IBM

8976 Wellington Road
Manassas, VA 20109

December 7, 2012

George Heitzman, P.E.
Division of Environmental Remediation
New York State Dept. of Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233-7014

Re: Former IBM Kingston Facility, (TechCity)
Site Number: 356002
Supplemental Site Characterization Report: Sanitary Sewer Evaluation

Dear Mr. Heitzman:

The purpose of this letter is to transmit the referenced Supplemental Site Characterization Report, dated December 7, 2012, pursuant to Exhibit C of the Order on Consent, Index # D3-10023-6-11. Per the Department's request, Figure 4 has been revised and incorporated into the report.

After reviewing the information provided in this transmittal, should you have any questions please call Dean Chartrand at (703) 257-2583.

Sincerely yours,

M. E. Meyers

Mitchell E. Meyers
Manager, Environmental Remediation
Corporate Environmental Affairs

cc: w/ enclosure (1 hardcopy and 1 electronic copy)

Benjamin Conlon, Esq.	NYSDEC - Office of General Counsel (1 hardcopy and 1 electronic copy)
Kristin Kulow	NYSDOH - Oneonta (1 hardcopy and 1 electronic copy)
Wayne Mizerak	NYSDEC - Albany (electronic copy only)
Charlotte Bethoney	NYSDOH - Troy (electronic copy only)
Daniel Wieneke	TechCity Properties, Inc. (1 hardcopy and 1 electronic copy)
Mitchell Khosrova, Esq.	TechCity Properties, Inc. (electronic copy only)
Michael Teetsel	Environmental Resources Management (electronic copy only)

Former IBM Kingston Facility (TechCity)
Site Number: 356002
Order on Consent Index: D3-10023-6-11
Supplemental Site Characterization Report:
Sanitary Sewer Evaluation

Prepared for:

IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

December 7, 2012

Prepared by:

Groundwater Sciences Corporation

2601 Market Place Street, Suite 310
Harrisburg, Pennsylvania 17110

560 Route 52, Suite 202
Beacon, New York 12508

1108 Vestal Parkway East, Suite 2
Vestal, New York 13850

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

This Supplemental Site Characterization Report (Interim SC Report), prepared by Groundwater Sciences Corporation (GSC) on behalf of International Business Machines Corporation (IBM), presents the results of the evaluation of the sanitary sewer piping as a potential conduit for contaminant migration at the former IBM Kingston Facility (the Site) located at 300 Enterprise Drive, Kingston, Ulster County, New York (see Figure 1). The evaluation was based on activities implemented under the approved Supplemental Site Characterization Work Plan (SC Work Plan) prepared in response to the OU3 requirements set forth in Exhibit C of the Order on Consent (Order), Index # D3-10023-6-11, for Site 356002.

Based on initial evaluations, additional supplemental sanitary sewer line sampling was proposed and implemented as Modification #1 to the SC Work Plan.

1.1 Site Background

The Site is located north of the City of Kingston in the Town of Ulster, Ulster County, New York and is bounded by John M. Clarke Drive and Route 9W to the east, Old Neighborhood Road and Route 209 to the north, Esopus Creek to the west and Boices Lane to the south (see Figure 2). The approximately 258-acre property was first developed by IBM from farmland during the 1950s. The primary activities included the manufacturing of electric typewriters and the development, manufacture and testing of computer systems and related components and technologies. IBM ceased operations during the early-1990s and the property was subsequently subdivided into multiple parcels. In 1998, IBM sold the Site to AG Properties of Kingston, LLC and Ulster Business Complex, LLC. The site is currently managed by TechCity Properties, Inc. (TechCity).

The portion of the Site located east of Enterprise Drive is referred to as the East Campus and includes the majority of the buildings at the Site, many of which are vacant. The portion located west of Enterprise Drive is referred to as the West Campus and includes Buildings 201 (B201), Building 202 (B202) and Building 203 (B203) (currently referred to as the Bank of America facility); a large parking area south and west of the Bank of America facility; and generally undeveloped land further to the southwest and north of the Bank of America facility.

The site is listed as a Class 4 Site (Site # 356002) in the Registry of Inactive Hazardous Waste Disposal Sites in New York State and was managed in compliance with the October 4, 1996 Hazardous Waste Management Permit #3-5154-00067/00090 (6 NYCRR Part 373) (RCRA Permit) until the Order on Consent (Order) was signed with New York State Department of Environmental Conservation (NYSDEC) by IBM and TechCity on July 8, 2011.

The Order, which supersedes and replaces the former RCRA Permit, divides the site into ten Operable Units (OUs). The locations of the OUs are depicted in Figure 2. Table 1-1 presents a list of the OUs, including the proposed OU use and which OUs remain listed as a Class 4 Inactive Hazardous Waste Disposal Site. Reference is made to Exhibit C of the Order for additional information.

Prior to the execution of the Order, IBM completed extensive RCRA Facility Investigations (RFIs) beginning in the 1990s through 2002 to delineate the occurrence and extent of volatile organic compounds (VOCs) in groundwater beneath the Site. Corrective Measures implemented by IBM include the operation and maintenance of a perimeter control system that intercepts the groundwater plume. The perimeter control system consists of two stormwater sewer systems, an unsaturated portion of the surficial sand unit that underlies the site; a utility trench barrier wall and a groundwater collection system (see Figure 2). IBM currently performs groundwater quality monitoring to evaluate the effectiveness of the Corrective Measures.

Table 1-1 Listing of Operable Units, Proposed Use and Status		
Operable Unit	**Proposed Use**	**Status**
OU1	Commercial	
OU 2	Commercial	
OU 3	Commercial	Included as part of the Class 4 Inactive Hazardous Waste Disposal Site # 356002
OU 3a	Commercial	Included as part of the Class 4 Inactive Hazardous Waste Disposal Site # 356002
OU 4	Restricted Residential	
OU4a	Commercial	
OU5	Commercial	Included as part of the Class 4 Inactive Hazardous Waste Disposal Site # 356002
OU6	Commercial	
OU7	Commercial	
OU8	Commercial	

1.2 Purpose

With the approval of the Order additional activities were required to evaluate the sanitary sewers as a potential conduit for contaminant migration, specifically in the east-west sections that lie north of Building 001 (B001) and Building 003 (B003) extending westward to the Utility Trench Barrier Wall. This SC Report presents evaluations and the results of the recommended confirmatory sampling.

Section 2.0 of this SC Report provides a description of the site geology and hydrogeology and a summary of the nature and extent of site-wide groundwater impacts. Section 3.0 presents a summary of findings including a compendium of existing information, evaluation of available data, and details on supplemental data collected under the SC Work Plan, including Modification #1 to the SC Work Plan. Section 4.0 includes a summary analysis of all available data including recommendations. Section 5.0 provides reference listing of historical documents used in the preparation of this SC Report.

2.0 CURRENT CONDITIONS

This section presents the current Conceptual Site Model (CSM) for the entire site. The following description of geology and hydrogeology was originally based on information collected by GSC, on behalf of IBM, and has been refined by data collected at the site by Golder Associates, Inc. (Golder) since 2009. The nature and extent of the VOC groundwater plume is based upon the findings of work completed by GSC, on behalf of IBM. The primary documents used to develop this CSM include:

- Sewer Systems Assessment Report, March 14, 1994.
- RCRA Facility Assessments, Four Recently Identified Solid Waste Management Units, January 16, 1995.
- RCRA Facility Assessments Newly Identified Solid Waste Management Units, March 14, 1997.
- RCRA Facility Investigation Groundwater Plumes and Sources, March 14, 1997.
- Triangle Plume Area Investigation Report, September, 2009.
- 2010 Annual Groundwater Monitoring Report, March 30, 2011.

A complete listing of documents reviewed in the preparation of this SC Report is provided in Section 3.1 and a full listing of reference documents for the site is provided in Section 5.0.

2.1 Generalized Geology

The site is located within the Hudson-Mohawk Lowland Physiographic Province. The bedrock underlying the western portion of the site consists of siltstone and shale of the Middle Devonian Age Lower Hamilton Group. The eastern portion of the site is underlain by both the Lower Hamilton Group and the Lower Devonian Age Onondaga Limestone. The exact location and nature of the contact between these units is not known. The Lower Hamilton Group forms a north-northwest trending bedrock high approximately coincident with Enterprise Drive, and is described as a calcareous shale in boring logs completed during previous site investigations.

Literature on regional geologic conditions indicate that a glacially-derived sand and gravel unit directly overlies the bedrock west of Enterprise Drive and a glacial till unit overlies the bedrock east of Enterprise Drive. These unconsolidated units are overlain by a varved silt and clay unit that is interpreted to be of lacustrine origin, with a thickness of zero feet in an area where it is absent proximate to the bedrock high, to over 180-feet in the central portion of East Campus as determined by previous site borings. The clay portion of the varved silt and clay unit serves as an aquitard throughout most the site, except in the localized area in the vicinity of the bedrock high where it is absent.

A well sorted, fine to coarse-grained sand of lacustrine origin, with intermittent, thin, silty-clay zones, overlies the varved silt and clay (or bedrock where the varved silt and clay is absent in the vicinity of the bedrock high). This surficial sand unit ranges in thickness across the site from approximately 6-feet in the area of the bedrock ridge to greater than 30-feet in the central portion of the East Campus. A discontinuous transition zone of relatively fine-grained materials is present at the base of the surficial sand unit in some areas of the site (GSC, 1997).

Generalized descriptions of the near-surface lithologic units encountered at the site are as follows:

- **Surficial SAND Unit:** Consists of a light brown, fine to medium grained sand containing variable amounts of finer-grained silt and clay. This unit is typically saturated below a depth of approximately 6 to 7-feet below ground surface (ft bgs).
- **SILTY-SAND and CLAY Transition Unit:** Consists of variable amounts of reddish-brown to gray silt, sand, and clay. Typical appearance in a soil core is a silty-sand matrix containing thin lenses of silt and sandy clay. This unit, if present, is generally encountered between 15 to 20-ft bgs in the vicinity of B001.
- **Varved CLAY Unit:** Consists of red-brown and gray, plastic, cohesive, wet clay with intermittent silt zones. Typical appearance in a soil core is clay with laminae of silt and sometimes very fine-grained sand. This unit is typically encountered at approximately 20 to 25-ft bgs in the B001 area, with greater or lesser depths of first occurrence in localized areas.

The thickness of the sand unit increases and the thickness of the transition unit decreases coinciding with a shallowing of the depth to top-of-clay along the western edge of a clay unit "valley" identified in the *RCRA Facility Investigation on Groundwater Plumes* report (GSC, 1997b). This valley is deepest below B001 and B003 (i.e., approximately 30 ft bgs to the top of the clay unit) and extends southward to the east of Building B025 (B025) and then west towards Boices Lane.

2.2 Generalized Hydrogeology

The varved clay unit serves as an aquitard throughout most the site. Therefore groundwater in the bedrock and in the deep sand and gravel and glacial till units that underlie the varved silt and clay is under confined conditions. Groundwater within the surficial sand unit that overlies the varved silt and clay unit is unconfined. The surficial sand unit is typically unsaturated in the area of the bedrock high along Enterprise Drive.

The estimated horizontal hydraulic conductivity of the surficial sand unit ranges from approximately 65 feet per day (ft/day) to 270 ft/day (i.e., 2.3×10^{-2} centimeters per second [cm/sec] to 9.5×10^{-2} cm/sec), with an average hydraulic conductivity of approximately 100 ft/day [2.3×10^{-2} cm/sec]. The horizontal hydraulic conductivity of the varved silt and clay unit has been estimated at approximately one (1) foot per day [3.5×10^{-4} cm/sec]. The vertical hydraulic conductivity of this unit is likely significantly lower than its horizontal hydraulic conductivity due to the horizontal bedding structure. The low vertical hydraulic conductivity and thickness of the unit support the designation of the varved silt and clay as an aquitard.

An east-west trending groundwater divide has been identified at the site underlying B001, Building 002 (B002), B003, Building 004 (B004) and Building 005 (B005) (see Figure 3). Groundwater to the north of the divide flows west and northwest. Groundwater to the south of the divide flows west and southwest. The water table gradient in the eastern portion of the site and in the vicinity of the Groundwater Collection System (GWCS) is reportedly higher than the water table gradient in the south and central portion of the site, and estimated horizontal groundwater flow velocities range from approximately 0.8 ft/day to 2 ft/day (GSC, 1997b).

Groundwater flow is influenced by the presence of the perimeter control system (see Figure 3), which is composed of:

- A 42-inch diameter storm sewer pipe that extends from east to west along a line south of B001 through B005, and then passes under Enterprise Drive to the south of B201.
- An unsaturated portion of the surficial sand unit that intersects the 42-inch storm sewer south of B201, and extends east-northeast back across Enterprise Drive, and then continues toward the north portion of the site.
- The GWCS, extends along the western and northern perimeter of the North Parking Lot Area. The GWCS is comprised of a set of groundwater cut-off trenches. Water collected in the trenches is treated via air stripping.
- A 60-inch diameter storm sewer pipe that intersects the GWCS and extends along the western portion of the North Parking Lot Area.
- A utility trench barrier wall, consisting of an approximately 250-foot long trench backfilled with clay with the base keyed into the Varved Clay Unit and the top of the barrier wall completed a minimum of two feet above the recorded high water table. This barrier wall was installed to mitigate the potential for groundwater migration along the underground utility pipes which ultimately terminate at the former IWTF.

The groundwater VOC plume is contained within the site by this system.

2.3 Nature and Extent of Site Groundwater Contamination

IBM has been collecting groundwater samples at the site since the late 1970s. The existing monitoring well network is shown on Figure 3. Identified compounds of concern in the surficial sand aquifer include the following chlorinated VOCs: 1,1,1-trichloroethance [TCA], trichloroethene [TCE] and tetrachloroethene [PCE], and related degradation products (i.e., 1,1-dichloroethene [1,1-DCE], 1,1-dichloroethane [1,1-DCA], 1,2-cis-dichloroethene [1,2-DCE] and 1,2-dichloroethane [1,2-DCA]). Other VOCs have been detected in groundwater, including carbon tetrachloride, freon and petroleum hydrocarbons; however, concentrations of these VOCs are generally lower and less extensive than the chlorinated compounds.

Four groundwater plumes have been identified at the site, including:

- The North Parking Lot Area (NPLA) Plume (located to the north of B001 and B003) is primarily composed of TCE and TCA, and to a lesser degree PCE. Based on historic groundwater quality sampling and soil vapor screening investigations, the source areas for this plume are likely associated with historic manufacturing activities in B001, B002, B003, B004 and B005S. The primary source area appears to be the industrial waste sewer lines located beneath these buildings (as noted below) and north of B001 and B003. Concentrations of PCE, TCE and TCA in the NPLA Plume appear to originate in the central and western portions of the site.

- The B005 Plume Area, located beneath B001, B002, B003, B004 and B005, is primarily composed of TCE and TCA. Based on historic groundwater quality sampling and soil vapor screening investigations, this plume is believed to have originated from activities in B001, B003, B004 and B005S.

- An isolated PCE plume, extending from the southern portion of B005 to the 42-inch sewer and originating from a release(s) at a PCE tank located in the southeastern corner of B005.

- The Industrial Waste Treatment Facility (IWTF) Plume, located near Building 036 (B036). The plume in this area is not likely to have originated from the IWTF, but is believed to have migrated from the eastern campus plume along the underground utility pipes prior to the installation of the utility trench barrier wall.

Figure 3 presents a generalized depiction of areas where groundwater is impacted by VOCs.

3.0 SUMMARY OF FINDINGS

Implementation of the approved SC Work Plan included examination and compilation of available information and gathering of additional data regarding the sanitary sewers in the NPLA to evaluate the potential for infiltration of groundwater containing VOCs into the sanitary sewers. As noted in the CSM, the nature and extent of the VOC groundwater plume is based upon the findings of work completed under the RCRA Permit by GSC and Golder. The sanitary sewer system is above the water table throughout nearly the entire site and so there are limited opportunities for infiltration of groundwater into the system. The focus of the SC Work Plan includes the sanitary sewers that extend from the east side of B003 westward along and parallel to the north end of B001 to the intersection of these sewers with Enterprise Drive at the location of the Utility Trench Barrier Wall (Figure 4). In addition, the potential for exfiltration from the sanitary sewers in areas west of the Utility Trench Barrier Wall was also evaluated.

3.1 Compendium of Existing Sources of Available Data

Several historical investigations of the sanitary sewers were conducted under the RCRA Permit, the results of which were presented in the following reports:

- Sewer Systems Assessment Report, March 14, 1994.
- North Parking Lot Area Sewer Systems Investigation, Revised RCRA Facility Investigation Work Plan, February 14, 1996.
- RCRA Facility Investigations, Soil Gas Surveys and Sewer Systems Sampling, April 12, 1996.
- RCRA Facility Investigation Groundwater Plumes and Sources, March 14, 1997.
- RCRA Facility Investigation, Former Industrial Waste Sludge Lagoon, April 16, 1999.
- Expanded RCRA Facility Investigation, Former Industrial Waste Sludge Lagoon, Arsenic and VOC Plume Source Investigation and Deep Bedrock RCRA Facility Investigation, February 26, 2002.

In addition to the reports listed above, details relating to the installation of the Utility Trench Barrier Wall were presented in the following report:

- Draft Final Construction Report, Barrier Wall Installation, December 1995.

3.2 Evaluation of Available Data

As noted in the CSM, a utility trench sealing project was completed under the RCRA Permit to eliminate the gap in the site control perimeter associated with the utility trenches that passed from east to west beneath Neighborhood Road (now known as Enterprise Drive). The barrier wall was installed by excavating a trench adjacent to the east side of Enterprise Drive, and then filling it with clay. The clay backfill has a maximum hydraulic conductivity of 10^{-8} centimeters per second (cm/s). The minimum thickness of this clay seal is 2 feet. The seal was placed completely around each individual drain line, hand packing around the pipe. Three drain lines were left in place, including the sanitary sewer.

With this seal in place, groundwater which had previously drained to the west either via the utility trenches cut through the bedrock or through the shallow saturated sand adjacent to these trenches is instead being diverted to the north where it drains into the GWCS trench. The only remaining avenue for groundwater chemical flux through the barrier wall is via groundwater leakage into the sanitary sewer where it passes through the NPLA Plume. Investigations were conducted under the RCRA Permit along the main sanitary line which lies north of B001 and B003, the subject area of the SC Work Plan. During these investigations, the segment of the sanitary sewer to the west of B001 was below the water table (July 1995) and the portion of this sewer line to the north and east of B001 was near or above the water table. In addition, VOCs were detected in samples collected of the sanitary sewer base flow (September 8, 1994) prior to the installation of the Utility Trench Barrier Wall. In general, it was determined that the presence of the VOCs and the position of the sanitary sewer below the water table suggests that VOCs were present because of infiltrating groundwater.

The same set of sanitary sewer manholes was re-sampled twice during February 1996, after the installation of the Utility Trench Barrier Wall, under activities associated with an approved RFI pursuant to the RCRA Permit. Figure 4 shows graphical representations of TCA and TCE-series sampling results for the pre- and post-Utility Trench Barrier Wall installation time periods. As can be seen from these graphs, VOCs were detected in sanitary sewer base flow samples from this time

period with higher concentrations detected upstream of the Utility Trench Barrier Wall in the segment of sanitary sewer line just north and northeast of B001. Concentrations are shown to decrease on the downstream side of the Utility Trench Barrier Wall. This pattern of decreasing concentrations indicates that the barrier wall is effective in preventing the migration of VOCs from the east campus to the west campus through the utility trenches.

Also as noted in the CSM, a dissolved groundwater VOC plume has been identified near B036, the Industrial Waste Treatment Facility (IWTF) Plume. Based on investigations conducted under the RCRA Permit, the plume in this area is not likely to have originated from the IWTF or the Former Industrial Waste Sludge Lagoon (Former IWSL) but is believed to have migrated from the eastern campus plume along the underground utility pipes prior to the installation of the utility trench barrier wall. Investigations of the Former IWSL area conducted under the RCRA Permit identify this plume as the Southern IWSL VOC Plume. A second dissolved VOC plume was also identified to the north of the Former IWSL and was known as the Northern IWSL VOC Plume during investigations conducted under the RCRA Permit.

As part of the investigations of the Former IWSL area and the Northern IWSL VOC plume, samples were collected from four locations along the sanitary sewer line concurrent with groundwater quality samples from three wells during May and November 2000. The pattern of detections in groundwater adjacent to and downgradient from the sanitary sewer suggests that exfiltration from the sanitary sewer may have been the source for the Northern IWSL VOC Plume. The concentrations observed in the sanitary sewer line during those investigations were not sufficient to produce the concentrations observed in groundwater, but show that following the installation of the Utility Trench Barrier Wall, VOC concentrations decreased for all sanitary sewer manhole sampling locations monitored downstream of that barrier wall. Based on these data, there does not appear to be a continuing discharge of sanitary sewer flow to the surrounding groundwater; rather, the pattern reflects a tailing effect for groundwater concentrations resulting from desorption from surrounding soils.

As part of the bedrock investigations conducted under the RCRA Permit, a bedrock well, MW-324R, was installed near Enterprise Drive in an area of shallow bedrock where the utility trenches

cut through the rock to identify any impacts that may have occurred to groundwater in the bedrock unit before the Utility Trench Barrier Wall was constructed. Well MW-324R was drilled through 4 feet of sand and gravel associated with parking lot fill and an additional 7.5 feet of clay associated with the Utility Trench Barrier Wall. The underlying bedrock consists of massive gray-black calcareous shale. A water bearing zone was identified at approximately 37 feet, with the well completed at a depth of 43.15 feet and constructed as a 6-inch open hole. Sampling of this well was conducted under the RCRA Permit and no site constituents were detected in any of the samples collected.

3.3 Field Inspections and Data Collection

Drawings depicting the sanitary sewer system along the main line were field verified during October 2011 and manholes were opened to ascertain availability of access for sampling and other measurements. Historical monitoring records and other sources of information were compiled of the sanitary sewer and associated relevant groundwater monitoring well installation and sampling data.

3.4 Supplemental Data Collection and Evaluation

Groundwater elevation data were collected from available monitoring points and compared with the invert elevations of the sanitary sewer. A comparison of groundwater elevations with sanitary pipe invert elevations indicate that a portion of the sanitary sewer line which lies to the north of B001 and B003 have the potential for infiltration of groundwater containing VOCs.

Based on these observations from the nearby groundwater monitoring well network, three point wells were installed on October 21, 2011 immediately adjacent to sanitary sewer line. The location for the three point wells was based on accessibility (utility clearance) and also, coincident with sections of the sanitary sewer that were determined to be fully penetrating the water table, those sections that were determined to be partially penetrating the water table and near to or coincident with where the sanitary sewer pipe is above the water table. These points are shown on Figure 4 as PW-B, PW-C and PW-D.

Groundwater elevation measurements were determined for each of the three point wells and based on these measurements the section of sanitary sewer line near PW-B is fully penetrating the water table; near PW-C, the sanitary sewer line is partially penetrating the water table and the invert of the sanitary sewer line near PW-D lies at or just below the water table.

Following development, a sample was collected from each of the three point wells for SW846 8260B VOCs. A summary of the results are presented on Figure 4. These water quality results, coupled with the relationship of pipe invert to water table would suggest that there is a potential for contaminated groundwater to infiltrate the sanitary sewer within the portion of the main line that lies below the water table to the north of B001 and B003. The sanitary sewer line is gravity drained and therefore the sanitary sewer line which lies to the west of this segment, towards Enterprise Drive, also lies below the water table.

Based on the available historical data collected under the RCRA Permit and the supplemental data collected under the SC Work Plan, confirmatory sampling of the sanitary sewer was proposed as Modification #1 to the approved SC Work Plan to verify conditions of sanitary sewer base flow upgradient to and downgradient from the Utility Trench Barrier Wall at three historical monitoring locations. The three proposed locations included: CS220, which lies immediately downstream of the point well PW-C where the highest VOC concentrations were detected in groundwater immediately adjacent to the sanitary sewer line; CS221, located immediately downgradient of the Utility Trench Barrier Wall and CS1078, the most downgradient of the sanitary sewer manholes sampled historically.

Confirmatory sampling was completed at the three proposed historical sanitary sewer manholes with NYSDEC oversight on April 19, 2012. Based on consultation with the NYSDEC during these field activities, one additional sampling location, CS219, located immediately upgradient of the Utility Trench Barrier Wall was also sampled. All samples were submitted for analysis of TCL VOCs by method 8260B. The results of this sampling are summarized in Table 3-1 and presented on Figure 4. A copy of the Data Usability Summary Report is presented as Appendix A.

As can be seen in Table 3-1, with the exception of Toluene and Chloroform, no other TCL 8260B VOCs were detected in these samples.

Table 3-1. Summary of Supplemental Characterization Sampling Results (ug/L)
Sanitary Sewers Evaluation

Sampling Location	Date Sampled	Lab Number	Chloroform	Toluene	All other TCL 8260B VOCs
CS220	4/19/2012	6624143	ND	21 J	ND
CS221	4/19/2012	6624144	ND	4 J	ND
CS1078	4/19/2012	6624145	ND	ND	ND
CS1078, replicate	4/19/2012	6624146	ND	ND	ND
CS219	4/19/2012	6624147	67	5 J	ND

Notes:
J = Estimated Value
ND = Not Detected

4.0 SUMMARY ANALYSIS AND RECOMMENDATIONS

The following sections detail the summary analysis of the historical data together with the supplemental data collected under the SC Work Plan.

4.1 Summary Analysis

Water quality results obtained from the three temporary point wells installed immediately adjacent to the sanitary sewer line north of B001 and B003, coupled with the relationship of pipe invert to water table would suggest that there is a potential for contaminated groundwater to infiltrate the sanitary sewer within the portion of the main line that lies below the water table to the north of B001 and B003.

A utility trench sealing project was completed under the RCRA Permit to eliminate the gap in the site control perimeter associated with the utility trenches that passed from east to west beneath Neighborhood Road (now known as Enterprise Drive). With this seal in place, groundwater which had previously drained to the west either via the utility trenches cut through the bedrock or through the shallow saturated sand adjacent to these trenches is instead being diverted to the north where it drains into the GWCS trench. The only remaining avenue for groundwater chemical flux through the barrier wall is via groundwater leakage into the sanitary sewer where it passes through the NPLA Plume.

As part of the bedrock investigations conducted under the RCRA Permit, a bedrock well, MW-324R, was installed near Enterprise Drive in an area of shallow bedrock where the utility trenches cut through the rock to identify any impacts that may have occurred to groundwater in the bedrock unit before the Utility Trench Barrier Wall was constructed. Sampling of this well was conducted under the RCRA Permit and no site constituents were detected in any of the samples collected.

Initial investigations conducted under the RCRA Permit of the sanitary sewer line, in general, determined that the presence of the VOCs and the position of the sanitary sewer below the water table suggest that VOCs were present in the sanitary sewer base flow because of infiltrating groundwater. The pattern of detections in groundwater adjacent to and downgradient from the

sanitary sewer suggests that exfiltration from the sanitary sewer may have been the source for the dissolved VOC plumes near B036. VOC concentrations observed in the sanitary sewer line following the installation of the Utility Trench Barrier Wall decreased for all locations monitored downstream of that barrier wall.

The most recent sampling conducted under the Supplemental Site Characterization shows no groundwater related VOCs to be present in the sanitary sewer base flow. In addition, this overall pattern of decreasing concentrations coupled with the most recent results where no groundwater related VOCs were detected in sanitary base flow both upgradient and downgradient of the Utility Trench Barrier Wall indicate that the barrier wall is effective in preventing the migration of VOCs from the east campus to the west campus through the utility trenches.

4.2 Recommendations

Based on a review of the available historical data collected under the RCRA Permit and the supplemental data collected under the SC Work Plan including confirmatory sampling of sanitary sewer base flow upgradient to and downgradient from the Utility Trench Barrier Wall at four historical monitoring locations, no further action is recommended.

5.0 REFERENCES

Conestoga-Rovers and Associates, 1995, "Draft Final Construction Report, Barrier Wall Installation", December 1995.

Golder Associates, 2009, "RCRA Facility Investigation Management Plans" 26 May, 2009.

Golder Associates, 2011, "SWMU G Investigation Report" March, 2011.

Groundwater Sciences Corporation, 1993 "Corrective Action For Solid Waste Management Units RCRA Facility Investigation Scope of Work, Volume V, Appendix K-L, Groundwater Sampling and Analysis Plan", 13 August, 1993.

Groundwater Sciences Corporation, 1994, "Sewer Systems Assessment Report", 14 March, 1994.

Groundwater Sciences Corporation, 1996, "IBM Kingston RCRA Facility Investigations Soil Gas Surveys and Sewer Systems Sampling", 12 April 1996.

Groundwater Sciences Corporation, 1997a "RCRA Facility Assessments Newly Identified Solid Waste Management Units", 14 March, 1997.

Groundwater Sciences Corporation, 1997b, "RCRA Facility Investigation Groundwater Plumes and Sources", 14 March, 1997.

Groundwater Sciences Corporation, 1999, "RCRA Facility Investigation Former Industrial Waste Sludge Lagoon", 16 April, 1999.

Groundwater Sciences Corporation, 2002, "Expanded RCRA Facility Investigation, Former Industrial Waste Sludge Lagoon, Arsenic and VOC Plume Source Investigation and Deep Bedrock RCRA Facility Investigation", 26 February 2002.

Groundwater Sciences Corporation, 2008, "2007 Annual Groundwater Monitoring Report", 28 March, 2008.

Groundwater Sciences Corporation, 2010, "2009 Annual Groundwater Monitoring Report", 30 March, 2010.

Groundwater Sciences Corporation, 2010, "2010 Semiannual Groundwater Monitoring Report", 29 September, 2010.

IBM Corporation, 2001, "IBM Post-Closure Permit Renewal Application", 2 April, 2001.

IBM Corporation, 2007, "IBM Kingston Facility, Part 373 Permit No. 3-5154-0067/000090, Corrective Measures Shutdown Request (MW-504S)", 30 March, 2007.

NYSDEC, 1998, "Technical and Operational Guidance Series (1.1.1) "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations", June 1998.

