.

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Table 2. Concentrations of Volatile Organic Compounds and 1,4-Dioxane Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	W-05 9/15/2005	W-06 3/22/2005	W-06 9/14/2005	W-06-LF 9/14/2005	W-07 3/23/2005	W-07 9/13/2005	W-13 9/13/2005	W-14S 9/13/2005	W-16S 3/23/2005	W-16S 9/13/2005	W-16S-LF 9/14/2005	
4 4 Trichlersthene							ę						
I, I, I - I fichloroethane		0.1×	N.1.2	0.12	0.12	0.1	87	0.1×	N.1×	<u>v.1></u>	0.1 2	0.1>	
1,1,2-Trichloroethane		<1.0	<1.0	o.1∘	<1.0	 1.0 	<1.0	0.15	<1.0	<1.0	1.0	<1.0	
1,1-Dichloroethane		77	31	30	33	3.6	170	<1.0	<1.0	23	24	23	
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,2-Dichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 <	
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzene		4.2	4.8	10	5.9	<1.0	c.1>	<1.0	<1.0	3.1	2.6	3.3	
Chiorobenzene		18	13	18	24	3.8	27	<1.0	<1.0	24	26	31	
Chloroethane		110	7.4	7.8	7.9	2.8	34	<1.0	c1.0	1	9.8	9.6	
Chloroform		<1.0	<1.0	<1.0	°	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
cis-1,2-Dichloroethene		1.5	8.5	6.1	5.1	<1.0	55	<1.0	<1.0	<1.0	1.7	1.5	
Dichlorodifluoromethane		≤1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	17	<1.0	<1.0	<1.0	<1.0	<1.0	
Methylene chloride		1.9	<1.0	<1.0	<1.0	<1.0	4.8	<1.0	<1.0	<1.0	<1.0	<1.0	
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Naphthalene		<1.0	<1.0	<1.0	<1.0	<1.0	67	<1.0	<1.0	<1.0	<1.0	<1.0	
o-Xylene		<1.0	<1.0	<1.0	<1.0	<1.0	12	<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Toluene		1.2	<1.0	<1.0	<1.0 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
trans-1,2-Dichloroethene		≤1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene		1.5	5.5	5.3	4.8	1.1	11	<1.0	<1.0	2.1	2.6	2.5	
Vinyl chloride		8.3	<1.0	<1.0 1	<1.0	<1.0	13	<1.0	<1.0	<1.0	<1.0	<1.0	
1,4-Dioxane		NA	NA .	NA	<0.94	NA	AN	NA	AN	NA	NA	<0.95	
Total VOCs		223.6	70.2	72.2	80.7	11.3	438.3	0.0	0.0	63.2	66.7	70.9	

Bold Constituent detected above MDL.

VOCs Volatile Organic Compounds.

Micrograms per liter. J/Bn

Field replicate.

Estimated value. -

Method detection limit. MDL

Not analyzed. A -

Samples GMMW-02-LF and GMMW-06 were inadvertently mislabeled by the reporting laboratory or in the field. Accordingly, all data values for these samples have been qualified as estimated values.

G: APROJECTIBROOMENY0949, 018/LTM Data/0905all_final.xls - GW VOCs

Table 2. Concentrations of Volatile Organic Compounds and 1,4-Dioxane Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: Date:	W-17S	W-18 3/22/2005	W-18	W-18-LF	W-20S	W-20S-LF	TB 09-13-05 9/13/2005	FB9-15-05 9/15/2005	
(units in ug/L)	nale.		000717710		C007/C1/E	21 31 2000	2002	000710110	911012000	
1,1,1-Trichloroethane		<1.0	7.1	18	17	<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1-Dichloroethane		<1.0	9	17	17	<1.0	<1.0	<1.0	<1.0	
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,2-Dichloroethane		<1 0 1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,2-Dichloropropane		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Benzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Chiorobenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Chloroethane		< <u>1.0</u>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Chloroform		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
cis-1,2-Dichloroethene		<1.0	4.2	14	13	<1.0	<1.0	<1.0	<1.0	
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Methylene chloride		<1.0	<1.0	<1.0	<1.0	<1.0	4.5	<1.0	<1.0	
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	<1.0	o.1>	<1.0	<1.0	
Naphthalene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	•
o-Xylene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0 <	<1.0	<1.0	<1.0	
Toluene		<.1. 0.1≻	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Trichloroethene		c.1>	8.7	20	20	<1.0	<1.0	<1.0	<1.0	
Vinyl chloride		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
				VIV		VIV		NIA	1 20 02	
1,4-Uloxane		AN	AN		06.02	ΥN	10.04		000.04	
Total VOCs		0.0	26.0	69.0	67.0	0.0	4.5	0.0	0.0	

Bold Constituent detected above MDL.

VOCs Volatile Organic Compounds.

ug/L Micrograms per liter.

Field replicate.

Estimated value.

MDL Method detection limit.

NA Not analyzed. 1. Samples GMMV

Samples GMMW-02-LF and GMMW-06 were inadvertently mislabeled by the reporting laboratory or in the field. Accordingly, all data values for these samples have been qualified as estimated values.

G: IAPROJECTIBROOMENNY0949.0181/TM Data/0905all_final.xis - GW VOCs

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Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID Date	: GMMW-02 : 12/8/04	GMMW-02 3/24/05	GMMW-02 6/22/05	GMMW-02 9/15/05	GMMW-04 12/8/04
	UNITS					
METALS					·.	
Iron. Dissolved	mg/L		0.0548	-		
Manganese, Dissolved	mg/L	• <u></u> * .	0.032			
GENERAL CHEMISTRY						
Bromide	mg/L	 ¹				0.033
Chloride	mg/L	·	23.6			
Nitrogen, Nitrate (As N)	mg/L		<0.1			·
Nitrogen, Nitrite	mg/L	· · ·	<0.1	_ '	·	
Total Organic Carbon	mg/L	<2.0	<2.0	2.86	<2.0	
Sulfate	mg/L		7.26	,	<u> </u>	
Sulfide (field)	mg/L	0.031	0.21	0.57	0.203	-
Iron (field)	mg/L	0.09			-	
FIELD PARAMETERS						
pН	Standard units	6.02	7.29	6.38	6.05	
Specific Conductance	mmhos/cm	56	0.587	0.543	0.543	
Turbidity	NTU	189	36			
Dissolved Oxygen	mg/L	2.13	4.13	4.03	2.26	
Temperature	deg C	11.15	10.75	12.62	14.54	
ORP	mV	116	102.4	131.8	212.7	-
DISSOLVED GASES		·	• • •			
Carbon dioxide	mg/L		220			·
Carbon monoxide	mg/L		<0.40	-		
Ethane	ng/L		480		490	
Ethene	ng/L	 .	2,800		2,100	-
Methane	ug/L		1,000		1,100	
Nitrogen	mg/L		22	·		
Oxygen	mg/L		4.8			-

Bold Constituent detected above MDL. Milligrams per liter. mg/L Millimhos per centimeter. mmhos/cm Nephelometric Turbidity Units. NTU Degrees Celsius. deg C Millivolts. mV Nanograms per liter. ng/L Not analyzed or collected. _ Micrograms per liter. ug/L Injection well. W Oxidation-reduction potential. ORP

J

Qualifier assigned to analytical data indicating result is estimated.

Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	· .	Sample ID: Date:	GMMW-05 12/7/04	GMMW-05 12/8/04	GMMW-05 3/24/05	GMMW-05 6/21/05	GMMW-05 9/15/05
		UNITS					
METALS		<u>omio</u>					
Iron Dissolved		ma/L			187	· _	
Manganese, Dissolved		mg/L	лан <u></u>		7.38	_ *	·
GENERAL CHEMISTRY							
Bromide		mg/L	·	0.035			
Chloride		mg/L			21.8		
Nitrogen, Nitrate (As N)		mg/L			<0.1		
Nitrogen, Nitrite		mg/L			1.54	·	
Total Organic Carbon		mg/ <u>L</u>	102		224	528	-
Sulfate		mg/L			<1		· -
Sulfide (field)		mg/L	0.096		0.398	0.284	
Iron (field)		mg/L	1.84				
FIELD PARAMETERS							•••
pH		Standard units	5.9		8.12	5.39	6.17
Specific Conductance		mmhos/cm	74.5	· · · . ·	1.335	1.634	1.963
Turbidity		NTU	115	'		<u></u> 11	·· -···
Dissolved Oxygen	I	mg/L	0.49	·	2.99	1.64	··
Temperature		deg C	12.59	·	8.29	19.64	13.04
ORP		mV	-53	_ *	-31	-90.1	-75
DISSOLVED GASES					· ·		
Carbon dioxide	1	mg/L	·		290 J		· _
Carbon monoxide	1	mg/L			<0.40 J		
Ethane		ng/L	·· ·		<5.0 J		68
Ethene		ng/L		-	36,000 J		9,000
Methane		ug/L		·	17,000 J		24,000
Nitrogen	1	mg/L			17 J	· · · · · ·	
Oxygen	1	mg/L		·	2.5 J	-	-

Bold Constituent detected above MDL. mg/L Milligrams per liter. Millimhos per centimeter. mmhos/cm NTU Nephelometric Turbidity Units. Degrees Celsius. deg C . mV Millivolts. ng/L Nanograms per liter. Not analyzed or collected. ___ ug/L Micrograms per liter.

Injection well. ORP Oxidation-reduction potential.

W

J

Qualifier assigned to analytical data indicating result is estimated.

Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: Date:	GMMW-06 12/7/04	GMMW-06 12/9/04	GMMW-06 3/24/05	GMMW-06 6/21/05	GMMW-06 9/15/05
	UNITS					
METALS						
Iron, Dissolved	mg/L	-		13.9	-	
Manganese, Dissolved	mg/L	· - ·		4.16		
GENERAL CHEMISTRY						
Bromide	mg/L					-
Chloride	mg/L			14.8	-	
Nitrogen, Nitrate (As N)	mg/L			<0.1		
Nitrogen, Nitrite	mg/L			0.306	·	 •
Total Organic Carbon	mg/L		57.9	7.09	9.75	5.44
Sulfate	mg/L	·		1.08	-	
Sulfide (field)	mg/L	0.073		0.27	0.039	0.052
Iron (field)	mg/L	1.17	· · <u></u>	· · ·	-	·
FIELD PARAMETERS						
pH	Standard units	6.21		8.22	6.41	6.67
, Specific Conductance	mmhos/cm	0.149		1.291	0.914	0.816
Turbidity	NTU	93.3		45		
Dissolved Oxygen	mg/L	0.7		2.76	2.77	
Temperature	deg C	10.69	-	6.2	16.21	16.31
ORP	mV	-61		20.4	-59.8	-55.6
DISSOLVED GASES						
Carbon dioxide	mg/L	-	· _	240 J		·
Carbon monoxide	mg/L			<0.40 J	-	_
Ethane	ng/L	· · ·		2,300 J	·	930
Ethene	ng/L			140,000 J	· · · ·	73,000
Methane	ug/L		· · _ · ·	2,500 J		870
Nitrogen	mg/L		-	25 J		_
Oxygen	mg/L	<u> </u>	· _ ·	3.4 J	'	

Bold Constituent detected above MDL.

mg/L	Milligrams per liter.		
mmhos/cm	Millimhos per centimeter.		
NTU	Nephelometric Turbidity Units.		
deg C	Degrees Celsius.		
mV	Millivolts.		
ng/L	Nanograms per liter.		
	Not analyzed or collected.		
ug/L	Micrograms per liter.		
W	Injection well.		
ORP	Oxidation-reduction potential.		
J.	Qualifier assigned to analytical data indica	ating result is estin	nated.

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Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: Date:	GMMW-07 9/14/05	GMPW-01 12/8/04	PW-03 3/23/05	PW-03 9/13/05	PW-04 12/8/04
	UNITS				· · · · · · · · · · · · · · · · · · ·	
	UNITS					
NETALS	ma/l					
Inganaga Dissolved	mg/L	-				
langanese, Dissolved	ing/L					-
ENERAL CHEMISTRY						
romide	ma/l		0 022			
bloride	mg/L		0.022			
itrogen Nitrate (As N)	mg/L					
litrogen, Nitrite	mg/L					
otal Organic Carbon	mg/L	2.05		-2.0		-2.0
	mg/L	2.05		~ 2.0		~ 2.0
	mg/L	0 152				0.064
amae (neia)	mg/L .	0.155		0.034		0.001
on (neid)	ing/L					0.17
ELD PARAMETERS						
H	Standard units	6.18		6.43	6 4 2	5.6
necific Conductance	mmhos/cm	0.321		0.588	0 608	57 4
urbidity	NTU				0.000	42 7
issolved Oxvaen	mg/l	0.66		13 42		3 44
emperature	den C	14.5		6 46	15.02	12 01
	m\/	224 7		97 5	13.02	12.01
		264.1		37.5		
ISSOLVED GASES			-			
arbon dioxide	mg/L	·			-	
arbon monoxide	ma/L					
thane	na/L	580	-	-		
thene	na/L	5,100				
ethane	ua/L	710				-
itrogen	ma/L					
yvden	mg/L					
~J9011						

Bold Constituent detected above MDL. mg/L Milligrams per liter.

	·······
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV.	Millivolts.
ng/L	Nanograms per liter.
	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential
J	Qualifier assigned to analytical data indicating result is estimated.

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Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

	Sample ID:	PW-04	PW-04	PW-04	PW-05	PW-05
Parameters	Date:	3/24/05	6/21/05	9/13/05	3/25/05	9/15/05
······································			<u> </u>			
· · · · · · · · · · · · · · · · · · ·	UNITS	• . •				
METALS						
Iron, Dissolved	mg/L	0.0436	-		- ¹ 2	
Manganese, Dissolved	mg/L	0.00998			'	
GENERAL CHEMISTRY			× .			
Bromide	mg/L	· <u> </u> ·		-		
Chloride	mg/L	443				
Nitrogen, Nitrate (As N)	mg/L	1.2	· · ·		"	
Nitrogen, Nitrite	mg/L	<1.0		¹	·	
Total Organic Carbon	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Sulfate	mg/L	4.06	·		'	1
Sulfide (field)	mg/L	0.02	0.007	·	0.045	0.134
Iron (field)	mg/L					
FIELD PARAMETERS						
pH	Standard units	6,53	5.31	•	7.41	7.85
Specific Conductance	mmhos/cm	1.657	1.397		0.24	0.243
Turbidity	NTU	 ¹ 4.			<u></u>	
Dissolved Oxygen	mg/L	7.59	4.76		1.11	1.67
Temperature	deg C	9.50	12.08	-	8.75	10.32
ORP	mV	112.3	264.2	-	119.9	5.9
DISSOLVED GASES						
Carbon dioxide	ma/l	210	. _		· _	
Carbon monovide	mg/L	<0.40	_	_		_
Ethane	ng/l	63		40		. 30
Ethene	ng/L	140		76	· · · · · · · · · · · · · · · · · · ·	670
Methane	ug/l	28		53	-	55
Nitrogen	mg/L	23		3.5		5.5
	mg/L	52	-			
Cylacu	ing/L	5.2		_	-	

Bold Constituent detected above MDL.

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
-	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential.
j i	Qualifier assigned to analytical data indicating result is estimated.

Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: Date:	PW-07 9/13/05	PW-13 9/13/05	W-05 12/8/04	W-05 3/24/05	W-05 6/22/05
METALS		`				
Iron, Dissolved	mg/L			-	33.9	-
Manganese, Dissolved	mg/L			· ·	3.31	
GENERAL CHEMISTRY						
Bromide	ma/l	·	1	-		
Chloride	mg/l				19.5	-
Nitrogen Nitrate (As N)	mg/L				<0.1	
Nitrogen, Nitrite	ma/L				<0.1	· · · ·
Total Organic Carbon	mg/L			<2.0 J	4.24	38.6
Sulfate	mg/L				2.09	
Sulfide (field)	mg/L			0.236	0.024	0.302
Iron (field)	mg/L			1.96		
FIELD PARAMETERS		· · · · · · · · · · · · · · · · · · ·				
pH	Standard units	3.28	5.78	6.24	7.94	6.62
Specific Conductance	mmhos/cm	0.267	0.18	78.6	0.738	0.667
Turbidity	NTU			186		<u> </u>
Dissolved Oxygen	mg/L	· · ·		1.69	8.14	5.64
Temperature	deg C	15.02	13.64	11.04	9.68	10.72
ORP	mV			-79	-10.8	-39.4
DISSOLVED GASES				· ·		
Carbon dioxide	mg/L				200 J	
Carbon monoxide	mg/L	-	_ *	· <u></u> .	<0.40 J	
Ethane	ng/L	·		-	13,000 J	
Ethene	ng/L	· •••			11,000 J	
Methane	ug/L				1,200 J	·
Nitrogen	mg/L		····	_	23 J	
Oxygen	mg/L	1 T		-	2.8 J	

Bold Constituent detected above MDL.

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
	Not analyzed or collected.
ug/L	Micrograms per liter.
iw -	Injection well.
ORP	Oxidation-reduction potential.
	Ourlifier assigned to enabrical data in

Qualifier assigned to analytical data indicating result is estimated.

Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

	Sample ID:	W-05	W-06	W-06	W-07	W-07
Parameters	Date:	9/15/05	3/22/05	9/14/05	3/23/05	9/13/05
			· · · · · · · · · · · · · · · · · · ·			
NETALO	UNITS	•				
METALS	· · · · · · · · · · · · · · · · · · ·					
Iron, Dissolved	mg/L					-
Manganese, Dissolved	mg/L				 ·	-
GENERAL CHEMISTRY						
Bromide	mg/L	'	· · · · ·	 1		
Chloride	· mg/L					
Nitrogen, Nitrate (As N)	mg/L					
Nitrogen, Nitrite	mg/L				-	
Total Organic Carbon	mg/L	3.83	<2.0		<2.0	.
Sulfate	mg/L	· ••• ·			_	
Sulfide (field)	mg/L		0.098	0.149	0.116	
Iron (field)	mg/L		· ·	"		-
FIFLD PARAMETERS						
nH	Standard units	7.72	6 93	6 17	6 79	
Specific Conductance	mmbos/cm	0.837	0.546	0.438	0.489	
Turbidity	NTU	0.007	0.040	0.400	0.400	
Dissolved Oxygen	ma/l		6 13	1 07	3.00	
Temperature	den C	13 91	12 42	14.96	9.92	
ORP	m\/		25	39.9	36.0	
			20	00.0	00.5	
DISSOLVED GASES	•					
Carbon dioxide	mg/L	-		-		· · ·
Carbon monoxide	mg/L					_
Ethane	ng/L	25,000			·	
Ethene	ng/L	8,900	·		·	_
Methane	ug/L	2,200	··		-	-
Nitrogen	mg/L	-, *	-	·	- :	-
Oxygen	mg/L					·

Bold Constituent detected above MDL.

mg/L	Milligrams per liter.		
mmhos/cm	Millimhos per centimeter.	1	
NTU	Nephelometric Turbidity Units.		
deg C	Degrees Celsius.		
mV	Millivolts.		
ng/L	Nanograms per liter.	· · · ·	
	Not analyzed or collected.		
ug/L	Micrograms per liter.		
W	Injection well.		
ORP	Oxidation-reduction potential.		·
J	Qualifier assigned to analytical data indi	cating result is	estimated.
Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters		Sample ID: Date:	W-13 9/13/05	W-14S 9/13/05	W-16S 3/23/05	W-16S 9/14/05	W-17S 9/13/05	
								_
		UNITS						
METALS				•				
Iron, Dissolved		mg/L	··· ·	. ·				
Manganese, Dissolved	:	mg/L		·			-	
GENERAL CHEMISTRY								
Bromide		mg/L		'				
Chloride		mg/L	· ·					
Nitrogen, Nitrate (As N)		mg/L						
Nitrogen, Nitrite		mg/L						
Total Organic Carbon		mg/L			<2.0	. '		
Sulfate		mg/L						
Sulfide (field)		mg/L			0.013			
Iron (field)		mg/L						
FIFI D PARAMETERS			1. A.					
pH		Standard units	5.40	8.31	6.45	5.93	6.09	
Specific Conductance		mmhos/cm	0.582	0.093	0.453	0.394	0.215	
Turbidity		NTU	-					
Dissolved Oxygen		ma/l			4.38	2.21		
Temperature		dea C	12.70	17.41	6.66	16.58	15.31	
ORP		mV		·	94.4	390		
DISSOLVED GASES								
Carbon dioxide		mg/L	-	-		-		
Carbon monoxide		mg/L		· _ ·	·			
Ethane		ng/L						
Ethene		ng/L						
Methane		ug/L						
Nitrogen		mg/L	_					

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential.
J	Qualifier assigned to analytical data indicating result is estimated.

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Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: Date:	W-18 3/22/05	W-18 9/15/05	W-20S 9/13/05	IW-01 12/8/04	IW-02 6/23/05
	UNITS					·
METALS						•
Iron, Dissolved	mg/L		· _	-		
Manganese, Dissolved	mg/L				 '	
GENERAL CHEMISTRY						
Bromide	mg/L	·	,			
Chloride	mg/L	-				
Nitrogen, Nitrate (As N)	mg/L		· · · ·			
Nitrogen, Nitrite	mg/L	·			·	
Total Organic Carbon	mg/L	<2.0	'		3300	20,200
Sulfate	mg/L		-			
Sulfide (field)	mg/L	0.342		0.016		
Iron (field)	mg/L		-			
FIELD PARAMETERS	· • *					
pH	Standard units	6.66	6.10	5.76	3.73	
Specific Conductance	mmhos/cm	0.226	0.373	0.093	0.296	
Turbidity	NTU	<20		• • •	755	-
Dissolved Oxygen	mg/L	10.78	4.28	3.28	5.11	
Temperature	deg C	6.8	15.23	21.81	10.38	-
ORP	mV .	108.4	166.5	305.3	119	
DISSOLVED GASES			• • •			
Carbon dioxide	mg/L	-	-			•
Carbon monoxide	mg/L	-				-
Ethane	ng/L	in .			-	,
Ethene	ng/L					
Methane	ug/L	-				
Nitrogen	mg/L	-			-	
Oxygen	mg/L	-				<u> </u>

mg/L	Milligrams per liter.
mmhos/cm	Millimhos per centimeter.
NTU	Nephelometric Turbidity Units.
deg C	Degrees Celsius.
mV	Millivolts.
ng/L	Nanograms per liter.
	Not analyzed or collected.
ug/L	Micrograms per liter.
IW	Injection well.
ORP	Oxidation-reduction potential.
J .	Qualifier assigned to analytical data indicating result is estimated.

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Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: Date:	IW-02 9/13/05	IW-08 12/8/04	IW-08 6/23/05	IW-08 9/13/05	IW-13 12/8/04
METALS						
Iron Dissolved	ma/l					·
Manganese, Dissolved	mg/L		· · ·			
mangameer, ereen	Ū.					
GENERAL CHEMISTRY						
Bromide	mg/L					·
Chloride	mg/L					
Nitrogen, Nitrate (As N)	mg/L		,			
Nitrogen, Nitrite	mg/L					
Total Organic Carbon	mg/L	20,900	961	10,700	42,700	314
Sulfate	mg/L			,		-
Sulfide (field)	mg/L	"				
Iron (field)	mg/L					
FIELD PARAMETERS						
pH	Standard units	3.9	3.69	,	1.91	4.96
Specific Conductance	 mmhos/cm	· ,	0.124		3.675	86.2
Turbidity	NTU		433		·	530
Dissolved Oxygen	mg/L		5.01			3.91
Temperature	deg C		10.01		16.64	9.92
ORP	mV	-	164	 .		-4.0
Carbon diovide	ma/l	-			-	
	mg/L	-				
	ng/L					
Ethane	ng/L		_			
Ethene	ug/L					
Methane	uy/L					
Nitrogen	mg/L					
Oxygen	mg/L					-

mg/L	Mill	igrams per liter.					
mmh	os/cm Mill	imhos per centi	meter.				
NTU	Ne	phelometric Tur	bidity Units.				
deg	Deg	grees Celsius.		·			
mV	Mill	ivolts.					
na/L	Nar	nograms per lite	r.				
-	Not	analyzed or col	lected.				
ua/L	Mic	rograms per lite	н г .				
IW	Inje	ction well.					
ORP	Oxi	dation-reduction	potential.				
1	Qu	alifier assigned	to analytical da	ata indicating	result is	estim	ated.

Page 11 of 11

Table 3.

Concentrations of Selected Metals, General Chemistry, Field Parameters, and Dissolved Gases Detected in Groundwater, Operational Year 3, Colesville Landfill, Broome County, New York.

Parameters	Sample ID: Date:	IW-13 6/23/05	IW-13 9/13/05			
	UNITS					
	UNITS					
METALS	ma/l					
Manganaga Dissolved	mg/L mg/l					
Manganese, Dissolved	my/L					
GENERAL CHEMISTRY						
Bromide	mg/L					
Chloride	mg/L					
Nitrogen, Nitrate (As N)	mg/L					
Nitrogen, Nitrite	mg/L					
Total Organic Carbon	mg/L	156	507			
Sulfate	mg/L					
Sulfide (field)	mg/L					1
Iron (field)	mg/L					
FIELD PARAMETERS			4.00			
pH	Standard Units		4.96			5
	mmnos/cm		0.906	. '		
	NIU					
Dissolved Oxygen	mg/L					
Temperature						
ORP	mv			•		
DISSOLVED GASES						
Carbon dioxide	ma/L		-		1.1	
Carbon monoxide	mg/L	-	-			
Ethane	ng/L			1. A.		
Ethene	ng/L		-			
Methane	ug/L					
Nitrogen	mg/L		-			
Oxygen	mg/L		-			

mg/L	Milligrams per liter.				
mmhos/cm	Millimhos per centimeter.				
NTU	Nephelometric Turbidity Units.				
deg C	Degrees Celsius.				
mV	Millivolts.				
ng/L	Nanograms per liter.		1		
	Not analyzed or collected.				
ug/L	Micrograms per liter.		· ·		
IŴ	Injection well.				
ORP	Oxidation-reduction potential.				
J	Qualifier assigned to analytical dat	ta indicatin	g result is	estima	ted.

Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the PT System,

York ^{3,8}
New
County
Broome
Landfill,
Colesville
Year 3,
Operational

-										
Constituents	Model Technology	Sample ID:	GMPW-3	GMPW-3	GMPW-3	GMPW-3	GMPW-4	GMPW-4	GMPW-4	GMPW-4
	BPJ Limits ^{1,2} (ug/L)	Date:	12/9/2004	3/23/2005	6/22/2005	9/13/2005	12/9/2004	3/23/2005	6/22/2005	9/13/2005
1,1,1-Trichloroethane	10-20	-	49	67	50	49	59	74	52	46
1,1,2-Trichloroethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	10		47	56	47	53	53	100	18	83
1.1-Dichloroethene	10	,	2.6	3.8	3.2	3.6	3.0	4.6	3.4	3.0
1,2-Dichloroethane	10-30		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	NA		<1.0	<1.0 1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	2 L		4.3	4.8	₽	4.8	4.8	7.2	5.4	9
Chlorobenzene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	4.5	3.5	4
Chioroethane	NA		12	13	12	17	14	26	27	28
Chloroform	NA		<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0
cis-1,2-Dichloroethene	10		68	88	64	87	11	140	88	89
Dichlorodifluoromethane	NA		<1.0	<1.0	1.3	<1.0	<1.0	<1.0	2.3	2.3
Methylene Chloride	10-50		<4.6	4.5	3.1	3.2	<4.5	5.2	3.7	4.9
Naphthalene	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
o-Xvlene	5		<1.0	0.1>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	10		<1.0 1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1.2-Dichloroethene	10-50		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	10		49	59	62	56	58	110	83	81
Vinyl Chloride	10-50		7.8	8.0	3.6	10	9.6	29	30	41
Total VOCs			239.7	304	246	283.6	275.4	502	376	388.2
	Model Technology BPJ Limits ^{3,4}	•								
Metals (units in mg/L)	(mg/L)									
Total Iron	1.2/0.61		1.28	0.262	3.80	1.97	0.543	1.07	2.72	0.878

See Notes on Last Page.

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Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the PT System, Operational Year 3, Colesville Landfill, Broome County, New York^{5,6}.

Constituents	Model Technology	Sample ID:	GMPW-5	GMPW-5	GMPW-5	GMPW-5	T. INFLUENT	T. INFLUENT	T. INFLUENT	T. INFLUENT
	BPJ Limits'* (ug/L)	Date:	12/9/2004	3/23/2005	6/22/2005	9/13/2005	12/9/2004	3/23/2005	6/22/2005	9/13/2005
1,1,1-Trichloroethane	10-20		51	64	34	2.4	57	71	25	26.)
1,1,2-Trichloroethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 1	<1.0	<1.0J
1,1-Dichloroethane	10		67	99	44	4.2	73	85	36	32J
1,1-Dichloroethene	10		2.5	3.6	1.8	<1.0	3.1	4.1	1.2	<1.01
1,2-Dichloroethane	10-30		<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0J
1,2-Dichloropropane	NA		<1.0	<.1. 0	1.0	<1.0	<1.0	<1.0	<1.0 <	<1.0.1
Benzene	ß		5.6	5.1	1.1	<1.0	6.2	6.1	<1.0 <	2.6J
Chlorobenzene	NA		1.7	<1.0	<1.0	<1.0	2.0	2.7	<1.0	<1.0J
Chloroethane	NA		20	16	1	<1.0	22	27	8.8	11J
Chloroform	NA		<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0J
cis-1,2-Dichloroethene	10		87	66	60	5.3	93	120	48	46J
Dichlorodifluoromethane	NA		1.1	< <u>1.0</u>	<1.0	<1.0	1.4	<1.0	<1.0 <	<1.0J
Methylene Chloride	10-50		<4.4	4.8	2.3	⊽	4.3	4.9	2.0	<1.0.1
Naphthalene	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0J
o-Xylene	ß		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<.1.0 0.1≥	<0.1>
Styrene	NA		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0J
Tetrachloroethene	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0.1
Toluene	ъ		<1.0 1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0J
trans-1,2-Dichloroethene	10-50		c1. 0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0J
Trichloroethene	10		64	67	57	4.4	71	06	48	36J
Vinyl Chloride	10-50		19	10	5.2	<1.0	53	20	4.6	8.2.1
Total VOCs			318.9	336	216	16.3	353.0	432	174	160.8
	Model Technology									
Metals (units in mo/l.)	(ma/l)							• .		
Mctais /	1-1-2011									

See Notes on Last Page.