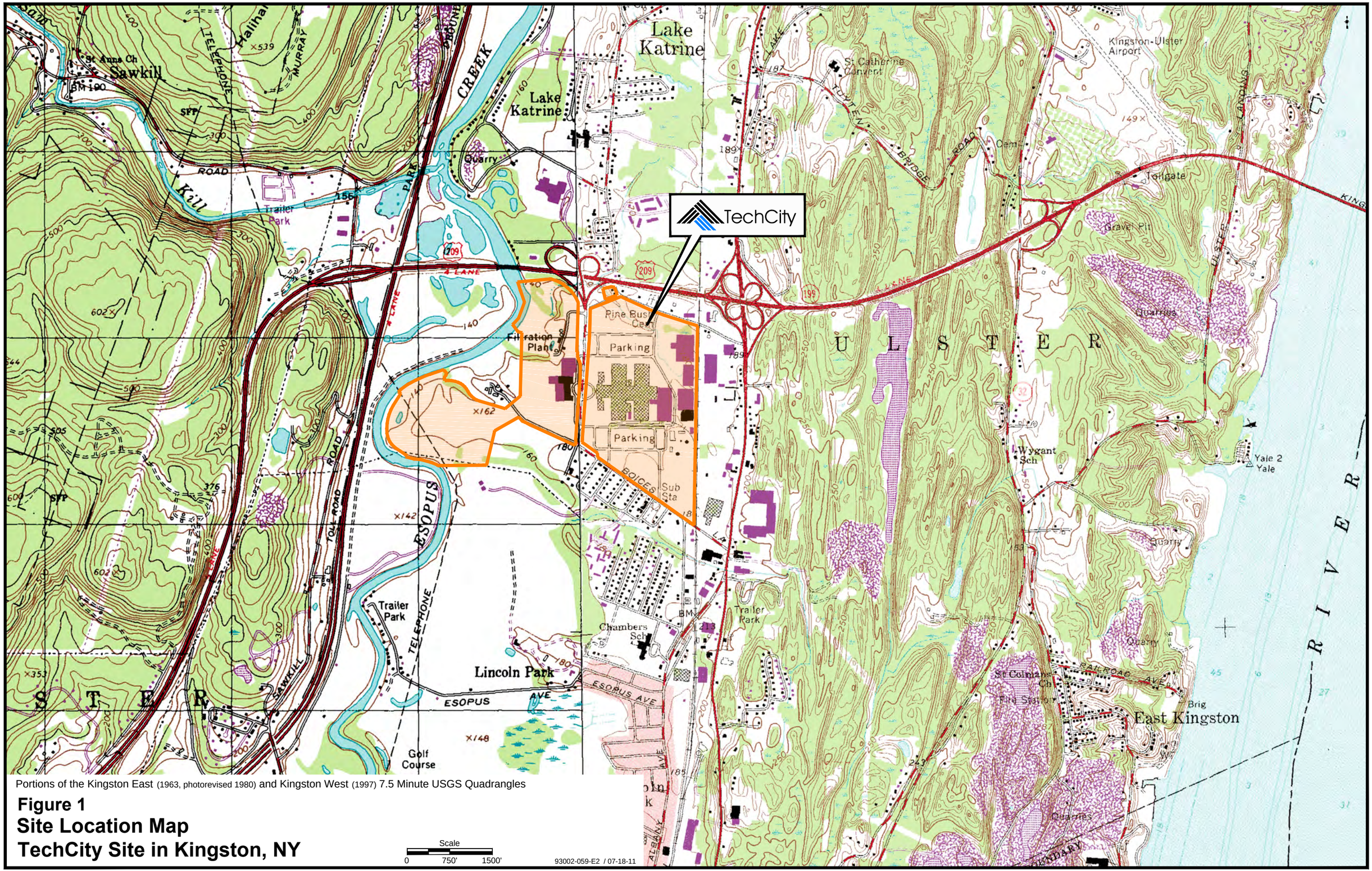
NYSDEC, 1999, "6 NYCRR Part 703 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations", 4 August, 1999.

NYSDEC, 2006 "6 NYCRR Part 375 Environmental Remediation Programs, Subparts 375-1 to 375-4 & 375-6", 14 December, 2006.

NYSDEC, 2010, DEC Policy, "CP-51/Soil Cleanup Objectives", 21 October, 2010.

NYSDEC, 2010, "DER-10 Technical Guidance for Site Investigation and Remediation, Appendix B Guidance for the Development of Data Usability Summary Reports" 25 December, 2002.

NYSDEC, 2011, "Development and Implementation of a Remedial Program for an Inactive Hazardous Waste Disposal Site Order on Consent Site #356002", July 18, 2011.



Portions of the Kingston East (1963, photorevised 1980) and Kingston West (1997) 7.5 Minute USGS Quadrangles

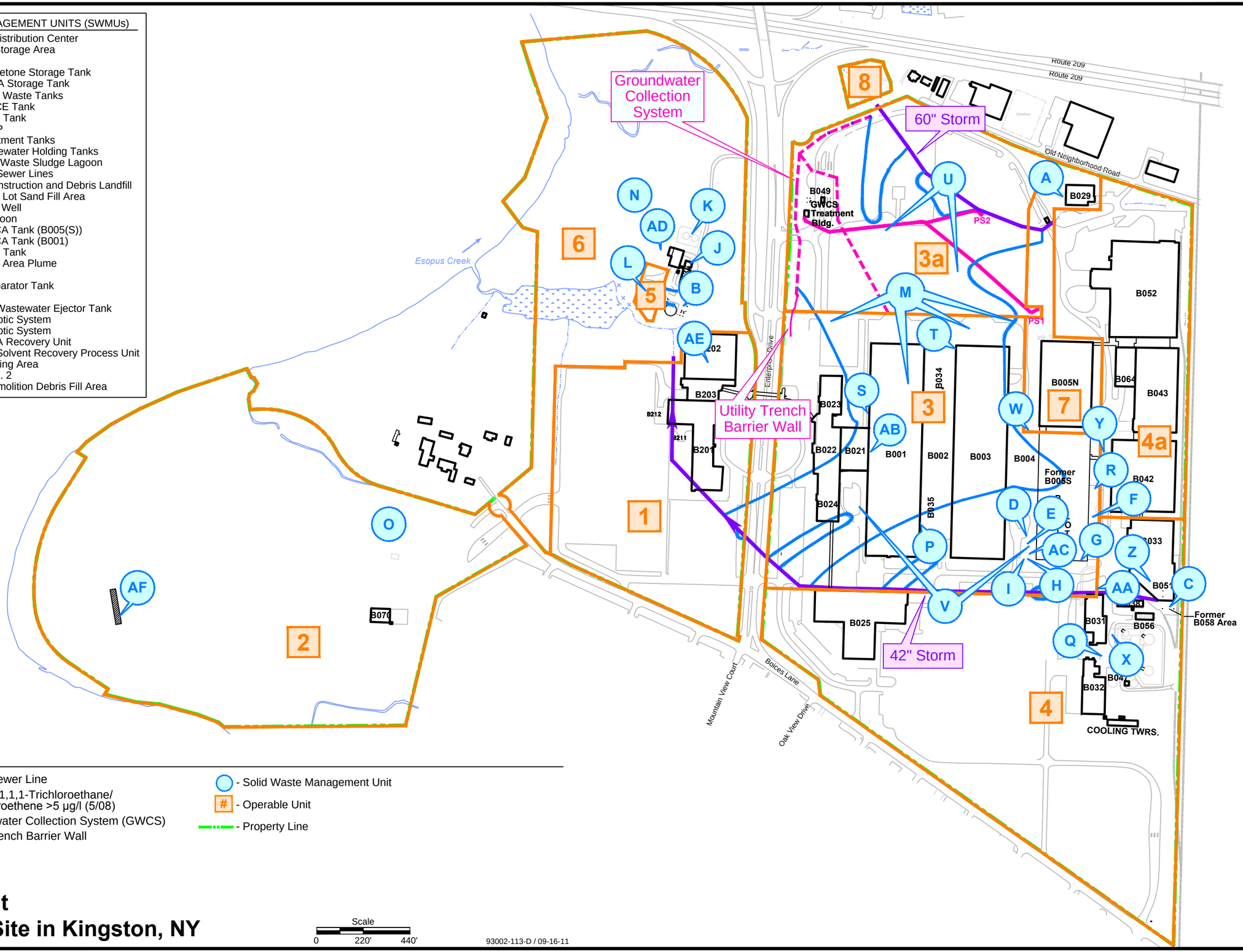
Figure 1
Site Location Map
TechCity Site in Kingston, NY

Scale
0 750' 1500'

93002-059-E2 / 07-18-11

SOLID WASTE MANAGEMENT UNITS (SWMUs)

A: B029 Chemical Distribution Center
B: B036 Container Storage Area
C: Former B058
D: Former Waste Acetone Storage Tank
E: Former Waste IPA Storage Tank
F: Former East Side Waste Tanks
G: Former Waste PCE Tank
H: Former East SRP Tank
I: Former West SRP
J: Wastewater Treatment Tanks
K: Emergency Wastewater Holding Tanks
L: Former Industrial Waste Sludge Lagoon
M: Industrial Waste Sewer Lines
N: Inactive B036 Construction and Debris Landfill
O: Salt Barn Parking Lot Sand Fill Area
P: Former B035 Dry Well
Q: Former B031 Lagoon
R: Former Waste TCA Tank (B005(S))
S: Former Waste TCA Tank (B001)
T: Former Waste Oil Tank
U: North Parking Lot Area Plume
V: B005 Plume
W: Former B004 Separator Tank
X: B031 Separator
Y: Former Fluoride Wastewater Ejector Tank
Z: Inactive B033 Septic System
AA: Inactive B031 Septic System
AB: Former B001 TCA Recovery Unit
AC: Former B005(S) Solvent Recovery Process Unit
AD: Former Fire Training Area
AE: B202 Elevator No. 2
AF: Inactive West Demolition Debris Fill Area



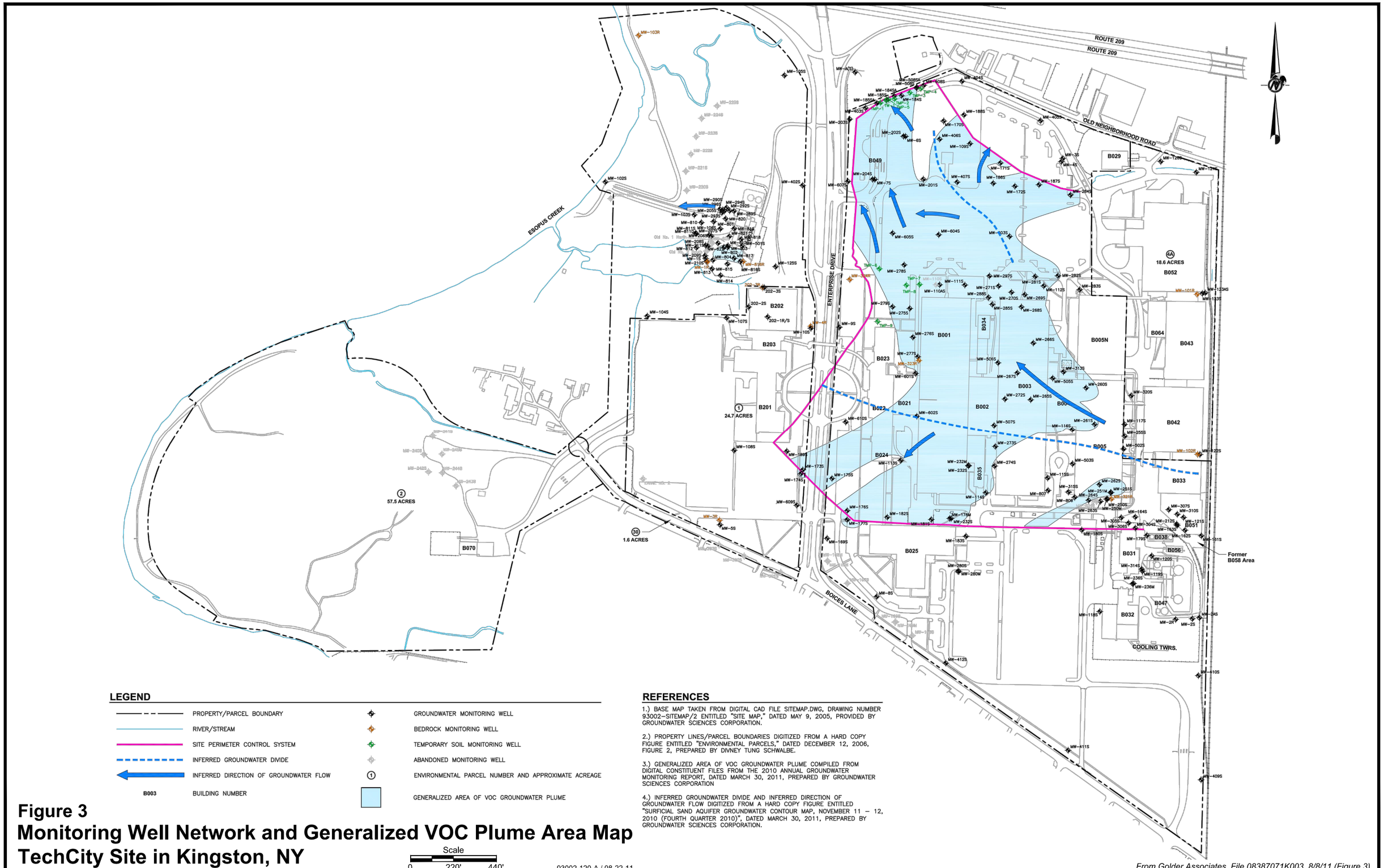
LEGEND

- Storm Sewer Line
- Area of 1,1,1-Trichloroethane/ Tricholoroethene >5 µg/l (5/08)
- Groundwater Collection System (GWCS)
- Utility Trench Barrier Wall
- Solid Waste Management Unit
- # - Operable Unit
- Property Line

Figure 2
Site Layout
TechCity Site in Kingston, NY

Scale
0 220' 440'

93002-113-D / 09-16-11



LEGEND

- PROPERTY/PARCEL BOUNDARY
- RIVER/STREAM
- SITE PERIMETER CONTROL SYSTEM
- INFERRED GROUNDWATER DIVIDE
- INFERRED DIRECTION OF GROUNDWATER FLOW
- B003 — BUILDING NUMBER
- GROUNDWATER MONITORING WELL
- BEDROCK MONITORING WELL
- TEMPORARY SOIL MONITORING WELL
- ABANDONED MONITORING WELL
- (1) — ENVIRONMENTAL PARCEL NUMBER AND APPROXIMATE ACREAGE
- GENERALIZED AREA OF VOC GROUNDWATER PLUME

REFERENCES

1.) BASE MAP TAKEN FROM DIGITAL CAD FILE SITEMAP.DWG, DRAWING NUMBER 93002–SITEMAP/2 ENTITLED "SITE MAP," DATED MAY 9, 2005, PROVIDED BY GROUNDWATER SCIENCES CORPORATION.

2.) PROPERTY LINES/PARCEL BOUNDARIES DIGITIZED FROM A HARD COPY FIGURE ENTITLED "ENVIRONMENTAL PARCELS," DATED DECEMBER 12, 2006, FIGURE 2, PREPARED BY DIVNEY TUNG SCHWALBE.

3.) GENERALIZED AREA OF VOC GROUNDWATER PLUME COMPILED FROM DIGITAL CONSTITUENT FILES FROM THE 2010 ANNUAL GROUNDWATER MONITORING REPORT, DATED MARCH 30, 2011, PREPARED BY GROUNDWATER SCIENCES CORPORATION

4.) INFERRED GROUNDWATER DIVIDE AND INFERRED DIRECTION OF GROUNDWATER FLOW DIGITIZED FROM A HARD COPY FIGURE ENTITLED "SURFICIAL SAND AQUIFER GROUNDWATER CONTOUR MAP, NOVEMBER 11 – 12, 2010 (FOURTH QUARTER 2010)", DATED MARCH 30, 2011, PREPARED BY GROUNDWATER SCIENCES CORPORATION.

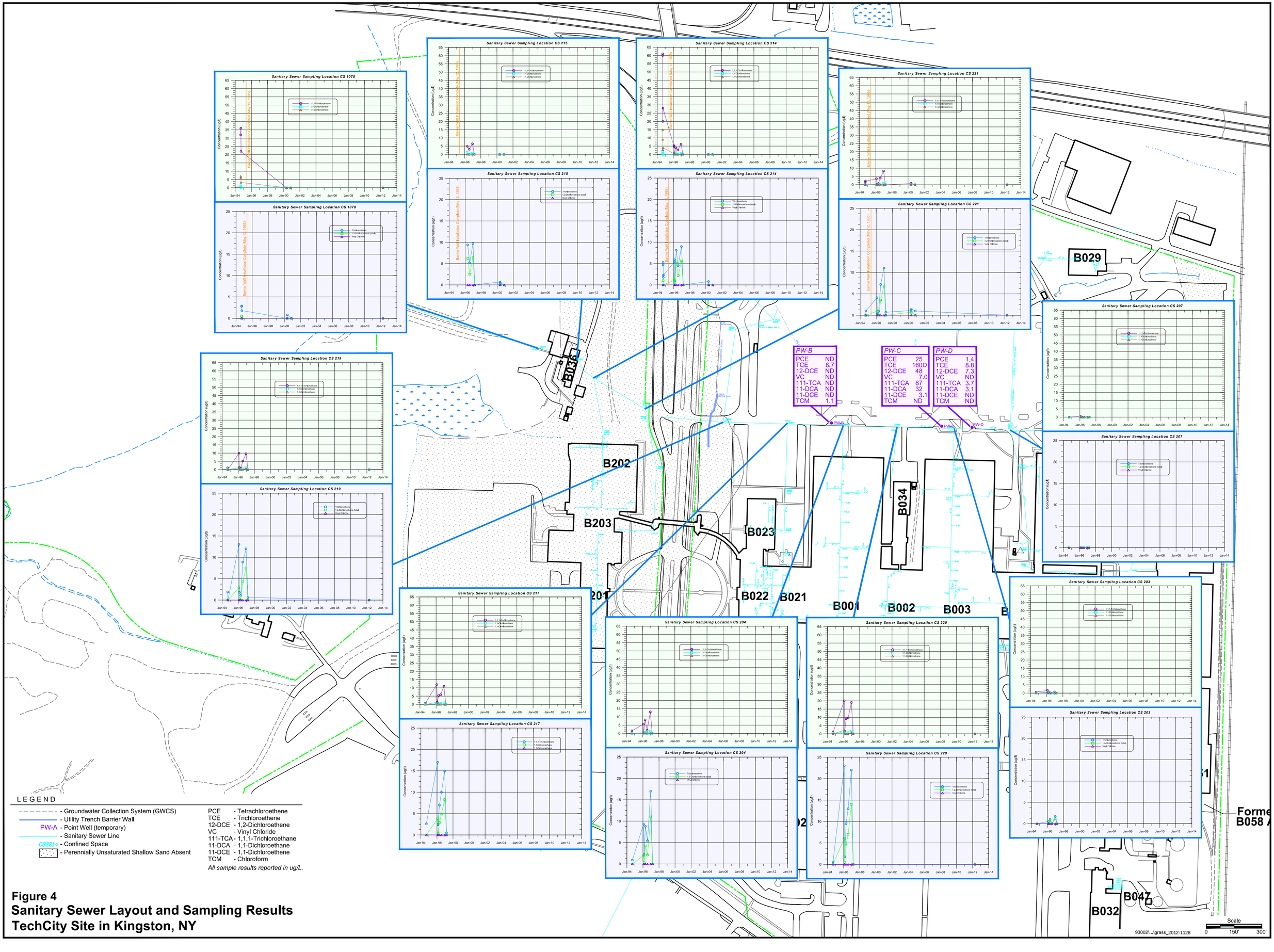
Figure 3

Monitoring Well Network and Generalized VOC Plume Area Map
TechCity Site in Kingston, NY

Scale
0 220' 440'

93002-120-A / 08-22-11

From Golder Associates, File 08387071K003, 8/8/11 (Figure 3).



LEGEND

- Groundwater Collection System (GWCS)
- Utility Trench Barrier Wall
- PW-A - Point Well (temporary)
- Sanitary Sewer Line
- CS221 - Confined Space
- Perennially Unsaturated Shallow Sand Absent

PCE - Tetrachloroethene
TCE - Trichloroethene
12-DCE - 1,2-Dichloroethene
VC - Vinyl Chloride
111-TCA - 1,1,1-Trichloroethane
11-DCA - 1,1-Dichloroethene
11-DCE - 1,1-Dichloroethene
TCM - Chloroform

All sample results reported in ug/L.

Figure 4
Sanitary Sewer Layout and Sampling Results
TechCity Site in Kingston, NY

Appendix A

Data Usability Summary Report

DATA VALIDATION REPORT

TECHCITY (FORMER IBM KINGSTON) GROUNDWATER CONTAMINATION SUPERFUND SITE

Lancaster Laboratories
SDG: **GSK08**

May 21, 2012

Prepared for:

GROUNDWATER SCIENCES CORPORATION
2601 Market Place Street, Suite 310
Harrisburg, Pennsylvania 17110

Prepared by:

VERIDIAN ENVIRONMENTAL, INC.
1111 Kennedy Place
Suite 2
Davis, California 95616

DATA VALIDATION REPORT

TECHCITY (FORMER IBM KINGSTON) GROUNDWATER CONTAMINATION SUPERFUND SITE

May 21, 2012

Name	Position	Signature/Date
Veridian Environmental, Inc.		
Prepared by:		
Tracy A. Young	**Senior Quality Assurance Chemist**	Tracy A. Young 5/21/2012
Ann Lack	**Senior Quality Assurance Chemist**	Ann Lack 5/21/12
Reviewed and Approved by:		
Charlotte R. Symms	**President**	Charlotte R Symms 5/21/12

TABLE OF CONTENTS

ATTACHMENTS

ACRONYMS

Acronym	Definition
%D	Percent Difference
%REC	Percent Recovery
%RI	Percent Relative Intensity
%RPD	Percent Relative Percent Difference
%RSD	Percent Relative Standard Deviation
%S	Percent Solids
ARRF	Average Relative Response Factor
CCC	Calibration Check Analytes
CCV	Continuing Calibration Verification
CD	Correctable Deficiency
CF	Calibration Factor
CLP	Contract Laboratory Program
COC	Chain-of-Custody
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DER	Division of Environmental Remediation
DF	Dilution Factor
DL	Dilution Limit
DO	Diluted Out
DOC	Date of Collection
DQO	Data Quality Objective
DVR	Data Validation Report
EDD	Electronic Data Deliverable
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
GSC	Groundwater Sciences Corporation
ICAL	Initial Calibration
ICV	Initial Calibration Verification
IS	Internal Standard
kg	Kilogram
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
l	Liter
LL	Lower Limit
LLI	Lancaster Laboratories, Inc.
MDL	Method Detection Limit
ml	Milliliter
MRL	Method Reporting Limit
MS	Matrix Spike

Acronym	Definition
MSD	Matrix Spike Duplicate
µg	Microgram
ND	Non-detect
NFG	National Functional Guidelines
NIST	National Institute of Standards and Technology
NQW	No Qualification Warranted
NTC	Non Target Compound
NYSDEC	New York State Department of Environmental Conservation
OERR	Office of Emergency and Remedial Response
OSWER	Office of Solid Waste and Emergency Response
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
RRF	Relative Response Factor
RRT	Relative Retention Time
RSD	Relative Standard Deviation
RT	Retention Time
SDG	Sample Delivery Group
SM	Standard Method
SOP	Standard Operating Procedure
SOW	Statement of Work
SPCC	System Performance Check Analytes
Surr	Surrogate
TAL	Target Analyte List
TCL	Target Analyte List
TIC	Tentatively Identified Analyte
UL	Upper Limit
U.S. EPA	United States Environmental Protection Agency
VEI	Veridian Environmental, Inc.
VOC	Volatile Organic Analyte

1.0 INTRODUCTION

This Data Validation Report (DVR) details the assessment and the Level IV data validation performed on the sample analyses from SDG GSK08 as summarized in Attachment A. These samples were collected on April 19, 2012, as part of the TechCity (Former IBM Kingston) Facility Superfund Site in Kingston, New York. The samples were shipped to and analyzed by Eurofins Lancaster Laboratories, Inc., (LLI) in Lancaster, Pennsylvania.

Data validation of all sample results was performed by Tracy A. Young, Ann Lack, and Charlotte R. Symms of Veridian Environmental, Inc. (VEI). A review (Level III) of 100% of the data, which allows for complete independent data review without reconstruction of analytical data, was conducted. In addition, approximately 10% of the project data underwent a comprehensive or extensive review (Level IV) which allowed for the complete reconstruction of the chemical analyses. The comprehensive review included the recalculation of calibration curves and sample results. None of the samples from this report were selected for the comprehensive Level IV review. The data were validated in accordance with the analytical methods and the documents entitled: *RFI Management Plans, Former IBM Kingston Facility* (Golder Associates, 2009); *U.S. EPA Region 2 RCRA and CERCLA Data Validation Standard Operating Procedures* (U.S. EPA Region 2, 2006); and with guidance from *DER-10 / Technical Guidance for Site Investigation and Remediation* (NYSDEC DEC Program Policy, 2010), *Data Quality Assessment: A Reviewer's Guide* (U.S. EPA QA/G-9R 2006); *Data Quality Assessment: Statistical Tools for Practitioners* (U.S. EPA QA-G-9S, 2006); and *U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (U.S. EPA, 2008).

The data were examined to determine the usability of the analytical results and the compliance relative to requirements specified in the analytical methods and guidelines provided. Qualifier codes have been placed next to the results on the laboratory analytical result forms so the data user can quickly assess the qualitative and/or quantitative reliability of any result. The data qualifications allow the data end-user to best understand the usability of the analytical results. It should be understood that data that have not been qualified in this report should be considered valid based on the quality control (QC) criteria that have been reviewed. This report was prepared to provide a critical review of the laboratory analyses and the reported analytical results. Quality assurance (QA) reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories.

The findings of this QA review are presented in Section 2.0 of this report, a summary is presented in Section 3.0, and the references are provided in Section 4.0. Attachment A summarizes the client sample identification, the analytical laboratory, laboratory sample identification, sample date, sample time, and the analyses requested for each sample in this SDG. Copies of the laboratory case narrative, the sample chain-of-custody (COC) record, and the sample receipt documentation log report forms for samples discussed in this DVR are included in Attachment B. The qualified analytical result forms for the samples are provided in Attachment C. The samples were analyzed for Volatile Organic Analytes (EPA Method 8260B). The data validation checklist and copies of all relevant documentation needed to support the findings of the quality assurance review are presented in Attachment D. Project Correspondence is presented as Attachment E.

Several data validation flags are utilized in the validation process. The definitions of these qualifier flags are as follows:

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample result and/or analysis have been rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

All necessary flags have been incorporated into the data presented in this report (Attachment C). As per project-specific reporting requirements, all results reported at concentrations less than the sample-specific practical quantitation limits (adjusted for dilution factors, sample size, and percent solids) should be considered estimated (J).

2.0 FINDINGS

Copies of all relevant documentation needed to support the findings of the quality assurance review are presented in Attachment D of this report. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance. Data that warranted qualification are summarized in Section 3.0 of this report.

2.1 VOLATILE ORGANIC COMPOUNDS DATA VALIDATION

The samples analyzed for Volatile Organic Compounds (VOCs) by U.S. EPA Method 8260B were evaluated for the following data requirements.

	Acceptable	Acceptable With Discussion	Acceptable With Qualification	Not Acceptable	Not Applicable
Sample Condition Upon Receipt		✓			
Analytical Holding Times	✓				
Blank Analyses	✓				
GC/MS Tuning and Mass Calibrations	✓				
Initial Calibrations	✓				
Initial Calibration Verifications			✓		

	Acceptable	Acceptable With Discussion	Acceptable With Qualification	Not Acceptable	Not Applicable
Continuing Calibrations			✓		
Surrogate Spike Recoveries	✓				
LCS Analyses			✓		
MS/MSD Analyses					✓
Internal Standards	✓				
Verification of Sample Results					✓
Field Duplicate Results	✓				
Verification of the Client EDD	✓				
Additional Findings		✓			

A comprehensive Level IV review was performed on ten percent (10%) of the project data. None of the samples from SDG GSK08 were selected for the comprehensive Level IV review. Details of the data findings are presented following the summary of the data requirements.

2.1.1 Sample Condition Upon Receipt

All samples were received intact and with the proper preservation (pH $\leq$ 2) by LLI. The temperature of the cooler was 1.4°C upon receipt by the laboratory. Since the samples were not frozen, qualification of the data is not warranted.

2.1.2 Analytical Holding Times

All samples were prepared and analyzed within the project-specified holding time of fourteen days from sample collection.

2.1.3 Blank Analyses

All associated field and laboratory blanks were free of target analyte contamination.

2.1.4 Gas Chromatograph/Mass Spectrometer Tuning and Mass Calibrations

All gas chromatograph/mass spectrometer (GC/MS) tuning and mass calibrations met project criteria (m/z ratios). All project samples were analyzed within the 12-hour tune windows.

2.1.5 Initial Calibrations

For the initial calibrations, all SPCC (min. RRFs) and CCC analytes (%RSD $\leq$ 30%) met project criteria. In addition, all target analytes displayed acceptable calibrations (average RRF > 0.050 and %RSD $\leq$ 20%).

2.1.6 Initial Calibration Verifications

All target compounds demonstrated acceptable percent differences in the Initial Calibration Verification (ICV) except for dichlorodifluoromethane listed in the following table. A low

percent difference was observed for dichlorodifluoromethane. The associated non-detect results are biased low (UJ).

Lab Sample ID Date (Time)	Analyte(s)	Percent Difference	Associated Qualified Sample(s)
ICV 03/21/2012 (14:23)	Dichlorodifluoromethane	-28%	**CS0220120419 CS0221120419 CS1078120419 CX1078120419 CS0219120419 TTB204190419**

2.1.7 Continuing Calibrations

For the continuing calibrations, all SPCC (min. RRFs) and CCC analytes (%D ≤ 20%) met project criteria. In addition, the percent differences and RRFs for all other target analytes were ≤ 20% and > 0.050, respectively except for chloromethane. A low percent difference was noted for chloromethane in the following continuing calibration. The associated non-detect results are estimated (UJ) in accordance with the project criteria.

Lab Sample ID Date (Time)	Analyte(s)	Percent Difference	Associated Qualified Sample(s)
CCV 04/25/2012 (07:38)	Chloromethane	-25%	**CS0220120419 CS0221120419 CS1078120419 CX1078120419 CS0219120419 TTB204190419**

2.1.8 Surrogate Spike Recoveries

For all project analyses, the surrogate recoveries were within project criteria.

2.1.9 Laboratory Control Sample Analyses

For all LCS analyses, the recoveries for all target compounds met project criteria with the exception of dichlorodifluoromethane in the following table. A low percent recovery was observed for this analyte. The associated non-detect results are biased low (UJ).

Lab Sample ID Date (Time)	Analyte(s)	Percent Recovery	Limits	Associated Qualified Sample(s)
LCSE91 04/25/2012 (08:18)	Dichlorodifluoromethane	61%	63-187%	**CS0220120419 CS0221120419 CS1078120419 CX1078120419 CS0219120419 TTB204190419**

2.1.10 Matrix Spike/Matrix Spike Duplicate Analyses

The laboratory did not prepare and analyze a Matrix Spike/Matrix Spike Duplicate (MS/MSD) for this analysis on any sample from SDG GSK08. Consequently, an assessment of matrix effects cannot be made for these samples.

2.1.11 Internal Standards

For all project sample analyses, the internal standards met project criteria (RT within ± 30 seconds of ICAL mid-point standard and internal standard area within -50% to + 100% of ICAL mid-point standard).

2.1.12 Verification of Sample Results

None of the samples from SDG GSK08 were selected for a comprehensive Level IV review.

2.1.13 Field Duplicate Results

The following project samples were submitted as a field duplicate pair for this analysis.

SDG	Sample(s)	Field Duplicate(s)
GSK08	**CS1078120419**	**CX1078120419**

Acceptable precision was demonstrated by the results reported for the field duplicate pair to the limited extent that no target analytes were detected above the CRQL.

2.1.14 Verification of the Client Electronic Data Deliverable

The database files provided in the laboratory's enhanced general format matched the data reported by the laboratory.

2.1.15 Additional Findings

As noted on the Case Narrative, the reporting limits were raised due to sample foaming for samples **CS0220120419, CS0221120419, CS1078120419, CX1078120419** and **CS0219120419.** Qualification of the data is not warranted on this basis.

Samples **CS0220120419** (5.0x), **CS0221120419** (5.0x), **CS1078120419** (5.0x), **CX1078120419** (5.0x) and **CS0219120419** (5.0x) were analyzed at a dilution due to sample foaming.

2.2 FIELD DUPLICATES

The following project samples were submitted as a field duplicate pair for this analysis.

SDG	Sample(s)	Field Duplicate(s)
GSK08	**CS1078120419**	**CX1078120419**

Acceptable precision was demonstrated by the results reported for the field duplicate pair.

2.3 REPRESENTATIVENESS EVALUATION

Representativeness is a qualitative evaluation of whether the data represent actual environmental conditions. Representativeness was evaluated using holding time criteria, which reflect the length of time after sample collection that a sample or extract remains representative of environmental conditions. Depending on the analysis, either one or two holding times were evaluated. For those analyses that do not include a sample extraction, only one holding time was evaluated: the length of time between sample collection and analysis. For analyses that require sample extraction prior to analysis, two holding times were evaluated: the length of time from sampling until extraction and the length of time from extraction to analysis. Holding times were compared to standard method-specific holding times accepted by the U.S. EPA. All holding times that are within acceptance criteria are considered representative. Those holding times outside of U.S. EPA acceptance criteria are qualitatively evaluated to determine their effect on sample representativeness. Representativeness was also evaluated by analysis of laboratory method blanks, trip blanks, and equipment blanks that were used to identify sources of contamination not associated with environmental conditions. As summarized in the following sections, the samples appear to be representative of the environmental conditions on site.

2.3.1 Sample Condition Upon Receipt

All samples arrived at the laboratory intact, appropriately preserved and documented except as previously noted. The cooler was received by LLI < 2.0°C. Since the samples were not frozen, qualification of the data is not warranted.

2.3.2 Analytical Holding Times

As previously noted, all holding times were met.

2.3.3 Blank Analyses

As previously discussed, all field and laboratory blanks were free of all target analytes.

2.4 USABILITY AND COMPARABILITY

Usability of data was evaluated by assuring that all the analytical requests were met, the samples were received in the proper condition, and all analyses were performed within the appropriate holding times with the exception of those noted in this report.

3.0 SUMMARY

This QA review has identified aspects of the analytical data that required qualification due to initial calibration verifications, continuing calibrations and LCS recoveries. None of the VOC data were rejected. To confidently use any of the analytical data within this sample set, the data user should understand the qualifications and limitations of the results. SDG GSK08 met the project completeness goal of 90%. The percent completeness is summarized in the following table.

Fraction	Number of Results	Number of Rejected Results	Percent Completeness
VOCs	246	0	100%
Overall	**246**	**0**	**100%**

4.0 REFERENCES

Data Quality Assessment: A Reviewer's Guide, U.S. Environmental Protection Agency, EPA *Data Quality Assessment: A Reviewer's Guide,* U.S. Environmental Protection Agency, EPA QA/G-9R, February, 2006.

Data Quality Assessment: Statistical Tools for Practitioners, U.S. Environmental Protection Agency, EPA QA/G-9S, February, 2006.

DER-10 / Technical Guidance for Site Investigation and Remediation, Office of Remediation and Materials Management, DEC Program Policy, May 3, 2010.

RFI Management Plans, Former IBM Kingston Facility, Golder Associates, September 2005.

SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods Third Edition, U.S. Environmental Protection Agency, Office of Solid Waste, December 1994.

Method 8260B: Volatile Organic Analytes by Gas Chromatography/Mass Spectrometry

U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, EPA 540-R-08-01, June 2008.

U.S EPA Region 2 RCRA and CERCLA Field and Data Validation Standard Operating Procedures

SOP No.	Title	Date
SOP HW-24 Revision 2	Validating Volatile Organic Analytes by SW-846 Method 8260B	October 2006

ATTACHMENT A

CHAIN-OF-CUSTODY SUMMARY TABLE

ATTACHMENT A
CHAIN-OF-CUSTODY SUMMARY TABLE
TechCity (Former IBM Kingston)
Kingston, New York

Client Sample ID	Laboratory	Laboratory SDG	Laboratory Sample ID	Collection Date	Matrix	Parameter(s) Analyzed
CS0220120419	Lancaster Labs	GSK08	6624143	04/19/2012	Water	V
CS0221120419	Lancaster Labs	GSK08	6624144	04/19/2012	Water	V
CS1078120419	Lancaster Labs	GSK08	6624145	04/19/2012	Water	V
CX1078120419 (Field Duplicate of CS1078120419)	Lancaster Labs	GSK08	6624146	04/19/2012	Water	V
CS0219120419	Lancaster Labs	GSK08	6624147	04/19/2012	Water	V
TTB204190419 (Trip Blank)	Lancaster Labs	GSK08	6624148	04/19/2012	Water	V

Notes:
SDG - Sample Delivery Group
V - Volatile Organic Compounds by U.S. EPA Method 8260B

ATTACHMENT B

CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORDS

eurofins | Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

NYSDEC ASP Category B Data Package

Prepared for:

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

Project: Sanitary Sewers Evaluation
Water Samples
Collected on 04/19/12

SDG# GSK08

GROUP	SAMPLE NUMBERS
1303704	6624143-6624148

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-08A-TX

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** 05/15/2012

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Nicole Maljovec at Ext. 1537.

Total Number of Pages 240

eurofins | Lancaster Laboratories

Case Narrative/Conformance Summary

CLIENT: Groundwater Science Co
SDG:GSK08

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Volatiles by 8260B

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
6624143	CS0220120419	X		5	
6624144	CS0221120419	X		5	
6624145	CS1078120419	X		5	
6624146	CX1078120419	X		5	Field Duplicate Sample
6624147	CS0219120419	X		5	
6624148	TTB204190419	X		1	Trip Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

GSK08 0022

eurofins | Lancaster Laboratories

Case Narrative/Conformance Summary

CLIENT: Groundwater Science Co
SDG:GSK08

GC/MS Volatiles

Fraction: Volatiles by GC/MS

SAMPLE ANALYSIS:

(Sample number(s): 6624143-6624147: Analysis: 10904)
Reporting limits were raised due to sample foaming.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Narrative Reviewed and Approved 5/15/12 (Date) by Kathy J. Fair
Specialist

GSK08 0023

IBM Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 06911 Group # 1303709 Sample # 6624143-48

For Lancaster Laboratories use only

Instructions on reverse side correspond with circled numbers.

COC # 016057

(1) Client Information

Client: Groundwater Sciences Corp Acct#: 06911

Project Name#: Sanitary Sewers Evaluation

IBM PM: Dean Chartrand Project State: New York

P.O. #: 93002.37 Sampler: DBergmann / MRuchin

Check One: ☐ Routine Lab GW ☐ Routine GTF O&M

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

OU: _____ (Endicott Non-Routine only)

(4) Matrix

Sediment	Ground	Surface	Potable	NPDES	Air
☐	☐	☐	☐	☐	☐

Soil	Water	Oil
☐	☐	☐

(5) Analyses Requested

Preservation Code: H

(2) Sample Identification	Collected Date	Collected Time	(3) Grab	Composite	Soil	Water	Oil	Total # of Containers	8260B Std water
CS022012O419	4/19/2012	0935	X			X		3	X
CS022112O419	4/19/2012	1005	X			X		3	X
CS107812O419	4/19/2012	1035	X			X		3	X
CX107812O419	4/19/2012	1035	X			X		3	X
CS021912O419	4/19/2012	1110	X			X		3	X
TTB2O419O419	4/19/2012	—	—			X		2	X

For Lab Use Only

SCR# 120450

Preservation Codes

H = HC T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

(6) Remarks

(7) Turnaround Time Requested (TAT) (please circle)

Standard Rush

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

Date results are needed: _____

Rush results requested by (please circle) E-mail Phone

E-mail: _____ Phone: _____

(8) Data Package Options (please circle if required)

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

Type III (Reduced NJ) MA MCP NY ASP B

Type VI (Raw Data Only) CT RCP COC Seal 407341

SDG Complete? Yes No

Relinquished by	Date	Time	Received by	Date	Time
Suzette Lehman	4/5/12	7:40	DABergmann	4/6/2012	1320
DABergmann	4/19/2012	1500			
			Suzette Lehman	4/20/12	0915

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

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

Temperature upon receipt 1.4 °C

(9)

See DVR

eurofins | Lancaster Laboratories

Environmental Sample Administration
Receipt Documentation Log

Client/Project: IBM

Date of Receipt: 4/20/12

Time of Receipt: 0915

Source Code: SO-1

Shipping Container Sealed: (YES) NO

Custody Seal Present * : (YES) NO

* Custody seal was intact unless otherwise noted in the discrepancy section

Package: (Chilled) Not Chilled

Temperature of Shipping Containers							
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments
1	9422	1.4	TB	WI	Y	B	
2							
3							
4							
5							
6							

Number of Trip Blanks received NOT listed on chain of custody: 0

Paperwork Discrepancy/Unpacking Problems:

Unpacker Signature/Emp#: Suzette Lehman 1677 **Date/Time:** 4/20/12 1630

Issued by Dept. 6042 Management

2174.06

ATTACHMENT C

QUALIFIED LABORATORY TEST RESULT FORMS

eurofins | Lancaster Laboratories

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

April 26, 2012

Project: Sanitary Sewers Evaluation

Submittal Date: 04/20/2012
Group Number: 1303704
SDG: GSK08
PO Number: DB93002.37
State of Sample Origin: NY

Client Sample Description	Lancaster Labs (LLI) #
CS0220120419 Grab Water	6624143
CS0221120419 Grab Water	6624144
CS1078120419 Grab Water	6624145
CX1078120419 Grab Water	6624146
CS0219120419 Grab Water	6624147
TTB204190419 Water	6624148

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

ELECTRONIC COPY TO	Groundwater Science Co	Attn: Dorothy Bergmann
1 COPY TO	Data Package Group	

Respectfully Submitted,

Nicole L. Maljovec
Senior Specialist Group Leader

(717) 556-7259

GSK08 0006

Sample Description: CS0220120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624143
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 09:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0220 SDG#: GSK08-01

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l		ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.		3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.		5	25	5	
10904	Bromobenzene	108-86-1	N.D.		5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.		5	25	5	
10904	Bromoform	75-25-2	N.D.		5	25	5	
10904	Bromomethane	74-83-9	N.D.		5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.		5	25	5	
10904	Chlorobenzene	108-90-7	N.D.		4	25	5	
10904	Chloroethane	75-00-3	N.D.		5	25	5	
10904	Chloroform	67-66-3	N.D.		4	25	5	
10904	Chloromethane	74-87-3	N.D.		5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.		5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.		5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.		5	25	5	
10904	Dibromomethane	74-95-3	N.D.		5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.		5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.		5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.		5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.		10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.		5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.		5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.		4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.		4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.		5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.		5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.		5	25	5	
10904	Ethylbenzene	100-41-4	N.D.		4	25	5	
10904	Freon 113	76-13-1	N.D.		10	50	5	
10904	Freon 123a	354-23-4	N.D.		10	25	5	
10904	Methylene Chloride	75-09-2	N.D.		10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.		4	25	5	
10904	Toluene	108-88-3	21	J	4	25	5	J
10904	1,1,1-Trichloroethane	71-55-6	N.D.		4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.		4	25	5	
10904	Trichloroethene	79-01-6	N.D.		5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.		10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.		5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.		5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.		4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 8260B

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CS0220120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624143
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 09:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0220 SDG#: GSK08-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 10:47	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 10:47	Jason M Long	5

GSK08 0089

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

Sample Description: CS0221120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624144
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:05 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0221 SDG#: GSK08-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.	3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.	5	25	5	
10904	Bromobenzene	108-86-1	N.D.	5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.	5	25	5	
10904	Bromoform	75-25-2	N.D.	5	25	5	
10904	Bromomethane	74-83-9	N.D.	5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.	5	25	5	
10904	Chlorobenzene	108-90-7	N.D.	4	25	5	
10904	Chloroethane	75-00-3	N.D.	5	25	5	
10904	Chloroform	67-66-3	N.D.	4	25	5	
10904	Chloromethane	74-87-3	N.D.	5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.	5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.	5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.	5	25	5	
10904	Dibromomethane	74-95-3	N.D.	5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.	5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.	5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.	5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.	10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.	5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.	5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.	4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.	5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	5	25	5	
10904	Ethylbenzene	100-41-4	N.D.	4	25	5	
10904	Freon 113	76-13-1	N.D.	10	50	5	
10904	Freon 123a	354-23-4	N.D.	10	25	5	
10904	Methylene Chloride	75-09-2	N.D.	10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.	4	25	5	
10904	Toluene	108-88-3	4 J	4	25	5	J
10904	1,1,1-Trichloroethane	71-55-6	N.D.	4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.	4	25	5	
10904	Trichloroethene	79-01-6	N.D.	5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.	10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.	5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.	5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.	4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 8810

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CS0221120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624144
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:05 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0221 SDG#: GSK08-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 11:07	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 11:07	Jason M Long	5

GSK08 0011

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

Sample Description: CS1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624145
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C1078 SDG#: GSK08-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l		
10904	Benzene	71-43-2	N.D.	3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.	5	25	5	
10904	Bromobenzene	108-86-1	N.D.	5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.	5	25	5	
10904	Bromoform	75-25-2	N.D.	5	25	5	
10904	Bromomethane	74-83-9	N.D.	5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.	5	25	5	
10904	Chlorobenzene	108-90-7	N.D.	4	25	5	
10904	Chloroethane	75-00-3	N.D.	5	25	5	
10904	Chloroform	67-66-3	N.D.	4	25	5	
10904	Chloromethane	74-87-3	N.D.	5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.	5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.	5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.	5	25	5	
10904	Dibromomethane	74-95-3	N.D.	5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.	5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.	5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.	5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.	10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.	5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.	5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.	4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.	5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	5	25	5	
10904	Ethylbenzene	100-41-4	N.D.	4	25	5	
10904	Freon 113	76-13-1	N.D.	10	50	5	
10904	Freon 123a	354-23-4	N.D.	10	25	5	
10904	Methylene Chloride	75-09-2	N.D.	10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.	4	25	5	
10904	Toluene	108-88-3	N.D.	4	25	5	
10904	1,1,1-Trichloroethane	71-55-6	N.D.	4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.	4	25	5	
10904	Trichloroethene	79-01-6	N.D.	5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.	10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.	5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.	5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.	4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 08-2

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CS1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624145
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C1078 SDG#: GSK08-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 11:27	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 11:27	Jason M Long	5

GSK08 0013

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CX1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624146
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

1078D SDG#: GSK08-04FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l	
10904	Benzene	71-43-2	N.D.	3	25	5
10904	Benzyl Chloride	100-44-7	N.D.	5	25	5
10904	Bromobenzene	108-86-1	N.D.	5	25	5
10904	Bromodichloromethane	75-27-4	N.D.	5	25	5
10904	Bromoform	75-25-2	N.D.	5	25	5
10904	Bromomethane	74-83-9	N.D.	5	25	5
10904	Carbon Tetrachloride	56-23-5	N.D.	5	25	5
10904	Chlorobenzene	108-90-7	N.D.	4	25	5
10904	Chloroethane	75-00-3	N.D.	5	25	5
10904	Chloroform	67-66-3	N.D.	4	25	5
10904	Chloromethane	74-87-3	N.D.	5	25	5
10904	2-Chlorotoluene	95-49-8	N.D.	5	25	5
10904	4-Chlorotoluene	106-43-4	N.D.	5	25	5
10904	Dibromochloromethane	124-48-1	N.D.	5	25	5
10904	Dibromomethane	74-95-3	N.D.	5	25	5
10904	1,2-Dichlorobenzene	95-50-1	N.D.	5	25	5
10904	1,3-Dichlorobenzene	541-73-1	N.D.	5	25	5
10904	1,4-Dichlorobenzene	106-46-7	N.D.	5	25	5
10904	Dichlorodifluoromethane	75-71-8	N.D.	10	25	5
10904	1,1-Dichloroethane	75-34-3	N.D.	5	25	5
10904	1,2-Dichloroethane	107-06-2	N.D.	5	25	5
10904	1,1-Dichloroethene	75-35-4	N.D.	4	25	5
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	4	25	5
10904	1,2-Dichloropropane	78-87-5	N.D.	5	25	5
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	5	25	5
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	5	25	5
10904	Ethylbenzene	100-41-4	N.D.	4	25	5
10904	Freon 113	76-13-1	N.D.	10	50	5
10904	Freon 123a	354-23-4	N.D.	10	25	5
10904	Methylene Chloride	75-09-2	N.D.	10	25	5
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	5	25	5
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	5	25	5
10904	Tetrachloroethene	127-18-4	N.D.	4	25	5
10904	Toluene	108-88-3	N.D.	4	25	5
10904	1,1,1-Trichloroethane	71-55-6	N.D.	4	25	5
10904	1,1,2-Trichloroethane	79-00-5	N.D.	4	25	5
10904	Trichloroethene	79-01-6	N.D.	5	25	5
10904	Trichlorofluoromethane	75-69-4	N.D.	10	25	5
10904	1,2,3-Trichloropropane	96-18-4	N.D.	5	25	5
10904	Vinyl Chloride	75-01-4	N.D.	5	25	5
10904	Xylene (Total)	1330-20-7	N.D.	4	25	5

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 0014

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CX1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624146
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

1078D SDG#: GSK08-04FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 11:47	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 11:47	Jason M Long	5

GSK08 0015

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

Sample Description: CS0219120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624147
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 11:10 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0219 SDG#: GSK08-05

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l		ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.		3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.		5	25	5	
10904	Bromobenzene	108-86-1	N.D.		5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.		5	25	5	
10904	Bromoform	75-25-2	N.D.		5	25	5	
10904	Bromomethane	74-83-9	N.D.		5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.		5	25	5	
10904	Chlorobenzene	108-90-7	N.D.		4	25	5	
10904	Chloroethane	75-00-3	N.D.		5	25	5	
10904	Chloroform	67-66-3	67		4	25	5	
10904	Chloromethane	74-87-3	N.D.		5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.		5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.		5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.		5	25	5	
10904	Dibromomethane	74-95-3	N.D.		5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.		5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.		5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.		5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.		10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.		5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.		5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.		4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.		4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.		5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.		5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.		5	25	5	
10904	Ethylbenzene	100-41-4	N.D.		4	25	5	
10904	Freon 113	76-13-1	N.D.		10	50	5	
10904	Freon 123a	354-23-4	N.D.		10	25	5	
10904	Methylene Chloride	75-09-2	N.D.		10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.		4	25	5	
10904	Toluene	108-88-3	5	J	4	25	5	J
10904	1,1,1-Trichloroethane	71-55-6	N.D.		4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.		4	25	5	
10904	Trichloroethene	79-01-6	N.D.		5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.		10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.		5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.		5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.		4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 0816

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

Sample Description: CS0219120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624147
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 11:10 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0219 SDG#: GSK08-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 12:06	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 12:06	Jason M Long	5

GSK08 0017

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: TTB204190419 Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624148
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

CTRBL SDG#: GSK08-06TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.	0.5	5	1	
10904	Benzyl Chloride	100-44-7	N.D.	1	5	1	
10904	Bromobenzene	108-86-1	N.D.	1	5	1	
10904	Bromodichloromethane	75-27-4	N.D.	1	5	1	
10904	Bromoform	75-25-2	N.D.	1	5	1	
10904	Bromomethane	74-83-9	N.D.	1	5	1	
10904	Carbon Tetrachloride	56-23-5	N.D.	1	5	1	
10904	Chlorobenzene	108-90-7	N.D.	0.8	5	1	
10904	Chloroethane	75-00-3	N.D.	1	5	1	
10904	Chloroform	67-66-3	N.D.	0.8	5	1	
10904	Chloromethane	74-87-3	N.D.	1	5	1	UJ
10904	2-Chlorotoluene	95-49-8	N.D.	1	5	1	
10904	4-Chlorotoluene	106-43-4	N.D.	1	5	1	
10904	Dibromochloromethane	124-48-1	N.D.	1	5	1	
10904	Dibromomethane	74-95-3	N.D.	1	5	1	
10904	1,2-Dichlorobenzene	95-50-1	N.D.	1	5	1	
10904	1,3-Dichlorobenzene	541-73-1	N.D.	1	5	1	
10904	1,4-Dichlorobenzene	106-46-7	N.D.	1	5	1	
10904	Dichlorodifluoromethane	75-71-8	N.D.	2	5	1	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.	1	5	1	
10904	1,2-Dichloroethane	107-06-2	N.D.	1	5	1	
10904	1,1-Dichloroethene	75-35-4	N.D.	0.8	5	1	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	0.8	5	1	
10904	1,2-Dichloropropane	78-87-5	N.D.	1	5	1	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	1	5	1	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	1	5	1	
10904	Ethylbenzene	100-41-4	N.D.	0.8	5	1	
10904	Freon 113	76-13-1	N.D.	2	10	1	
10904	Freon 123a	354-23-4	N.D.	2	5	1	
10904	Methylene Chloride	75-09-2	N.D.	2	5	1	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1	5	1	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	5	1	
10904	Tetrachloroethene	127-18-4	N.D.	0.8	5	1	
10904	Toluene	108-88-3	N.D.	0.7	5	1	
10904	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5	1	
10904	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5	1	
10904	Trichloroethene	79-01-6	N.D.	1	5	1	
10904	Trichlorofluoromethane	75-69-4	N.D.	2	5	1	
10904	1,2,3-Trichloropropane	96-18-4	N.D.	1	5	1	
10904	Vinyl Chloride	75-01-4	N.D.	1	5	1	
10904	Xylene (Total)	1330-20-7	N.D.	0.8	5	1	

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 0018

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: TTB204190419 Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624148
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

CTRBL SDG#: GSK08-06TB*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 10:26	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 10:26	Jason M Long	1

GSK08 0019

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

eurofins | Lancaster Laboratories

Explanation of Symbols and Abbreviations

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

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

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

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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

ATTACHMENT D

DATA VALIDATION CHECKLIST AND SUPPORT DOCUMENTATION

SOP # HW-24
Revision # 2
August 2008

USEPA
Hazardous Waste Support Branch
Validating Volatile Organic Compounds
By Gas Chromatography/Mass Spectrometry
SW-846 Method 8260B

Prepared by: _____ Date: 8/22/08
George Karras Chemist
Hazardous Waste Support Section

Prepared by: _____ Date: 8/22/08
Russell Arnone Chemist
Hazardous Waste Support Section

Concurred by: _____ Date: 8/26/08
Linda Mauel Chief
Hazardous Waste Support Section

Approved by _____ Date: 8/26/08
Robert Runyon, Chief
Hazardous Waste Support Branch

Annual Review

Reviewed by: _____ Date: 08/11/09
Name

Reviewed by: _____ Date: _____
Name

Scope and Applicability

This SOP offers detailed guidance in evaluating laboratory data generated according to the USEPA SW-846, Method 8260B December 1996. The validation methods and actions discussed in this document are based on the requirements set forth in USEPA SW-846, Method 8260B and Method 8000C, Rev 3, March 2003; and "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," January, 2005. This document covers technical as well as method specific problems; however situations may arise where data limitations must be assessed based on the reviewer's own professional judgement.

Summary

To ensure a thorough evaluation of each result in a data case, the reviewer must complete the checklist within this SOP, answering specific questions while performing the prescribed "ACTIONS" in each section. Qualifiers (or flags) are applied to questionable or unusable results as instructed. The data qualifiers discussed in this document are defined on page 4.

The reviewer must prepare a detailed data assessment to be submitted along with the complete SOP checklist. The Data Assessment must list all data qualifications, reasons for qualifications, instances of missing data, and contract non-compliance.

DEFINITIONS

Acronyms

BNA - base neutral acid(another name for Semi Volatiles)
CLP - Contract Laboratory Program
CRQL - Contract Required Quantitation Limit
CF - calibration factor
%D - percent difference
DCB -decachlorobiphenyl
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenylethane
DDT - dichlorodiphenyltrichloroethane
DoC - Date of Collection
GC - gas chromatography
GC/ECD - gas chromatography/electron capture detector
GC/MS - gas chromatography/mass spectrometer
GPC - gel permeation chromatography
IS - internal standard
kg - kilogram
µg - microgram
MS - matrix spike
MSD - matrix spike duplicate
ℓ - liter
mℓ - milliliter
PCB - Polychlorinated biphenyl
PE - performance evaluation
PEM - Performance Evaluation Mixture
QC - quality control
RAS - Routine Analytical Services
RIC - reconstructed ion chromatogram
RPD - relative percent difference
RRF - relative response factor
RRF - average relative response factor (from initial calibration)
RRT - relative retention time
RSD - relative standard deviation
RT - retention time
RSCC - Regional Sample Control Center
SDG - sample delivery group
SMC - system monitoring compound
SOP - standard operating procedure
SOW - Statement of Work
SVOA - semivolatile organic acid
TCL - Target Compound List
TCLP - Toxicity Characteristics Leachate Procedure
TCX -tetrachloro-m-xylene
TIC - tentatively identified compound

TOPO - Task Order Project Officer
TPO - Technical Project Officer
VOA - Volatile organic
VTSR - Validated Time of Sample Receipt

Data Qualifiers

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

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

LAB QUALIFIERS:

D - The positive value is the result of an analysis at a secondary dilution factor.

B - The analyte is present in the associated method blank as well as in the sample. This qualifier has a different meaning when validating inorganic data.

E - The concentration of this analyte exceeds the calibration range of the instrument.

A - Indicates a Tentatively Identified Compound (TIC) is a suspected adol-condensation product.

X,Y,Z- Laboratory defined flags. The data reviewer must change these qualifiers during validation so that the data user may understand their impact on the data.

YES NO N/A

I. PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: GSK08 LAB: Lancaster Laboratories

SITE NAME: TechCity (Former IBM Kingston)

1.0 Data Completeness and Deliverables

1.1 Has all data been submitted in CLP deliverable format or CLP Forms Equivalent? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the Data Assessment narrative.

2.0 Cover Letter, SDG Narrative

2.1 Is a laboratory narrative, and/or cover letter signed release present? [✓] ___ ___

2.2 Are case number and SDG number(s) contained in the narrative or cover letter? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the Data Assessment narrative.

II. VOLATILE ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Reports, and/or Chain of Custodies from the field samplers present for all samples sign release present? [✓] ___ ___

ACTION: If no, contact the laboratory/sampling team for replacement of missing or illegible copies.

1.2 Is a sampling trip report present (if required)? [ ] ___ [✓]

1.3 Sample Conditions/Problems

YES NO N/A

1.3.1 Do the Traffic Reports, Chain of Custodies, or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ IV ___

ACTION: If all the VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated ("J"). If a soil sample, other than TCLP, contains more than 90% water, flag all positive results "J" and all non-detects "R".

ACTION: If samples were not iced or if the ice was melted upon receipt at the laboratory and the temperature of the cooler was elevated (>10°C), flag all positive results "J" and all non-detects non"UJ".

2.0 Holding Times

2.1 Have any volatile holding times, determined from date of collection to date of analysis, been exceeded? ___ IV ___

The maximum holding time for aqueous samples is 14 days.

The maximum holding time for soils non aqueous samples is 14 days.

NOTE: If unpreserved, aqueous samples maintained at 4°C for aromatic hydrocarbons analysis must be analyzed within 7 days. If preserved with HCL acid to a pH<2 and stored at 4°C, then aqueous samples must be analyzed within 14 days from time of collection. For non-aqueous samples for volatile components that are frozen (less than 7°C) or are properly cooled (4°C ± 2°C) and perserved with $NaHSO_4$, the maximum holding time is 14 days from sample collection. If

YES NO N/A

uncertain about preservation, contact the laboratory /sampling team to determine whether or not samples were preserved.

ACTION: Qualify sample results according to Table 1:

Table 1. Holding Time Actions for Trace Volatile Analysis

Matrix	Preserved	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤7 days	No qualifications	
	No	> 7 days	J	R
	Yes	≤14 days	No qualifications	
	Yes	> 14 days	J	R
Non Aqueous	No	≤ 14 days	J	R
	Yes	≤ 14 days	No qualifications	
	Yes/No	> 14 days	J	R

3.0 Surrogate Recovery (CLP Form II Equivalent)

3.1 Have the volatile surrogate recoveries been listed on Surrogate Recovery forms for each of the following matrices:

a. Water [✓] ___ ___

b. Soil [ ] ___ [✓]

3.2 If so, are all the samples listed on the appropriate Surrogate Recovery forms for each matrix:

a. Water [✓] ___ ___

b. Soil [ ] ___ [✓]

ACTION: If large errors exist, deliverables are unavailable or information is missing, document the effect(s) in Data

YES NO N/A

Assessments and contact the laboratory/project officer/appropriate official for an explanation /resubmittal, make any necessary corrections and document effect in the Data Assessment.