0.709J

5.02

0.561

1.66

0.116

3.89

0.478

1.20

1.2 / 0.61

Total Iron

G:\APROJECT\BROOMENY0949.018\LTM Data\Yr3Q4_System_Data.xls - table1

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Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the PT System, Operational Year 3. Colesville Landfill. Broome County. New York^{5,6}.

	o, colcaville calimin, of						
Constituents	Model Technology BPJ Limits ^{1,2} (ug/L)	Sample ID: Date:	T. EFFLUENT AC 12/9/2004	T. EFFLUENT AC 3/23/2005	T. EFFLUENT AC 6/22/2005	T. EFFLUENT AC 9/13/2005	
1,1,1-Trichloroethane	10-20		1.6	61.0	< <u>1.0</u>	<1.0	
1,1,2-Trichloroethane	10 10		<1.0	<1.0	<1.0	<1.0	
1,1-Dichloroethane	10		3.0	<1.0	<1.0	<1.0	
1,1-Dichloroethene	10		<1.0	<1.0	<1.0	<1.0	
1,2-Dichloroethane	10-30		<1.0	<1.0	<1.0	<1.0	
1,2-Dichloropropane	NA		<1.0	<1.0	<1.0	<1.0	
Benzene	ۍ ۲		<1.0	<1.0	<1.0	<1.0	
Chlorobenzene	NA		<1.0	<1.0	<1.0	<1.0	
Chloroethane	NA		<1.0	<1.0	<1.0	<1.0	
Chloroform	NA		<1.0	<1.0	<1.0	<1.0	
cis-1,2-Dichloroethene	10		4.2	1.9	<1.0	<1.0	
Dichlorodifluoromethane	NA		<1.0	<1.0	<1.0	<1.0	
Methylene Chloride	10-50		<1.0	<1.0	<1.0	<1.0	
Naphthalene	10		<1.0	<1.0	<1.0	<1.0	
o-Xylene	ŝ		<1.0	<1.0	<1.0	<1.0	
Styrene	NA		<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene	10		<1.0	<1.0	<1.0	<1.0	
Toluene	S		<1.0	<1.0	<1.0	<1.0	
trans-1,2-Dichloroethene	10-50		<1.0	<1.0	<1.0	<1.0	
Trichloroethene	10		2.4	1.3	<1.0	<1.0	
Vinyl Chloride	10-50		<1.0	<1.0	<1.0	<1.0	
Total VOCe			8 3	3.0	c		
				•	5	•	
	Model Technology						
	BPJ Limits ^{3,4}						
Metals (units in mg/L)	(mg/L)						
Total Iron	1.2 / 0.61		:	0.76	0.454	1.38	

See Notes on Last Page.

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1.1

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Table 4. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Aqueous Samples Collected from the PT System, Operational Year 2, Colesville Landfill, Broome County, New York 5,6

Notes:

1. Model Technology Best Professional Judgment (BPJ) Limits recommended for Air Stripping with appropriate pretreatment from Attachment C of TOGS 1.2.1.

2. When a range is listed for the BPJ limit, a variation in available references was found. Recommended daily maximum limits should be in this range.

3. Model Technology BPJ Limits recommended for Lime, Settle and Filter treatment.

4. The recommended daily maximum permit limit is 1.2 mg/L and the recommended daily average permit limit is 0.61 mg/L.

5. Production wells were sampled in accordance with the schedule set forth in Table 3 of the Long-Term Monitoring Plan (ARCADIS 2002).

6. Bold values indicate compound detected above method detection limit.

No BPJ limit listed.	Estimated Value.	Micrograms Per Liter.	Milligrams Per Liter.	Volatile Organic Compounds.	After Cartridge Filter.	Before Cartridge Filter.	Pump and Treat.	Not Analyzed or Collected.	Analyte Below Detection Limit.	Total.
NA	٦	ng/L	mg/L	VOCS	AC	BC	РТ		v	Ť,

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Table 5. Concentrations of Volatile Organic Compounds Detected in Springs, Operational Year 3, Colesville Landfill, Broome County, New York.

t

Constituents	Sample ID:	SP-2	SP-2	SP-3	SP-3	
(units in ug/L)	Date:	12/7/2004	6/22/2005	12/7/2004	6/22/2005	-
1,1,1-Trichloroethane		<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane		<1.0	<1.0	<1.0	<1.0	
1,1-Dichloroethane		<1.0	<1.0	2.0	1.3	
1,1-Dichloroethene		<1.0	<1.0	<1.0	<1.0	
1,2-Dichloroethane		<1.0	<1.0	<1.0	<1.0	
1,2-Dichloropropane		<1.0	<1.0	<1.0	<1.0	
1,4-Dioxane		NA	NA	NA	NA	
Benzene		<1.0	<1.0	<1.0	<1.0	
Chlorobenzene		<1.0	<1.0	<1.0	<1.0	
Chloroethane		<1.0	<1.0	<1.0	<1.0	
Chloroform		<1.0	<1.0	<1.0	<1.0	
cis-1,2-Dichloroethene		<1.0	<1.0	<1.0	5.5	
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0	
Ethylbenzene		<1.0	<1.0	<1.0	<1.0	
Methylene chloride		<1.0	<1.0	<1.0	<1.0	
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	
Naphthalene		<1.0	<1.0	<1.0	<1.0	
o-Xylene		<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	
Toluene		<1.0	<1.0	c1.0	<1.0	
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1.0	
Trichloroethene		<1.0	<1.0	<1.0	<1.0	
Vinyl chloride		<1.0	<1.0	<1.0	<1.0	
Total VOCs		0.0	0.0	2.0	6.8	

Bold Constituent detected above MDL.

VOCs Volatile Organic Compounds.

Micrograms per liter. Method detection limit. Not analyzed. ng/L NDL

Table 6. Concentrations of Volatile Organic Compounds Detected in Surface Water, Operational Year 3, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	F-6 12/7/2004	F-6 6/22/2005	SP-4 12/7/04	SP-4 3/25/05	SP-4 6/22/05	
1,1,1-Trichloroethane		41.0	<1.0	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane		4.0	0.1>	<1.0	<1.0	<1.0	
1,1-Dichloroethane	·	<1.0	2.0	1.2	1.4	< <u>1.0</u>	
1,1-Dichloroethene		<1.0 0.1>	<1.0	<1.0	<1.0 <	<1.0 0	
1,2-Dichloroethane		<1.0	<1.0	<1.0 0.1>	<1.0	<1.0	
1,2-Dichloropropane		<1.0	<1.0	<1 .0	<1.0	<1.0	
1,4-Dioxane		NA	NA	NA	NA	NA	
Benzene		<1.0	<1.0	1 .0	<1.0	<1.0 <	
Chiorobenzene		<1.0	<1.0	<1 .0	<1.0	<1.0	
Chloroethane		<1.0	<1.0	<1 .0	<1.0	<1.0	
Chloroform		<1.0	<1,0	<1.0 <	<1.0	<1.0	
cis-1,2-Dichloroethene		<.1 0.1 0	<1.0	1 0	1.0	<1.0	
Dichlorodifluoromethane		<1.0	<1.0	<1.0	<1.0 1	<1.0 <	
Ethylbenzene		<1.0	<1.0	<1.0 1	<1.0	<1.0	
Methylene chloride		<1.0	<1.0 1	<1.0	<1.0	<1.0	
Methyl tert-butyl ether		<1.0	<1.0	<1.0	<1.0	< <u>1.0</u>	
Naphthalene		<1.0	<1.0	<1.0	<1.0	<1.0	
o-Xylene		<1.0	<1.0	<1.0	<1.0	<1.0	
Tetrachloroethene		<1.0	<1.0	<1.0	<1.0	<1.0	
Toluene		<1.0	<1.0	<1.0	<1.0	<1.0 <	
trans-1,2-Dichloroethene		<1.0	<1.0	<1.0	<1 0 1	<1.0	
Trichloroethene		<1.0	<1.0	< <u>1</u> .0	<1.0	<1.0	
Vinyl chloride		<1.0	<1.0	<1.0	<1.0	<1.0	
Total VOCs		0.0	2.0	1.2	1.4	0.0	

Bold Constituent detected above MDL. VOCs Volatile Organic Compounds.

ng/L

Micrograms per liter. Method detection limit. Not analyzed. MDL

Table 7. PT System Operating Parameters, Operational Year 3, Quarter Number 4 and Annual Summary, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

		Air Stripper Me	easurements			Flow Measuremen	lts	
Date	Time	Blower Discharge	Blower Effluent	Total	Water Bypass	GMPW-3	GMPW-4	GMPW-5
	Recorded	Pressure	Flowrate	Effluent Totalizer	Totalizer	Totalizer	Totalizer	Totalizer
		PI-301		FQI-401	FQI-402	FQI-101	FQI-102	FQI-103
		(i.w.c.)	(scfm)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)
6/24/2005	11:20 AM	8.7	375	906,050.1	810,793.1	360,475.7	269,880.4	298,009.0
9/13/2005	4:40 PM	8.5	3361	939,149.4	837,354.5	366,874.4	287,300.0	312,707.8
	Average Da	ily Flowrate During Re	porting Period (gpm) =	0.28	0.23	0.05	0.15	0.13
Tota	al Groundwater R	ecovered During Repo	rting Period (gallons) =	33,099	26,561	6,399	17,420	14,699
	Average Dail	ly Flowrate During Ope	rational Year 3 (gpm) =	0.30	0.25	0.03	0.17	0.12
Totai	Groundwater Rec	covered During Operat	iional Year 3 (gallons) =	158,200	129,176	17,972	87,474	62,188

Notes:

Gallons per minute. gpm i.w.c. scfm 1.

Inches of water column. Standard cubic feet per minute. Exit velocity was not recorded on 9/13/2005 due to equipment malfunction. Exit velocity measured during an interim site visit on 8/1/2005 is provided above.

G:\APROJECT\BROOME\NY0949.018\LTM Data\PTparametersummary_Yr3Q4_rev1.xls - Sheet1

Table 8. PT System Mass Removal Rate of Volatile Organic Compounds, Operational Year 3, Quarter Number 4 and Annual Summary, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Date Sample	d Total VOC Influent Concentration (ug/L)	Totat Effluent Totalizer FQI-401 (gallons)	Total Groundwater Recovered ¹ Between Sampling Intervals (gal)	Influent Concentration ² Geometric Mean (ug/L)	Total Estimated Mass ³ Removed (Ibs)
6/24/2005	174	906,050.1	NA	AN	ΥN
9/13/2005	160.8	939,149.4	33,099	167.3	0.05
		Total Est	timated Mass Removed During Operation	ial Year 3, Quarter Number 4 (lbs) :	- 0.05
			Total Estimated Mass Remov	ed During Operational Year 3 (lbs) -	= 0.42
			Total Estimated Mass Re	moved Since System Startup (lbs) -	= 1.62
Notes:					
NA	Not applicable.				
ng/L	Micrograms per liter.				
gal	Gallons.				
lþs	Pounds.				
voc	Volatile organic compound.				

Total Mass Removed = (Total Groundwater Recovered Between Sampling Intervals) x Influent Concentration Geometric Mean x 3.7854 L/gallon x (1 lb / 453,592,370 ug). Total Groundwater Recovered Between Sampling Intervals = Well Totalizer Reading for current sampling event - Well Totalizer Reading for prior sampling event. Influent Concentration Geometric Mean = (Influent Concentration for prior sampling event x Influent Concentration for current sampling event) (1/2). -- oʻ m

G:\APROJECT\BROOME\NY0949.018\LTM Data\Pump-8-TreatMassRecovery_Yr304_rev1.xls - Summary

Table 9. Concentrations of Volatile Organic Compounds Detected in Air Stripper Effluent, Operational Year 3, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Compounds	CAS Numbers	Sample ID: Date Sampled:	Effluent 12/9/2004 ppbv	Effluent 3/23/2005 ppbv	Effluent 6/24/2005 ppbv	Effluent 9/13/2005 ppbv
Vinyl Chloride	75-01-4		<13	<7.3	<5.0	<7.2
Chloroethane(Ethyl Chloride)	75-00-3		<13	<7.3	<5.0	<7.2
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4		<13	<7.3	<5.0	<7.2
Methylene Chloride(Dichloromethane)	75-09-2		<13	<7.3	<5.0	<7.2
1,1-Dichloroethane	75-34-3		18	30	<5.0	<7.2
cis-1,2-Dichloroethylene	156-59-2		37	50	<5.0	<7.2
Chloroform	67-66-3		<13	<7.3	<5.0	<7.2
1,1,1-Trichloroetharie(Methyl Chloroform)	71-55-6		<13	16	<5.0	<7.2
Benzene	71-43-2		<13	<7.3	<5.0	<7.2
Trichloroethene	79-01-6		16	26	<5.0	<7.2
Toluene	108-88-3		<13	<7.3	<5.0	<7.2
Ethyl benzene	100-41-4		<13	<7.3	<5.0	<7.2
m,p-Xylene	108-38-3/106-42-3		<13	<7.3	<5.0	<7.2
o-Xylene	95-47-6		<13	<7.3	<5.0	<7.2
1,2,4-Trimethylbenzene	95-63-6		<13	<7.3	<5.0	<7.2
2-Propanol (isopropyl alcohol)	67-63-0		<13	<7.3	160	<7.2
Dichlorodifluoromethane(Freon 12)	75-71-8		<13	<7.3	<5.0	<7.2

Bold Constituent detected above MDL.

ppbv: parts per billion by volume

Notes/Assumptions:

1. Samples collected by ARCADIS personnel on the dates shown and submitted to Air Toxics Laboratories LTD.

for volatile organic compound (VOC) analyses using a modified USEPA Method TO-14A.

G:\APROJECT\BROOME\NY0949.018\LTM Data\Colesville air modeling data-AGC.xls - Effluent Summary_Yr3Q4

Table 10. Concentrations of Volatile Organic Compounds Detected in Aqueous Samples Collected from the SP-5 Spring Water Remediation System, Operational Year 3, Colesville Landfill, Broome County, New York.

Constituents	Model Technology BPJ Limits ^{1,2}	Sample ID: Date:	SP-5 INF. 12/8/04	SP-5 INF. 3/25/2005	SP-5 INF. 6/23/2005	SP-5 INF 09/15/05	SP-5 EFF. 12/8/04	SP-5 EFF. 3/25/2005	SP-5 EFF. 6/23/2005	SP-5 EFF 09/15/05
	(ng/L)									
VOCs (units in ug/L)										
1,1,1-Trichloroethane	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	10		31	33	32	41	7.0	<1.0	3.1	3.8
1,2-Dichloroethane	10-100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	ß		2.8	2.8	2.6	3.8	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	10-25		30	28	32	39	6.4	<1.0	1.5	<1.0
Chloroethane	10		9.0	9.0	9.3	12	2.8	3.8	9.8	12
cis-1,2-Dichloroethene	10		<1.0	1.7	2.1	2.6	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	NA		1.4	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ъ		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	ŝ		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	10-100		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	10		2.2	2.5	3.1	3.6	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total VOCs			76.4	0.77	82.5	102.0	16.2	3.8	14.4	15.8

Bold Constituent detected above MDL.

Micrograms per liter.	Volatile organic compounds.	Analyte below detection limit.	Influent.	Effluent.	No BPJ limit listed.
ng/L	vocs	v	INF.	EFF.	NA

Notes:

Model Technology Best Professional Judgment (BPJ) Limits recommended for carbon adsorption with appropriate pretreatment from Attachment C of TOGS 1.2.1.
 When a range is listed for the BPJ limit, a variation in available references was found. Recommended daily maximum limits should be in this range.

G:\APROJECT\BROOME\NY0949.018\LTM Data\Yr3Q4_SP-5_Data.xls - table1

Table 11. SP-5 Spring Water Remediation System Mass Removal Rate of Volatile Organic Compounds, Operational Year 3, Quarter Number 4,

6/23/2005 9/15/2005	Influent Concentration	i					
6/23/2005 9/15/2005	(ng/L)	Flowrate (gpm)	to Water (feet btc)	Between Sampling Intervals (gal)	Geometric Mean (ug/L)	Removed (lbs)	
9/15/2005	82.5	0.72	0	NA	NA	NA	
	102.0	1.13	0	118,973	91.7	0.09	Ч.
			Total Estimated N	Mass Removed During Operational	Year 3, Quarter Number 4 (lbs) =	0.09	
				Total Estimated Mass Removed	During Operational Year 3 (lbs) =	0.37	
				Total Estimated Mass Remo	ved Since System Startup (lbs) =	0.59	
				Total Effluent Treated Duri	ng Operational Year 3 (gallons) ≕	528,582	
Notes:				Total Effluent Treated	Since System Startup (gallons) =	788,198	
NA Not a	plicable.						
ug/L Micro	trams per liter.						
gpm Gallo	is per minute.						
btc Belov	top of casing.						
gal Galic	IS.				· ·		
lbs Pour	ts.						
VOC Volat	le organic compound.						