3.3 Were the surrogate recovery limits followed per Table 2. If Table 2 criteria were not followed, the laboratory may use in-house performance criteria (per SW-846, Method 8000C, section 9.7). Other compounds may be used as surrogates, depending upon the analysis requirements. (In-house limits) [ ] ✓ ___

Table 2. Surrogate Spike Recovery Limits for Water and Soil/Sediments

DMC	Recovery Limits (%)Water	Recovery Limits Soil/Sediment
4-Bromofluorobenzene	80-120	70-130
Dibromofluoromethane	80-120	70-130
Toluene-d_8	80-120	70-130
Dichloroethane-d_4	80-120	70-130

Note: Use above table if laboratory did not provide in house recovery criteria.

Note: Other compounds may be used as surrogated depending upon the analysis requirements.

3.4 Were outliers marked correctly with an asterisk? [ ] ___ ✓

ACTION: Circle all outliers with a red pencil.

3.5 Were one or more volatile surrogate recoveries out of specification for any sample or method blank. Table 2. [ ] ✓ ___

If yes, were samples reanalyzed? [ ] ___ ✓

Were method blanks reanalyzed? [ ] ___ ✓

YES NO N/A

ACTION: If all surrogate recoveries are > 10% but 1 or more compounds do not meet method specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.
3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects, but qualify positive results as estimated "J".

If any surrogate has a recovery of < 10%:

1. Positive results are qualified with ("J").
2. Non-detects for that should be qualified as unusable ("R").

NOTE: Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. The basic concern is whether the blank problems represent an isolated problem with the blank alone or whether there is a fundamental problem with the analytical process. If one or more samples in the batch show acceptable surrogate recoveries, the reviewer may choose the blank problem to be an isolated occurrence.

3.6 Are there any transcription/calculation errors between raw data and reported data? [ ] ___ ✓

Level IV not performed on this SDG

ACTION: If large errors exist, take action as specified in section 3.2 above.

4.0 Laboratory Control Sample(Form III/Equivalent)

4.1 Is the LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG. [✓] ___ ___

YES NO N/A

Note: LCS consists of an aliquot of a clean (control) matrix similar to the sample matrix and of the same weight or volume.

ACTION: If any Laboratory Control Sample data are missing, call the lab for explanation /resubmittals. Make note in the data assessment.

4.2 Were the Laboratory Control Samples analyzed at the required frequency for each of the following matrices:

A. Water [✓] ___ ___

B. Soil [ ] ___ [✓]

C. Med Soil [ ] ___ [✓]

Note: The LCS is spiked with the same analytes at the same concentrations as the matrix spike (SW-846 8000C, Section 9.5). If different make note in data assessment. Matrix/LCS spiking standards should be prepared from volatile organic compounds which are representative of the compounds being investigating. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene.

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

4.3 Have in house LCS recovery limits been developed (Method 8000C, Sect 9.7). [✓] ___ ___

4.4 If in house limits are not developed, are LCS acceptance recovery limits between 70 - 130% (Method 8000c Sect 9.5)? [ ] ___ [✓]

4.5 Were one or more of the volatile LCS recoveries outside the in house laboratory recovery criteria for spiked analytes? If in house limits are not present use 70 - 130% recovery limits.

[✓] ___ ___ (project limits)

YES NO N/A

Table 3. LCS Actions for Volatile Analysis

Criteria	Action	
	Detected Spiked Compounds	Non-Detected Spiked Compounds
%R > Upper Acceptance Limit	J	No Qualifiers
%R < Lower Acceptance Limit	J	UJ
Lower Acceptance Limit ≤ %R	No Qualifications	

5.0 Matrix Spikes(Form III or equivalent)

5.1 Are all data for matrix spike and matrix duplicate or matrix spike duplicate (MS/MD or MS/MSD) present and complete for each matrix? [ ] ___ ✓

MS/MSD not performed on this SDG

NOTE: The laboratory should use one matrix spike and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If the sample is not expected to contain target analytes, a MS/MSD should be analyzed (SW-846, Method 8260B, Sect 8.4.2).

5.2 Have MS/MD or MS/MSD results been summarized on modified CLP Form III? [ ] ___ ✓

ACTION: If any data are missing take action as specified in section 3.2 above.

5.3 Were matrix spikes analyzed at the required frequency for each of the following matrices? (One MS/MD, MS/MSD or laboratory replicate must be performed for every 20 samples

YES NO N/A

of similar matrix or concentration level. Laboratories analyzing one to ten samples per month are required to analyze at least one MS per month [page 8000C, section 9.5.])

a. Water [ ] ✓ ___

b. Waste [ ] ___ ✓

c. Soil/Solid [ ] ___ ✓

Note: The LCS is spiked with the same analytes at the same concentrations as the matrix spike (SW-846 8000C, Section 9.5). If different make note in data assessment. Matrix/LCS spiking standards should be prepared from volatile organic compounds which are representative of the compounds being investigating. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene. The concentration of the LCS should be determined as described SW-Method 8000C Section 9.5.

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

5.4 Have in house MS recovery limits been developed (Method 8000C, Sect 9.7)for each matrix. [ ] ___ ✓

5.5 Were one or more of the volatile MS/MSD recoveries outside of the in-house laboratory recovery criteria for spiked analytes? If none are present, then use 70-130% recovery as per SW-846, 8000C, Sect. 9.5.4. [ ] ___ ✓

ACTION: Circle all outliers with a red pencil.

NOTE: If any individual % recovery in the MS (or MSD) falls outside the designated range for recovery the reviewer should determine if there is a matrix effect. A matrix effect is indicated if the LCS data are within limits but the MS data exceeds the limits.

YES NO N/A

NOTE: No qualification of data is necessary on MS and MSD data alone. However, using informed professional judgement, the data reviewer may use MS and MSD results in conjunction with other QC criteria to determine the need for some qualification.

Note: The data reviewer should first try to determine to what extent the results of the MS and MSD affect the associated data. This determination should be made with regard to he MS and MSD sample itself, as well as specific analytes for all samples associated with the MS and MSD.

Note: In those instances where it can be determine that the results of the MS and MSD affect only the sample spiked, limit qualification to this sample only. However, it may be determined through the MS and MSD results that a laboratory is having a systematic problem in the analysis of one or more analytes that affect all associated samples, and the reviewer must use professional judgement to qualify the data from all associated samples.

Note: The reviewer must use professional judgement to determine the need for qualification of non-spiked compounds.

ACTION: Follow criteria in Table 4 when professional judgement deems qualification of sample.

Table 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Actions for Volatile Analysis

Criteria	Action	
	Detected Spiked Compounds	Non-Detected Spiked Compounds
%R > Upper Acceptance Limit	J	No Qualifiers
%R < Lower Acceptance Limit	J	UJ
Lower Acceptance Limit ≤ %R	No Qualifications	

YES NO N/A

6.0 Blank (CLP Form IV Equivalent)

6.1 Is the Method Blank Summary form present? [✓] ___ ___

6.2 Frequency of Analysis: Has a method blank been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch? [✓] ___ ___

6.3 Has a method blank been analyzed for each GC/MS system used ? [✓] ___ ___

ACTION: If any blank data are missing, take action as specified above (section 3.2). If blank data is not available, reject ® all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

6.4 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for volatile organic compounds? [✓] ___ ___

7.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

7.1 Do any method/instrument/reagent blanks have positive results for target analytes and/or TICs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for percent moisture where necessary. [ ] ✓ ___

YES NO N/A

7.2 Do any field/rinse blanks have positive volatile organic compound results? ___ ☑ ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

ACTION: Follow the directions in Table 5 below to qualify sample results due to contamination. Use the largest value from all the associated blanks.

Table 5. Volatile Organic Analysis Blank Contamination Criteria

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Storage, Field, Trip, Instrument**	Detects	Not detected	No qualification
	< CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL	Use professional judgement
	> CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ CRQL and ≥ blank contamination	Use professional judgement
	= CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL	Use professional judgement
	Gross contam-ination	Detects	Qualify results as unusable R

* 2x the CRQL for methylene chloride, 2-butanone, and acetone

** Qualifications based on instrument blank results affect only the sample analyzed immediately after the sample that has target compounds that exceed the calibration range or non-target compounds that exceed 100 ug/L.

NOTE: If gross blank contamination exists(e.g., saturated peaks, "hump-o-grams," "junk" peaks), all affected positive compounds in the associated samples should be qualified as unusable "R", due to interference. Non-detected volatile organic target compounds do not require qualification unless the contamination is so high that it interferes with the analyses of non-detected compounds.

YES NO N/A

7.3 Are there field/rinse/equipment blanks associated with every sample? ☑ ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

8.0 GC/MS Apparatus and Materials

8.1 Did the lab use the proper gas chromatographic column(s) for analysis of volatiles by Method 8260B? Check raw data, instrument logs or contact the lab to determine what type of column(s) was (were) used. ☑ ___ ___

NOTE: For the analysis of volatiles, the method requires the use of 60 m. x 0.75 mm capillary column, coated with VOCOL(Supelco) or equivalent column. (see SW-846, page 8260B-7, section 4.9.2)

ACTION: If the specified column, or equivalent, was not used, document the effects in the Data Assessment. Use professional judgement to determine the acceptability of the data.

9.0 GC/MS Instrument Performance Check (CLP Form V Equivalent)

9.1 Are the GC/MS Instrument Performance Check forms present for Bromofluorobenzene (BFB), and do these forms list the associated samples with date/time analyzed? ☑ ___ ___

9.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? ☑ ___ ___

9.3 Has an instrument performance check solution (BFB)

YES NO N/A

been analyzed for every twelve hours of sample analysis per instrument?(see Table 4, SW-846, page 8260B-36) [✓] ___ ___

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS GC/MS tuning data are available.

ACTION: If the laboratory/project officer cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

ACTION: If mass assignment is in error, flag all associated sample data as unusable, "R".

9.4 Have the ion abundances been normalized to m/z 95? [✓] ___ ___

9.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, take action as specified in section 3.2.

9.6 Are there any transcription/calculation errors between mass lists and reported values? (Check at least two values but if errors are found, check more.) ___ [ ] [✓]

Level IV not performed on this SDG

9.7 Have the appropriate number of significant figures (two) been reported? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.2.

9.8 Are the spectra of the mass calibration compounds acceptable. [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

YES NO N/A

10.0 Target Analytes (CLP Form I Equivalent)

10.1 Are the Organic Analysis reporting forms present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate [✓] ___ ___

b. Matrix spikes and matrix spike duplicates [ ] ___ ✓

c. Blanks [✓] ___ ___

d. Laboratory Control Samples [✓] ___ ___

10.2 Are the reconstructed Ion Chromatograms, mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?

a. Samples and/or fractions as appropriate [✓] ___ ___

b. Matrix spikes and matrix spike duplicates (Mass spectra not required) [ ] ___ ✓

c. Blanks [✓] ___ ___

d. Laboratory Control Samples [✓] ___ ___

ACTION: If any data are missing, take action specified in 3.2 above.

10.3 Is chromatographic performance acceptable with respect to:

Baseline stability? [✓] ___ ___

	YES	NO	N/A
Resolution?	☑	___	___
Peak shape?	☑	___	___
Full-scale graph (attenuation)?	☑	___	___

Other:_____

ACTION: Use professional judgement to determine the acceptability of the data.

10.4 Are the lab-generated standard mass spectra of identified volatile compounds present for each sample? ☑ ___ ___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If the lab does not generate their own standard spectra, make a note in the Data Assessment. If spectra are missing, contact the lab for missing spectra.

10.5 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration? ☑ ___ ___

10.6 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum? ☑ ___ ___

10.7 Do the relative intensities of the characteristic ions in the sample agree within ± 30% of the corresponding relative intensities in the reference spectrum? ☑ ___ ___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected ("R"), flagged ("N") - Presumptive evidence of the presence of the compound) or changed to non detected ("U") at the calculated detection limit. In order to be

YES NO N/A

positively identified, the data must comply with the criteria listed in 9.6, 9.7, and 9.8.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

11.0 Tentatively Identified Compounds (TIC) (CLP Form I/TIC Equivalent)

11.1 If Tentatively Identified Compound were required for this project, are all Tentatively Identified Compound reporting forms present; and do listed TICs include scan number or retention time, estimated concentration and a qualifier? [ ] ___ ✓

NOTE: Add "N" qualifier to all TICs which have CAS number, if missing.

NOTE: Have the project officer/appropriate official check the project plan to determine if lab was required to identify non-target analytes (SW-846, page 8260B-23, Sect. 7.6.2).

11.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate [ ] ___ ✓

b. Blanks [ ] ___ ✓

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier only to analytes identified by a CAS#.

NOTE: If TICs are present in the associated blanks take action as specified in section 3.2 above.

YES NO N/A

11.3 Are any priority pollutants listed as TIC compounds (i.e., an BNA compound listed as a VOA TIC)? [ ] ___ ✓

ACTION: 1. Flag with "R" any target compound listed as a TIC.

2. Make sure all rejected compounds are properly reported if they are target compounds.

11.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum? [ ] ___ ✓

11.5 Do TIC and "best match" standard relative ion intensities agree within ± 20%? [ ] ___ ✓

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R". (Common lab contaminants: CO_2(M/E 44), Siloxanes (M/E 73), Hexane, Aldol Condensation Products, Solvent Preservatives, and related byproducts).

12.0 Compound Quantitation and Reported Detection Limits

12.1 Are there any transcription/calculation errors in organic analysis reporting form results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and average initial RRF/CF were used to calculate organic analysis reporting form result. Were any errors found? [ ] ___ ✓

Level IV not performed on this SDG

NOTE: Structural isomers with similar mass spectra, but insufficient GC resolution (i.e. percent valley between the two peaks > 25%) should be

YES NO N/A

reported as isomeric pairs. The reviewer should check the raw data to ensure that all such isomers were included in the quantitation (i.e., add the areas of the two coeluting peaks to calculate the total concentration).

12.2 Are the method CRQL's adjusted to reflect sample dilutions and, for soils, sample moisture? [✓] ___ ___

ACTION: If errors are large, take action as specified in section 3.2 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest detection limits are used (unless a QC accedence dictates the use of the higher detection limit from the diluted sample data). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original reporting form (if present) and substituting the data from the analysis of the diluted sample. Specify which organic analysis reporting form is to be used, then draw a red "X" across the entire page of all reporting forms that should not be used, including any in the summary package.

13.0 Standards Data (GC/MS)

13.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant Reports) present for initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in section 3.2 above.

14.0 GC/MS Initial Calibration (CLP Form VI Equivalent)

YES NO N/A

14.1 Are the Initial Calibration reporting forms present and complete for the volatile fraction? ☑ ___ ___

ACTION: If any calibration forms or standard raw data are missing, take action specified in section 3.2 above.

ACTION: If the percent relative standard deviation (% RSD) is > 20%, (8000C-39)qualify positive results for that analyte "J". When % RSD > 90%,. Qualify all positive results for that analyte "J" and all non-detects results for that analyte "R".

14.2 Are all average RRFs > 0.050? ☑ ___ ___

NOTE: (Method Requirement) For SPCC compounds, the individual RRF values must be ≥ the values in the following list. If individual RRF values reported are below the listed values document in the Data Assessment.

Chloromethane	0.10
1,1-Dichloroethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

ACTION: Circle all outliers with red pencil.

ACTION: For any target analyte with average RRF < 0.05, or for the requirements for the 5 compounds in 14.2 above, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

14.3 Are response factors stable over the concentration range of the calibration. ☑ ___ ___

NOTE: (Method Requirement) For the following CCC compounds, the %RSD values must be ≤ 30.0%. If %RSD values reported are > 30.0% document in the Data Assessment.

YES NO N/A

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

ACTION: Circle all outliers with a red pencil.

ACTION: If the % RSD is > 20.0%, or > 30% for the 6 compounds in 14.3 above, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

14.4 Was the % RSD determined using RRF or CF? ☑ ___ ___

If no, what method was used to determine the linearity of the initial calibration? Document any effects to the case in the Data Assessment.

14.5 Are there any transcription/calculation errors in the reporting of RRF or % RSD? (Check at least two values but if errors are found, check more.) ☐ ___ ☑

Level IV not performed on this SDG

ACTION: Circle errors with a red pencil.

ACTION: If errors are large, take action as specified in section 3.2 above.

15.0 GC/MS Calibration Verification (CLP Form VII Equivalent)

YES NO N/A

15.1 Are the Calibration Verification reporting forms present and complete for all compounds of interest? ☑ ___ ___

15.2 Has a calibration verification standard been analyzed for every twelve hours of sample analysis per instrument? ☑ ___ ___

ACTION: List below all sample analyses that were not within twelve hours of a calibration verification analysis for each instrument used.

ACTION: If any forms are missing or no calibration verification standard has been analyzed twelve hours prior to sample analysis, take action as specified in section 3.2 above. If calibration verification data are not available, flag all associated sample data as unusable ("R").

15.3 Was the % D determined from the calibration verification determined using RRF or CF? ☑ ___ ___

If no, what method was used to determine the calibration verification? Document any effects to the case in the Data Assessment.

15.4 Do any volatile compounds have a % D (difference or drift) between the initial and continuing RRF or CF which exceeds 20% (SW-846, page 8260B-19, section 7.4.5.2). ☑ ___ ___

NOTE: (Method Requirement) For the following CCC compounds, the %D values must be ≤ 20.0%. If %D values reported are > 20.0% document in the Data Assessment.

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

YES NO N/A

ACTION: Circle all outliers with a red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated, "J". When %D is above 90%, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

15.5 Do any volatile compounds have a RRF < 0.05? [ ] [✓] ___

NOTE: (Method Requirement) For SPCC compounds, the individual RRF values must be ≥ the values in the following list for each calibration verification. If average RRF values reported are below the listed values document in the data assessment.

Chloromethane	0.10
1,1-Dichloroethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

ACTION: Circle all outliers with a red pencil.

ACTION: If RRF < 0.05, or < the requirements for the 5 compounds is section 15.5 above, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

16.0 Internal Standards (CLP Form VIII Equivalent)

16.1 Are the internal standard (IS) areas on the internal standard reporting forms of every sample and blank within the upper and lower limits (-50% to + 100%) for each initial mid-point calibration (SW-846, 8260B-20, Sect. 7.4.7)? [✓] ___ ___

YES NO N/A

ACTION: If errors are large or information is missing, take action as specified in section 3.2 above.

ACTION: List each outlying internal standard below.

Sample ID	IS #	Area Lower Limit	Area Upper Limit

(Attach additional sheets if necessary.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when the associated IS are counts area > + 100%.

3. If the IS area is below the lower limit (< -50%), qualify all associated non-detects (U-values) "J".

4. If extremely low area counts are reported (< -25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable "R" and positive results as estimated "J".

16.2 Are the retention times of all internal standards within 30 seconds of the associated initial mid-point calibration standard (SW-846, 8260B-20, Sect. 7.4.6)? [V] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

YES NO N/A

17.0 Field Duplicates

17.1 Were any field duplicates submitted for volatile analysis? [✓] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the Data Assessment. However, if large differences exist, take action specified in section 3.2 above.

eurofins | Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Reference List for SDG Number GSK08 with a Data Package Type of NYSDEC B

06911 - Groundwater Science Co

Project: Sanitary Sewers Evaluation

Lab Sample Number	Lab Sample Code	Client Sample Description
6624143	C0220	CS0220120419 Grab Water
6624144	C0221	CS0221120419 Grab Water
6624145	C1078	CS1078120419 Grab Water
6624146	1078D	CX1078120419 Grab Water
6624147	C0219	CS0219120419 Grab Water
6624148	CTRBL	TTB204190419 Water

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 · 717-656-2300 Fax: 717-656-2681 · www.lancasterlabs.com

01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

10904 8260 Ext. Water Master

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

GC/MS VOLATILES CALCULATIONS:

1. Relative response factor (RRF)

$$RRF = \frac{Ax}{Ais} \times \frac{Cis}{Cx}$$

Where :
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the specific internal standard to be measured.
Cis = Concentration of the internal standard.
Cx = Concentration of the compound to be measured.

2. % Relative Standard Deviation (%RSD)

$$\%RSD = \frac{\text{Standard deviation}}{\text{mean}} \times 100$$

3. % Difference (%D)

$$\%D = \frac{RRFc - RRFi}{RRFi} \times 100$$

Where:
RRFc=Relative response factor from continuing calibration standard.
RRFi = Mean relative response factor from the initial calibration.

4. Concentration

$$\text{Concentration (ug/l)} = \frac{(Ax)\ (Is)\ (Df)}{(Ais)\ (RRF)}$$

Where:
Ax , Ais, RRF are as given in 1. above.
Is = Concentration of internal standard added in parts per billion (ug/l)
Df = Dilution factor

5. % Recovery (%Rec)

$$\%Rec = \frac{SSR - SR}{SA} \times 100$$

Where:
SSR = Spiked sample result
SR = Sample result
SA = Spike added

6. Relative Percent Difference (RPD)

$$RPD = \frac{|\ MSR - MSDR\ |}{(1/2)\ (MSR+MSDR)} \times 100$$

Where:
MSR = Matrix spike recovery
MSDR = Matrix spike duplicate recovery

eurofins | Lancaster Laboratories

Quality Control Reference List
GC/MS Volatiles

CLIENT: Groundwater Science Co
SDG: GSK08

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
Volatiles by 8260B	E121161AA	VBLKE91	04/25/2012 07:58:00
		LCSE91	04/25/2012 08:18:00
		6624143	04/25/2012 10:47:00
		6624144	04/25/2012 11:07:00
		6624145	04/25/2012 11:27:00
		6624146	04/25/2012 11:47:00
		6624147	04/25/2012 12:06:00
		6624148	04/25/2012 10:26:00

eurofins | Lancaster Laboratories

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: GSK08
Matrix: LIQUID

Fraction: Volatiles by GC/MS

E121161AA	Dibromofluoromethane		1,2-Dichloroethane-d4		Toluene-d8		4-Bromofluorobenzene	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKE91	101	80 - 116	103	77 - 113	98	80 - 113	96	78 - 113
LCSE91	103	80 - 116	102	77 - 113	98	80 - 113	98	78 - 113
6624143	100	80 - 116	102	77 - 113	99	80 - 113	95	78 - 113
6624144	100	80 - 116	100	77 - 113	98	80 - 113	95	78 - 113
6624145	102	80 - 116	99	77 - 113	99	80 - 113	96	78 - 113
6624146	102	80 - 116	104	77 - 113	101	80 - 113	98	78 - 113
6624147	101	80 - 116	105	77 - 113	98	80 - 113	96	78 - 113
6624148	102	80 - 116	107	77 - 113	99	80 - 113	97	78 - 113

eurofins | Lancaster Laboratories

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: GSK08
Matrix: LIQUID

Fraction: Volatiles by GC/MS

E121161AA / VBLKE91 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Dichlorodifluoromethane	04/25/12	N.D.	ug/l	2	5
Chloromethane	04/25/12	N.D.	ug/l	1	5
Vinyl Chloride	04/25/12	N.D.	ug/l	1	5
Bromomethane	04/25/12	N.D.	ug/l	1	5
Chloroethane	04/25/12	N.D.	ug/l	1	5
Freon 123a	04/25/12	N.D.	ug/l	2	5
Freon 113	04/25/12	N.D.	ug/l	2	10
Trichlorofluoromethane	04/25/12	N.D.	ug/l	2	5
1,1-Dichloroethene	04/25/12	N.D.	ug/l	0.8	5
Ethylbenzene	04/25/12	N.D.	ug/l	0.8	5
1,1,1,2-Tetrachloroethane	04/25/12	N.D.	ug/l	1	5
Methylene Chloride	04/25/12	N.D.	ug/l	2	5
Bromoform	04/25/12	N.D.	ug/l	1	5
1,1-Dichloroethane	04/25/12	N.D.	ug/l	1	5
1,1,2,2-Tetrachloroethane	04/25/12	N.D.	ug/l	1	5
Bromobenzene	04/25/12	N.D.	ug/l	1	5
1,2-Dichloroethene (Total)	04/25/12	N.D.	ug/l	0.8	5
1,2,3-Trichloropropane	04/25/12	N.D.	ug/l	1	5
Chloroform	04/25/12	N.D.	ug/l	0.8	5
2-Chlorotoluene	04/25/12	N.D.	ug/l	1	5
1,1,1-Trichloroethane	04/25/12	N.D.	ug/l	0.8	5
4-Chlorotoluene	04/25/12	N.D.	ug/l	1	5
Benzene	04/25/12	N.D.	ug/l	0.5	5
Carbon Tetrachloride	04/25/12	N.D.	ug/l	1	5
1,2-Dichloroethane	04/25/12	N.D.	ug/l	1	5
Trichloroethene	04/25/12	N.D.	ug/l	1	5
1,2-Dichloropropane	04/25/12	N.D.	ug/l	1	5
Dibromomethane	04/25/12	N.D.	ug/l	1	5
Bromodichloromethane	04/25/12	N.D.	ug/l	1	5
1,3-Dichlorobenzene	04/25/12	N.D.	ug/l	1	5
cis-1,3-Dichloropropene	04/25/12	N.D.	ug/l	1	5
1,4-Dichlorobenzene	04/25/12	N.D.	ug/l	1	5
Toluene	04/25/12	N.D.	ug/l	0.7	5
trans-1,3-Dichloropropene	04/25/12	N.D.	ug/l	1	5
Benzyl Chloride	04/25/12	N.D.	ug/l	1	5
1,2-Dichlorobenzene	04/25/12	N.D.	ug/l	1	5
1,1,2-Trichloroethane	04/25/12	N.D.	ug/l	0.8	5
Tetrachloroethene	04/25/12	N.D.	ug/l	0.8	5
Dibromochloromethane	04/25/12	N.D.	ug/l	1	5
Chlorobenzene	04/25/12	N.D.	ug/l	0.8	5
Xylene (Total)	04/25/12	N.D.	ug/l	0.8	5

eurofins | Lancaster Laboratories

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: GSK08
Matrix: LIQUID

GC/MS Volatiles
Fraction: Volatiles by GC/MS

LCS: LCSE91	Batch: E121161AA (Sample number(s): 6624143-6624148)								
Analyte	Spike Added ug/l	LCS Conc ug/l	LCSD Conc ug/l	LCS %Rec	LCSD %Rec	%Rec Limits	%RPD	%RPD Limits	
Dichlorodifluoromethane	20	12.11		61		47-120			
Chloromethane	20	14.01		70		60-129			
Vinyl Chloride	20	15.45		77		56-123			
Bromomethane	20	16.68		83		44-120			
Chloroethane	20	15.48		77		49-129			
Freon 123a	20	19.1		95		70-129			
Freon 113	20	19.06		95		69-128			
Trichlorofluoromethane	20	16.9		84		56-128			
1,1-Dichloroethene	20	20.33		102		80-120			
1,1,1,2-Tetrachloroethane	20	18.93		95		79-120			
Ethylbenzene	20	18.26		91		79-120			
Methylene Chloride	20	19.58		98		80-126			
1,1-Dichloroethane	20	18.4		92		79-120			
Bromoform	20	19.39		97		61-120			
1,1,2,2-Tetrachloroethane	20	16.54		83		75-123			
Bromobenzene	20	18.58		93		80-120			
1,2-Dichloroethene (Total)	40	39.73		99		80-120			
1,2,3-Trichloropropane	20	17.49		87		76-120			
2-Chlorotoluene	20	18.02		90		80-120			
Chloroform	20	19.35		97		77-122			
1,1,1-Trichloroethane	20	18.9		94		70-121			
4-Chlorotoluene	20	18.16		91		80-120			
1,2-Dichloroethane	20	19.41		97		64-130			
Benzene	20	19.41		97		77-121			
Carbon Tetrachloride	20	19.3		97		67-122			
Trichloroethene	20	19.58		98		80-120			
1,2-Dichloropropane	20	18.57		93		80-120			
Dibromomethane	20	19.51		98		80-120			
1,3-Dichlorobenzene	20	18.53		93		80-120			
Bromodichloromethane	20	19.1		95		73-120			
cis-1,3-Dichloropropene	20	18.56		93		78-120			
1,4-Dichlorobenzene	20	18.26		91		80-120			
Toluene	20	18.83		94		79-120			
trans-1,3-Dichloropropene	20	17.86		89		79-120			
1,1,2-Trichloroethane	20	19.18		96		80-120			
1,2-Dichlorobenzene	20	18.3		92		80-120			
Benzyl Chloride	20	16.89		84		60-120			
Tetrachloroethene	20	19.94		100		79-120			
Dibromochloromethane	20	18.76		94		72-120			
Chlorobenzene	20	18.72		94		80-120			
Xylene (Total)	60	56.08		93		77-120			

QAPP Limits (63157)

See DVR

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_GSK08___

Lab File ID: em21t01.d BFB Injection Date: 03/21/12

Instrument ID: HP15648 BFB Injection Time: 11:35

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.46
75	30.0 - 60.0% of mass 95	46.62
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.62
173	Less than 2.0% of mass 174	0.57 (0.90)1
174	Greater than 50.0% of mass 95	63.02
175	5.0 - 9.0% of mass 174	4.94 (7.84)1
176	Greater than 95.0%, but less than 101.0% of mass 174	60.81 (96.49)1
177	5.0 - 9.0% of mass 176	4.00 (6.58)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	em21i01.d	03/21/12	12:03
02	VSTD100	em21i02.d	03/21/12	12:23
03	VSTD50	em21i03.d	03/21/12	12:43
04	VSTD20	em21i04.d	03/21/12	13:03
05	VSTD10	em21i05.d	03/21/12	13:23
06	VSTD4	em21i06.d	03/21/12	13:43
07	MDL001 - MDL001	em21m01.d	03/21/12	14:03
08	ICVELG	em21cv1.d	03/21/12	14:23
09	VBLKE42	em21b01.d	03/21/12	14:43
10	1MDL#1 - MDL001	em21m11.d	03/21/12	15:03
11	1MDL#2 - MDL001	em21m12.d	03/21/12	15:23
12	1MDL#3 - MDL001	em21m13.d	03/21/12	15:43
13	1MDL#4 - MDL001	em21m14.d	03/21/12	16:03
14	1MDL#5 - MDL001	em21m15.d	03/21/12	16:23
15	1MDL#6 - MDL001	em21m16.d	03/21/12	16:43
16	1MDL#7 - MDL001	em21m17.d	03/21/12	17:03

GSK08 0050

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date(s): 03/21/12 03/21/12

Heated Purge: (Y/N) Y Calibration Times: 12:03 13:43

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 4 = em21106.d RRF 10= em21105.d RRF 20= em21104.d
RRF 50= em21103.d RRF100= em21102.d RRF300= em21101.d RRF =

COMPOUND	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	$\overline{RRF}$	% RSD	CAL. METHOD	
Dichlorodifluoromethane	0.5087	0.4415	0.4278	0.4456	0.4241	0.4286		0.4460	7	AVG	
Chloromethane	#0.5695	0.4502	0.4600	0.4746	0.4627	0.4667		0.4806	9	AVG	#
Vinyl Chloride	*0.5635	0.4520	0.4425	0.4474	0.4433	0.4483		0.4662	10	AVG	*
Bromomethane	0.2960	0.2535	0.2469	0.2489	0.2444	0.2455		0.2559	8	AVG	
Chloroethane	0.2877	0.2371	0.2390	0.2443	0.2378	0.2384		0.2474	8	AVG	
Dichlorofluoromethane	0.6437	0.5364	0.5581	0.5511	0.5339	0.5525		0.5626	7	AVG	
Trichlorofluoromethane	0.5014	0.4179	0.4100	0.4275	0.4218	0.4259		0.4341	8	AVG	
Ethyl Ether	0.3050	0.2472	0.2591	0.2642	0.2577	0.2558		0.2648	8	AVG	
Freon 123a	0.4351	0.3476	0.3545	0.3530	0.3422	0.3495		0.3637	10	AVG	
Acrolein	2.6139	2.1604	2.1324	2.2432	2.2795	2.0801		2.2516	9	AVG	
1,1-Dichloroethene	*0.2813	0.2265	0.2264	0.2352	0.2236	0.2268		0.2366	9	AVG	*
Freon 113	0.2629	0.2235	0.2280	0.2367	0.2312	0.2356		0.2363	6	AVG	
Acetone	0.1431	0.1154	0.1127	0.1289	0.1170	0.1136		0.1218	10	AVG	
Methyl Iodide	0.3674	0.3212	0.3309	0.3389	0.3244	0.3270		0.3349	5	AVG	
2-Propanol	0.8886	0.7368	0.7508	0.7847	0.7499	0.7424		0.7755	7	AVG	
Carbon Disulfide	0.8021	0.6597	0.6763	0.6967	0.6677	0.6739		0.6960	8	AVG	
Allyl Chloride	0.6133	0.4923	0.4941	0.5209	0.4987	0.5184		0.5229	9	AVG	
Methyl Acetate	0.3879	0.3003	0.3051	0.3119	0.3011	0.3187		0.3208	10	AVG	
Methylene Chloride	0.2988	0.2476	0.2520	0.2552	0.2477	0.2508		0.2587	8	AVG	
t-Butyl Alcohol	1.4763	1.1776	1.2291	1.2654	1.1431	1.2047		1.2493	10	AVG	
Acrylonitrile	0.1933	0.1638	0.1640	0.1716	0.1687	0.1667		0.1713	7	AVG	
trans-1,2-Dichloroethene	0.2895	0.2515	0.2551	0.2613	0.2488	0.2541		0.2601	6	AVG	
Methyl Tertiary Butyl Ether	0.8980	0.7733	0.8017	0.8162	0.7867	0.8127		0.8148	5	AVG	
n-Hexane	0.5069	0.4220	0.4260	0.4558	0.4364	0.4646		0.4520	7	AVG	
1,2-Dichloroethene (total)	0.3045	0.2654	0.2685	0.2743	0.2615	0.2674		0.2736	6	AVG	
1,1-Dichloroethane	#0.6035	0.5119	0.5263	0.5411	0.5203	0.5323		0.5392	6	AVG	#
di-Isopropyl Ether	1.0958	0.9330	0.9540	0.9916	0.9547	0.9802		0.9849	6	AVG	
2-Chloro-1,3-Butadiene	0.5136	0.4368	0.4423	0.4631	0.4463	0.4593		0.4602	6	AVG	
Ethyl t-Butyl Ether	0.9917	0.8549	0.8550	0.8945	0.8716	0.8911		0.8931	6	AVG	
cis-1,2-Dichloroethene	0.3195	0.2793	0.2819	0.2874	0.2741	0.2807		0.2872	6	AVG	
2-Butanone	0.2545	0.2109	0.2067	0.2150	0.2237	0.2158		0.2211	8	AVG	
2,2-Dichloropropane	0.4626	0.3825	0.3913	0.4054	0.3872	0.3923		0.4035	7	AVG	
Propionitrile	1.8805	1.5829	1.5764	1.6675	1.5454	1.6496		1.6504	7	AVG	
Methacrylonitrile	0.1911	0.1618	0.1673	0.1669	0.1614	0.1706		0.1698	6	AVG	
Bromochloromethane	0.1467	0.1173	0.1172	0.1211	0.1191	0.1211		0.1238	9	AVG	
Tetrahydrofuran	1.5647	1.3163	1.2779	1.4107	1.3643	1.3535		1.3812	7	AVG	
Chloroform	*0.5302	0.4352	0.4375	0.4528	0.4339	0.4446		0.4557	8	AVG	*
1,1,1-Trichloroethane	0.5394	0.4105	0.4199	0.4094	0.3865	0.4021		0.4280	13	AVG	
Cyclohexane	0.6504	0.5529	0.5586	0.5685	0.5542	0.5789		0.5773	6	AVG	
Cyclohexane(mz 84)	0.4906	0.4198	0.4297	0.4414	0.4343	0.4454		0.4435	6	AVG	
Cyclohexane(mz 69)	0.1899	0.1634	0.1596	0.1662	0.1638	0.1686		0.1686	6	AVG	
1,1-Dichloropropene	0.4849	0.3860	0.4036	0.4105	0.3956	0.4093		0.4150	9	AVG	
Carbon Tetrachloride	0.3480	0.2998	0.3052	0.3199	0.3114	0.3208		0.3175	5	AVG	
Isobutyl Alcohol	0.4953	0.4021	0.4296	0.4314	0.4050	0.4376		0.4335	8	AVG	
Benzene	1.3760	1.1493	1.1687	1.2039	1.1480	1.1873		1.2055	7	AVG	
1,2-Dichloroethane	0.3580	0.3151	0.3274	0.3343	0.3241	0.3369		0.3327	4	AVG	
t-Amyl Methyl Ether	0.9056	0.7944	0.8128	0.8362	0.8232	0.8457		0.8363	5	AVG	
n-Heptane	0.5352	0.4439	0.4669	0.4772	0.4731	0.5269		0.4872	7	AVG	
n-Butanol	0.4251	0.3419	0.3755	0.3754	0.3605	0.3885		0.3778	7	AVG	
Trichloroethene	0.3330	0.2718	0.2816	0.2911	0.2768	0.2869		0.2902	8	AVG	
1,2-Dichloropropane	*0.3534	0.3113	0.3170	0.3279	0.3140	0.3263		0.3250	5	AVG	*
Methylcyclohexane	0.6483	0.5321	0.5272	0.5664	0.5600	0.5966		0.5718	8	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

GSK08 0033

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date(s): 03/21/12 03/21/12

Heated Purge: (Y/N) Y Calibration Times: 12:03 13:43

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 4 = em21i06.d RRF 10= em21i05.d RRF 20= em21i04.d
RRF 50= em21i03.d RRF100= em21i02.d RRF300= em21i01.d RRF =

COMPOUND	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	$\overline{RRF}$	% RSD	CAL. METHOD	
Methyl Methacrylate	0.3049	0.2539	0.2606	0.2668	0.2651	0.2808		0.2720	7	AVG	
Dibromomethane	0.1744	0.1549	0.1544	0.1620	0.1557	0.1623		0.1606	5	AVG	
1,4-Dioxane	0.1113	0.0929	0.0965	0.0911	0.0979	0.0941		0.0973	7	AVG	
Bromodichloromethane	0.3611	0.3090	0.3274	0.3349	0.3248	0.3411		0.3331	5	AVG	
2-Nitropropane	0.1099	0.0913	0.0919	0.0970	0.1084	0.1011		0.1000	8	AVG	
2-Chloroethyl Vinyl Ether	0.2429	0.2153	0.2233	0.2263	0.2268	0.2396		0.2290	5	AVG	
cis-1,3-Dichloropropene	0.4961	0.4434	0.4532	0.4607	0.4545	0.4742		0.4637	4	AVG	
4-Methyl-2-Pentanone	0.4873	0.4388	0.4213	0.4419	0.5209	0.4453		0.4592	8	AVG	
Toluene	*1.3017	1.0726	1.0850	1.1383	1.0726	1.1135		1.1306	8	AVG	*
trans-1,3-Dichloropropene	0.6844	0.5898	0.6183	0.6398	0.6276	0.6562		0.6360	5	AVG	
Ethyl Methacrylate	0.7322	0.6378	0.6657	0.6921	0.6838	0.7189		0.6884	5	AVG	
1,1,2-Trichloroethane	0.3835	0.3447	0.3479	0.3580	0.3512	0.3622		0.3579	4	AVG	
Tetrachloroethene	0.4676	0.3704	0.3837	0.4022	0.3793	0.3949		0.3997	9	AVG	
1,3-Dichloropropane	0.7262	0.6372	0.6604	0.6744	0.6542	0.6813		0.6723	5	AVG	
2-Hexanone	0.5432	0.4900	0.4708	0.4984	0.6162	0.4882		0.5178	10	AVG	
Dibromochloromethane	0.3694	0.3267	0.3442	0.3565	0.3522	0.3689		0.3530	5	AVG	
1,2-Dibromoethane	0.4068	0.3554	0.3667	0.3724	0.3615	0.3780		0.3735	5	AVG	
Chlorobenzene	#1.2906	1.1026	1.1332	1.1603	1.1236	1.1635		1.1623	6	AVG	#
1,1,1,2-Tetrachloroethane	0.3723	0.3354	0.3494	0.3649	0.3522	0.3659		0.3567	4	AVG	
Ethylbenzene	*2.4454	2.0812	2.1629	2.2165	2.1267	2.2156		2.2081	6	AVG	*
m+p-Xylene	0.9253	0.7804	0.8100	0.8444	0.8089	0.8503		0.8365	6	AVG	
Xylene (Total)	0.9155	0.7705	0.8023	0.8317	0.7972	0.8391		0.8261	6	AVG	
o-Xylene	0.8959	0.7508	0.7871	0.8064	0.7738	0.8169		0.8051	6	AVG	
Styrene	1.3857	1.2109	1.2778	1.3170	1.2850	1.3721		1.3081	5	AVG	
Bromoform	#0.2490	0.2147	0.2335	0.2425	0.2422	0.2617		0.2406	7	AVG	#
Isopropylbenzene	2.4127	1.9943	2.0773	2.1728	2.0796	2.1827		2.1532	7	AVG	
Cyclohexanone	0.4453	0.3743	0.3791	0.3863	0.3991	0.4106		0.3991	7	AVG	
1,1,2,2-Tetrachloroethane	#1.4043	1.1589	1.2310	1.2500	1.2015	1.2283		1.2457	7	AVG	#
trans-1,4-Dichloro-2-Butene	0.4152	0.3496	0.3776	0.3837	0.3893	0.4005		0.3860	6	AVG	
Bromobenzene	0.9214	0.7741	0.8226	0.8373	0.8163	0.8257		0.8329	6	AVG	
1,2,3-Trichloropropane	0.3782	0.3128	0.3284	0.3413	0.3268	0.3284		0.3360	7	AVG	
n-Propylbenzene	5.8838	4.9559	5.1304	5.3488	5.1447	5.0182		5.2470	6	AVG	
2-Chlorotoluene	1.0355	0.8875	0.9354	0.9402	0.9130	0.9125		0.9374	6	AVG	
1,3,5-Trimethylbenzene	3.8761	3.2850	3.5006	3.6047	3.4463	3.5540		3.5445	6	AVG	
4-Chlorotoluene	1.0535	0.9197	0.9448	0.9736	0.9413	0.9766		0.9682	5	AVG	
tert-Butylbenzene	0.8577	0.6867	0.7303	0.7766	0.7434	0.7699		0.7607	8	AVG	
Pentachloroethane	0.5502	0.4394	0.4771	0.5194	0.5059	0.5424		0.5058	8	AVG	
1,2,4-Trimethylbenzene	3.8910	3.3518	3.4657	3.6062	3.4798	3.5307		3.5542	5	AVG	
sec-Butylbenzene	5.0879	4.2231	4.4656	4.6831	4.4825	4.5675		4.5850	6	AVG	
p-Isopropyltoluene	4.0298	3.4691	3.6538	3.8175	3.6944	3.8237		3.7480	5	AVG	
1,3-Dichlorobenzene	1.8144	1.5402	1.5989	1.6755	1.6270	1.6729		1.6548	6	AVG	
1,4-Dichlorobenzene	1.9139	1.5790	1.6326	1.6824	1.6327	1.6790		1.6866	7	AVG	
1,2,3-Trimethylbenzene	3.9184	3.2057	3.2384	3.4761	3.3611	3.5061		3.4510	8	AVG	
Benzyl Chloride	2.7648	2.3537	2.5429	2.7078	2.6724	2.8165		2.6430	6	AVG	
1,3-Diethylbenzene	2.4834	1.9825	2.0871	2.2467	2.1754	2.3216		2.2161	8	AVG	
1,4-Diethylbenzene	2.2635	1.9293	1.9543	2.1229	2.0721	2.2265		2.0948	7	AVG	
n-Butylbenzene	2.0822	1.8050	1.9137	2.0042	1.9447	2.0776		1.9712	5	AVG	
1,2-Dichlorobenzene	1.7199	1.4731	1.5320	1.5709	1.5484	1.6066		1.5752	5	AVG	
1,2-Diethylbenzene	2.4085	1.9346	2.0124	2.1525	2.1107	2.2074		2.1377	8	AVG	
1,2-Dibromo-3-Chloropropane	0.3013	0.2726	0.2783	0.2874	0.2761	0.2939		0.2849	4	AVG	
1,3,5-Trichlorobenzene	1.1123	0.9655	1.0188	1.0637	1.0430	1.0891		1.0487	5	AVG	
1,2,4-Trichlorobenzene	0.9858	0.8679	0.9157	0.9442	0.9373	0.9683		0.9365	4	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

GSK08 0034

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date(s): 03/21/12 03/21/12

Heated Purge: (Y/N) Y Calibration Times: 12:03 13:43

Matrix:(soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 4 = em21i06.d RRF 10= em21i05.d RRF 20= em21i04.d
RRF 50= em21i03.d RRF100= em21i02.d RRF300= em21i01.d RRF =

COMPOUND	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	$\overline{RRF}$	% RSD	CAL. METHOD
Hexachlorobutadiene	0.4406	0.3725	0.3939	0.4076	0.3982	0.4173		0.4050	6	AVG
Naphthalene	3.9397	3.4253	3.6413	3.7836	3.7194	3.7526		3.7103	5	AVG
1,2,3-Trichlorobenzene	1.0037	0.8351	0.8906	0.9323	0.8984	0.9043		0.9107	6	AVG
2-Methylnaphthalene	2.0710	1.6810	1.8127	1.9899	1.9291	1.8302		1.8856	7	AVG
Dibromofluoromethane	0.2103	0.2107	0.2100	0.2074	0.2105	0.2074		0.2094	1	AVG
Dibromofluoromethane(mz111)	0.2156	0.2159	0.2143	0.2130	0.2145	0.2135		0.2145	1	AVG
1,2-Dichloroethane-d4	0.0544	0.0551	0.0571	0.0542	0.0556	0.0545		0.0552	2	AVG
1,2-Dichloroethane-d4(mz104)	0.0343	0.0362	0.0352	0.0350	0.0360	0.0354		0.0353	2	AVG
1,2-Dichloroethane-d4(mz65)	0.2602	0.2649	0.2585	0.2602	0.2606	0.2611		0.2609	1	AVG
Toluene-d8(mz100)	0.9341	0.9318	0.9496	0.9347	0.9339	0.9287		0.9354	1	AVG
4-Bromofluorobenzene(mz174)	0.3431	0.3525	0.3433	0.3430	0.3471	0.3458		0.3458	1	AVG
Toluene-d8	1.4569	1.4585	1.4666	1.4598	1.4588	1.4540		1.4591	0	AVG
4-Bromofluorobenzene	0.5152	0.5292	0.5280	0.5206	0.5212	0.5299		0.5240	1	AVG

Average %RSD 6

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

GSK08 0035

FORM VI VOA

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP15648.i/12mar21a.b/em21i01.d VSTD300
/chem/HP15648.i/12mar21a.b/em21i02.d VSTD100
/chem/HP15648.i/12mar21a.b/em21i03.d VSTD050
/chem/HP15648.i/12mar21a.b/em21i04.d VSTD020
/chem/HP15648.i/12mar21a.b/em21i05.d VSTD010
/chem/HP15648.i/12mar21a.b/em21i06.d VSTD004

Area Summary

File ID:

Internal Standard Name	em21i01.d	em21i02.d	em21i03.d	em21i04.d	em21i05.d	em21i06.d	Avg. Area	%RSD	In Spec
t-Butyl Alcohol-d10	209687	222727	205400	223584	218404	214198	215667	3	Yes
Fluorobenzene	1025357	1094649	1037802	1086076	1106658	1081567	1072018	3	Yes
Chlorobenzene-d5	689625	729147	682153	717490	737280	718495	712365	3	Yes
1,4-Dichlorobenzene-d4	355330	357865	334207	351672	358576	350346	351333	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	em21i01.d	em21i02.d	em21i03.d	em21i04.d	em21i05.d	em21i06.d	Avg. RT
t-Butyl Alcohol-d10	2.675	2.688	2.694	2.676	2.663	2.669	2.678
Fluorobenzene	4.955	4.955	4.962	4.949	4.956	4.949	4.955
Chlorobenzene-d5	8.071	8.071	8.071	8.071	8.071	8.071	8.071
1,4-Dichlorobenzene-d4	9.942	9.942	9.942	9.942	9.942	9.942	9.942

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 03/21/2012 at 15:43.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 ICV Date: 03/21/12 Time: 14:23

Lab File ID: em21cv1.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4460	0.3227	14.47	20	-28	
#	Chloromethane	0.4806	0.4091	17.02	20	-15	#
*	Vinyl Chloride	0.4662	0.4106	17.62	20	-12	*
	Bromomethane	0.2559	0.2362	18.46	20	-8	
	Chloroethane	0.2474	0.2141	17.31	20	-13	
	Dichlorofluoromethane	0.5626	0.6094	21.66	20	8	
	Trichlorofluoromethane	0.4341	0.4141	19.08	20	-5	
	Ethyl Ether	0.2648	0.2695	20.36	20	2	
	Freon 123a	0.3637	0.3710	20.40	20	2	
	Acrolein	2.2516	2.1710	144.63	150	-4	
*	1,1-Dichloroethene	0.2366	0.2658	22.47	20	12	*
	Freon 113	0.2363	0.2726	23.08	20	15	
	Acetone	0.1218	0.1214	149.54	150	0	
	Methyl Iodide	0.3349	0.3705	22.12	20	11	
	2-Propanol	0.7755	0.8503	164.46	150	10	
	Carbon Disulfide	0.6960	0.7917	22.75	20	14	
	Allyl Chloride	0.5229	0.4975	19.03	20	-5	
	Methyl Acetate	0.3208	0.3019	18.82	20	-6	
	Methylene Chloride	0.2587	0.2731	21.11	20	6	
	t-Butyl Alcohol	1.2493	1.2313	197.10	200	-1	
	Acrylonitrile	0.1713	0.1560	91.05	100	-9	
	trans-1,2-Dichloroethene	0.2601	0.2716	20.89	20	4	
	Methyl Tertiary Butyl Ether	0.8148	0.8335	20.46	20	2	
	n-Hexane	0.4520	0.5012	22.18	20	11	
	1,2-Dichloroethene (total)	0.2736	0.2795	40.90	40	2	
#	1,1-Dichloroethane	0.5392	0.5539	20.55	20	3	#
	di-Isopropyl Ether	0.9849	0.9756	19.81	20	-1	
	2-Chloro-1,3-Butadiene	0.4602	0.4843	21.05	20	5	
	Ethyl t-Butyl Ether	0.8931	0.8965	20.08	20	0	
	cis-1,2-Dichloroethene	0.2872	0.2874	20.01	20	0	
	2-Butanone	0.2211	0.2015	136.69	150	-9	
	2,2-Dichloropropane	0.4035	0.4050	20.07	20	0	
	Propionitrile	1.6504	1.6660	151.42	150	1	
	Methacrylonitrile	0.1698	0.1648	145.59	150	-3	
	Bromochloromethane	0.1238	0.1198	19.35	20	-3	
	Tetrahydrofuran	1.3812	1.3686	99.08	100	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

GSK08 0037

FORM VII VOA

See DVR

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 ICV Date: 03/21/12 Time: 14:23

Lab File ID: em21cv1.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4557	0.4568	20.05	20	0	*
	1,1,1-Trichloroethane	0.4280	0.4378	20.46	20	2	
	Cyclohexane	0.5773	0.6195	21.46	20	7	
	1,1-Dichloropropene	0.4150	0.4168	20.09	20	0	
	Carbon Tetrachloride	0.3175	0.3165	19.94	20	0	
	Isobutyl Alcohol	0.4335	0.4300	496.00	500	-1	
	Benzene	1.2055	1.2187	20.22	20	1	
	1,2-Dichloroethane	0.3327	0.3376	20.30	20	1	
	t-Amyl Methyl Ether	0.8363	0.8459	20.23	20	1	
	n-Heptane	0.4872	0.4863	19.96	20	0	
	n-Butanol	0.3778	0.3640	963.43	1000	-4	
	Trichloroethene	0.2902	0.2887	19.89	20	-1	
*	1,2-Dichloropropane	0.3250	0.3207	19.73	20	-1	*
	Methylcyclohexane	0.5718	0.5639	19.73	20	-1	
	Methyl Methacrylate	0.2720	0.2663	19.58	20	-2	
	Dibromomethane	0.1606	0.1638	20.39	20	2	
	1,4-Dioxane	0.0973	0.0982	504.67	500	1	
	Bromodichloromethane	0.3331	0.3258	19.56	20	-2	
	2-Nitropropane	0.1000	0.0872	17.45	20	-13	
	2-Chloroethyl Vinyl Ether	0.2290	0.2276	19.87	20	-1	
	cis-1,3-Dichloropropene	0.4637	0.4584	19.77	20	-1	
	4-Methyl-2-Pentanone	0.4592	0.4196	91.38	100	-9	
*	Toluene	1.1306	1.1298	19.98	20	0	*
	trans-1,3-Dichloropropene	0.6360	0.6285	19.76	20	-1	
	Ethyl Methacrylate	0.6884	0.6838	19.87	20	-1	
	1,1,2-Trichloroethane	0.3579	0.3630	20.28	20	1	
	Tetrachloroethene	0.3997	0.4060	20.32	20	2	
	1,3-Dichloropropane	0.6723	0.6802	20.23	20	1	
	2-Hexanone	0.5178	0.4722	91.19	100	-9	
	Dibromochloromethane	0.3530	0.3482	19.73	20	-1	
	1,2-Dibromoethane	0.3735	0.3731	19.98	20	0	
#	Chlorobenzene	1.1623	1.1623	20.00	20	0	#
	1,1,1,2-Tetrachloroethane	0.3567	0.3544	19.87	20	-1	
*	Ethylbenzene	2.2081	2.1846	19.79	20	-1	*
	m+p-Xylene	0.8365	0.8327	39.81	40	0	
	Xylene (Total)	0.8261	0.5414	59.48	60	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 ICV Date: 03/21/12 Time: 14:23

Lab File ID: em21cv1.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.8051	0.7918	19.67	20	-2	
	Styrene	1.3081	1.3086	20.01	20	0	
#	Bromoform	0.2406	0.2313	19.22	20	-4	#
	Isopropylbenzene	2.1532	2.1593	20.06	20	0	
	Cyclohexanone	0.3991	0.3961	496.23	500	-1	
#	1,1,2,2-Tetrachloroethane	1.2457	1.2335	19.80	20	-1	#
	trans-1,4-Dichloro-2-Butene	0.3860	0.3551	92.00	100	-8	
	Bromobenzene	0.8329	0.8279	19.88	20	-1	
	1,2,3-Trichloropropane	0.3360	0.3278	19.52	20	-2	
	n-Propylbenzene	5.2470	5.2779	20.12	20	1	
	2-Chlorotoluene	0.9374	0.9631	20.55	20	3	
	1,3,5-Trimethylbenzene	3.5445	3.5036	19.77	20	-1	
	4-Chlorotoluene	0.9682	0.9654	19.94	20	0	
	tert-Butylbenzene	0.7607	0.7656	20.13	20	1	
	Pentachloroethane	0.5058	0.4853	19.19	20	-4	
	1,2,4-Trimethylbenzene	3.5542	3.5424	19.93	20	0	
	sec-Butylbenzene	4.5850	4.6091	20.11	20	1	
	p-Isopropyltoluene	3.7480	3.6925	19.70	20	-1	
	1,3-Dichlorobenzene	1.6548	1.6561	20.02	20	0	
	1,4-Dichlorobenzene	1.6866	1.6672	19.77	20	-1	
	1,2,3-Trimethylbenzene	3.4510	3.4860	20.20	20	1	
	Benzyl Chloride	2.6430	2.5192	19.06	20	-5	
	1,3-Diethylbenzene	2.2161	2.2109	19.95	20	0	
	1,4-Diethylbenzene	2.0948	2.0816	19.87	20	-1	
	n-Butylbenzene	1.9712	1.9194	19.47	20	-3	
	1,2-Dichlorobenzene	1.5752	1.5743	19.99	20	0	
	1,2-Diethylbenzene	2.1377	2.0800	19.46	20	-3	
	1,2-Dibromo-3-Chloropropane	0.2849	0.2753	19.33	20	-3	
	1,3,5-Trichlorobenzene	1.0487	1.0458	19.94	20	0	
	1,2,4-Trichlorobenzene	0.9365	0.9307	19.88	20	-1	
	Hexachlorobutadiene	0.4050	0.3894	19.23	20	-4	
	Naphthalene	3.7103	3.6889	19.88	20	-1	
	1,2,3-Trichlorobenzene	0.9107	0.9093	19.97	20	0	
	2-Methylnaphthalene	1.8856	1.8814	19.96	20	0	

Average %Drift 3

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)

Maximum %Drift for CCC(*)=20%

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_GSK08___

Lab File ID: ea25t02.d BFB Injection Date: 04/25/12

Instrument ID: HP15648 BFB Injection Time: 07:10

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.13
75	30.0 - 60.0% of mass 95	45.68
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.66
173	Less than 2.0% of mass 174	0.68 (0.87)1
174	Greater than 50.0% of mass 95	78.26
175	5.0 - 9.0% of mass 174	5.90 (7.54)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.93 (97.02)1
177	5.0 - 9.0% of mass 176	4.85 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ea25c01.d	04/25/12	07:38
02	VBLKE91	ea25b01.d	04/25/12	07:58
03	LCSE91	ea25s01.d	04/25/12	08:18
04	6623803	ea25s02.d	04/25/12	09:26
05	6623804	ea25s03.d	04/25/12	09:46
06	6620546	ea25s04.d	04/25/12	10:06
07	6624148	ea25s05.d	04/25/12	10:26
08	6624143	ea25s06.d	04/25/12	10:47
09	6624144	ea25s07.d	04/25/12	11:07
10	6624145	ea25s08.d	04/25/12	11:27
11	6624146	ea25s09.d	04/25/12	11:47
12	6624147	ea25s10.d	04/25/12	12:06
13	6623799	ea25s11.d	04/25/12	12:26
14	6623800MS	ea25s12.d	04/25/12	12:47
15	6623801MSD	ea25s13.d	04/25/12	13:07
16	6620540	ea25s14.d	04/25/12	13:27
17	6620541	ea25s15.d	04/25/12	13:47
18	6620542	ea25s16.d	04/25/12	14:07
19	6620543	ea25s17.d	04/25/12	14:27
20	6620544	ea25s18.d	04/25/12	14:47
21	6620545	ea25s19.d	04/25/12	15:07
22	6622848	ea25s20.d	04/25/12	15:27

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.: GSK08___

Lab File ID: ea25t02.d BFB Injection Date: 04/25/12

Instrument ID: HP15648 BFB Injection Time: 07:10

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.13
75	30.0 - 60.0% of mass 95	45.68
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.66
173	Less than 2.0% of mass 174	0.68 (0.87)1
174	Greater than 50.0% of mass 95	78.26
175	5.0 - 9.0% of mass 174	5.90 (7.54)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.93 (97.02)1
177	5.0 - 9.0% of mass 176	4.85 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	6622849	ea25s21.d	04/25/12	15:47
24	6622849DL	ea25s22.d	04/25/12	16:07
25	6622850	ea25s23.d	04/25/12	16:27
26	6616298	ea25s24.d	04/25/12	16:47

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4460	0.3916	43.89	50	-12	
#	Chloromethane	0.4806	0.3629	37.75	50	-25	#
*	Vinyl Chloride	0.4662	0.3944	42.30	50	-15	*
	Bromomethane	0.2559	0.2248	43.93	50	-12	
	Chloroethane	0.2474	0.2076	41.96	50	-16	
	Dichlorofluoromethane	0.5626	0.4527	40.23	50	-20	
	Trichlorofluoromethane	0.4341	0.3900	44.92	50	-10	
	Ethyl Ether	0.2648	0.1639	30.95	50	-38	NTC
	Freon 123a	0.3637	0.2930	40.29	50	-19	
	Acrolein	2.2516	1.9061	423.28	500	-15	
*	1,1-Dichloroethene	0.2366	0.2528	53.42	50	7	*
	Freon 113	0.2363	0.2596	54.94	50	10	
	Acetone	0.1218	0.0969	79.57	100	-20	
	Methyl Iodide	0.3349	0.3791	56.59	50	13	
	2-Propanol	0.7755	0.5868	189.15	250	-24	NTC
	Carbon Disulfide	0.6960	0.7853	56.41	50	13	
	Allyl Chloride	0.5229	0.4409	42.15	50	-16	
	Methyl Acetate	0.3208	0.2739	42.70	50	-15	
	Methylene Chloride	0.2587	0.2586	49.99	50	0	
	t-Butyl Alcohol	1.2493	0.9256	185.22	250	-26	NTC
	Acrylonitrile	0.1713	0.1545	45.09	50	-10	
	trans-1,2-Dichloroethene	0.2601	0.2719	52.28	50	5	
	Methyl Tertiary Butyl Ether	0.8148	0.8058	49.45	50	-1	
	n-Hexane	0.4520	0.4734	52.37	50	5	
	1,2-Dichloroethene (total)	0.2736	0.2804	102.48	100	2	
#	1,1-Dichloroethane	0.5392	0.5185	48.08	50	-4	#
	di-Isopropyl Ether	0.9849	0.8730	44.32	50	-11	
	2-Chloro-1,3-Butadiene	0.4602	0.4453	48.37	50	-3	
	Ethyl t-Butyl Ether	0.8931	0.8208	45.95	50	-8	
	cis-1,2-Dichloroethene	0.2872	0.2889	50.31	50	1	
	2-Butanone	0.2211	0.1922	86.95	100	-13	
	2,2-Dichloropropane	0.4035	0.4042	50.08	50	0	
	Propionitrile	1.6504	1.6654	252.27	250	1	
	Methacrylonitrile	0.1698	0.1606	118.17	125	-5	
	Bromochloromethane	0.1238	0.1224	49.47	50	-1	
	Tetrahydrofuran	1.3812	1.4880	107.73	100	8	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