G:\APROJECT\BROOME\NY0949.018\LTM Data\Spring MassRemoved_Yr3Q4.xls - Summary

Appendix A

Water-Level Measurement and Groundwater Sampling Logs.

Table 3. Field Measurements of Depth to Water in Select Wells, Colesville Landfill, Broome County, New York.

Date: 9/16/05

Well Identification	Depth to Water (feet below MP)	Comments
GMMW-2	36.38	
GMMW-5	47.16	
GMMW-6	38.84	
GMMW-7	46.89	
PW-3	13.09	
PW-4	17.88	
PW-5	.65	
W-5	50.90	
W-6	49.02	
PW-7	38,79	
W-7	42.24	
PW-10	63,35	
PW-13	60.41	
W-13	46.43	
W-14S	11.34	
W-16S	10.08	Top of Outer Casing
W-17S	12.26	
W-18	10.67	11.71 - 1.04
W-20S	11.81	

ARCADIS GERAG	nina Log				•
Project	COLBUDU	Project No. Ny	000930005	2.000 3 1 of	
Site Location	Have PURSUALE	m		Date 9-1	3-05
Site AVell No.	mw-143	Replicate No.		Code No.	
Weather		Sampling Time:	Begin	End	
Evacuation Data			Field Parameters		•
Measuring Point			Color	· · · · · · · · · · · · · · · · · · ·	
MP Elevation (ft)			Odor		·
Land Surface Elevatio	on (ft)		Appeara nce		
Sounded Well Depth	(ft bmp)	f	pH (s.u.)	8.31	
Depth to Water (ft br	np)	((ms/cm)		
Water-Level Elevation	(ft)		(µmhos/cm)	93	
Water Column in Wei	II (ft)	т	urbidity (NTU)		
Casing Diameter/Type		Ť	emperature (°C)	17.41	
Gallons in Well		D	issolved Oxygen (m	9 /)	
Gallons Pumped/Bailed Prior to Sampli	1 ng	Si	alinity (%)	PAR	
Sample Pump Intake Setting (ft bmp)	Re	emarks		
Purge Time	begin end				•
omping Rate (gpm)					· · ·
vacuation Method					
onstituents Sampled	l Contzi	ner Description	Numb er	Preserval	tive
	and the second secon				
			-		
			-		
moling Personnel					
Well Cas	ing Volumes				
L/FL 1-16" = 0 1-1/3" = 0	.06 2° = 0.16 3 .09 2-12° = 0.26 3	* = 0.37 4* = 0.65 % * = 0.50 6* = 1.47			
below measuring po	int ml mililiter		NTU Nepł	nelometric Turbidity Units	
Degrees Celsius	mS/cm Milisiemen	s per centimeter	PVC Polyv	vinyl chloride	
ieet	msi mean sea-i	evel	s.u. Stand	dard units	· · · ·
n Galloni per minute		JUIC .	unnoven Mice		

ARCADIS GRAGHT & MILLER Water Sampling Log			
Project COLESUALE	Project No. N.	1000980.0	013-0603 fage 1_of
Site Location COLESORLE NY		a	Date <u>9-13-05</u>
singwall No nw-lby	Replicate No.	•	Code No.
Weather	Sampling Time:	Begin	End
Evacuation Data		Field Paramete	ß
Measuring Point		Color	COLORUMS
MP Elevation (ft)		Odor	NOUS
Land Surface Elevation (ft)		Appeara nce	CLEAN
Sounded Well Depth (ft bmp)		р Н (s.u.)	6.14
Depth to Water (fl.bmp)		Conductivity	
		(mS/cm)	
Water-Level Elevation (11)		(µmhos/cm	<u>477</u>
Water Column in Well (ft)		Turbidity (NTU)	
Casing Diameter/Type		Temperature (*(()
Gallons in Well		Dissolved Oxyge	n (mg/L)
Gallons Pumped/Bailed		Salinity (%)	DDR
Sample Pump Intake Setting (ft bmp)		Sampling Metho Remarks	
Purge Time begin end			
Pumping Rate (gpm)			
vacuation Method	<u> </u>		
Constituents Sampled Container	Description	Nui	mb er Preserva tive
		······	
Impling Personnel Gus fm			
Well Casing Volumes			
aL/Ft 1-36" = 0.06 2" = 0.16 3" = 1-36" = 0.09 2-36" = 0.26 3-36"	$0.37 4^{-} = 0.6$ = 0.50 6 ⁺ = 1.4	2 7	
no below measuring point ml mililiter		טדא	Nephelometric Turbidity Units
Degrees Celsius mS/cm Milisiemens per	centimeter	PVC	Polyvinyl chloride
ient mean sez-level		5.0.	Standard units
College per minute N/A Not Applicable		umbos/cm	Micromhos net centimeter

Project COLESUTILY MA	Project No. Jy 000949.0018.00039	Page 1 of
Site LocationARPURSUDUE NY		Date <u>4-13-05</u>
Site/Well No. MW-1 []	Replicate No.	Code No.
Weather	Sampling Time: Begin	End
Evacuation Data	Field Parameters	
Measuring Point	Color CL	0.107
MP Elevation (ft)	Odor	عسادي
Land Surface Elevation (ft)	Appearance	NRSDO
Sounded Well Depth (ft bmp)	pH (s.u.)	6.09
Depth to Water (ft bmp)	Conductivity (m5/cm)	
Nator-Level Flevation (11)	(µmhos/cm)	215
where Column in Well (ft)	Turbidity (NTU)	
	Temperature (°C)	5.31
Callons in Wei	Dissolved Oxygen (mg/L)	•
Gallons Pumped/Bailed	Salinity (%)	
Prior to Sampling	Sampling Method	
Sample Pump Intake Setting (ft bmp)	Remarks	
Purge Time begin and		
Pumping Rate (gpm)		<u> </u>
Evacuation Method		
Constituents Sampled Container De	scription Number	Preserva tive
		<u>_</u>
		-
ampling Personnel 600 Fm		
ampling Personnel GW Fm Well Casing Volumes		
Well Casing Volumes Well Casing Volumes H./Ft. 1-½* = 0.06 2* = 0.16 3* = 0.3 1-½* = 0.09 2-½* = 0.26 3-½* = 0	97 4° = 0.65 0.50 6° = 1.47	
Sumpling Personnel GW Fm Well Casing Volumes Well Casing Volumes H./Ft. $1-3^{\circ} = 0.06$ $2^{\circ} = 0.16$ $3^{\circ} = 0.3$ $1-3^{\circ} = 0.09$ $2-3^{\circ} = 0.26$ $3-3^{\circ} = 0.3$	97 4° = 0.65 0.50 6° = 1.47	etric Turbidity Units
ampling Personnel Well Casing Volumes H./Ft. $1-3^{*} = 0.06$ $2^{*} = 0.16$ $3^{*} = 0.3$ $1-3^{*} = 0.09$ $2-3^{*} = 0.26$ $3-3^{*} = 0$ Ip below measuring point ml miliiter Concress Celsius mS/cm Milisiemens per cel	87 4° = 0.65 0.50 6° = 1.47 NTU Nephelorr ntimeter PVC Polyvinyl c	etric Turbidity Units hloride
ampling Personnel Well Casing Volumes H./Ft. 1-34° = 0.06 2° = 0.16 3° = 0.3 1-34° = 0.09 2-32° = 0.26 3-32° = 0 p below measuring point ml mililiter Degrees Celsius mS/cm Milisiemens per cent feet ms/ mean sea-level	87 4° = 0.65 0.50 6° = 1.47 NTU Nephelorr ntimeter PVC Polyvinyl c s.u. Standard d	etric Turbidity Units hloride units

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ARCADIS GERAGHIT & MILLER Water Sampling Log

Project COLES	Jary	Project No. My	50098000	12-02034 Page 1 of	
Site Location Colos	sour M.			Date 7-15-00	5
Site/Well No. Mw.	-205	Replicate No.	· · · · · · · · · · · · · · · · · · ·	Code No.	
Weather		Sampling Time:	Begin	End	
Evacuation Data			Field Paramet ers		
Measuring Point			Color	Courless	
MP Elevation (ft)			Odor	Now	
Land Surface Elevation (ft)	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	Appearan ce	Society WR	8
Sounded Well Depth (ft bmp)	»		p H (s.u.)	6.01	
Depth to Water (ft bmp)			Conductivity		
Water-Level [levation (ft)			(µmhos/c m)	91	
Water Column in Well (ft)			urbidity (NTU)		
Casing Diameter/Type	-	T	emperature (°C)	15-99	. <u> </u>
Gallons in Well		C	issolved Oxygen	mg/L)	
Gallons Pumped/Bai led Prior to Sampling		5	alinity (%)	Por	
Sample Pump Intake Setting (ft bmp)		R(emarks	100	
Purge Time	begin end				
umping Rate (gp m) vacuation Method					
onstituents Sampled	Container D	escription	Numb	er Preservative	
					. *
			-		
	Galfra		•		
mpling Personnel				والمحافظ والمنافعة والمتحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ والمحافظ و	
well Casing Volu		>7			
Well Casing Volu I./Ft. 1-W* = 0.06 1-%* = 0.09	2" = 0.16 3" = 0. 2-%" = 0.26 3-½" =	37 4° = 0.65 0.50 6° = 1.47			
Well Casing Volu I./Ft. 1-W* = 0.06 1-%* = 0.09	2° = 0.16 3° = 0. 2-½° = 0.26 3-½° = ml mililiter	37 4° = 0.65 0.50 6° = 1.47	NTU NE	phelometric Turbidity Units	
P below measuring point Degrees Célsius	mes 2° = 0.16 3° = 0. 2-½° = 0.26 3-½° = ml mililiter mS/cm Milisiemens per co	37 4° = 0.65 0.50 6° = 1.47 Entimeter	NTU Ne PVC Po	phelometric Turbidity Units yvinyl chloride	
well Casing Volu Well Casing Volu I./Ft. 1-W* = 0.06 1-3/* = 0.09 p below measuring point Degrees Celsius leet	mes 2° = 0.16 3° = 0. 2-½° = 0.26 3-½° = ml mililiter mS/cm Milisiemens per co msl mean sea-level	37 4° = 0.65 0.50 6° = 1.47 entimeter	NTU Ne PVC Po s.u. Sta	phelometric Turbidity Units yvinyl chloride ndard units	

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Project COLPSIDELE	Project No. MC00980 000 54 Page 1 of
Site Location	Date <u>9-13-05</u>
Site/Well No. 6MPW-S	Replicate No Code No
Weather	Sampling Time: Begin End
Evacuation Data	Field Parameters
Measuring Point	Color COLORESS
MP Elevation (ft)	Odor NEUL
Land Surface Elevation (ft)	Appearance <u>C(EVAN</u>
Sounded Well Depth (ft bmp)	pH (s.u.) <u>6.07</u>
Depth to Water (ft bmp)	Conductivity
Water Lovel Elevation (ft)	$\frac{1}{471}$
VValer-Level Level to Vol (th)	
Gallons in Well	Dissolved Oxygen (mg/L)
Gallons Pumped/Bailed	Salinity (%)
Prior to Sampling	Sampling Method SAMPLE PORT
Sample Pump Intake Setting (ft bmp)	Remarks
Purge Time begin e	end
Pumping Kate (gpm)	
Evacuation Method	
Pumping Kate (gpm) Evacuation Method Constituents Sampled	ntziner Description Number Preservative
Pumping Rate (gpm) Evacuation Method Constituents Sampled	ntziner Description Number Preservative
Pumping Rate (gpm) Evacuation Method Constituents Sampled	ntziner Description Number Preservative
Pumping Rate (gpm) Evacuation Method Constituents Sampled ampling Personnel	Number Preservative
Pumping Rate (gpm) Evacuation Method Constituents Sampled Constituents Sampled Constituents Sampled Constituents Sampled Constituents Consti	$Number Preservative$ $3^{*} = 0.37 4^{*} = 0.65$ $3^{-} = 1.47$

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ARCADIS GERAGHTY & MILLER Water Sampling Log

Site Location COLESSE Site/Well No. GMPUS Weather CLEAR	ZUE NJ - 4 Replicate No. 20° Sampling Time	e: Begin	Date <u></u> Date <u></u> Code No. End
Evacuation Data		Field Parameters	
Measuring Point _		Color Col	Colless
MP Elevation (ft)		Ottor	Novr
Land Surface Elevation (ft)	-	Appeara nce	Suz my YURO
Sounded Well Depth (ft bmp)		р Н (s.u.)	5,90
Depth to Water (ft bmp)		Conductivity	
Water-Level Flevation (ft)		(µmhos/cm)	491
viditi-Le ver Li volici (ity		Turbidity (NTLI)	
		Temperature (°C)	().แห
		Dissolved Oxygen (m	<u>[61]</u>
Gallons in yven		Salioity (%)	
Gallons Pumped/Bailed Prior to Sampling			SA QUE PARE
ample Pump Intake		Sampling Method	Sample lard
Setting (ft bmp)		Remarks	
urge Time	in end		
umping Rate (gpm)			
onstituents Sampled	Container Description	Number	Preservative
	•		
mpling Personnel	SW DM		
mpling Personnel	Sw DM		
Well Casing Volumes	2° = 0.16 3° = 0.37 4° = 0 2-16 3-16 3-16 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	.65 .47	
mpling Personnel Well Casing Volumes L/Ft. 1-34° = 0.06 1-32° = 0.09 below measuring point r Degrees Celsius r	2' = 0.16 $3^{*} = 0.37$ $4^{*} = 0$ 2' = 0.16 $3^{*} = 0.37$ $4^{*} = 0$ 2' = 0.26 $3-\frac{1}{2}^{*} = 0.50$ $6^{*} = 1$ nl milikiter nS/cm Milisiemens per centimeter	.65 .47 NTU Neph PVC Polyv	elometric Turbidity Units inyl chloride
mpling Personnel Well Casing Volumes L/F1. 1-14° = 0.06 1-12° = 0.09 below measuring point r Degrees Celsius r leet r	2' = 0.16 $3^* = 0.37$ $4^- = 0$ 2-5' = 0.26 $3-5^* = 0.50$ $6^- = 1$ ml miliitter nS/cm Milisiemens per centimeter nsl mean see-level MA Not Applicable	NTU Neph PVC Polyv s.u. Stanc	elometric Turbidity Units inyl chloride iard units

ARCADIS GERAGHT & MILLER Water Sampling Log

Project COLES	July,	Project No.	rey 000980.0	018-00034 Page 1 of
site Location	WELLE	M		Date <u>9-13-05</u>
Since Local No 6mf	w-5	Replicate No	•	Code No.
Weather <u>CLE</u>	AR 80°	Sampling Tin	e: Begin	End
Evacuation Data			Field Paramete	rs
Measuring Point			Color	COLORIESS
MP Flevation (ft)		•	Odor	NOVE
Land Surface Elevation (ft)			Appearance	·CLONA
Sounded Well Depth (ft brnp)		рН (s.u.)	6.15
Depth to Water (ft.bmp)			Conductivity (m5/cm)	
Water-Level Elevation (ft)	· .		(µmhos/cm	v <u>199</u>
Water Column in Well (ft)			Turbidity (NTU)	
Casing Diameter/Type			Temperature (*1	0 17.72
Gallons in Well	· · · · · · · · · · · · · · · · · · ·	·	Dissolved Oxyge	en (mg/L)
Gallons Pumped/Bailed Prior to Sampling			Salinity (%)	
Sample Pump Intake Setting (ft bmp)			Sampling Metho Remarks	DQ
urge Time	begin	end		
umping Rate (gp m) vacuation Method		······································		
onstituents Sampled	C	ontainer Description	 Nບ	mb er Preserva tive
			·	
			·	
	`			
	•		a da a	
		· · · · · · · · · · · · · · · · · · ·		
npling Personnel	GWDN			
Well Casing Volu ./Ft. 1-34 * = 0.06	7 = 0.16 2 - 1⁄2 = 0.26	3° = 0.37 4° = 3-½° = 0.50 6° =	0.65 1.47	
1-33 = 0.09	10 C			ht_t_t_t_
1-3° = 0.09	ml milili	ter	NTU	Nephelometric lurbidity Units
1-33 * = 0.09 below measuring point Degrees Celsius	m l milili mS/cm Milis	ter Iemens per centimeter	NTU PVC	Polyvinyl chloride
1-23 * = 0.09 below measuring point Degrees Celsius feet	ml milili mS/cm Milisi msl mear	ter iemens per centimeter nsez-level annirable	NTU PVC S.u.	Polyvinyl chloride Standard units