GSK08 0040

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4557	0.4452	48.84	50	-2	*
	1,1,1-Trichloroethane	0.4280	0.4140	48.36	50	-3	
	Cyclohexane	0.5773	0.5678	49.18	50	-2	
	Cyclohexane(mz 84)	0.4435	0.4623	52.12	50	4	
	Cyclohexane(mz 69)	0.1686	0.1678	49.78	50	0	
	1,1-Dichloropropene	0.4150	0.4047	48.76	50	-2	
	Carbon Tetrachloride	0.3175	0.3363	52.96	50	6	
	Isobutyl Alcohol	0.4335	0.3730	537.78	625	-14	
	Benzene	1.2055	1.1852	49.16	50	-2	
	1,2-Dichloroethane	0.3327	0.3284	49.36	50	-1	
	t-Amyl Methyl Ether	0.8363	0.8229	49.20	50	-2	
	n-Heptane	0.4872	0.4540	46.60	50	-7	
	n-Butanol	0.3778	0.3450	1141.44	1250	-9	
	Trichloroethene	0.2902	0.2875	49.54	50	-1	
*	1,2-Dichloropropane	0.3250	0.3024	46.52	50	-7	*
	Methylcyclohexane	0.5718	0.5359	46.86	50	-6	
	Methyl Methacrylate	0.2720	0.2555	46.96	50	-6	
	Dibromomethane	0.1606	0.1583	49.29	50	-1	
	1,4-Dioxane	0.0973	0.0936	601.25	625	-4	
	Bromodichloromethane	0.3331	0.3257	48.90	50	-2	
	2-Nitropropane	0.1000	0.0942	94.29	100	-6	
	2-Chloroethyl Vinyl Ether	0.2290	0.2178	47.56	50	-5	
	cis-1,3-Dichloropropene	0.4637	0.4467	48.16	50	-4	
	4-Methyl-2-Pentanone	0.4592	0.3897	84.86	100	-15	
*	Toluene	1.1306	1.0776	47.66	50	-5	*
	trans-1,3-Dichloropropene	0.6360	0.5908	46.44	50	-7	
	Ethyl Methacrylate	0.6884	0.6371	46.27	50	-7	
	1,1,2-Trichloroethane	0.3579	0.3510	49.03	50	-2	
	Tetrachloroethene	0.3997	0.4173	52.20	50	4	
	1,3-Dichloropropane	0.6723	0.6206	46.16	50	-8	
	2-Hexanone	0.5178	0.4154	80.23	100	-20	
	Dibromochloromethane	0.3530	0.3564	50.49	50	1	
	1,2-Dibromoethane	0.3735	0.3620	48.47	50	-3	
#	Chlorobenzene	1.1623	1.1188	48.13	50	-4	#
	1,1,1,2-Tetrachloroethane	0.3567	0.3452	48.39	50	-3	
*	Ethylbenzene	2.2081	2.1129	47.85	50	-4	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)

Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.8365	0.8081	96.60	100	-3	
	Xylene (Total)	0.8261	0.7968	144.68	150	-4	
	o-Xylene	0.8051	0.7742	48.08	50	-4	
	Styrene	1.3081	1.2763	48.79	50	-2	
#	Bromoform	0.2406	0.2440	50.72	50	1	#
	Isopropylbenzene	2.1532	2.0715	48.10	50	-4	
	Cyclohexanone	0.3991	0.3531	552.91	625	-12	
#	1,1,2,2-Tetrachloroethane	1.2457	1.0585	42.49	50	-15	#
	trans-1,4-Dichloro-2-Butene	0.3860	0.3009	97.44	125	-22	NTC
	Bromobenzene	0.8329	0.7911	47.49	50	-5	
	1,2,3-Trichloropropane	0.3360	0.2964	44.12	50	-12	
	n-Propylbenzene	5.2470	4.7272	45.05	50	-10	
	2-Chlorotoluene	0.9374	0.8664	46.21	50	-8	
	1,3,5-Trimethylbenzene	3.5445	3.2057	45.22	50	-10	
	4-Chlorotoluene	0.9682	0.8964	46.29	50	-7	
	tert-Butylbenzene	0.7607	0.7034	46.23	50	-8	
	Pentachloroethane	0.5058	0.4716	46.63	50	-7	
	1,2,4-Trimethylbenzene	3.5542	3.2016	45.04	50	-10	
	sec-Butylbenzene	4.5850	4.1426	45.18	50	-10	
	p-Isopropyltoluene	3.7480	3.4646	46.22	50	-8	
	1,3-Dichlorobenzene	1.6548	1.5596	47.12	50	-6	
	1,4-Dichlorobenzene	1.6866	1.5603	46.26	50	-7	
	1,2,3-Trimethylbenzene	3.4510	3.0208	43.77	50	-12	
	Benzyl Chloride	2.6430	2.3681	44.80	50	-10	
	1,3-Diethylbenzene	2.2161	2.0055	45.25	50	-10	
	1,4-Diethylbenzene	2.0948	1.8729	44.70	50	-11	
	n-Butylbenzene	1.9712	1.7465	44.30	50	-11	
	1,2-Dichlorobenzene	1.5752	1.4670	46.57	50	-7	
	1,2-Diethylbenzene	2.1377	1.8575	43.45	50	-13	
	1,2-Dibromo-3-Chloropropane	0.2849	0.2339	41.05	50	-18	
	1,3,5-Trichlorobenzene	1.0487	1.0248	48.86	50	-2	
	1,2,4-Trichlorobenzene	0.9365	0.8940	47.73	50	-5	
	Hexachlorobutadiene	0.4050	0.3969	49.00	50	-2	
	Naphthalene	3.7103	3.2729	44.11	50	-12	
	1,2,3-Trichlorobenzene	0.9107	0.8667	47.58	50	-5	
	2-Methylnaphthalene	1.8856	1.4785	39.20	50	-22	NTC

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)

Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane	0.2094	0.2139	51.08	50	2
Dibromofluoromethane(mz111)	0.2145	0.2196	51.19	50	2
1,2-Dichloroethane-d4	0.0552	0.0556	50.44	50	1
1,2-Dichloroethane-d4(mz104)	0.0353	0.0357	50.46	50	1
Toluene-d8(mz100)	0.9354	0.9304	49.73	50	-1
1,2-Dichloroethane-d4(mz65)	0.2609	0.2621	50.22	50	0
4-Bromofluorobenzene(mz174)	0.3458	0.3777	54.62	50	9
Toluene-d8	1.4591	1.4510	49.72	50	-1
4-Bromofluorobenzene	0.5240	0.5120	48.85	50	-2

Average %Drift 8

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP15648.i/12mar21a.b/em21i06.d
/chem/HP15648.i/12mar21a.b/em21i05.d
/chem/HP15648.i/12mar21a.b/em21i04.d
/chem/HP15648.i/12mar21a.b/em21i03.d
/chem/HP15648.i/12mar21a.b/em21i02.d
/chem/HP15648.i/12mar21a.b/em21i01.d

File /chem/HP15648.i/12mar21a.b/em21i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP15648.i/12apr25a.b/ea25c01.d

RT Summary

Internal Standard Name	File ID: ea25c01.d	ICAL RT	In Spec
t-Butyl Alcohol-d10	2.676	2.694	Yes
Fluorobenzene	4.956	4.962	Yes
Chlorobenzene-d5	8.071	8.071	Yes
1,4-Dichlorobenzene-d4	9.942	9.942	Yes

A "No" indicates the retention time is greater than 30 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ea25c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl Alcohol-d10	191440	205400	102700	410800	Yes
Fluorobenzene	1054251	1037802	518901	2075604	Yes
Chlorobenzene-d5	725652	682153	341076	1364306	Yes
1,4-Dichlorobenzene-d4	378429	334207	167104	668414	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 04/25/2012 at 07:57

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.: GSK08

Lab File ID (Standard): ea25c01.d Date Analyzed: 04/25/12

Instrument ID: HP15648 Time Analyzed: 07:38

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(FBZ)		IS2(CBZ)		IS3(DCB)		IS4(TBA)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1054251	4.956	725652	8.071	378429	9.942	191440	2.676
	UPPER LIMIT	2108502	5.456	1451304	8.571	756858	10.442	382880	3.176
	LOWER LIMIT	527126	4.456	362826	7.571	189214	9.442	95720	2.176
	LAB SAMPLE ID								
01	VBLKE91	1077050	4.956	733879	8.071	366349	9.936	187682	2.676
02	LCSE91	1061588	4.956	736277	8.071	378839	9.936	189408	2.669
03	6623803	1076485	4.956	729984	8.071	374287	9.942		
04	6623804	1089004	4.962	733371	8.071	377767	9.936		
05	6620546	1030769	4.962	695661	8.071	357458	9.936		
06	6624148	1067845	4.956	722480	8.071	368699	9.936	158696	2.669
07	6624143	1098261	4.949	739591	8.064	380669	9.936	184162	2.657
08	6624144	1074037	4.956	732251	8.071	367024	9.936	182235	2.675
09	6624145	1057845	4.956	711699	8.071	364829	9.936	178735	2.669
10	6624146	999526	4.962	663729	8.065	345217	9.936	169755	2.682
11	6624147	1031593	4.955	706341	8.071	360590	9.936	183972	2.669
12	6623799	1028527	4.956	705989	8.071	367238	9.936	187813	2.669
13	6623800MS	1036719	4.956	708448	8.071	376784	9.936	186778	2.663
14	6623801MSD	1012882	4.955	704074	8.071	367115	9.936	178345	2.669
15	6620540	1044565	4.956	716456	8.071	370115	9.936		
16	6620541	1020570	4.949	695868	8.065	356562	9.936		
17	6620542	1071610	4.949	738105	8.065	378624	9.936		
18	6620543	1048820	4.950	721754	8.065	367740	9.936		
19	6620544	1052599	4.956	721850	8.071	372170	9.936		
20	6620545	1002836	4.949	697792	8.065	359421	9.936		
21	6622848	1036694	4.949	708998	8.065	363245	9.936		
22	6622849	1071581	4.962	729492	8.071	374096	9.936		

IS1 (FBZ)=Fluorobenzene
IS2 (CBZ)=Chlorobenzene-d5
IS3 (DCB)=1,4-Dichlorobenzene-d4
IS4 (TBA)=t-Butyl Alcohol-d10

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

GSK08 0046

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_GSK08___

Lab File ID (Standard): ea25c01.d Date Analyzed: 04/25/12

Instrument ID: HP15648 Time Analyzed: 07:38

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(FBZ) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DCB) AREA #	RT #	IS4(TBA) AREA #	RT #
12 HOUR STD	1054251	4.956	725652	8.071	378429	9.942	191440	2.676
UPPER LIMIT	2108502	5.456	1451304	8.571	756858	10.442	382880	3.176
LOWER LIMIT	527126	4.456	362826	7.571	189214	9.442	95720	2.176
LAB SAMPLE ID								
23 6622849DL	1021896	4.955	698671	8.071	364157	9.936		
24 6622850	1031378	4.949	698144	8.064	359816	9.936		
25 6616298	1064506	4.956	726337	8.071	372889	9.936	157794	2.663

IS1 (FBZ)=Fluorobenzene
IS2 (CBZ)=Chlorobenzene-d5
IS3 (DCB)=1,4-Dichlorobenzene-d4
IS4 (TBA)=t-Butyl Alcohol-d10

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Lancaster Laboratories
Runlog for Hewelet Packard GC/MS System HP15648 **HP #27**

** Shift #1 Analyst: JML ** Shift #2 Analyst: _____ ** Shift #3 Analyst: _____ *

Comment Code:
R = Reinjection necessary
S = Surrogate problem
NU = Not used
MR = Meets requirements
Cz = Confirms z, (z = S, I or X)
X = Sample sent to be reextracted
I = Internal Standard problem
F = Further dilution required
IUO = Internal use only
T = Injected outside valid tune period

Other problems or comments are as follows:

8260_WATERS

Data Directory Path is - d:\data\12MAR21A\

FILE	SAMPLE	LLI#	DATE	TIME	BATCH	D.F.	NOTES
EM21T01.D	50ng BFB	BFB SEP28-11	21 Mar 2012	11:35			MR
EM21X01.D	BLK	BLK	21 Mar 2012	11:43			NU
EM21I01.D	VSTD300	VSTD300	21 Mar 2012	12:03			MR
EM21I02.D	VSTD100	VSTD100	21 Mar 2012	12:23			MR
EM21I03.D	VSTD050	VSTD050	21 Mar 2012	12:43			MR
EM21I04.D	VSTD020	VSTD020	21 Mar 2012	13:03			MR
EM21I05.D	VSTD010	VSTD010	21 Mar 2012	13:23			MR
EM21I06.D	VSTD004	VSTD004	21 Mar 2012	13:43			MR
EM21M01.D	MDL001	MDL001	21 Mar 2012	14:03			MR
EM21CV1.D	ICVELG	ICVELG	21 Mar 2012	14:23	E120819AA		MR
EM21B01.D	VBLKE42	VBLKE42	21 Mar 2012	14:43	E120811AA		
EM21M11.D	MDL001	1MDL#1	21 Mar 2012	15:03	E120811AA		
EM21M12.D	MDL001	1MDL#2	21 Mar 2012	15:23	E120811AA		

Lancaster Laboratories
Runlog for Hewelet Packard GC/MS System HP15648 **HP #27**

** Shift #1 Analyst:___JML_____** Shift #2 Analyst:___KAS_____** Shift #3 Analyst:_____*

Comment Code:

R =	Reinjection necessary	X =	Sample sent to be reextracted
S =	Surrogate problem	I =	Internal Standard problem
NU =	Not used	F =	Further dilution required
MR =	Meets requirements	IUO =	Internal use only
Cz =	Confirms z, (z = S, I or X)	T =	Injected outside valid tune period

Other problems or comments are as follows:

_____

_____

_____

_____

Data Directory Path is - d:\data\12APR25A\

FILE	SAMPLE	LLI#	DATE	TIME	BATCH	D.F.	NOTES
EA25T01.D	50ng BFB	BFB MAR28-12	25 Apr 2012	06:57			NU
EA25T02.D	50ng BFB	BFB MAR28-12	25 Apr 2012	07:10			MR
EA25X01.D	BLK	BLK	25 Apr 2012	07:18			NU
EA25C01.D	VSTD050	VSTD050	25 Apr 2012	07:38	E121161AA		MR
EA25B01.D	VBLKE91	VBLKE91	25 Apr 2012	07:58	E121161AA		MR
EA25S01.D	LCSE91	LCSE91	25 Apr 2012	08:18	E121161AA		MR
EA25X02.D	BLK	BLK	25 Apr 2012	09:06			NU
EA25S02.D	CHREB	6623803	25 Apr 2012	09:26	E121161AA		MR
EA25S03.D	CHRTR	6623804	25 Apr 2012	09:46	E121161AA		MR
EA25S04.D	CHFTB	6620546	25 Apr 2012	10:06	E121161AA		MR
EA25S05.D	CTRBL	6624148	25 Apr 2012	10:26	E121161AA		MR
EA25S06.D	C0220	6624143	25 Apr 2012	10:47	E121161AA	5	MR
EA25S07.D	C0221	6624144	25 Apr 2012	11:07	E121161AA	5	MR
EA25S08.D	C1078	6624145	25 Apr 2012	11:27	E121161AA	5	MR
EA25S09.D	1078D	6624146	25 Apr 2012	11:47	E121161AA	5	MR
EA25S10.D	C0219	6624147	25 Apr 2012	12:06	E121161AA	5	MR
EA25S11.D	CHR1R	6623799	25 Apr 2012	12:26	E121161AA		MR
EA25S12.D	CHR1RMS	6623800MS	25 Apr 2012	12:47	E121161AA		MR
EA25S13.D	CHR1RMSD	6623801MSD	25 Apr 2012	13:07	E121161AA		MR
EA25S14.D	CHF02	6620540	25 Apr 2012	13:27	E121161AA		MR
EA25S15.D	CHF05	6620541	25 Apr 2012	13:47	E121161AA		MR
EA25S16.D	CHFE5	6620542	25 Apr 2012	14:07	E121161AA		MR
EA25S17.D	CHF18	6620543	25 Apr 2012	14:27	E121161AA		MR
EA25S18.D	CHF9R	6620544	25 Apr 2012	14:47	E121161AA		MR
EA25S19.D	CHF9D	6620545	25 Apr 2012	15:07	E121161AA		MR
EA25S20.D	52263	6622848	25 Apr 2012	15:27	E121161AA		MR
EA25S21.D	52264	6622849	25 Apr 2012	15:47	E121161AA	5	F
EA25S22.D	52264DL	6622849DL	25 Apr 2012	16:07	E121161AA	50	MR
EA25S23.D	52265	6622850	25 Apr 2012	16:27	E121161AA		MR
EA25S24.D	R10S5	6616298	25 Apr 2012	16:47	E121161AA	5	MR

eurofins | Lancaster Laboratories

LOQ/MDL Summary
GC/MS Volatiles

SDG: GSK08

Fraction: Volatiles by GC/MS

10904: Volatiles by 8260B Analyte Name	Default MDL	Default LOQ	Units
Dichlorodifluoromethane	2	5	ug/l
Chloromethane	1	5	ug/l
Vinyl Chloride	1	5	ug/l
Bromomethane	1	5	ug/l
Chloroethane	1	5	ug/l
Trichlorofluoromethane	2	5	ug/l
1,1-Dichloroethene	0.8	5	ug/l
Freon 113	2	10	ug/l
Freon 123a	2	5	ug/l
Methylene Chloride	2	5	ug/l
1,1-Dichloroethane	1	5	ug/l
1,2-Dichloroethene (Total)	0.8	5	ug/l
Chloroform	0.8	5	ug/l
1,1,1-Trichloroethane	0.8	5	ug/l
Carbon Tetrachloride	1	5	ug/l
Benzene	0.5	5	ug/l
1,2-Dichloroethane	1	5	ug/l
Trichloroethene	1	5	ug/l
1,2-Dichloropropane	1	5	ug/l
Dibromomethane	1	5	ug/l
Bromodichloromethane	1	5	ug/l
cis-1,3-Dichloropropene	1	5	ug/l
Toluene	0.7	5	ug/l
trans-1,3-Dichloropropene	1	5	ug/l
1,1,2-Trichloroethane	0.8	5	ug/l
Tetrachloroethene	0.8	5	ug/l
Dibromochloromethane	1	5	ug/l
Chlorobenzene	0.8	5	ug/l
1,1,1,2-Tetrachloroethane	1	5	ug/l
Ethylbenzene	0.8	5	ug/l
Xylene (Total)	0.8	5	ug/l
Bromoform	1	5	ug/l
Bromobenzene	1	5	ug/l
1,1,2,2-Tetrachloroethane	1	5	ug/l
1,2,3-Trichloropropane	1	5	ug/l
2-Chlorotoluene	1	5	ug/l
4-Chlorotoluene	1	5	ug/l
1,3-Dichlorobenzene	1	5	ug/l
1,4-Dichlorobenzene	1	5	ug/l
Benzyl Chloride	1	5	ug/l
1,2-Dichlorobenzene	1	5	ug/l

eurofins | Lancaster Laboratories

GC/MS Volatiles pH Log

Batch: E121161AA

LLI#	pH	Date Checked	Initials/ Employee #	Comments
6623803	<2	4/25/2012	KAS 2648	038a
6623804	<2	4/25/2012	KAS 2648	038a
6620546	<2	4/25/2012	KAS 2648	038a
6624148	<2	4/25/2012	KAS 2648	038a
6624143	<2	4/25/2012	JML 1693	038a
6624144	<2	4/25/2012	JML 1693	038a
6624145	<2	4/25/2012	JML 1693	038a
6624146	<2	4/25/2012	JML 1693	038a
6624147	<2	4/25/2012	JML 1693	038a
6623799	<2	4/25/2012	KAS 2648	038a
6623800	<2	4/25/2012	KAS 2648	038a
6623801	<2	4/25/2012	KAS 2648	038a
6620540	<2	4/25/2012	KAS 2648	038a
6620541	<2	4/25/2012	KAS 2648	038a
6620542	<2	4/25/2012	KAS 2648	038a
6620543	<2	4/25/2012	KAS 2648	038a
6620544	<2	4/25/2012	KAS 2648	038a
6620545	<2	4/25/2012	KAS 2648	038a
6616298	7	4/25/2012	JML 1693	099a

ATTACHMENT E

PROJECT CORRESPONDENCE

No Project Correspondence associated with this SDG

DATA VALIDATION REPORT

TECHCITY (FORMER IBM KINGSTON) GROUNDWATER CONTAMINATION SUPERFUND SITE

Lancaster Laboratories
SDG: **GSK08**

May 21, 2012

Prepared for:

GROUNDWATER SCIENCES CORPORATION
2601 Market Place Street, Suite 310
Harrisburg, Pennsylvania 17110

Prepared by:

VERIDIAN ENVIRONMENTAL, INC.
1111 Kennedy Place
Suite 2
Davis, California 95616

DATA VALIDATION REPORT

TECHCITY (FORMER IBM KINGSTON) GROUNDWATER CONTAMINATION SUPERFUND SITE

May 21, 2012

Name	Position	Signature/Date
Veridian Environmental, Inc.		
Prepared by:		
Tracy A. Young	**Senior Quality Assurance Chemist**	Tracy A. Young 5/21/2012
Ann Lack	**Senior Quality Assurance Chemist**	Ann Lack 5/21/12
Reviewed and Approved by:		
Charlotte R. Symms	**President**	Charlotte R Symms 5/21/12

TABLE OF CONTENTS

ATTACHMENTS

ACRONYMS

Acronym	Definition
%D	Percent Difference
%REC	Percent Recovery
%RI	Percent Relative Intensity
%RPD	Percent Relative Percent Difference
%RSD	Percent Relative Standard Deviation
%S	Percent Solids
ARRF	Average Relative Response Factor
CCC	Calibration Check Analytes
CCV	Continuing Calibration Verification
CD	Correctable Deficiency
CF	Calibration Factor
CLP	Contract Laboratory Program
COC	Chain-of-Custody
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
DER	Division of Environmental Remediation
DF	Dilution Factor
DL	Dilution Limit
DO	Diluted Out
DOC	Date of Collection
DQO	Data Quality Objective
DVR	Data Validation Report
EDD	Electronic Data Deliverable
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
GSC	Groundwater Sciences Corporation
ICAL	Initial Calibration
ICV	Initial Calibration Verification
IS	Internal Standard
kg	Kilogram
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
l	Liter
LL	Lower Limit
LLI	Lancaster Laboratories, Inc.
MDL	Method Detection Limit
ml	Milliliter
MRL	Method Reporting Limit
MS	Matrix Spike

Acronym	Definition
MSD	Matrix Spike Duplicate
µg	Microgram
ND	Non-detect
NFG	National Functional Guidelines
NIST	National Institute of Standards and Technology
NQW	No Qualification Warranted
NTC	Non Target Compound
NYSDEC	New York State Department of Environmental Conservation
OERR	Office of Emergency and Remedial Response
OSWER	Office of Solid Waste and Emergency Response
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
RRF	Relative Response Factor
RRT	Relative Retention Time
RSD	Relative Standard Deviation
RT	Retention Time
SDG	Sample Delivery Group
SM	Standard Method
SOP	Standard Operating Procedure
SOW	Statement of Work
SPCC	System Performance Check Analytes
Surr	Surrogate
TAL	Target Analyte List
TCL	Target Analyte List
TIC	Tentatively Identified Analyte
UL	Upper Limit
U.S. EPA	United States Environmental Protection Agency
VEI	Veridian Environmental, Inc.
VOC	Volatile Organic Analyte

1.0 INTRODUCTION

This Data Validation Report (DVR) details the assessment and the Level IV data validation performed on the sample analyses from SDG GSK08 as summarized in Attachment A. These samples were collected on April 19, 2012, as part of the TechCity (Former IBM Kingston) Facility Superfund Site in Kingston, New York. The samples were shipped to and analyzed by Eurofins Lancaster Laboratories, Inc., (LLI) in Lancaster, Pennsylvania.

Data validation of all sample results was performed by Tracy A. Young, Ann Lack, and Charlotte R. Symms of Veridian Environmental, Inc. (VEI). A review (Level III) of 100% of the data, which allows for complete independent data review without reconstruction of analytical data, was conducted. In addition, approximately 10% of the project data underwent a comprehensive or extensive review (Level IV) which allowed for the complete reconstruction of the chemical analyses. The comprehensive review included the recalculation of calibration curves and sample results. None of the samples from this report were selected for the comprehensive Level IV review. The data were validated in accordance with the analytical methods and the documents entitled: *RFI Management Plans, Former IBM Kingston Facility* (Golder Associates, 2009); *U.S. EPA Region 2 RCRA and CERCLA Data Validation Standard Operating Procedures* (U.S. EPA Region 2, 2006); and with guidance from *DER-10 / Technical Guidance for Site Investigation and Remediation* (NYSDEC DEC Program Policy, 2010), *Data Quality Assessment: A Reviewer's Guide* (U.S. EPA QA/G-9R 2006); *Data Quality Assessment: Statistical Tools for Practitioners* (U.S. EPA QA-G-9S, 2006); and *U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (U.S. EPA, 2008).

The data were examined to determine the usability of the analytical results and the compliance relative to requirements specified in the analytical methods and guidelines provided. Qualifier codes have been placed next to the results on the laboratory analytical result forms so the data user can quickly assess the qualitative and/or quantitative reliability of any result. The data qualifications allow the data end-user to best understand the usability of the analytical results. It should be understood that data that have not been qualified in this report should be considered valid based on the quality control (QC) criteria that have been reviewed. This report was prepared to provide a critical review of the laboratory analyses and the reported analytical results. Quality assurance (QA) reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories.

The findings of this QA review are presented in Section 2.0 of this report, a summary is presented in Section 3.0, and the references are provided in Section 4.0. Attachment A summarizes the client sample identification, the analytical laboratory, laboratory sample identification, sample date, sample time, and the analyses requested for each sample in this SDG. Copies of the laboratory case narrative, the sample chain-of-custody (COC) record, and the sample receipt documentation log report forms for samples discussed in this DVR are included in Attachment B. The qualified analytical result forms for the samples are provided in Attachment C. The samples were analyzed for Volatile Organic Analytes (EPA Method 8260B). The data validation checklist and copies of all relevant documentation needed to support the findings of the quality assurance review are presented in Attachment D. Project Correspondence is presented as Attachment E.

Several data validation flags are utilized in the validation process. The definitions of these qualifier flags are as follows:

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected at or above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample result and/or analysis have been rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

All necessary flags have been incorporated into the data presented in this report (Attachment C). As per project-specific reporting requirements, all results reported at concentrations less than the sample-specific practical quantitation limits (adjusted for dilution factors, sample size, and percent solids) should be considered estimated (J).

2.0 FINDINGS

Copies of all relevant documentation needed to support the findings of the quality assurance review are presented in Attachment D of this report. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance. Data that warranted qualification are summarized in Section 3.0 of this report.

2.1 VOLATILE ORGANIC COMPOUNDS DATA VALIDATION

The samples analyzed for Volatile Organic Compounds (VOCs) by U.S. EPA Method 8260B were evaluated for the following data requirements.

	Acceptable	Acceptable With Discussion	Acceptable With Qualification	Not Acceptable	Not Applicable
Sample Condition Upon Receipt		✓			
Analytical Holding Times	✓				
Blank Analyses	✓				
GC/MS Tuning and Mass Calibrations	✓				
Initial Calibrations	✓				
Initial Calibration Verifications			✓		

	Acceptable	Acceptable With Discussion	Acceptable With Qualification	Not Acceptable	Not Applicable
Continuing Calibrations			✓		
Surrogate Spike Recoveries	✓				
LCS Analyses			✓		
MS/MSD Analyses					✓
Internal Standards	✓				
Verification of Sample Results					✓
Field Duplicate Results	✓				
Verification of the Client EDD	✓				
Additional Findings		✓			

A comprehensive Level IV review was performed on ten percent (10%) of the project data. None of the samples from SDG GSK08 were selected for the comprehensive Level IV review. Details of the data findings are presented following the summary of the data requirements.

2.1.1 Sample Condition Upon Receipt

All samples were received intact and with the proper preservation (pH $\leq$ 2) by LLI. The temperature of the cooler was 1.4°C upon receipt by the laboratory. Since the samples were not frozen, qualification of the data is not warranted.

2.1.2 Analytical Holding Times

All samples were prepared and analyzed within the project-specified holding time of fourteen days from sample collection.

2.1.3 Blank Analyses

All associated field and laboratory blanks were free of target analyte contamination.

2.1.4 Gas Chromatograph/Mass Spectrometer Tuning and Mass Calibrations

All gas chromatograph/mass spectrometer (GC/MS) tuning and mass calibrations met project criteria (m/z ratios). All project samples were analyzed within the 12-hour tune windows.

2.1.5 Initial Calibrations

For the initial calibrations, all SPCC (min. RRFs) and CCC analytes (%RSD $\leq$ 30%) met project criteria. In addition, all target analytes displayed acceptable calibrations (average RRF > 0.050 and %RSD $\leq$ 20%).

2.1.6 Initial Calibration Verifications

All target compounds demonstrated acceptable percent differences in the Initial Calibration Verification (ICV) except for dichlorodifluoromethane listed in the following table. A low

percent difference was observed for dichlorodifluoromethane. The associated non-detect results are biased low (UJ).

Lab Sample ID Date (Time)	Analyte(s)	Percent Difference	Associated Qualified Sample(s)
ICV 03/21/2012 (14:23)	Dichlorodifluoromethane	-28%	**CS0220120419 CS0221120419 CS1078120419 CX1078120419 CS0219120419 TTB204190419**

2.1.7 Continuing Calibrations

For the continuing calibrations, all SPCC (min. RRFs) and CCC analytes (%D ≤ 20%) met project criteria. In addition, the percent differences and RRFs for all other target analytes were ≤ 20% and > 0.050, respectively except for chloromethane. A low percent difference was noted for chloromethane in the following continuing calibration. The associated non-detect results are estimated (UJ) in accordance with the project criteria.

Lab Sample ID Date (Time)	Analyte(s)	Percent Difference	Associated Qualified Sample(s)
CCV 04/25/2012 (07:38)	Chloromethane	-25%	**CS0220120419 CS0221120419 CS1078120419 CX1078120419 CS0219120419 TTB204190419**

2.1.8 Surrogate Spike Recoveries

For all project analyses, the surrogate recoveries were within project criteria.

2.1.9 Laboratory Control Sample Analyses

For all LCS analyses, the recoveries for all target compounds met project criteria with the exception of dichlorodifluoromethane in the following table. A low percent recovery was observed for this analyte. The associated non-detect results are biased low (UJ).

Lab Sample ID Date (Time)	Analyte(s)	Percent Recovery	Limits	Associated Qualified Sample(s)
LCSE91 04/25/2012 (08:18)	Dichlorodifluoromethane	61%	63-187%	**CS0220120419 CS0221120419 CS1078120419 CX1078120419 CS0219120419 TTB204190419**

2.1.10 Matrix Spike/Matrix Spike Duplicate Analyses

The laboratory did not prepare and analyze a Matrix Spike/Matrix Spike Duplicate (MS/MSD) for this analysis on any sample from SDG GSK08. Consequently, an assessment of matrix effects cannot be made for these samples.

2.1.11 Internal Standards

For all project sample analyses, the internal standards met project criteria (RT within ± 30 seconds of ICAL mid-point standard and internal standard area within -50% to + 100% of ICAL mid-point standard).

2.1.12 Verification of Sample Results

None of the samples from SDG GSK08 were selected for a comprehensive Level IV review.

2.1.13 Field Duplicate Results

The following project samples were submitted as a field duplicate pair for this analysis.

SDG	Sample(s)	Field Duplicate(s)
GSK08	**CS1078120419**	**CX1078120419**

Acceptable precision was demonstrated by the results reported for the field duplicate pair to the limited extent that no target analytes were detected above the CRQL.

2.1.14 Verification of the Client Electronic Data Deliverable

The database files provided in the laboratory's enhanced general format matched the data reported by the laboratory.

2.1.15 Additional Findings

As noted on the Case Narrative, the reporting limits were raised due to sample foaming for samples **CS0220120419, CS0221120419, CS1078120419, CX1078120419** and **CS0219120419.** Qualification of the data is not warranted on this basis.

Samples **CS0220120419** (5.0x), **CS0221120419** (5.0x), **CS1078120419** (5.0x), **CX1078120419** (5.0x) and **CS0219120419** (5.0x) were analyzed at a dilution due to sample foaming.

2.2 FIELD DUPLICATES

The following project samples were submitted as a field duplicate pair for this analysis.

SDG	Sample(s)	Field Duplicate(s)
GSK08	**CS1078120419**	**CX1078120419**

Acceptable precision was demonstrated by the results reported for the field duplicate pair.

2.3 REPRESENTATIVENESS EVALUATION

Representativeness is a qualitative evaluation of whether the data represent actual environmental conditions. Representativeness was evaluated using holding time criteria, which reflect the length of time after sample collection that a sample or extract remains representative of environmental conditions. Depending on the analysis, either one or two holding times were evaluated. For those analyses that do not include a sample extraction, only one holding time was evaluated: the length of time between sample collection and analysis. For analyses that require sample extraction prior to analysis, two holding times were evaluated: the length of time from sampling until extraction and the length of time from extraction to analysis. Holding times were compared to standard method-specific holding times accepted by the U.S. EPA. All holding times that are within acceptance criteria are considered representative. Those holding times outside of U.S. EPA acceptance criteria are qualitatively evaluated to determine their effect on sample representativeness. Representativeness was also evaluated by analysis of laboratory method blanks, trip blanks, and equipment blanks that were used to identify sources of contamination not associated with environmental conditions. As summarized in the following sections, the samples appear to be representative of the environmental conditions on site.

2.3.1 Sample Condition Upon Receipt

All samples arrived at the laboratory intact, appropriately preserved and documented except as previously noted. The cooler was received by LLI < 2.0°C. Since the samples were not frozen, qualification of the data is not warranted.

2.3.2 Analytical Holding Times

As previously noted, all holding times were met.

2.3.3 Blank Analyses

As previously discussed, all field and laboratory blanks were free of all target analytes.

2.4 USABILITY AND COMPARABILITY

Usability of data was evaluated by assuring that all the analytical requests were met, the samples were received in the proper condition, and all analyses were performed within the appropriate holding times with the exception of those noted in this report.

3.0 SUMMARY

This QA review has identified aspects of the analytical data that required qualification due to initial calibration verifications, continuing calibrations and LCS recoveries. None of the VOC data were rejected. To confidently use any of the analytical data within this sample set, the data user should understand the qualifications and limitations of the results. SDG GSK08 met the project completeness goal of 90%. The percent completeness is summarized in the following table.

Fraction	Number of Results	Number of Rejected Results	Percent Completeness
VOCs	246	0	100%
Overall	**246**	**0**	**100%**

4.0 REFERENCES

Data Quality Assessment: A Reviewer's Guide, U.S. Environmental Protection Agency, EPA *Data Quality Assessment: A Reviewer's Guide,* U.S. Environmental Protection Agency, EPA QA/G-9R, February, 2006.

Data Quality Assessment: Statistical Tools for Practitioners, U.S. Environmental Protection Agency, EPA QA/G-9S, February, 2006.

DER-10 / Technical Guidance for Site Investigation and Remediation, Office of Remediation and Materials Management, DEC Program Policy, May 3, 2010.

RFI Management Plans, Former IBM Kingston Facility, Golder Associates, September 2005.

SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods Third Edition, U.S. Environmental Protection Agency, Office of Solid Waste, December 1994.

Method 8260B: Volatile Organic Analytes by Gas Chromatography/Mass Spectrometry

U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, EPA 540-R-08-01, June 2008.

U.S EPA Region 2 RCRA and CERCLA Field and Data Validation Standard Operating Procedures

SOP No.	Title	Date
SOP HW-24 Revision 2	Validating Volatile Organic Analytes by SW-846 Method 8260B	October 2006

ATTACHMENT A

CHAIN-OF-CUSTODY SUMMARY TABLE

ATTACHMENT A
CHAIN-OF-CUSTODY SUMMARY TABLE
TechCity (Former IBM Kingston)
Kingston, New York

Client Sample ID	Laboratory	Laboratory SDG	Laboratory Sample ID	Collection Date	Matrix	Parameter(s) Analyzed
CS0220120419	Lancaster Labs	GSK08	6624143	04/19/2012	Water	V
CS0221120419	Lancaster Labs	GSK08	6624144	04/19/2012	Water	V
CS1078120419	Lancaster Labs	GSK08	6624145	04/19/2012	Water	V
CX1078120419 (Field Duplicate of CS1078120419)	Lancaster Labs	GSK08	6624146	04/19/2012	Water	V
CS0219120419	Lancaster Labs	GSK08	6624147	04/19/2012	Water	V
TTB204190419 (Trip Blank)	Lancaster Labs	GSK08	6624148	04/19/2012	Water	V

Notes:
SDG - Sample Delivery Group
V - Volatile Organic Compounds by U.S. EPA Method 8260B

ATTACHMENT B

CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORDS

eurofins | Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

NYSDEC ASP Category B Data Package

Prepared for:

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

Project: Sanitary Sewers Evaluation
Water Samples
Collected on 04/19/12

SDG# GSK08

GROUP	SAMPLE NUMBERS
1303704	6624143-6624148

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-08A-TX

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** 05/15/2012

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Nicole Maljovec at Ext. 1537.

Total Number of Pages 240

eurofins | Lancaster Laboratories

Case Narrative/Conformance Summary

CLIENT: Groundwater Science Co
SDG:GSK08

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Volatiles by 8260B

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
6624143	CS0220120419	X		5	
6624144	CS0221120419	X		5	
6624145	CS1078120419	X		5	
6624146	CX1078120419	X		5	Field Duplicate Sample
6624147	CS0219120419	X		5	
6624148	TTB204190419	X		1	Trip Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

GSK08 0022

eurofins | Lancaster Laboratories

Case Narrative/Conformance Summary

CLIENT: Groundwater Science Co
SDG:GSK08

GC/MS Volatiles

Fraction: Volatiles by GC/MS

SAMPLE ANALYSIS:

(Sample number(s): 6624143-6624147: Analysis: 10904)
Reporting limits were raised due to sample foaming.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Narrative Reviewed and Approved 5/15/12 (Date) by Kathy J. Fair
Specialist

GSK08 0023

IBM Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 06911 Group # 1303709 Sample # 6624143-48

For Lancaster Laboratories use only

Instructions on reverse side correspond with circled numbers.

COC # 016057

(1) Client Information

Client: Groundwater Sciences Corp Acct#: 06911

Project Name#: Sanitary Sewers Evaluation

IBM PM: Dean Chartrand Project State: New York

P.O. #: 93002.37 Sampler: DBergmann / MRuchin

Check One: ☐ Routine Lab GW ☐ Routine GTF O&M

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

OU: _____ (Endicott Non-Routine only)

(4) Matrix

Sediment	Ground	Surface	Potable	NPDES	Air
☐	☐	☐	☐	☐	☐

Soil	Water	Oil
☐	☐	☐

(5) Analyses Requested

Preservation Code: H

(2) Sample Identification	Collected Date	Collected Time	(3) Grab	Composite	Soil	Water	Oil	Total # of Containers	8260B Std water
CS022012O419	4/19/2012	0935	X			X		3	X
CS022112O419	4/19/2012	1005	X			X		3	X
CS107812O419	4/19/2012	1035	X			X		3	X
CX107812O419	4/19/2012	1035	X			X		3	X
CS021912O419	4/19/2012	1110	X			X		3	X
TTB2O419O419	4/19/2012	—	—			X		2	X

For Lab Use Only

SCR# 120450

Preservation Codes

H = HC T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

(6) Remarks

(7) Turnaround Time Requested (TAT) (please circle)

Standard Rush

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

Date results are needed: _____

Rush results requested by (please circle) E-mail Phone

E-mail: _____ Phone: _____

(8) Data Package Options (please circle if required)

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

Type III (Reduced NJ) MA MCP NY ASP B

Type VI (Raw Data Only) CT RCP COC Seal 407341

SDG Complete? Yes No

Relinquished by	Date	Time	Received by	Date	Time
Suzette Lehman	4/5/12	7:40	DABergmann	4/6/2012	1320
DABergmann	4/19/2012	1500			
			Suzette Lehman	4/20/12	0915

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

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

Temperature upon receipt 1.4 °C

(9)

See DVR

eurofins | Lancaster Laboratories

Environmental Sample Administration
Receipt Documentation Log

Client/Project: IBM

Date of Receipt: 4/20/12

Time of Receipt: 0915

Source Code: SO-1

Shipping Container Sealed: (YES) NO

Custody Seal Present * : (YES) NO

* Custody seal was intact unless otherwise noted in the discrepancy section

Package: (Chilled) Not Chilled

Temperature of Shipping Containers							
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments
1	9422	1.4	TB	WI	Y	B	
2							
3							
4							
5							
6							

Number of Trip Blanks received NOT listed on chain of custody: 0

Paperwork Discrepancy/Unpacking Problems:

Unpacker Signature/Emp#: Suzette Lehman 1677 **Date/Time:** 4/20/12 1630

Issued by Dept. 6042 Management

2174.06

ATTACHMENT C

QUALIFIED LABORATORY TEST RESULT FORMS

eurofins | Lancaster Laboratories

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

April 26, 2012

Project: Sanitary Sewers Evaluation

Submittal Date: 04/20/2012
Group Number: 1303704
SDG: GSK08
PO Number: DB93002.37
State of Sample Origin: NY

Client Sample Description	Lancaster Labs (LLI) #
CS0220120419 Grab Water	6624143
CS0221120419 Grab Water	6624144
CS1078120419 Grab Water	6624145
CX1078120419 Grab Water	6624146
CS0219120419 Grab Water	6624147
TTB204190419 Water	6624148

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

ELECTRONIC COPY TO	Groundwater Science Co	Attn: Dorothy Bergmann
1 COPY TO	Data Package Group	

Respectfully Submitted,

Nicole L. Maljovec
Senior Specialist Group Leader

(717) 556-7259

GSK08 0006

Sample Description: CS0220120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624143
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 09:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0220 SDG#: GSK08-01

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l		ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.		3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.		5	25	5	
10904	Bromobenzene	108-86-1	N.D.		5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.		5	25	5	
10904	Bromoform	75-25-2	N.D.		5	25	5	
10904	Bromomethane	74-83-9	N.D.		5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.		5	25	5	
10904	Chlorobenzene	108-90-7	N.D.		4	25	5	
10904	Chloroethane	75-00-3	N.D.		5	25	5	
10904	Chloroform	67-66-3	N.D.		4	25	5	
10904	Chloromethane	74-87-3	N.D.		5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.		5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.		5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.		5	25	5	
10904	Dibromomethane	74-95-3	N.D.		5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.		5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.		5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.		5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.		10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.		5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.		5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.		4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.		4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.		5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.		5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.		5	25	5	
10904	Ethylbenzene	100-41-4	N.D.		4	25	5	
10904	Freon 113	76-13-1	N.D.		10	50	5	
10904	Freon 123a	354-23-4	N.D.		10	25	5	
10904	Methylene Chloride	75-09-2	N.D.		10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.		4	25	5	
10904	Toluene	108-88-3	21	J	4	25	5	J
10904	1,1,1-Trichloroethane	71-55-6	N.D.		4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.		4	25	5	
10904	Trichloroethene	79-01-6	N.D.		5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.		10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.		5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.		5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.		4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 8260B

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CS0220120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624143
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 09:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0220 SDG#: GSK08-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 10:47	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 10:47	Jason M Long	5

GSK08 0089

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

Sample Description: CS0221120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624144
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:05 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0221 SDG#: GSK08-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.	3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.	5	25	5	
10904	Bromobenzene	108-86-1	N.D.	5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.	5	25	5	
10904	Bromoform	75-25-2	N.D.	5	25	5	
10904	Bromomethane	74-83-9	N.D.	5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.	5	25	5	
10904	Chlorobenzene	108-90-7	N.D.	4	25	5	
10904	Chloroethane	75-00-3	N.D.	5	25	5	
10904	Chloroform	67-66-3	N.D.	4	25	5	
10904	Chloromethane	74-87-3	N.D.	5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.	5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.	5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.	5	25	5	
10904	Dibromomethane	74-95-3	N.D.	5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.	5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.	5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.	5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.	10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.	5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.	5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.	4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.	5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	5	25	5	
10904	Ethylbenzene	100-41-4	N.D.	4	25	5	
10904	Freon 113	76-13-1	N.D.	10	50	5	
10904	Freon 123a	354-23-4	N.D.	10	25	5	
10904	Methylene Chloride	75-09-2	N.D.	10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.	4	25	5	
10904	Toluene	108-88-3	4 J	4	25	5	J
10904	1,1,1-Trichloroethane	71-55-6	N.D.	4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.	4	25	5	
10904	Trichloroethene	79-01-6	N.D.	5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.	10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.	5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.	5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.	4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 8810

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CS0221120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624144
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:05 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0221 SDG#: GSK08-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 11:07	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 11:07	Jason M Long	5

GSK08 0011

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

Sample Description: CS1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624145
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C1078 SDG#: GSK08-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l		
10904	Benzene	71-43-2	N.D.	3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.	5	25	5	
10904	Bromobenzene	108-86-1	N.D.	5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.	5	25	5	
10904	Bromoform	75-25-2	N.D.	5	25	5	
10904	Bromomethane	74-83-9	N.D.	5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.	5	25	5	
10904	Chlorobenzene	108-90-7	N.D.	4	25	5	
10904	Chloroethane	75-00-3	N.D.	5	25	5	
10904	Chloroform	67-66-3	N.D.	4	25	5	
10904	Chloromethane	74-87-3	N.D.	5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.	5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.	5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.	5	25	5	
10904	Dibromomethane	74-95-3	N.D.	5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.	5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.	5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.	5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.	10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.	5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.	5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.	4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.	5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	5	25	5	
10904	Ethylbenzene	100-41-4	N.D.	4	25	5	
10904	Freon 113	76-13-1	N.D.	10	50	5	
10904	Freon 123a	354-23-4	N.D.	10	25	5	
10904	Methylene Chloride	75-09-2	N.D.	10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.	4	25	5	
10904	Toluene	108-88-3	N.D.	4	25	5	
10904	1,1,1-Trichloroethane	71-55-6	N.D.	4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.	4	25	5	
10904	Trichloroethene	79-01-6	N.D.	5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.	10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.	5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.	5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.	4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 08-2

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CS1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624145
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C1078 SDG#: GSK08-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 11:27	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 11:27	Jason M Long	5

GSK08 0013

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CX1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624146
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

1078D SDG#: GSK08-04FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l	
10904	Benzene	71-43-2	N.D.	3	25	5
10904	Benzyl Chloride	100-44-7	N.D.	5	25	5
10904	Bromobenzene	108-86-1	N.D.	5	25	5
10904	Bromodichloromethane	75-27-4	N.D.	5	25	5
10904	Bromoform	75-25-2	N.D.	5	25	5
10904	Bromomethane	74-83-9	N.D.	5	25	5
10904	Carbon Tetrachloride	56-23-5	N.D.	5	25	5
10904	Chlorobenzene	108-90-7	N.D.	4	25	5
10904	Chloroethane	75-00-3	N.D.	5	25	5
10904	Chloroform	67-66-3	N.D.	4	25	5
10904	Chloromethane	74-87-3	N.D.	5	25	5
10904	2-Chlorotoluene	95-49-8	N.D.	5	25	5
10904	4-Chlorotoluene	106-43-4	N.D.	5	25	5
10904	Dibromochloromethane	124-48-1	N.D.	5	25	5
10904	Dibromomethane	74-95-3	N.D.	5	25	5
10904	1,2-Dichlorobenzene	95-50-1	N.D.	5	25	5
10904	1,3-Dichlorobenzene	541-73-1	N.D.	5	25	5
10904	1,4-Dichlorobenzene	106-46-7	N.D.	5	25	5
10904	Dichlorodifluoromethane	75-71-8	N.D.	10	25	5
10904	1,1-Dichloroethane	75-34-3	N.D.	5	25	5
10904	1,2-Dichloroethane	107-06-2	N.D.	5	25	5
10904	1,1-Dichloroethene	75-35-4	N.D.	4	25	5
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	4	25	5
10904	1,2-Dichloropropane	78-87-5	N.D.	5	25	5
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	5	25	5
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	5	25	5
10904	Ethylbenzene	100-41-4	N.D.	4	25	5
10904	Freon 113	76-13-1	N.D.	10	50	5
10904	Freon 123a	354-23-4	N.D.	10	25	5
10904	Methylene Chloride	75-09-2	N.D.	10	25	5
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	5	25	5
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	5	25	5
10904	Tetrachloroethene	127-18-4	N.D.	4	25	5
10904	Toluene	108-88-3	N.D.	4	25	5
10904	1,1,1-Trichloroethane	71-55-6	N.D.	4	25	5
10904	1,1,2-Trichloroethane	79-00-5	N.D.	4	25	5
10904	Trichloroethene	79-01-6	N.D.	5	25	5
10904	Trichlorofluoromethane	75-69-4	N.D.	10	25	5
10904	1,2,3-Trichloropropane	96-18-4	N.D.	5	25	5
10904	Vinyl Chloride	75-01-4	N.D.	5	25	5
10904	Xylene (Total)	1330-20-7	N.D.	4	25	5

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 0014

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: CX1078120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624146
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 10:35 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

1078D SDG#: GSK08-04FD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 11:47	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 11:47	Jason M Long	5

GSK08 0015

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

Sample Description: CS0219120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624147
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 11:10 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0219 SDG#: GSK08-05

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l		ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.		3	25	5	
10904	Benzyl Chloride	100-44-7	N.D.		5	25	5	
10904	Bromobenzene	108-86-1	N.D.		5	25	5	
10904	Bromodichloromethane	75-27-4	N.D.		5	25	5	
10904	Bromoform	75-25-2	N.D.		5	25	5	
10904	Bromomethane	74-83-9	N.D.		5	25	5	
10904	Carbon Tetrachloride	56-23-5	N.D.		5	25	5	
10904	Chlorobenzene	108-90-7	N.D.		4	25	5	
10904	Chloroethane	75-00-3	N.D.		5	25	5	
10904	Chloroform	67-66-3	67		4	25	5	
10904	Chloromethane	74-87-3	N.D.		5	25	5	UJ
10904	2-Chlorotoluene	95-49-8	N.D.		5	25	5	
10904	4-Chlorotoluene	106-43-4	N.D.		5	25	5	
10904	Dibromochloromethane	124-48-1	N.D.		5	25	5	
10904	Dibromomethane	74-95-3	N.D.		5	25	5	
10904	1,2-Dichlorobenzene	95-50-1	N.D.		5	25	5	
10904	1,3-Dichlorobenzene	541-73-1	N.D.		5	25	5	
10904	1,4-Dichlorobenzene	106-46-7	N.D.		5	25	5	
10904	Dichlorodifluoromethane	75-71-8	N.D.		10	25	5	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.		5	25	5	
10904	1,2-Dichloroethane	107-06-2	N.D.		5	25	5	
10904	1,1-Dichloroethene	75-35-4	N.D.		4	25	5	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.		4	25	5	
10904	1,2-Dichloropropane	78-87-5	N.D.		5	25	5	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.		5	25	5	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.		5	25	5	
10904	Ethylbenzene	100-41-4	N.D.		4	25	5	
10904	Freon 113	76-13-1	N.D.		10	50	5	
10904	Freon 123a	354-23-4	N.D.		10	25	5	
10904	Methylene Chloride	75-09-2	N.D.		10	25	5	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.		5	25	5	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.		5	25	5	
10904	Tetrachloroethene	127-18-4	N.D.		4	25	5	
10904	Toluene	108-88-3	5	J	4	25	5	J
10904	1,1,1-Trichloroethane	71-55-6	N.D.		4	25	5	
10904	1,1,2-Trichloroethane	79-00-5	N.D.		4	25	5	
10904	Trichloroethene	79-01-6	N.D.		5	25	5	
10904	Trichlorofluoromethane	75-69-4	N.D.		10	25	5	
10904	1,2,3-Trichloropropane	96-18-4	N.D.		5	25	5	
10904	Vinyl Chloride	75-01-4	N.D.		5	25	5	
10904	Xylene (Total)	1330-20-7	N.D.		4	25	5	

Reporting limits were raised due to sample foaming.

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 0816

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

Sample Description: CS0219120419 Grab Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624147
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012 11:10 by DB

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

C0219 SDG#: GSK08-05

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 12:06	Jason M Long	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 12:06	Jason M Long	5

GSK08 0017

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: TTB204190419 Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624148
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

CTRBL SDG#: GSK08-06TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor	
GC/MS Volatiles	SW-846 8260B		ug/l	ug/l	ug/l		DVQ
10904	Benzene	71-43-2	N.D.	0.5	5	1	
10904	Benzyl Chloride	100-44-7	N.D.	1	5	1	
10904	Bromobenzene	108-86-1	N.D.	1	5	1	
10904	Bromodichloromethane	75-27-4	N.D.	1	5	1	
10904	Bromoform	75-25-2	N.D.	1	5	1	
10904	Bromomethane	74-83-9	N.D.	1	5	1	
10904	Carbon Tetrachloride	56-23-5	N.D.	1	5	1	
10904	Chlorobenzene	108-90-7	N.D.	0.8	5	1	
10904	Chloroethane	75-00-3	N.D.	1	5	1	
10904	Chloroform	67-66-3	N.D.	0.8	5	1	
10904	Chloromethane	74-87-3	N.D.	1	5	1	UJ
10904	2-Chlorotoluene	95-49-8	N.D.	1	5	1	
10904	4-Chlorotoluene	106-43-4	N.D.	1	5	1	
10904	Dibromochloromethane	124-48-1	N.D.	1	5	1	
10904	Dibromomethane	74-95-3	N.D.	1	5	1	
10904	1,2-Dichlorobenzene	95-50-1	N.D.	1	5	1	
10904	1,3-Dichlorobenzene	541-73-1	N.D.	1	5	1	
10904	1,4-Dichlorobenzene	106-46-7	N.D.	1	5	1	
10904	Dichlorodifluoromethane	75-71-8	N.D.	2	5	1	UJ
10904	1,1-Dichloroethane	75-34-3	N.D.	1	5	1	
10904	1,2-Dichloroethane	107-06-2	N.D.	1	5	1	
10904	1,1-Dichloroethene	75-35-4	N.D.	0.8	5	1	
10904	1,2-Dichloroethene (Total)	540-59-0	N.D.	0.8	5	1	
10904	1,2-Dichloropropane	78-87-5	N.D.	1	5	1	
10904	cis-1,3-Dichloropropene	10061-01-5	N.D.	1	5	1	
10904	trans-1,3-Dichloropropene	10061-02-6	N.D.	1	5	1	
10904	Ethylbenzene	100-41-4	N.D.	0.8	5	1	
10904	Freon 113	76-13-1	N.D.	2	10	1	
10904	Freon 123a	354-23-4	N.D.	2	5	1	
10904	Methylene Chloride	75-09-2	N.D.	2	5	1	
10904	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	1	5	1	
10904	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	1	5	1	
10904	Tetrachloroethene	127-18-4	N.D.	0.8	5	1	
10904	Toluene	108-88-3	N.D.	0.7	5	1	
10904	1,1,1-Trichloroethane	71-55-6	N.D.	0.8	5	1	
10904	1,1,2-Trichloroethane	79-00-5	N.D.	0.8	5	1	
10904	Trichloroethene	79-01-6	N.D.	1	5	1	
10904	Trichlorofluoromethane	75-69-4	N.D.	2	5	1	
10904	1,2,3-Trichloropropane	96-18-4	N.D.	1	5	1	
10904	Vinyl Chloride	75-01-4	N.D.	1	5	1	
10904	Xylene (Total)	1330-20-7	N.D.	0.8	5	1	

General Sample Comments

State of New York Certification No. 10670

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

GSK08 0018

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Sample Description: TTB204190419 Water
Sanitary Sewers Evaluation

LLI Sample # WW 6624148
LLI Group # 1303704
Account # 06911

Project Name: Sanitary Sewers Evaluation

Collected: 04/19/2012

Submitted: 04/20/2012 09:15
Reported: 04/26/2012 15:42

Groundwater Science Co
560 Route 53
Suite 202
Beacon NY 12508

CTRBL SDG#: GSK08-06TB*

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	Volatiles by 8260B	SW-846 8260B	1	E121161AA	04/25/2012 10:26	Jason M Long	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E121161AA	04/25/2012 10:26	Jason M Long	1

GSK08 0019

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

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

eurofins | Lancaster Laboratories

Explanation of Symbols and Abbreviations

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

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

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

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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

ATTACHMENT D

DATA VALIDATION CHECKLIST AND SUPPORT DOCUMENTATION

SOP # HW-24
Revision # 2
August 2008

USEPA
Hazardous Waste Support Branch
Validating Volatile Organic Compounds
By Gas Chromatography/Mass Spectrometry
SW-846 Method 8260B

Prepared by: _____ Date: 8/22/08
George Karras Chemist
Hazardous Waste Support Section

Prepared by: _____ Date: 8/22/08
Russell Arnone Chemist
Hazardous Waste Support Section

Concurred by: _____ Date: 8/26/08
Linda Mauel Chief
Hazardous Waste Support Section

Approved by _____ Date: 8/26/08
Robert Runyon, Chief
Hazardous Waste Support Branch

Annual Review

Reviewed by: _____ Date: 08/11/09
Name

Reviewed by: _____ Date: _____
Name

Scope and Applicability

This SOP offers detailed guidance in evaluating laboratory data generated according to the USEPA SW-846, Method 8260B December 1996. The validation methods and actions discussed in this document are based on the requirements set forth in USEPA SW-846, Method 8260B and Method 8000C, Rev 3, March 2003; and "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," January, 2005. This document covers technical as well as method specific problems; however situations may arise where data limitations must be assessed based on the reviewer's own professional judgement.

Summary

To ensure a thorough evaluation of each result in a data case, the reviewer must complete the checklist within this SOP, answering specific questions while performing the prescribed "ACTIONS" in each section. Qualifiers (or flags) are applied to questionable or unusable results as instructed. The data qualifiers discussed in this document are defined on page 4.

The reviewer must prepare a detailed data assessment to be submitted along with the complete SOP checklist. The Data Assessment must list all data qualifications, reasons for qualifications, instances of missing data, and contract non-compliance.

DEFINITIONS

Acronyms

BNA - base neutral acid(another name for Semi Volatiles)
CLP - Contract Laboratory Program
CRQL - Contract Required Quantitation Limit
CF - calibration factor
%D - percent difference
DCB -decachlorobiphenyl
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenylethane
DDT - dichlorodiphenyltrichloroethane
DoC - Date of Collection
GC - gas chromatography
GC/ECD - gas chromatography/electron capture detector
GC/MS - gas chromatography/mass spectrometer
GPC - gel permeation chromatography
IS - internal standard
kg - kilogram
µg - microgram
MS - matrix spike
MSD - matrix spike duplicate
ℓ - liter
mℓ - milliliter
PCB - Polychlorinated biphenyl
PE - performance evaluation
PEM - Performance Evaluation Mixture
QC - quality control
RAS - Routine Analytical Services
RIC - reconstructed ion chromatogram
RPD - relative percent difference
RRF - relative response factor
RRF - average relative response factor (from initial calibration)
RRT - relative retention time
RSD - relative standard deviation
RT - retention time
RSCC - Regional Sample Control Center
SDG - sample delivery group
SMC - system monitoring compound
SOP - standard operating procedure
SOW - Statement of Work
SVOA - semivolatile organic acid
TCL - Target Compound List
TCLP - Toxicity Characteristics Leachate Procedure
TCX -tetrachloro-m-xylene
TIC - tentatively identified compound

TOPO - Task Order Project Officer
TPO - Technical Project Officer
VOA - Volatile organic
VTSR - Validated Time of Sample Receipt

Data Qualifiers

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

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

LAB QUALIFIERS:

D - The positive value is the result of an analysis at a secondary dilution factor.