	Water Sampling	g Log			
	Project COLE	BUTTLE	Project No.	N por sugar	21. Con 20 age 1 of
	ite Location COL	BOTUEN	1		Date 9-15-00
	HOAVEIL NO. GM	mw-5	Replicate No.		Code No.
v	Veather DV	EALAST 75	Sampling Tim	e: Begin	End
	vacuation Data			Field Parameters	
	leasuring Point			Color	GREEW TRUT
. N	IP Elevation (ft)			Odor	MODERATY
<u>і</u> Ц	and Surface Elevation (ft)			Appearance	TURIDO
S	ounded Well Depth (ft bmp)		рН (s.u.)	6.)7
D	epth to Water (ft bmp)	.		Conductivity	
	tion (tt)			(umhos/cm)	1,963
• W	ater-Level (levation (it)			Turbidity (NTLI)	
W	ater Column in Weil I'u			Temperature (°C)	13.04
Ca	sing Diameter type			Dissolved Oxygen	(mg/L)
Ga	lions III Ive			Salinity (967 DRE	° -75
Ga	Prior to Sampling			Sampling Method	
Sar	nple Pump Intake Setting (ft bmp)			Remarks	
Pur	ge Time	begin	end	. <u></u>	
Рип	nping Rate (gpm)				
Eva	cuation Method				
Сол	stituents Sampled	c	ontainer Descr iption	Num	b er Preserva tive
		<u> </u>			
		•			
		 . 			<u>+</u>
Samp	oling Personnel				
	Well Casing Volu	mes			
Gel./I	L 1-36 = 0.06 1-32 = 0.09	2" = 0.16 2-½" = 0.26	3° = 0.37 4° = 3-½° = 0.50 6° =	0.65 1.47	
	below measuring point	m) milili	iter	NTU ITA	Nephelometric Turbidity Units
000	De anna Calaint	mS/cm Milis	iemens per centimeter	PVC F	Polyvinyl chloride
omp (DEDLER CERT	mel -	s can laval		teodered weite
	legres census feet Gallons per minute	msl mear N/A Not /	n sez-level Applicable	s.u. S umhos/cm M	Standard units Micromhos per centimeter

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ARCADIS G&M, inc.

Low-Flow Groundwater Sampling Log

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roject Nur	nber: A	400	<u>944</u>	0021	- Task: Samo	C led By	610	> m. w	/eli ID:	OMM	w - 1		
ate:		-971	-1-01		- Docor	ded Bur		<u></u>					
ampling T	me:				- Recor	deu by: d Daaliaata Na i							
leather:					Code	d Replicate No.:	-		-				
n <mark>strumen</mark> Vater Qua	t <mark>Identifi</mark> ity Meter	cation (s):					_	Serial #:					
uraina In	formatio	n							· ·				
nging Mat	orial [.]		1			Purge Method	:	Isisti	m				
asing Mat	endi.	1 - A	-4		-	Screen Interva	(ft bmp):		~~~	Bottom			
	neter.	~~) .				Pump Intake [enth (ft bmr		S., .				
ounded D		mp).	50	22 '	•	Purce time	Start.			Finish			
epth to W	ater (Tt D	mp):		<u>.00</u>	-	roige time	51011.						
ield Parar	neter Me	asureme	nts Take	n During P	Purging					T			
Time	Minutes	Rate	Volume	Temp	рн	Spec. Cond.	ORP .	DO	Turbidity	Depth to Water			
	Elapsed	(mL/min)	Purged	(°C)	(SI Units)	(mS/cm)	(mV)	(mg/L)	(NTU)	(ft bmp)	Comments		
10:10		300		15.01	6.64	-385	108	4118		5030			
0:5				13.06	645	.386	173.4	3.56					
0:20				13.26	6.28	.307	200.7	3.07					
0.25				12.72	6.21	363	198.2	1.71	1. A. 1. A. 1.	50.02	•·.• ·		
0:30				17.62	5.70	. 254	251.4	1.15		51.20	1.		
0:35				14-14	5.77	749	268.5	. 99					
2:110				14.50	6-18	. 521	224.7	60.					
inu										and a strange			
				•		1							
						52-2	.153 M	NL_					
						~		91					
		+			[: :							
			<u> </u>										
		+	·										
· .									·····				
		· · · · ·					· · · ·						
	I					· · · · ·			<u></u>	·			
mple Co	ndition	C	olor: _			Odor:	·	Appearance	ce:				
rameter:	lection			Container:		· · .		NO.			Preservative:		
			-				- 				<u></u>		
			. · ·	·			-			•			
Reading					-		•						
m m c n t c													

G : AFROJECT WHCS Melville ERD Pilot Test low flowsampforms Ms-LoFio-GW-Samp

Project 1400	Cousi	ITUE Project N	10. Ny 0 00949	0071. 0009 Page 1 of
Site Location CD	LEVIE	Ľ	•	Date <u>9-15-08</u>
Site Well No. W-	5	Replicate	No	Code No.
Weath er		Sampling	Time: Begin _	End
Evacuation Data			Field Paramet	ers
Measuring Point			Color	Cantes
MP Elevation (ft)			Odor	SIDDAT
Land Surface Elevation (ft)			Appearan ce	CLEAN
Sounded Well Depth (ft bmp)		pH (s.u.)	7.72
Depth to Water (ft bmp)			Conductivity	
Level Flowston (#)			(umbos/ci	m) 837
			Turbidity (NTU)
Water Column in Weil (IV			Temperature (ro) 1351
Sallons in Well			Dissolved Oxyg	gen (mg/L)
allons Pumped/Bailed			Salinity (%)	
Prior to Sampling	/		Sampling Meth	hod
ample Pump Intake Setting (ft bmp)			Remarks	
	begin	end		
umping Rate (gpm)				
vacuation Method				
onstituents Sampled	··· · ·	Container Description	N	umber Preservative
See Coc	<u> </u>			
			* * *	
mpling Personnel		G	SW	
Well Casing Vol-	2° = 0.	$3^{\circ} = 0.37$	4" = 0.65 6" - 1.47	
1-2 = 0.09	<i>i-n</i> =		NI711	Nanhalometric Turhidity Inita
	101	() (() () () () () () () () (NIU	replicionenc forbidity ornis
below measuring point Depress Celsius	m\$/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
p below measuring point Degrees Celsius feet	mS/cm msl	Milisiemens per centimeter mean sez-level Not Apolicable	PVC s.u.	Polyvinyl chloride Standard units Micrombos per centimeter

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water samp			NUMPRAD	N8 00034 8000	1 of
Project CO	essue		. Maj <u>uno 100 ma</u>	raye	
Site Location	P COLOBUTI	LE NY		Date	7-1505
Site/Well No.	0-13	Replicate I	No	Code N	lo
Weather <u>Cl</u>	EAN 20°	Sampling	Time: Begin	End	
Evacuation Data			Field Paramete	rs	
Measuring Point		·	Color	COLO	21535
MP Elevation (ft)		•	Odor	And	SCROHT
Land Surface Elevation ((ft)		Appearan ce	·CLE	×1
Sounded Well Depth (ft	bm p)	· · · · ·	pH (s.u.)	5.40	
Depth to Water (ft bmp))		Conductivity		•
Water-Level Elevation (ft)		(µmhos/cm	\$82	•
Water Column in Well (f	t)		Turbidity (NTU)		·
Casing Diameter/Type			Temperature (*C	-) <u>17.70</u>	
Gallons in Well			Dissolved Oxyge	en (mg/L)	
Gallons Pumped/Bailed			Salinity (%)		
Prior to Sampling			Sampling Metho	De POB	
Sample Pump Induce Setting (ft bmp)	· · · · · · · · · · · · · · · · · · ·		Remarks		·
Purge Time	begin	end	• • • • • • • • • • • • • • • • • • •		
Pumping Rate (gpm)					
Evacuation Method					
Constituents Sampled		Container Description	Nui	mber	Preservative
	•				
					1
Sampling Personnel	<u> </u>	m,			
Well Casing	Volumes 2* = 0.16	3" = 0.37 4	= 0.65		
Gal/Ft (+)4 # U.UD	2-1/2* = 0.	26 3-1/2" = 0.50 6"	= 1.47		
1-35 = 0.09		-		Nenheinmetric Turbi	dity Units
1-3° = 0.09	mi	mililiter	NIU	inclusion of the second	- · · · ·
۱-۲۵° = 0.09 pmp below measuring point C Degrees Celsius	mi mS/cm	mililiter Milisiemens per centimeter	PVC	Polyvinyl chloride	
1-33° = 0.09 mp below measuring point C Degrees Celsius L feet	mi mS/cm msi r	mililiter Milisiemens per centimeter mean sez-level Not Applicable	PVC s.u.	Polyvinyl chloride Standard units	meler

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	Water Samp	ing Log				· · · ·
	Project	UPSO AU	Projec	1 No. NY 00949.0	021.00034 Page	<u>1</u> of
•		DIESUIL	ENM		Date	9-15-05
		W-3	Replic	ale No.	Code N).
	Weath er		Sampl	ing Time: Begin	End	
	Evacuation Data			Field Parame	ters	•
.)	Measuring Point			Color	COLORU	8
	up Elevation (ft)			Odor	50260	
	and Surface Elevation	(ft)		, Appeara nce	SULTH	4 TURBE
-	ounded Well Depth (ft	bm p)		pH (s.u.)	6.12	
C	epth to Water (fi bmp)		Conductivity		
	Vision-Level Flevation (#	ð		(µmhos/c	m) 608	
• •	valer-Levers in Well (f	 1)		Turbidity (NTL	<u></u>	
N	valer Column in Went			Temperature	rc) 15.02	-
. L.	allons in Well	1		Dissolved Oxy	gen (mg/L)	
6	allons Pumped/Bailed			Salinity (%)		
	Prior to Sampling			Sampling Met	hod	
Sa	mple Pump Intake Setting (ft bmp)			Remarks		•
Pu	ige Time	begin	end			
Pu	mping Rate (gpm)					
Eva	cuation Method					
Col	nstituents Sampled		Container Descriptio	n N	umb er	Preservative
					······································	
_						
-						
am	pling Personnel				•••••••••••••••••••••••••••••••••••••••	
	Well Casing	Volumes				9
iaļ./	Ft. 1-14° = 0.06 1-14° = 0.09	2° = 0.1 2-½° =	16 3° = 0.37 0.26 3-½° = 0.50	4° = 0.65 6° = 1.47		
mn	below measuring point	ml	mililiter	טזא	Nephelometric Turbid	ty Units
	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride	
am	leet Gallons der minute	N/A	Not Applicable	s.u. umhos/cm	Standard Units Micromhos per centim	eter
		NE	Not Foreigned			

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n series and series of the series series and series of the series of t

ampling Time:	oject Number: <u>NYODG446,0021</u> ate: <u>5-15-05</u>		Task: Sampi	led By:	0003 Gu	n v Stim	/ell ID:	_Pw-s	5		
eather:	mpling Time:	·			Recor	ded By:	_ 11				
strument identification	eather:			<u>.</u>	Codec	d Replicate No.			-		
aring Information sing Material:	strument Identif ater Quality Mete	ication r(s):					_	Serial #:			
sing Material:	Irging Informati	on									
sing Diameter:	sing Material:					Purge Method	j:	· · · · · · · · · · · · · · · · · · ·			<u>- 14 - 14 - 14 - 14 - 14 - 14 - 14 - 14</u>
unded Depth (ft tomp):	sing Diameter:					Screen Interva	al (ft bmp):	Тор <u>•</u>		Bottom	
Purge time Start: Finish: eld Parameter Measurements Taken During Purging Time	unded Depth (ft l	mp):				Pump Intake [Depth (ft bm	ip):			
eld Parameter Measurements Taken During Purging Time Minutes Rate Volume Temp pH Spec. Cond. ORP DO Turbidity Depth to Water Comments 105 I I.0.407.759.1255C 1.77 G.70 G.70 G.70 G.70 10 I.0.7667.725C 2.57 2.97 G.70 G.70 G.70 125 I.0.407.759.1255C 2.79 G.70 G.70 G.70 126 I.0.417.71 2.45 Y.11 G.70 G.70 126 I.0.417.71 2.45 Y.25 G.70 G.70 127 I.0.417 7.75 Y.11 G.70 G.70 126 I.0.78 7.78 Y.14 Z.3 G.70 G.70 127 I.0.27 7.75 Y.44 Z.4 G.70 G.70 G.70 127 I.0.27 7.75 Y.44 Z.4 G.70 G.70 G.70 128 I.0.27 7.75 Y.44 Z.4 G.70 G.70 G.70 G.70 <	pth to Water (ft l	mp):				Purge time	Start:			_ Finish:	
Internet Minutes Rate Volume Temp pH Spec. Cond. ORP DO Turbidity Depth to Water 105 10<	ald Parameter M	easureme	ents Take	n Durina P	urgina		A start search				e de la poste de la composition de la c
Euged (m/min) Purged (C) (S) Units) (mV) (mgA) (NTU) (th bmp) Comments 10 10.0017.76 .25Ca 1.7 6.77 5.98 6.70 1.0	Time Minutes	Rate	Volume	Temp	рН	Spec. Cond.	ORP	DO	Turbidity	Depth to Water	
d5 10.07 7.76 1256 1.7 6.87 Guiderer 10 10.10 7.65 125 3.9 3.72 1.7 15 10.10 7.65 127 3.09 6.70 1.7 10 10.10 7.65 127 3.09 6.70 1.70 10 10.10 7.65 1.27 3.09 6.70 1.70 120 10.27 7.76 2.47 3.2 3.09 6.87 130 10.37 7.84 2.44 7.3 7.50 6.87 130 10.37 7.83 2.44 7.3 7.50 6.87 135 10.27 7.83 2.44 7.47 1.67 1.67 130 10.27 7.83 2.44 7.47 1.67 1.67 130 10.27 7.83 2.44 1.67 1.67 1.67 130 10.27 7.83 2.44 1.67 1.67 1.67 140 10.27 7.83 1.44 1.67 1.67 <t< td=""><td>Elapsed</td><td>(mL/min)</td><td>Purged</td><td>(ሮር)</td><td>(SI Units)</td><td>(mS/cm)</td><td>(mV)</td><td>(mgA)</td><td>(NTU)</td><td>(ft bmp)</td><td>Comments</td></t<>	Elapsed	(mL/min)	Purged	(ሮር)	(SI Units)	(mS/cm)	(mV)	(mgA)	(NTU)	(ft bmp)	Comments
10 10.76 7.65 · 225 7.9 3.72 15 10.76 7.65 · 225 7.9 3.72 16 10.46 7.66 · 247 7.2 2.0 9 170 10.41 7.71 7.2 25 7.3 7.57 170 10.87 7.17 7.2 25 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.3 7.57 170 10.87 7.84 7.44 7.4 7.4 7.4 7.4 7.4 7.5 7.57 170 10.87 7.84 7.44 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7.4 7	115			10.00	7.79	,256	1.7	6.87		SUPPER	
15 0: 40 7.66 · 247 3.2 3.09 6.70 10 10.41 7.71 · 265 3.4.11 1.877 125 10.38 7.76 · 245 3.6 5.24 6.877 130 10.39 7.84 · 2444 7.3 7.50 6.877 135 10.37 7.85 · 143 5.9 1.677 135 10.37 7.85 · 143 5.9 1.677 135 10.37 7.85 · 143 5.9 1.677 136 10.37 7.85 · 143 5.9 1.677 137 1.677 1.677 134 5.9 1.677 134 5.9 1.677 10.37 7.85 · 143 5.9 1.677 10.37 1.34 psjt. 1.677 10.37 1.34 psjt. 1.677 137 1.34 psjt. 1.677 138 1.007 1.677 139 1.007 1.677 149 1.007 1.677 140 1.134 psjt. 1.677 141 1.134 psjt. 1.1677 141 1.134 psjt. 1.1677 141 1.134 psjt. 1.1677 141 1.1677 1.1677	IA			10.26	7.65	.225	3.9	3.77			1997 - 19
120 10.411 7.71 2.45 4.71 1.67 125 10.38 7.76 2.45 3.6 3.74 1.87 130 10.39 7.84 2.44 7.3 7.50 1.87 134 10.37 7.85 2.44 7.37 1.67 1.67 134 10.37 7.85 2.44 5.9 1.67 1.67 135 10.37 7.85 2.44 5.9 1.67 1.67 135 10.37 7.85 2.44 5.9 1.67 1.67 136 10.37 7.85 2.44 5.9 1.67 1.67 134 5.2 134 5.9 1.67 1.67 1.67 144 1.43 5.9 1.67 1.67 1.67 1.67 145 1.44 1.43 1.43 1.67 1.67 1.67 145 1.44 1.44 1.44 1.44 1.67 1.67 1.67 145 1.44 1.44 1.44 1.44 1.44 1	15			10:40	7.66	.247	3.2	3.09		6.70	
25 10.3776.245 36 5.24 7.877 30 10.3777.33.244 7.37.37.50 8.877 35 10.3777.33.244 7.37.50 8.877 35 10.3777.33.244 7.37.50 8.877 35 10.3777.33.244 7.37.50 8.877 35 10.3777.33.244 5.971 1.677 36 10.3777.33.244 5.971 1.677 36 10.3777.33.244 5.971 1.677 37 1.34704 5.971 1.677 38 52 1.34004 1.677 39 1.34004 1.467 1.677 39 1.34004 1.467 1.677 39 1.34004 1.467 1.677 39 1.34004 1.407 1.677 39 1.443 1.443 1.677 39 1.443 1.444 1.447 39 1.445 1.447 1.447 39 1.447 1.447 1.447 39 1.447 1.447 1.447 39 1.447	:20			10.41	7.71	.245	4.5	4.17		10.22	
30 10.39, 2.84, 2.44, 2.3, 7.50 6.87, 35 10.37, 7.33, 2.43, 5.9 1.67, 35 52, 0.134, 0.51, 1.67, 36 52, 0.134, 0.51, 1.67, 37 1.67, 1.67, 38 52, 0.134, 0.51, 1.67, 39 1.67, 1.67, 39 1.67, 1.67, 39 1.43, 5, 1.67, 39 1.43, 5, 1.67, 39 1.43, 5, 1.67, 39 1.43, 5, 1.67, 39 1.43, 5, 1.67, 39 1.44, 2.3, 7, 3, 1.43, 5, 1.67, 39 1.43, 1.43, 5, 1.67, 39 1.44, 1.43, 5, 1.44,	:25			10.3	7.76	.245	36	2.24		6.87	
35 i0.37 7.73 2.43 5.9 7.67 52 134 psjl 1 1 1 52 134 psjl 1 1 1 mple Condition melete: Color: CDLCD2(£35) Odor: No. Preservative: melete: Container: No. Preservative: 1 1 Reading	:30			10.39	7.84	· 244	7.3	7.50		6.87	·····
S2- 134 ms/L S2- 134 ms/L <td>36</td> <td></td> <td></td> <td>10.37</td> <td>7.85</td> <td><u>·143</u></td> <td>5.9</td> <td>1.67</td> <td></td> <td></td> <td></td>	36			10.37	7.85	<u>·143</u>	5.9	1.67			
								·			
	· · · · ·		<u> </u>	· ·	~?		- i	· · · · · ·			
mple Condition Color: CDLCDL(E3): Odor: NO. Preservative: maneter:					50-	<u>134 0</u>	sr_				
mple Condition Color: CDLODL(P35) Odor: NO. Preservative: model Container: No. Preservative:	·····	1									
mple Condition Color: CD CDCCETS3 Odor: N Dust Appearance: CITM mple Collection ameter: Container: No. Preservative:											
mple Condition Color: CD CD2 (E3) Odor: N Dutt Appearance: CIPM mple Collection Container: No. Preservative: meter: Container: No. Preservative:											
Imple Condition Color: CD CD2(C3) Odor: ND-stc Appearance: CIPM Imple Collection Container: No. Preservative:											
Imple Condition Color: CDLDL(E33) Odor: NO. Preservative: Imple Collection Container: No. Preservative: Immedia Container: No. Preservative:				·							<u></u>
nple Condition Color: CD CD21(E33 Odor: NDwitt Appearance: CITM nple Collection Container: No. Preservative:											· · · ·
nple Condition Color: DLOLLESS Odor: No. Clim nple Collection Container: No. Preservative: ameter: Container: No. Preservative:											·····
nple Condition Color: D LOLLESS Odor: NO. Preservative: ameter: Container: No. Preservative:	<u>· </u>	L							· · · · ·	Δi	·····
nple Collection ameter: Container: No. Preservative: Preservative: Preservati	nple Condition		Color:	DCOL	<u>e 55</u>	Odor:	Nout	Appearan	ce:	IM	
ameter: Container: No. Preservative:	nple Collection			-				•		Data	
Reading	ameter:			Container:				NO.		Pre	servative:
Reading			-				•			•	
Reading			•							· · · · · · · · · · · · · · · · · · ·	
nments	Reading		10.D	•	_					· · · · ·	
nments										1. N. N. N.	
	nments						· · · · · · · · · · · · · · · · · · ·				

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G :AFROJECT:WHCS Melville/ERD Pilot Tertilowflowsamploma:xls-LoFlo-GW-Samp

ARCADIS GERAGHTY & MILLER Water Sampling Log

Project COLES	SALLE .		Project No. N	10001800	018.00034 Page	
Site Location <u>CO2</u>	BORLES,	NY			Date	7-13-05
Site/Well No. Pw-	-		Replicate No.		Code	No
Weather CLE	42 80°		Sampling Time:	Begin	End	· · ·
Evacuation Data		•	· · · ·	Field Paramete	ß	
Measuring Point				Color	Color	erts,
MP Elevation (ft)				Odor	mede	RAN
Land Surface Elevation (ft)		а 1		Appearance	TURS	22
Sounded Well Depth (ft bmp)			pH (s.u.)	3.28	?
Depth to Water (ft bmp)				Conductivity (mS/em)	· · · · · · · · · · · · · · · · · · ·	
Water-Level Elevation (ft)				(µmhos/cm) 267	
Water Column in Well (ft)				Turbidity (NTU)		
Casing Diameter/Type		<u>. </u>		Temperature (*	c) 15.02	·
Gallons in Well			· · · ·	Dissolved Oxyge	n (mg/L)	
Sallons Pumped/Bai led Prior to Sampli ng		· · · ·		Salinity (%)	POR	
ample Pump Intake Setting (ft bmp)				Remarks		
urge Time	begin	end	 •.			
umping Rate (gpm)			•			
vacuation Method						
onstituents Sampled		Container Des	cription	Nu	mb er	Preservative
			•			
		·				
npling Personnel						
npling Personnel Well Casing Volu	Imes					
mpling Personnel Well Casing Volu L/Ft. 1-16* = 0.06 1-12* = 0.09	Imes 2° = 0.16 2-½° = 0.21	3° = 0.3 5 3-½° = 0,	7 4" = 0,1 .50 6" = 1,4	65 47		
npling Personnel Well Casing Volu ./Ft. 1-14° = 0.06 1-14° = 0.09	rmes 2° = 0.16 2-½° = 0.20 ml m	3° = 0.3 6 3-½° = 0	7 4° = 0. .50 6° = 1.4	65 47 NTU	Nephelometric Tu	bidity Units
mpling Personnel Well Casing Volu L/FL 1-36* = 0.06 1-32* = 0.09 Delow measuring point Degrees Celsius	mes 2* = 0.16 2-½* = 0.21 ml m mS/cm M	3° = 0.3 5 3-½° = 0. ililiter ilisiemens per cer	7 4° = 0. .50 6° = 1.4 ntimeter	65 47 NTU PVC	Nephelometric Tur Polyvinyl chloride	bidity Units
mpling Personnel Well Casing Volu L/Ft. 1-1/4 * = 0.06 1-1/2 * = 0.09 p below measuring point Degrees Celsius feet Celling construct	mes 2° = 0.16 2-½° = 0.24 ml m mS/cm M msl m	3° = 0.3 5 3-½° = 0. ililiter ilisiemens per cer ean sea-level 11 Applir able	7 4° = 0. .50 6° = 1.4 ntimeter	65 47 NTU PVC s.u.	Nephelometric Tu Polyvinyl chloride Standard units Mirrombos per ce	bidity Units

Water Sampling	j Log			
Project COLE	SOBUE	Project No. N	4000480.1	OD1B. ODD Page 1 of
Site Location COL	BUTILE M		. · ·	Date 9-13-05
Site Well No. PW	-13 1	Replicate No.		Code No.
Weather CLOA	M 80°	Sampling Time:	Begin	End
Evacuation Data			Field Paramete	ľs
Measuring Point			Color	COLORIAS
MP Elevation (ft)		•	Odor	Nor
Land Surface Elevation (ft)			Appearan ce	CLEAR
Sounded Well Depth (ft bmp)		рН (s.u.)	5.78
Depth to Water (ft bmp)			Conductivity	
Water-Level Elevation (ft)			(µmhos/cm	180
Water Column in Well (ft)			Turbidity (NTU)	
Casing Diameter/Type			Temperature (°C	1364
Gallons in Well			Dissolved Oxyge	n (mg /l)
Gallons Pumped/Bailed			Salinity (%)	
Prior to Sampling			Sampling Metho	DB
Sample Pump Intake Setting (ft bmp)			Remarks	
Purge Time	begin end		NEE	D MOATTER WEDENE
Pumping Rate (gpm)				
Evacuation Method				
Constituents Sampled	Container	Description	Nur	nber Preservative
Sampling Personnel	Gutn			
Well Casing Volu	mes			
Sal./Ft. 1-16 * = 0.06	2*=0.16 3*=	0.37 4" = 0.6	55	
1-23 = 0.09	2-½*=0.26 3-½**	= 0.50 6* = 1.4	17	
mp below measuring point	ml mililiter		UTN	Nephelometric Turbidity Units
C Degrees Celsius	mS/cm Milisiemens per	centimeter	PVC	Polyvinyl chloride
leet	msi mean sez-level		5.U.	Standard units
pm Gallons per minute	N/A Not Applicable		umhos/cm	Micromhos per centimeter
a saitter an an line	NR Not Foundard		VOC	Volatile Oreanic Compounds

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Water Sa			•		
Project	COLESURIA	Project No. N	4000949.00	2/1000 ³⁴ Page 1 of	·
Site Location	COLOUSUE M			Date 9-1500	5
Site/Well No.	SP-5 the	Replicate No.		Code No.	
Weather	CLEAN 30°	Sampling Time:	Begin	End	
Evacuation Data			Field Parameter	5	
Measuring Point	•		Color	Coroniess	
MP Elevation (ft)			Odor	SUD64T	
Land Surface Eleva	etion (ft)		Appearance	CLPAN	
Sounded Well Dep	oth (ft bmp)		p H (s.u.)	6.27	
Depth to Water (ft			Conductiv ity (mS/cm)		
Water-Level Elevati	ion (ft)		(µmhos/c m)	577	
Water Column in V	Vell (ft)		Turbidity (NTU)		
Casing Diameter/Ty	pe		Temperature (°C	18.46	· <u>.</u>
Gallons in Well			Dissolved Oxyger	n (mg /L)	
Gallons Pumped/Bal	iled		Salinity (%)		
			Sampling Methor	l a <u>Para a ser a ser a</u> la tra	
Setting (ft br	mp)		Remarks		
urge Time	begin	end			
in Date (app)			• .		• •
umping Kate (gping					
vacuation Method					
umping Kate (gpin vacuation Method onstituents Sampl	led Ci	ontainer Description	Num	b er Preservative	
umping Kate (gpin vacuation Method onstituents Sampl	led Ci	ontainer Description	Num	ber Preservative	
umping Kate (gpin vacuation Method onstituents Sampl	led Co	ontainer Description	Num	ber Preservative	
umping Kate (gpin vacuation Method onstituents Sampl	led (1	ontainer Description	Num	ber Preservative	
umping Kate (gpin vacuation Method onstituents Sampl	led (1	ontainer Description	Num	ber Preservative	
umping Kate (gpin vacuation Method onstituents Sampl	ed C	ontainer Description	Num	ber Preservative	
umping Kate (gpin vacuation Method onstituents Sampl	led (1	ontainer Description	Num	ber Preservative	
umping Kate (gpiny vacuation Method onstituents Sampl mpling Personnel		ontainer Description	Num	ber Preservative	
npling Personnel Well (./Ft. 1-36 - 12	Casing Volurnes = 0.06 2° = 0.16 = 0.09 2-½° = 0.26	ontainer Description 3° = 0.37 4° = 0.6 3-12° = 0.50 6° = 1.4	Num	ber Preservative	
mpling Personnel Well (./Ft. 1-36***	Casing Volumes = 0.06 2° = 0.16 = 0.09 2-1/2° = 0.26 point ml militi	ontainer Description $3^{*} = 0.37$ $4^{*} = 0.6$ $3 - \frac{1}{2}^{*} = 0.50$ $6^{*} = 1.4^{*}$ ler	S 7 NUM	Nephelometric Turbidity Units	
mpling Personnel Well (./Ft. 1-36* below measuring Degrees Celsius	Casing Volurnes = 0.06 2° = 0.16 = 0.09 2-½° = 0.26 point ml millit mS/cm Milisi	Dontainer Description $3^* = 0.37$ $4^* = 0.6$ $3^-\frac{1}{2}^* = 0.50$ $6^* = 1.4^{-1}$ ler emens per centimeter	S 7 NUU PVC F	Nephelometric Turbidity Units Polyvinyl chloride	
umping Kate (gpiny vacuation Method onstituents Sampl mpling Personnel ./Ft. 1-%** 1-%** below measuring Degrees Celsius feet	Casing Volumes = 0.06 2° = 0.16 = 0.09 2-½° = 0.26 point ml militit mS/cm Milisi msl mean N/A Not A	Dontainer Description $3^{*} = 0.37$ $4^{*} = 0.6$ $3 \cdot 12^{*} = 0.50$ $6^{*} = 1.4$ ler emens per centimeter osez-level poplicable	Num 	Nephelometric Turbidity Units Preservative	
umping Kate (gpiny vacuation Method onstituents Sampl mpling Personnel ./Ft. 1-36* 1-36* 0 below measuring Degrees Celsius feet Gallons per minute Miligrams per liter	Led Curres = 0.06 2* = 0.16 = 0.09 2-½* = 0.26 point ml msl mean = N/A Not A NR Not R	Dontainer Description $3^{*} = 0.37$ $4^{*} = 0.6$ $3 \cdot 12^{*} = 0.50$ $6^{*} = 1.4$ Her emens per centimeter isez-level splicable ecorded	Num S 7 NTU M PVC F s.u. S umhos/cm M VOC V	Aber Preservative	
mpling Personnel Well (./FL 1-36*** below measuring Degrees Celsius feet Gallons per minute Miligrams per liter	Led Curres Casing Volurnes - = 0.06 2* = 0.16 = 0.09 2-½* = 0.26 point ml mS/cm Milisi msl mean N/A Not A NR Not K	Dontainer Description $3^{\circ} = 0.37$ $4^{\circ} = 0.6$ $3^{-1/2}^{\circ} = 0.50$ $6^{\circ} = 1.4^{\circ}$ ler emens per centimeter sez-level applicable ecorded	Num S 7 NTU M PVC F s.u. S umhos/cm M VOC V	Aber Preservative	
umping Kate (gpiny vacuation Method onstituents Sampl mpling Personnel Well (L/Ft. 1-36*** 1-36*** below measuring Degrees Celsius feet Gallons per minute Miligrams per liter	Casing Volurnes = 0.06 2° = 0.16 = 0.09 2-½° = 0.26 point ml militin mS/cm Militis msl mean N/A Not A NR Not Ri	Dontainer Description $3^* = 0.37$ $4^* = 0.6$ $3^* = 0.50$ $6^* = 1.4^*$ ler emens per centimeter o sez-level applicable ecorded	Num 5 7 NTU N PVC F s.u. S umhos/cm N VOC V	Nephelometric Turbidity Units Polyvinyl chloride Itandard units Aicromhos per centimeter Volatile Organic Compounds	

CONTRACT.

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ARCADIS GERAGHTY & MILLER Water Sampling Log

Project (DCS)		Project No. NY	ondand-c	
Site Location Croue	BUTULE M			Date 9-15-05
Site/Well No. SP.	5- PPF DAG	Replicate No.		Code No.
Weather CLPR	<u>m 20°</u>	Sampling Time:	Begin	End
Evacuation Data			Field Parameter	3
Measuring Point	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	Color	BROWN
MP Elevation (ft)			Odor	NAJE
Land Surface Elevation (ft)			Appeara nce	TURAD
Sounded Well Depth (ft bmp	»		pH (s.u.)	6.64
Depth to Water (ft bmp)			Conductivity (mS/cm)	
Water-Level [levation (ft)			(µmhos/cm)	558
Water Column in Well (ft)			Turbidity (NTU)	
Casing Diameter/Type			Temperature (°C	18.52
Gallons in Well			Dissolved Oxyge	n (mg/L)
Gallons Pumped/Bai led Prior to Sampling		5	Salinity (%)	
Sample Pump Intake Setting (ft bmp)	-	<u>۲</u>	ampling Metho lemarks	bd
Sample Pump Intake Setting (ft bmp) Purge Time		ء جـــــ	iampling Metho Iemarks	
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm)	begin End		iampling Metho Iema rks	
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method	begin end		iampling Metho lemarks	
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method	begin end	escription	iampling Metho Iemarks Nur	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method	begin end Container D	escription	iampling Metho lemarks Nur	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method	begin end Container D	escription	iampling Metho Iemarks Nur	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method	begin end Container D	escription	iampling Metho Iemarks Nur	nber Preservative
iample Pump Intake Setting (ft bmp) urge Time umping Rate (gpm) vacuation Method onstituents Sampled	begin end Container D	escription	iampling Metho lemarks Nur	nber Preservative
iample Pump Intake Setting (ft bmp) urge Time umping Rate (gpm) vacuation Method onstituents Sampled mpling Personnel Well Casing Volu	begin end Container D	escription	iampling Metho lemarks Nur	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method Constituents Sampled mpling Personnel Well Casing Volu L/Ft. 1-% * = 0.06 1-½ * = 0.09	begin end Container D 	escription 2.37 4° = 0.6 0.50 6° = 1.47	iampling Metho Iemarks Nur	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method onstituents Sampled mpling Personnel 	begin end Container D	escription 	Nur	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Pumping Rate (gpm) vacuation Method Constituents Sampled Constituents Constituen	beginend Container D mes 2° = 0.16 3° = 0 2-½° = 0.26 3-½° = ml miliiter mS/cm Milisiemens per o	escription escription .37 4° = 0.63 0.50 6° = 1.47 centimeter	Nur Nur Nur Nur Nur Nur Nur Vu	nber Preservative
Sample Pump Intake Setting (ft bmp) Purge Time Purge Time Pumping Rate (gpm) vacuation Method Constituents Sampled Constituents Sampled Well Casing Volum L/Ft. 1-14° = 0.06 1-12° = 0.09 p below measuring point Degrees Celsius Leet	begin end Container D Container D 2° = 0.16 3° = 0 2-½° = 0.26 3-½° = ml miliiter mS/cm Milisiemens per o msl mean sea-level N/A Not Applicable	escription escription 2.37 4° = 0.6 0.50 6° = 1.47 centimeter	Nur Nur Nur Nur Nur Nur S S NTU PVC s.u.	Nephelometric Turbidity Units Polyvinyl chloride Standard units

Water Sa	mpling	LUY	•	. · ·				
Project	Corles	wew		Project No. N	4000949	0021-000 3 Fage	<u>1of</u>	
Site Location	Cous	said 1	vr			Date	9-15 er	
Sile/Well No.	Fr.	2		Replicate No.		Code	No	
Weather	CLEA	1.800		Sampling Time:	Begin	End		
Evacuation Data					Field Paramete	ers		
Measuring Point					Color	Blour	>	
MP Elevation (ft)					Odor	STRal	F 1	
Land Surface Elev	ation (ft)				Appearance	TUR	BDD	
Sounded Well De	pth (ft bmp)			•	pH (s.u.)	3.90)	_ ·
Depth to Water (f	1.bm p)				Conductivity (mS/cm)			
Water-Level [leval	lion (ft)				(µmhos/cri	n) @0		
Water Column in	Well (ft)				Turbidity (NTU))		
	ype	•			Temperature (*	·c)		
Gallons in Well			1		Dissolved Oxyg	en (mg/L)		
Gallons Pumped/Ba Prior to San	npling _				Salinity (%)			
Sample Pump Intak Setting (ft b	e mp) _				Sampling Meth		•	<u> </u>
Purge Time	b	xgin	end					
Pumping Rate (gpm) _			_				
Evacuation Method				4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
Constituents Samp	led		Container Desc	ription	Nu	mper	Preservative	
				•				
				•		······································		
	•						· · · · · · · · · · · · · · · · · · ·	- '
ampling Personnel				·				<u> </u>
Well	Casing Volume	2° - 0.1(4 31 - 037	41 04		•		
eL/FL 1-%* 1-%*	= 0.06 = 0.09	2-1/2" = 0.10	.26 3-15° = 0.5	$4^{\circ} = 0.6$ 0 $6^{\circ} = 1.4$			4. S.	
helow mesurion	noint	mi	mililiter		มาบ	Nephelometric Tur	pidity Units	
Depres Celsius		m\$/cm	Milisiemens per centi	meter	PVC	Polyvinyl chloride		
ieet		msl	mean sea-level		5.U.	Standard units		
	le l	N/A	Not Applicable			Micromhos per cen	limeter	
m Gallons per minut			pp		umnuyum	microminos per cen		

Project	COLESO	<u>ue</u>	<u> </u>	roject No. A	10009200	rag rag	·	
Site Location	COLBO	ILE N	1			Dəti	5-13	-05
Site Well No.	8 IW	-8	F	Replicate No.	· · · · ·	Cod	e No	
Weather	CIPAR	80°		ampling Time:	Begin	End		
Evacuation Data			•.	•	Field Parameter	s D D D		
Measuring Point					Color	Blow		
MP Elevation (ft)					Odor	STID		
and Surface Ele	vation (ft)		· · · · · · · · · · · · · · · · · · ·		Appearance	TOURSE	8	
ounded Well D	epth (ft bmp)				pH (s.u.)	19		
epth to Water	fi bmp)				Conductivity (mS/cm)			
Vatoral evel Flevs	ation (ft)				(µmhos/cm)	367		
Valor Columa in	Well (ft)				Turbidity (NTU)			
asing Diameter/	Туре				Temperature (°C)	16.64		
allons in Well					Dissolved Oxyger	n (mg/L)		in the second
allons Pumped/E	lailed				Salinity (%)	<u> </u>		
Prior to Sa	mpling			-	Sampling Methor	d		
					•	and the second		
mple Pump Inta Setting (ft mping Rate (gpr acuation Method	ke bmp) be n)	gin	end		Remarks			
mple Pump Inta Setting (ft mping Rate (gpr acuation Method	ke bmp) be n) d 	gin	end	- - - viption	Remarks	nber	Preserva	tive
mple Pump Inta Setting (ft mping Rate (gpr acuation Method nstituents Sam	ke bmp) be n) d 	gin 	end	- - - viption	Remarks	nber	Preserva	tive
mple Pump Inta Setting (ft mping Rate (gpr acuation Method nstituents Sam	ke bmp) be n) d pled	gin	end	- - - viption	Remarks	nber	Preserva	tive
mple Pump Inta Setting (ft orge Time mping Rate (gpr accuation Method nstituents Sam	ke bmp) be n) d pled	gin	end	- - viption	Remarks 	nber	Preserva	tive
Imple Pump Inta Setting (ft Inge Time Imping Rate (gpr acuation Methor Instituents Sam	ke bmp) be n) d pled	gin	end	- - ciption	Remarks 	nber	Preserva	tive
mple Pump Inta Setting (ft inge Time mping Rate (gpr acuation Method instituents Sam	ke bmp) be n) j j pled	gin	end	- - iption	Remarks 	nber	Preserva	tive
Imple Pump Inta Setting (ft Imping Rate (gpr acuation Method Instituents Sam	ke bmp) be n) d 	gin	end	- - iption	Remarks 	nber	Preserva	tive
Imple Pump Inta Setting (ft Imping Rate (gpr acuation Method Instituents Sam	ke bmp) be n) d gled	gin	end ontainer Desc	- - ription	Remarks	nber	Preserva	tive
Ample Pump Inta Setting (ft arge Time mping Rate (gpr acuation Method nstituents Sam appling Personnel We /Ft. 1-W	ke bmp) be n) f pled # Casing Volume: ;* = 0.06	gin(c	end		Remarks Nurr 	nber	Preserva	tive
nple Pump Inta Setting (ft setting (ft mping Rate (gpr acuation Method nstituents Sam ppling Personnel Ve /Ft. 1-W	ke bmp) be n) f pled # Casing Volume: ,* = 0.06 ,* = 0.09	gin Cc 2' = 0.16 2-½' = 0.26	end 	$4^{*} = 0.1$	Remarks	nber	Preserva	tive
nple Pump Inta Setting (ft setting (ft mping Rate (gpr acuation Method nstituents Sam ppling Personnel Ve /Ft. 1-W below measuri	ke bmp) be n) gled # Casing Volume: ,* = 0.06 ,* = 0.09 ng point	gin Cc 2.* = 0.16 2-½.* = 0.26 ml mililit	end 		Remarks	Nephelometric Tu	Preserva	tive
nrple Pump Inta Setting (ft srge Time mping Rate (gpr acuation Method nstituents Sam npling Personnel /Ft. 1-W below measuri Degrees Celsiu feet	ke bmp) be n) d pled # Casing Volume: * = 0.06 * = 0.09 ng point s	gin C c 2 * = 0.16 2 - ½ * = 0.26 ml mililit mS/cm Milisi msl mean	end ontainer Desc 3° = 0.37 3-12° = 0.5 ler emens per centi sea-level		Remarks	Nephelometric Tu Polyvinyl chloride Slandard units	Preserva	tive
Ample Pump Inta Setting (ft arge Time mping Rate (gpr acuation Method instituents Sam opling Personnel /Ft. 1-W below measuri Degrees Celsiu feet Gallons per min	ke bmp) be n) gpled # Casing Volume: * = 0.06 * = 0.09 ng point s hute	gin Ca Ca 2° = 0.16 2-½° = 0.26 ml mililit mS/cm Milisi msl mean N/A Not A	end pontainer Descu 3° = 0.37 3-12° = 0.5 ler emens per centi sea-level spplicable		Remarks Nurr 	Nephelometric Tr Polyvinyl chloride Standard units Micromhos per co	Preserva	tive
Ample Pump Inta Setting (ft arge Time Imping Rate (gpr acuation Method Instituents Sam Appling Personnel Ve /Ft. 1-W below measuri Degrees Celsiu feet Gallons per min Miligrams per li	ke bmp) be n) pled # Casing Volume: * = 0.06 * = 0.09 ng point s hute ter	gin 2* = 0.16 2-½* = 0.26 ml mililit msl mean N/A Not A NR Not A	end pontainer Desc 3° = 0.37 3-½° = 0.5 ler emens per centi sea-level oplicable ecorded		Remarks Nurr 	Nephelometric Tu Polyvinyl chloride Slandard units Micromhos per cu Volatile Organic (Preserva	tive
Ample Pump Inta Setting (ft arge Time Imping Rate (gpr acuation Method Instituents Sam Appling Personnel Ver /Ft. 1-W 1-W below measuri Degrees Celsiu feet Gallons per mir Miligrams per li	ke bmp) be n) d pled # Casing Volume: * = 0.06 * = 0.09 ng point s nute tter	gin C c 2 = 0.16 2 - ½ = 0.26 ml mililin mS/cm Milisi msl mean N/A Not A NR Not A	end phtainer Desc 3° = 0.37 3-1/2° = 0.5 ler emens per centi sea-level spplicable ecorded		Remarks Nurr 	Nephelometric Tu Polyvinyl chloride Slandard units Micromhos per ci Volatile Organic (Preserva 	tive
Ample Pump Inta Setting (ft arge Time mping Rate (gpr acuation Method instituents Sam opling Personnel /Ft 1-M below measuri Degrees Celsiu feet Gallons per mir Miligrams per li	ke bmp) be n) d d gpled # Casing Volume: (* = 0.06 (* = 0.09) ng point s nute ter	gin 2* = 0.16 2-½* = 0.26 ml mililin mS/cm Milisi ms/ mean N/A Not A NR Not A	end pontainer Descu 3° = 0.37 3-12° = 0.5 ler emens per centi sea-level spilicable ecorded		Remarks Nurr 	Nephelometric Tu Polyvinyl chloride Standard units Micromhos per cu Volatile Organic (Preserva	tive

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opera <u>COLOBUSILIE</u>	Project No. Ny 190244-0	Date 9-15-015
TW-B	Replicate No.	Code No.
Nepther <u>CLEAR</u> 80°	Sampling Time: Begin	End
acuation Data	Field Paramete	15
	Color	Blow
Flevation (ft)	Odor	STRONT
M Surface Elevation (ft)	Appearan ce	FURBER
nded Wel Depth (ft bmp)	pH (s.u.)	4.96
south to Water (ft bmp)	Conductivity	
Deh	(mS/ cm)	926
wher-Level Elevation (TD)		<u> </u>
Wier Column in Well (ft)		
(Ising Diameter/Type	Discound On or	en (maß)
Gilons in Vell	Calinity (%)	
Gillons Pumped/Bailed Prior to Sampling	Seminy (70)	
giple Pump Intake	Remarks	
Setting in prips begin	end	
pige in the approximate a second seco		
(Cuation Method		
viewonty Sampled	Container Description Nu	mber Preservative
MUSTIC DE DE SEMPICE		
· · · · ·		
npling Personnel		
Well Casing Volumes U/F1 1-14 * = 0.06 2 * = 0.16 1-15 * = 0.09 2-15 * = 0.2	3° = 0.37 4° = 0.65 3-3/2° = 0.50 6° = 1.47	
ml m	jiliter N711	Nephelometric Turbidity Units
p Defow measuring punits mS/cm M Degrees Celsius mS/cm M	ilisiemens per centimeter PVC	Polyvinyl chloride
ieet msl m	ran sea-level S.U.	Standard units Micromhos per centimeter
n Gallons per minute	Unnuy(m	micromitos per centario de

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ARCADIS GERAGHTY & MILLEN Water Sampling Log

Project (DIBORUE	Project No. NYBOOG	180:0018-00034 Page 1_0f	· · ·
NUTER CALPBUEL		Dale 9-13-	05
Site Location	Replicate No.	Code No.	•
Site/Well No			
Weather	Sampling Time: Be	gin End	-
Evacuation Data	Field P	arame ters	
Measuring Point	Color	Cowerss	· · · · · ·
MP Elevation (ft)	Odor	Nort	
Land Surface Elevation (ft)	Аррға	ance <u>cltA</u>	
Sounded Well Depth (ft bmp)	pH (s.u) 6.46	
Depth to Water (fi. bmp)	Condu	ctivity S/cm) -	
Water-Level Elevation (ft)		mhos/cm) <u>364</u>	
Water Column in Well (ft)	Turbidit	ty (NTU)	•
Casing Diameter/Type	Temper	ature (°C) [9,9]	
Gallons in Well	Dissolve	d Oxygen (mg/L)	
Gallons Pumped/Bailed Prior to Sampling	Salinity	(%) PDB	
Sample Pump Intake Setting (ft bm p)	Remark	5	
urge Time begin en	d		
umping Rate (gpm)			
vacuation Method			
onstituents Sampled Cont	winer Description	Numb er Preservati	ve
mpling Personnel			
Well Casing Volumes			
$1.4^{\circ} = 0.06$ $2^{\circ} = 0.16$	3° = 0.37 4° = 0.65 3-3/2° = 0.50 6° = 1.47		
1-½° = 0.09 2-½° = 0.26			
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Sector 1

ARCADIS G&M, Inc.

Low-Flow Groundwater Sampling Log

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1. A.

ARCADIS G&M, Inc.

Low-Flow Groundwater Sampling Log

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Project Nur	mber:	10 10		1.000	- Sampl	Lod Ry:	034	<u> </u>		_00_10	<u>()</u>
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Instrumen	nt Identif	ication						Social #:			
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Purging In	formatio	on .			- 						
Casing Ma	terial:				<u>.</u>	Purge Metho	d:				
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ield Para	meter M	easureme	ents Take	n During I	Purging			- 			
Time	Minutes	Rate	Volume	Temp	рН	Spec. Cond.	ORP	DO	Turbidity	Depth to Water	
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10:05		500		16-10	6.76	.394	87.5	5:30	<u> </u>	11.25	
10:10				15.24	6.51	.387	119.6	3.82		12-15	
10:15				15.19	6.08	<u>·397</u>	143.7	3.57	·	12.15	
10:20				15.30	6.09	-389	147-4	4.13			
0.25	14 f			15.76	5.93	383	174.1	3.70			
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1.30			1.1	15.36	6.58	.815	-53.9	-72		46.07	
1:35			· .	16.13	6.68	.816	-54.7	*			
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ield Para	Minutes	Rate	Volume	Тетр	pH	Spec. Cond.	ORP	DO	Turbidity	Depth to Water	
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1.70		,		12.7	6.6	547	147.1	3.91			
1.75				17.58	617	.546	164.2	Z.96			
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Appendix B

New York State Department of Environmental Conservation DAR-1 Air Modeling Data

Table B-1. NYSDEC DAR-1 Air Modeling Data, Operational Year 3, Quarter Number 4, Colesville Landfill, Broome County, New York.

Parameters for 9/13/2005 Sampling Event			
Discharge Temperature	F	518	ጜ
Ambient Temperature	Та	520	, R
Stack Diameter		9	. <u>c</u>
Stack Radius	œ	0.25	£
Stack Area	×	0.20	ft ²
Exit Velocity (6)	>	28.0	fps
Exit Flow	σ	330	actm
Exit Flow	σ	336	scfm
Stack Height	Ľ	17	Ħ
Building Height	Ê	13.25	۲ ۲
Ratio of Heights	h,h	1.28	
Plume rise credit? h _s /h _b > 1.5?	(if no, h _e =h _e)	(If Yes, h _s = h _s +1.	1 (F) ^{1/3})
Momentum Flux Fm = Ta/T *	V2 * R2	u/a	ft ⁴ /s ²
Effective Stack Height	ŗ	17.0	Ŧ
Reduction Factor? 2.5 > h _s /h _b > 1.5?	•	No, do not reduce	impact
Actual Annual Impact	ບ	RF*6*Q_/h ^{_2.25}	
Mass Flow	Q	S lbs emitted for Is	ast 12 months

fps: feet per second

acfm: actual cubic feet per minute

ug/m^{3;} micrograms per cubic meter

lb/yr: pounds per year lb/hr: pounds per hour

ppb: parts per billion

Notes/Assumptions:

The stack discharge temperature is 64°F based on recorded parameters.

2. The ambient temperature is approximately 60°F, the average temperature recorded in Binghamton, NY on September 13.

Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.

AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated December 22, 2003.

5. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent

groundwater of the Groundwater Remediation System.

6. Exit velocity was not recorded on 9/13/2005 due to equipment malfunction. Exit velocity measured during an interim site visit on 8/1/2005 was used in the calculations.

G:APROJECTIBROOME\NY0949.018\LTM Data\Colesville air modeling data-AGC - Yr3Q4

Page 1 of 3

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Table B-2. NYSDEC DAR-1 Air Modeling Data, Operational Year 3, Quarter Number 4, Colesville Landfili, Broome County, New York.

Page 2 of 3

Calculation of the Short-Term Guideline Concentration (SGC) for Sampling Event on 9/13/2005

Compounds	CAS Numbers	Maximum Limit	Analytical	Detection	Actual	Mase/bour	Maximum Potential Impact	Short Term Impact (Step	Percent of
-		(SGC)	Concentration	Limit Used	Emissions C.		(Step III.A.3 in DAR-1)	III.A.5 in DAR-1)	the SGC
		("m/gn)	(qdd)		(ng/m³)	(Ib/hr)	(°m/gu)	("m/gn)	(%)
Vinyl Chloride	75-01-4	180,000	7.2	*	18.71	2.63E-05	0.0045	0.29191	1.6E-04
Chloroethane(Ethyl Chloride)	75-00-3	1	7.2	•	19.31	2.71E-05	0.0046	0.30134	AZ
1,1-Dichloroethene(Vinylidene Chloride)	75-35-4	ł	7.2	•	29.02	4.08E-05	0.0070	0.45280	٩Z
Methylene Chloride(Dichloromethane)	75-09-2	14,000	7.2	•	25.42	3.57E-05	0.0061	0.39671	2.8E-03
1,1-Dichloroethane	75-34-3	I	7.2	•	29.62	4.16E-05	0.0071	0.46224	٩N
cis-1,2 - Dichloroethylene	156-59-2	ł	7.2	•	29.02	4.08E-05	0.0070	0.45280	٩Z
1,1,1-Trichloroethane(Methyl Chloroform)	71-55-6	68,000	7.2	•	39.93	5.61E-05	0.0096	0.62314	9.2E-04
Trichloroethene	79-01-6	54,000	7.2	•	39.33	5.52E-05	0.0094	0.61370	1.1E-03
Dichlorofluoromethane(Freon 12)	75-71-8	ł	7.2	•	36.19	5.08E-05	0.0087	0.56466	AN
									-

ug/m3: Micrograms per cubic meter

ppb: parts per billion

*: Analyte concentration below detection limit, detection limit was used in calculations

tb/hr: pounds per hour

--: No SGC listed for compound NA: Not applicable

Notes:

DAR-1 refers to DAR-1 AGC/SGC Tables dated December 22, 2003.
 SGC refers to the Short-Term Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated December 22, 2003.

3. To be conservative the tower detection limit was used for compounds that were below the limit of detection, but are found in the influent

groundwater of the Groundwater Remediation System.

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Table B-3. NYSDEC DAR-1 Air Modeling Data, Operational Year 3, Quarter Number 4, Colesville Landfill, Broome County, New York.

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Calculation of AGC based on 9/13/2005 Sampling Event

tual Mass Actual Mass Percent of « per Hour Flow per Year Annual Ib/hr Ib/yr %	.35E-05 0.20248 1.88	.43E-05 0.20902 0.00	0.31409 0.00	0.13 0.27518 0.13	0.32063 0.32063 0.52	1.65E-05 0.31409 0.00	1.02E-05 0.43224 0.00	1.95E-05 0.42569 0.87	2.26E-05 0.19470 0.00
Actual Emissions Ac C _a Flo ug/m ³	18.71	19.31	29.02	25.42	29.62	29.02	39.93	39.33	17.99
Detection Limit Used ⁵		•	•	•	•	•	•	•	•
Lab Data ppb	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Maximum Mass Flow Q _a Ib/yr	10.76	978,044.97	6,846.31	205.39	61.62	185,828.54	97,804.50	48.90	1,173,653.96
Maximum Limit on Ca (AGC ⁴) ug/m ³	0.11	10,000	20	2.1	0.63	1,900	1,000	0.5	12,000
CAS Numbers	75-01-4	75-00-3	75-35-4	75-09-2	75-34-3	156-59-2	71-55-6	79-01-6	75-71-8
Compounds	Vinyl Chloride	Chloroethane(Ethyl Chloride)	1,1-Dichloroethene(Vinylidene Chloride)	Methylene Chloride(Dichloromethane)	1,1-Dichloroethane	cis-1,2-Dichloroethylene	1,1,1-Trichloroethane(Methyl Chtoroform)	Trichloroethene	Dichlorodifluoromethane(Freon 12)

fps: feet per second

acfm: actual cubic feet per minute

ug/m^{3;} micrograms per cubic meter lb/yr: pounds per year

Ib/hr: pounds per hour

ppb: parts per billion

Notes/Assumptions:

1. The stack discharge temperature is 64°F based on recorded parameters.

2. The ambient temperature is approximately 60°F, the average temperature recorded in Binghamton, NY on September 13.

3. Calculations assume that the system will run with the maximum allowable concentrations between quarterly readings.

4. AGC refers to the Annual Guideline Concentration as determined using the hand calculations in the DAR-1 AGC/SGC Tables dated December 22, 2003.

5. To be conservative the lower detection limit was used for compounds that were below the limit of detection, but are found in the influent groundwater of the Groundwater Remediation System.

Appendix C

Automated Reagent Injection System Operating Parameters

 Table C-1. Automated Reagent Injection System Summary of Operational Year 3, Quarter Number 4 Injection Quantities,

 Groundwater Remediation System, Colesville Landfill, Broome County, New York.

Summary of	Automated	Reagant	Injections
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Date	Total Quantity of Molasses Solution Injected (gal.)	Total Quantity of Molasses Injected (gal.)	Total Quantity of Rinse Water Injected (gal.)	
6/27/2005	2 720	272	157	
8/22/2005	2,720	272	157	
Quarter Totals (gal.) =	5,440	544	314	
Totals For Operational Year 3 (gal) =	16.330	1.632	942	
5 (gai.) -		.,		
Totals Since Startup (gal.) =	66,714	7,913	7,367	

Notes: g**a**l.

Gallons

G:\APROJECT\BROOME\NY0949.018\LTM Data\molassesinjectionsummarypoststartup#1 - Summary of ARI-Yr3, Q4

Table C-2. Automated Reagent Injection System, Operational Year 3, Quarter Number 4 Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

			Injection Numbe	er 49		
njection Start Date = njection Completion Date = Molasses to Water Ratio (%) =		6/27/2005 8/3/2005				
		10.0	Programmed Mixing Time (min.) ¹ = 60			
Injection Well ID	Molasses Solution Injection Quantity (gal.)	Rinse ² Quantity (gal.)	Raw Molasses Per Well (gal.)	Min. Injection ³ Flowrate (gpm)	Max. Injection ³ Pressure (psi)	
PW-6	160	5	16.0	NM	NM	
IW-3	160	5	16.0	NM	NM	
IW-1	160	4	16.0	NM	NM	
IW-2	160	3	16.0	NM	NM	
GMMW-1	160	3	16.0	NM	NM	
IW-4	160	4	16.0	NM	NM	
IW-5	160	5	16.0	NM	NM	
IW-6	160	7	16.0	NM	NM	
IW-7	160	8	16.0	NM	NM	
IW-8	160	9	16.0	NM	NM	
IW-9	160	11	16.0	NM	NM	
IW-10	160	12	16.0	NM	NM	
IW-11	160	13	16.0	NM	NM	
IW-12	160	15	16.0	NM	NM	
IW-13	160	16	16.0	NM	NM	
IW-14	160	18	16.0	NM	NM	
IW-15	160	19	16.0	NM.	NM	
Totals (gal.) =	2720	157	272.0	NA	NA	<u></u>

Notes: Gallons. gal. min. Minutes. Inches of water column. i.w.c. Pounds per square inch. psi Gallons per minute. gpm NA Not applicable. Not measured. NM 1.

2.

3.

Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence. Rinse quantity is approximately 1-pipeline volume for each injection well. Parameter not measured due to SCADA system malfunction.

Molasses

Table C-2. Automated Reagent Injection System, Operational Year 3, Quarter Number 4 Operating Parameters, Groundwater Remediation System, Colesville Landfill, Broome County, New York.

		Injection Number 50	
Injection Start Date = Injection Completion Date =	8/22/2005 8/25/2005		
Molasses to Water Ratio (%) =	10.0	Programmed Mixing Time (min.) ¹ =	60

Injection Well ID	Solution Injection Quantity (gal.)	Rinse ² Quantity (gal.)	Raw Molasses Per Well (gal.)	Min. Injection ³ Flowrate (gpm)	Max. Injection Pressure (psi)	
	160	5	16.0	NM	26	
IW-3	160	5	16.0	NM	25	
IW-1	160	4	16.0	NM	24	
IW-2	160	3	16.0	NM	25	
GMMW-1	160	3	16.0	NM	0	
IW-4	160	4	16.0	NM	25	
IW-5	160	5	16.0	NM	26	
IW-6	160	7	16.0	NM	25	
IW-7	160	8	16.0	NM	25	
IW-8	160	9	16.0	NM	26	
IW-9	160	11	16.0	NM	25	
IW-10	160	12	16.0	NM	25	
IW-11	160	13	16.0	NM	25	
IW-12	160	15	16.0	NM	25	
IW-13	160	16	16.0	NM	25	
IW-14	160	18	16.0	NM	23	
IW-15	160	19	16.0	NM	26	
Totals (gal.) =	2720	157	272.0	NA	NA	-

Notes:	
gal.	Gallons.
min.	Minutes.
i.w.c.	Inches of water column.
psi	Pounds per square inch.
gpm	Gallons per minute.
NA	Not applicable.
NM	Not measured.
1.	Programmed mixing time i
	timer to the startup of trans
	TD 600 energies to

Programmed mixing time is calculated from the expiration time of the molasses injection countdown timer to the startup of transfer pump TP-900 during an injection sequence or from the end of transfer pump TP-600 operation to the restart of an injection during a mixing sequence. Rinse quantity is approximately 1-pipeline volume for each injection well. Parameter not measured due to SCADA system malfunction.

2.

3.

5

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Appendix D

Degradation Trend Figure

 Methane 1,2 DCE Ethene TCE PCE VC Methane Concentration (ug/I) -38 ß Concentration (umol/L)

Figure D-1. Concentration of PCE Daughter Products Versus Time in GMMW-6.

Days Following First Injection (days)