B - The analyte is present in the associated method blank as well as in the sample. This qualifier has a different meaning when validating inorganic data.

E - The concentration of this analyte exceeds the calibration range of the instrument.

A - Indicates a Tentatively Identified Compound (TIC) is a suspected adol-condensation product.

X,Y,Z- Laboratory defined flags. The data reviewer must change these qualifiers during validation so that the data user may understand their impact on the data.

YES NO N/A

I. PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: GSK08 LAB: Lancaster Laboratories

SITE NAME: TechCity (Former IBM Kingston)

1.0 Data Completeness and Deliverables

1.1 Has all data been submitted in CLP deliverable format or CLP Forms Equivalent? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the Data Assessment narrative.

2.0 Cover Letter, SDG Narrative

2.1 Is a laboratory narrative, and/or cover letter signed release present? [✓] ___ ___

2.2 Are case number and SDG number(s) contained in the narrative or cover letter? [✓] ___ ___

ACTION: If not, note the effect on review of the data in the Data Assessment narrative.

II. VOLATILE ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Reports, and/or Chain of Custodies from the field samplers present for all samples sign release present? [✓] ___ ___

ACTION: If no, contact the laboratory/sampling team for replacement of missing or illegible copies.

1.2 Is a sampling trip report present (if required)? [ ] ___ [✓]

1.3 Sample Conditions/Problems

YES NO N/A

1.3.1 Do the Traffic Reports, Chain of Custodies, or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ IV ___

ACTION: If all the VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50%-90% water, all data should be flagged as estimated ("J"). If a soil sample, other than TCLP, contains more than 90% water, flag all positive results "J" and all non-detects "R".

ACTION: If samples were not iced or if the ice was melted upon receipt at the laboratory and the temperature of the cooler was elevated (>10°C), flag all positive results "J" and all non-detects non"UJ".

2.0 Holding Times

2.1 Have any volatile holding times, determined from date of collection to date of analysis, been exceeded? ___ IV ___

The maximum holding time for aqueous samples is 14 days.

The maximum holding time for soils non aqueous samples is 14 days.

NOTE: If unpreserved, aqueous samples maintained at 4°C for aromatic hydrocarbons analysis must be analyzed within 7 days. If preserved with HCL acid to a pH<2 and stored at 4°C, then aqueous samples must be analyzed within 14 days from time of collection. For non-aqueous samples for volatile components that are frozen (less than 7°C) or are properly cooled (4°C ± 2°C) and perserved with $NaHSO_4$, the maximum holding time is 14 days from sample collection. If

YES NO N/A

uncertain about preservation, contact the laboratory /sampling team to determine whether or not samples were preserved.

ACTION: Qualify sample results according to Table 1:

Table 1. Holding Time Actions for Trace Volatile Analysis

Matrix	Preserved	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤7 days	No qualifications	
	No	> 7 days	J	R
	Yes	≤14 days	No qualifications	
	Yes	> 14 days	J	R
Non Aqueous	No	≤ 14 days	J	R
	Yes	≤ 14 days	No qualifications	
	Yes/No	> 14 days	J	R

3.0 Surrogate Recovery (CLP Form II Equivalent)

3.1 Have the volatile surrogate recoveries been listed on Surrogate Recovery forms for each of the following matrices:

a. Water [✓] ___ ___

b. Soil [ ] ___ [✓]

3.2 If so, are all the samples listed on the appropriate Surrogate Recovery forms for each matrix:

a. Water [✓] ___ ___

b. Soil [ ] ___ [✓]

ACTION: If large errors exist, deliverables are unavailable or information is missing, document the effect(s) in Data

YES NO N/A

Assessments and contact the laboratory/project officer/appropriate official for an explanation /resubmittal, make any necessary corrections and document effect in the Data Assessment.

3.3 Were the surrogate recovery limits followed per Table 2. If Table 2 criteria were not followed, the laboratory may use in-house performance criteria (per SW-846, Method 8000C, section 9.7). Other compounds may be used as surrogates, depending upon the analysis requirements. (In-house limits) [ ] ✓ ___

Table 2. Surrogate Spike Recovery Limits for Water and Soil/Sediments

DMC	Recovery Limits (%)Water	Recovery Limits Soil/Sediment
4-Bromofluorobenzene	80-120	70-130
Dibromofluoromethane	80-120	70-130
Toluene-d_8	80-120	70-130
Dichloroethane-d_4	80-120	70-130

Note: Use above table if laboratory did not provide in house recovery criteria.

Note: Other compounds may be used as surrogated depending upon the analysis requirements.

3.4 Were outliers marked correctly with an asterisk? [ ] ___ ✓

ACTION: Circle all outliers with a red pencil.

3.5 Were one or more volatile surrogate recoveries out of specification for any sample or method blank. Table 2. [ ] ✓ ___

If yes, were samples reanalyzed? [ ] ___ ✓

Were method blanks reanalyzed? [ ] ___ ✓

YES NO N/A

ACTION: If all surrogate recoveries are > 10% but 1 or more compounds do not meet method specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.
3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects, but qualify positive results as estimated "J".

If any surrogate has a recovery of < 10%:

1. Positive results are qualified with ("J").
2. Non-detects for that should be qualified as unusable ("R").

NOTE: Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. The basic concern is whether the blank problems represent an isolated problem with the blank alone or whether there is a fundamental problem with the analytical process. If one or more samples in the batch show acceptable surrogate recoveries, the reviewer may choose the blank problem to be an isolated occurrence.

3.6 Are there any transcription/calculation errors between raw data and reported data? [ ] ___ ✓

Level IV not performed on this SDG

ACTION: If large errors exist, take action as specified in section 3.2 above.

4.0 Laboratory Control Sample(Form III/Equivalent)

4.1 Is the LCS prepared, extracted, analyzed, and reported once for every 20 field samples of a similar matrix, per SDG. [✓] ___ ___

YES NO N/A

Note: LCS consists of an aliquot of a clean (control) matrix similar to the sample matrix and of the same weight or volume.

ACTION: If any Laboratory Control Sample data are missing, call the lab for explanation /resubmittals. Make note in the data assessment.

4.2 Were the Laboratory Control Samples analyzed at the required frequency for each of the following matrices:

A. Water [✓] ___ ___

B. Soil [ ] ___ [✓]

C. Med Soil [ ] ___ [✓]

Note: The LCS is spiked with the same analytes at the same concentrations as the matrix spike (SW-846 8000C, Section 9.5). If different make note in data assessment. Matrix/LCS spiking standards should be prepared from volatile organic compounds which are representative of the compounds being investigating. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene.

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

4.3 Have in house LCS recovery limits been developed (Method 8000C, Sect 9.7). [✓] ___ ___

4.4 If in house limits are not developed, are LCS acceptance recovery limits between 70 - 130% (Method 8000c Sect 9.5)? [ ] ___ [✓]

4.5 Were one or more of the volatile LCS recoveries outside the in house laboratory recovery criteria for spiked analytes? If in house limits are not present use 70 - 130% recovery limits.

[✓] ___ ___ (project limits)

YES NO N/A

Table 3. LCS Actions for Volatile Analysis

Criteria	Action	
	Detected Spiked Compounds	Non-Detected Spiked Compounds
%R > Upper Acceptance Limit	J	No Qualifiers
%R < Lower Acceptance Limit	J	UJ
Lower Acceptance Limit ≤ %R	No Qualifications	

5.0 Matrix Spikes(Form III or equivalent)

5.1 Are all data for matrix spike and matrix duplicate or matrix spike duplicate (MS/MD or MS/MSD) present and complete for each matrix? [ ] ___ ✓

MS/MSD not performed on this SDG

NOTE: The laboratory should use one matrix spike and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If the sample is not expected to contain target analytes, a MS/MSD should be analyzed (SW-846, Method 8260B, Sect 8.4.2).

5.2 Have MS/MD or MS/MSD results been summarized on modified CLP Form III? [ ] ___ ✓

ACTION: If any data are missing take action as specified in section 3.2 above.

5.3 Were matrix spikes analyzed at the required frequency for each of the following matrices? (One MS/MD, MS/MSD or laboratory replicate must be performed for every 20 samples

YES NO N/A

of similar matrix or concentration level. Laboratories analyzing one to ten samples per month are required to analyze at least one MS per month [page 8000C, section 9.5.])

a. Water [ ] ✓ ___

b. Waste [ ] ___ ✓

c. Soil/Solid [ ] ___ ✓

Note: The LCS is spiked with the same analytes at the same concentrations as the matrix spike (SW-846 8000C, Section 9.5). If different make note in data assessment. Matrix/LCS spiking standards should be prepared from volatile organic compounds which are representative of the compounds being investigating. At a minimum, the matrix spike should include 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene. The concentration of the LCS should be determined as described SW-Method 8000C Section 9.5.

ACTION: If any MS/MD, MS/MSD or replicate data are missing, take the action specified in 3.2 above.

5.4 Have in house MS recovery limits been developed (Method 8000C, Sect 9.7)for each matrix. [ ] ___ ✓

5.5 Were one or more of the volatile MS/MSD recoveries outside of the in-house laboratory recovery criteria for spiked analytes? If none are present, then use 70-130% recovery as per SW-846, 8000C, Sect. 9.5.4. [ ] ___ ✓

ACTION: Circle all outliers with a red pencil.

NOTE: If any individual % recovery in the MS (or MSD) falls outside the designated range for recovery the reviewer should determine if there is a matrix effect. A matrix effect is indicated if the LCS data are within limits but the MS data exceeds the limits.

YES NO N/A

NOTE: No qualification of data is necessary on MS and MSD data alone. However, using informed professional judgement, the data reviewer may use MS and MSD results in conjunction with other QC criteria to determine the need for some qualification.

Note: The data reviewer should first try to determine to what extent the results of the MS and MSD affect the associated data. This determination should be made with regard to he MS and MSD sample itself, as well as specific analytes for all samples associated with the MS and MSD.

Note: In those instances where it can be determine that the results of the MS and MSD affect only the sample spiked, limit qualification to this sample only. However, it may be determined through the MS and MSD results that a laboratory is having a systematic problem in the analysis of one or more analytes that affect all associated samples, and the reviewer must use professional judgement to qualify the data from all associated samples.

Note: The reviewer must use professional judgement to determine the need for qualification of non-spiked compounds.

ACTION: Follow criteria in Table 4 when professional judgement deems qualification of sample.

Table 4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Actions for Volatile Analysis

Criteria	Action	
	Detected Spiked Compounds	Non-Detected Spiked Compounds
%R > Upper Acceptance Limit	J	No Qualifiers
%R < Lower Acceptance Limit	J	UJ
Lower Acceptance Limit ≤ %R	No Qualifications	

YES NO N/A

6.0 Blank (CLP Form IV Equivalent)

6.1 Is the Method Blank Summary form present? [✓] ___ ___

6.2 Frequency of Analysis: Has a method blank been analyzed for every 20 (or less) samples of similar matrix or concentration or each extraction batch? [✓] ___ ___

6.3 Has a method blank been analyzed for each GC/MS system used ? [✓] ___ ___

ACTION: If any blank data are missing, take action as specified above (section 3.2). If blank data is not available, reject ® all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

6.4 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for volatile organic compounds? [✓] ___ ___

7.0 Contamination

NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

7.1 Do any method/instrument/reagent blanks have positive results for target analytes and/or TICs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for percent moisture where necessary. [ ] ✓ ___

YES NO N/A

7.2 Do any field/rinse blanks have positive volatile organic compound results? ___ ☑ ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

ACTION: Follow the directions in Table 5 below to qualify sample results due to contamination. Use the largest value from all the associated blanks.

Table 5. Volatile Organic Analysis Blank Contamination Criteria

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Storage, Field, Trip, Instrument**	Detects	Not detected	No qualification
	< CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL	Use professional judgement
	> CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL and < blank contamination	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ CRQL and ≥ blank contamination	Use professional judgement
	= CRQL*	< CRQL	Report CRQL value with a U
		≥ CRQL	Use professional judgement
	Gross contam-ination	Detects	Qualify results as unusable R

* 2x the CRQL for methylene chloride, 2-butanone, and acetone

** Qualifications based on instrument blank results affect only the sample analyzed immediately after the sample that has target compounds that exceed the calibration range or non-target compounds that exceed 100 ug/L.

NOTE: If gross blank contamination exists(e.g., saturated peaks, "hump-o-grams," "junk" peaks), all affected positive compounds in the associated samples should be qualified as unusable "R", due to interference. Non-detected volatile organic target compounds do not require qualification unless the contamination is so high that it interferes with the analyses of non-detected compounds.

YES NO N/A

7.3 Are there field/rinse/equipment blanks associated with every sample? ☑ ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

8.0 GC/MS Apparatus and Materials

8.1 Did the lab use the proper gas chromatographic column(s) for analysis of volatiles by Method 8260B? Check raw data, instrument logs or contact the lab to determine what type of column(s) was (were) used. ☑ ___ ___

NOTE: For the analysis of volatiles, the method requires the use of 60 m. x 0.75 mm capillary column, coated with VOCOL(Supelco) or equivalent column. (see SW-846, page 8260B-7, section 4.9.2)

ACTION: If the specified column, or equivalent, was not used, document the effects in the Data Assessment. Use professional judgement to determine the acceptability of the data.

9.0 GC/MS Instrument Performance Check (CLP Form V Equivalent)

9.1 Are the GC/MS Instrument Performance Check forms present for Bromofluorobenzene (BFB), and do these forms list the associated samples with date/time analyzed? ☑ ___ ___

9.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? ☑ ___ ___

9.3 Has an instrument performance check solution (BFB)

YES NO N/A

been analyzed for every twelve hours of sample analysis per instrument?(see Table 4, SW-846, page 8260B-36) [✓] ___ ___

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS GC/MS tuning data are available.

ACTION: If the laboratory/project officer cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

ACTION: If mass assignment is in error, flag all associated sample data as unusable, "R".

9.4 Have the ion abundances been normalized to m/z 95? [✓] ___ ___

9.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, take action as specified in section 3.2.

9.6 Are there any transcription/calculation errors between mass lists and reported values? (Check at least two values but if errors are found, check more.) ___ [ ] [✓]

Level IV not performed on this SDG

9.7 Have the appropriate number of significant figures (two) been reported? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.2.

9.8 Are the spectra of the mass calibration compounds acceptable. [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

YES NO N/A

10.0 Target Analytes (CLP Form I Equivalent)

10.1 Are the Organic Analysis reporting forms present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate [✓] ___ ___

b. Matrix spikes and matrix spike duplicates [ ] ___ ✓

c. Blanks [✓] ___ ___

d. Laboratory Control Samples [✓] ___ ___

10.2 Are the reconstructed Ion Chromatograms, mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?

a. Samples and/or fractions as appropriate [✓] ___ ___

b. Matrix spikes and matrix spike duplicates (Mass spectra not required) [ ] ___ ✓

c. Blanks [✓] ___ ___

d. Laboratory Control Samples [✓] ___ ___

ACTION: If any data are missing, take action specified in 3.2 above.

10.3 Is chromatographic performance acceptable with respect to:

Baseline stability? [✓] ___ ___

	YES	NO	N/A
Resolution?	☑	___	___
Peak shape?	☑	___	___
Full-scale graph (attenuation)?	☑	___	___

Other:_____

ACTION: Use professional judgement to determine the acceptability of the data.

10.4 Are the lab-generated standard mass spectra of identified volatile compounds present for each sample? ☑ ___ ___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If the lab does not generate their own standard spectra, make a note in the Data Assessment. If spectra are missing, contact the lab for missing spectra.

10.5 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration? ☑ ___ ___

10.6 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum? ☑ ___ ___

10.7 Do the relative intensities of the characteristic ions in the sample agree within ± 30% of the corresponding relative intensities in the reference spectrum? ☑ ___ ___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected ("R"), flagged ("N") - Presumptive evidence of the presence of the compound) or changed to non detected ("U") at the calculated detection limit. In order to be

YES NO N/A

positively identified, the data must comply with the criteria listed in 9.6, 9.7, and 9.8.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

11.0 Tentatively Identified Compounds (TIC) (CLP Form I/TIC Equivalent)

11.1 If Tentatively Identified Compound were required for this project, are all Tentatively Identified Compound reporting forms present; and do listed TICs include scan number or retention time, estimated concentration and a qualifier? [ ] ___ ✓

NOTE: Add "N" qualifier to all TICs which have CAS number, if missing.

NOTE: Have the project officer/appropriate official check the project plan to determine if lab was required to identify non-target analytes (SW-846, page 8260B-23, Sect. 7.6.2).

11.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate [ ] ___ ✓

b. Blanks [ ] ___ ✓

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier only to analytes identified by a CAS#.

NOTE: If TICs are present in the associated blanks take action as specified in section 3.2 above.

YES NO N/A

11.3 Are any priority pollutants listed as TIC compounds (i.e., an BNA compound listed as a VOA TIC)? [ ] ___ ✓

ACTION: 1. Flag with "R" any target compound listed as a TIC.

2. Make sure all rejected compounds are properly reported if they are target compounds.

11.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% (of the most abundant ion) also present in the sample mass spectrum? [ ] ___ ✓

11.5 Do TIC and "best match" standard relative ion intensities agree within ± 20%? [ ] ___ ✓

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change the identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R". (Common lab contaminants: CO_2(M/E 44), Siloxanes (M/E 73), Hexane, Aldol Condensation Products, Solvent Preservatives, and related byproducts).

12.0 Compound Quantitation and Reported Detection Limits

12.1 Are there any transcription/calculation errors in organic analysis reporting form results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and average initial RRF/CF were used to calculate organic analysis reporting form result. Were any errors found? [ ] ___ ✓

Level IV not performed on this SDG

NOTE: Structural isomers with similar mass spectra, but insufficient GC resolution (i.e. percent valley between the two peaks > 25%) should be

YES NO N/A

reported as isomeric pairs. The reviewer should check the raw data to ensure that all such isomers were included in the quantitation (i.e., add the areas of the two coeluting peaks to calculate the total concentration).

12.2 Are the method CRQL's adjusted to reflect sample dilutions and, for soils, sample moisture? [✓] ___ ___

ACTION: If errors are large, take action as specified in section 3.2 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest detection limits are used (unless a QC accedence dictates the use of the higher detection limit from the diluted sample data). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original reporting form (if present) and substituting the data from the analysis of the diluted sample. Specify which organic analysis reporting form is to be used, then draw a red "X" across the entire page of all reporting forms that should not be used, including any in the summary package.

13.0 Standards Data (GC/MS)

13.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant Reports) present for initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in section 3.2 above.

14.0 GC/MS Initial Calibration (CLP Form VI Equivalent)

YES NO N/A

14.1 Are the Initial Calibration reporting forms present and complete for the volatile fraction? ☑ ___ ___

ACTION: If any calibration forms or standard raw data are missing, take action specified in section 3.2 above.

ACTION: If the percent relative standard deviation (% RSD) is > 20%, (8000C-39)qualify positive results for that analyte "J". When % RSD > 90%,. Qualify all positive results for that analyte "J" and all non-detects results for that analyte "R".

14.2 Are all average RRFs > 0.050? ☑ ___ ___

NOTE: (Method Requirement) For SPCC compounds, the individual RRF values must be ≥ the values in the following list. If individual RRF values reported are below the listed values document in the Data Assessment.

Chloromethane	0.10
1,1-Dichloroethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

ACTION: Circle all outliers with red pencil.

ACTION: For any target analyte with average RRF < 0.05, or for the requirements for the 5 compounds in 14.2 above, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

14.3 Are response factors stable over the concentration range of the calibration. ☑ ___ ___

NOTE: (Method Requirement) For the following CCC compounds, the %RSD values must be ≤ 30.0%. If %RSD values reported are > 30.0% document in the Data Assessment.

YES NO N/A

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

ACTION: Circle all outliers with a red pencil.

ACTION: If the % RSD is > 20.0%, or > 30% for the 6 compounds in 14.3 above, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

14.4 Was the % RSD determined using RRF or CF? ☑ ___ ___

If no, what method was used to determine the linearity of the initial calibration? Document any effects to the case in the Data Assessment.

14.5 Are there any transcription/calculation errors in the reporting of RRF or % RSD? (Check at least two values but if errors are found, check more.) ☐ ___ ☑

Level IV not performed on this SDG

ACTION: Circle errors with a red pencil.

ACTION: If errors are large, take action as specified in section 3.2 above.

15.0 GC/MS Calibration Verification (CLP Form VII Equivalent)

YES NO N/A

15.1 Are the Calibration Verification reporting forms present and complete for all compounds of interest? ☑ ___ ___

15.2 Has a calibration verification standard been analyzed for every twelve hours of sample analysis per instrument? ☑ ___ ___

ACTION: List below all sample analyses that were not within twelve hours of a calibration verification analysis for each instrument used.

ACTION: If any forms are missing or no calibration verification standard has been analyzed twelve hours prior to sample analysis, take action as specified in section 3.2 above. If calibration verification data are not available, flag all associated sample data as unusable ("R").

15.3 Was the % D determined from the calibration verification determined using RRF or CF? ☑ ___ ___

If no, what method was used to determine the calibration verification? Document any effects to the case in the Data Assessment.

15.4 Do any volatile compounds have a % D (difference or drift) between the initial and continuing RRF or CF which exceeds 20% (SW-846, page 8260B-19, section 7.4.5.2). ☑ ___ ___

NOTE: (Method Requirement) For the following CCC compounds, the %D values must be ≤ 20.0%. If %D values reported are > 20.0% document in the Data Assessment.

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl chloride

YES NO N/A

ACTION: Circle all outliers with a red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated, "J". When %D is above 90%, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

15.5 Do any volatile compounds have a RRF < 0.05? [ ] [✓] ___

NOTE: (Method Requirement) For SPCC compounds, the individual RRF values must be ≥ the values in the following list for each calibration verification. If average RRF values reported are below the listed values document in the data assessment.

Chloromethane	0.10
1,1-Dichloroethane	0.10
Bromoform	0.10
Chlorobenzene	0.30
1,1,2,2-Tetrachloroethane	0.30

ACTION: Circle all outliers with a red pencil.

ACTION: If RRF < 0.05, or < the requirements for the 5 compounds is section 15.5 above, qualify all positive results for that analyte "J" and all non-detect results for that analyte "R".

NOTE: The above data qualification action applies regardless of method requirements.

16.0 Internal Standards (CLP Form VIII Equivalent)

16.1 Are the internal standard (IS) areas on the internal standard reporting forms of every sample and blank within the upper and lower limits (-50% to + 100%) for each initial mid-point calibration (SW-846, 8260B-20, Sect. 7.4.7)? [✓] ___ ___

YES NO N/A

ACTION: If errors are large or information is missing, take action as specified in section 3.2 above.

ACTION: List each outlying internal standard below.

Sample ID	IS #	Area Lower Limit	Area Upper Limit

(Attach additional sheets if necessary.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when the associated IS are counts area > + 100%.

3. If the IS area is below the lower limit (< -50%), qualify all associated non-detects (U-values) "J".

4. If extremely low area counts are reported (< -25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable "R" and positive results as estimated "J".

16.2 Are the retention times of all internal standards within 30 seconds of the associated initial mid-point calibration standard (SW-846, 8260B-20, Sect. 7.4.6)? [V] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

YES NO N/A

17.0 Field Duplicates

17.1 Were any field duplicates submitted for volatile analysis? [✓] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the Data Assessment. However, if large differences exist, take action specified in section 3.2 above.

eurofins | Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Reference List for SDG Number GSK08 with a Data Package Type of NYSDEC B

06911 - Groundwater Science Co

Project: Sanitary Sewers Evaluation

Lab Sample Number	Lab Sample Code	Client Sample Description
6624143	C0220	CS0220120419 Grab Water
6624144	C0221	CS0221120419 Grab Water
6624145	C1078	CS1078120419 Grab Water
6624146	1078D	CX1078120419 Grab Water
6624147	C0219	CS0219120419 Grab Water
6624148	CTRBL	TTB204190419 Water

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 · 717-656-2300 Fax: 717-656-2681 · www.lancasterlabs.com

01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

10904 8260 Ext. Water Master

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

GC/MS VOLATILES CALCULATIONS:

1. Relative response factor (RRF)

$$RRF = \frac{Ax}{Ais} \times \frac{Cis}{Cx}$$

Where :
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the specific internal standard to be measured.
Cis = Concentration of the internal standard.
Cx = Concentration of the compound to be measured.

2. % Relative Standard Deviation (%RSD)

$$\%RSD = \frac{\text{Standard deviation}}{\text{mean}} \times 100$$

3. % Difference (%D)

$$\%D = \frac{RRFc - RRFi}{RRFi} \times 100$$

Where:
RRFc=Relative response factor from continuing calibration standard.
RRFi = Mean relative response factor from the initial calibration.

4. Concentration

$$\text{Concentration (ug/l)} = \frac{(Ax)\ (Is)\ (Df)}{(Ais)\ (RRF)}$$

Where:
Ax , Ais, RRF are as given in 1. above.
Is = Concentration of internal standard added in parts per billion (ug/l)
Df = Dilution factor

5. % Recovery (%Rec)

$$\%Rec = \frac{SSR - SR}{SA} \times 100$$

Where:
SSR = Spiked sample result
SR = Sample result
SA = Spike added

6. Relative Percent Difference (RPD)

$$RPD = \frac{|\ MSR - MSDR\ |}{(1/2)\ (MSR+MSDR)} \times 100$$

Where:
MSR = Matrix spike recovery
MSDR = Matrix spike duplicate recovery

eurofins | Lancaster Laboratories

Quality Control Reference List
GC/MS Volatiles

CLIENT: Groundwater Science Co
SDG: GSK08

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
Volatiles by 8260B	E121161AA	VBLKE91	04/25/2012 07:58:00
		LCSE91	04/25/2012 08:18:00
		6624143	04/25/2012 10:47:00
		6624144	04/25/2012 11:07:00
		6624145	04/25/2012 11:27:00
		6624146	04/25/2012 11:47:00
		6624147	04/25/2012 12:06:00
		6624148	04/25/2012 10:26:00

eurofins | Lancaster Laboratories

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: GSK08
Matrix: LIQUID

Fraction: Volatiles by GC/MS

E121161AA	Dibromofluoromethane		1,2-Dichloroethane-d4		Toluene-d8		4-Bromofluorobenzene	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKE91	101	80 - 116	103	77 - 113	98	80 - 113	96	78 - 113
LCSE91	103	80 - 116	102	77 - 113	98	80 - 113	98	78 - 113
6624143	100	80 - 116	102	77 - 113	99	80 - 113	95	78 - 113
6624144	100	80 - 116	100	77 - 113	98	80 - 113	95	78 - 113
6624145	102	80 - 116	99	77 - 113	99	80 - 113	96	78 - 113
6624146	102	80 - 116	104	77 - 113	101	80 - 113	98	78 - 113
6624147	101	80 - 116	105	77 - 113	98	80 - 113	96	78 - 113
6624148	102	80 - 116	107	77 - 113	99	80 - 113	97	78 - 113

eurofins | Lancaster Laboratories

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: GSK08
Matrix: LIQUID

Fraction: Volatiles by GC/MS

E121161AA / VBLKE91 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Dichlorodifluoromethane	04/25/12	N.D.	ug/l	2	5
Chloromethane	04/25/12	N.D.	ug/l	1	5
Vinyl Chloride	04/25/12	N.D.	ug/l	1	5
Bromomethane	04/25/12	N.D.	ug/l	1	5
Chloroethane	04/25/12	N.D.	ug/l	1	5
Freon 123a	04/25/12	N.D.	ug/l	2	5
Freon 113	04/25/12	N.D.	ug/l	2	10
Trichlorofluoromethane	04/25/12	N.D.	ug/l	2	5
1,1-Dichloroethene	04/25/12	N.D.	ug/l	0.8	5
Ethylbenzene	04/25/12	N.D.	ug/l	0.8	5
1,1,1,2-Tetrachloroethane	04/25/12	N.D.	ug/l	1	5
Methylene Chloride	04/25/12	N.D.	ug/l	2	5
Bromoform	04/25/12	N.D.	ug/l	1	5
1,1-Dichloroethane	04/25/12	N.D.	ug/l	1	5
1,1,2,2-Tetrachloroethane	04/25/12	N.D.	ug/l	1	5
Bromobenzene	04/25/12	N.D.	ug/l	1	5
1,2-Dichloroethene (Total)	04/25/12	N.D.	ug/l	0.8	5
1,2,3-Trichloropropane	04/25/12	N.D.	ug/l	1	5
Chloroform	04/25/12	N.D.	ug/l	0.8	5
2-Chlorotoluene	04/25/12	N.D.	ug/l	1	5
1,1,1-Trichloroethane	04/25/12	N.D.	ug/l	0.8	5
4-Chlorotoluene	04/25/12	N.D.	ug/l	1	5
Benzene	04/25/12	N.D.	ug/l	0.5	5
Carbon Tetrachloride	04/25/12	N.D.	ug/l	1	5
1,2-Dichloroethane	04/25/12	N.D.	ug/l	1	5
Trichloroethene	04/25/12	N.D.	ug/l	1	5
1,2-Dichloropropane	04/25/12	N.D.	ug/l	1	5
Dibromomethane	04/25/12	N.D.	ug/l	1	5
Bromodichloromethane	04/25/12	N.D.	ug/l	1	5
1,3-Dichlorobenzene	04/25/12	N.D.	ug/l	1	5
cis-1,3-Dichloropropene	04/25/12	N.D.	ug/l	1	5
1,4-Dichlorobenzene	04/25/12	N.D.	ug/l	1	5
Toluene	04/25/12	N.D.	ug/l	0.7	5
trans-1,3-Dichloropropene	04/25/12	N.D.	ug/l	1	5
Benzyl Chloride	04/25/12	N.D.	ug/l	1	5
1,2-Dichlorobenzene	04/25/12	N.D.	ug/l	1	5
1,1,2-Trichloroethane	04/25/12	N.D.	ug/l	0.8	5
Tetrachloroethene	04/25/12	N.D.	ug/l	0.8	5
Dibromochloromethane	04/25/12	N.D.	ug/l	1	5
Chlorobenzene	04/25/12	N.D.	ug/l	0.8	5
Xylene (Total)	04/25/12	N.D.	ug/l	0.8	5

eurofins | Lancaster Laboratories

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: GSK08
Matrix: LIQUID

GC/MS Volatiles
Fraction: Volatiles by GC/MS

LCS: LCSE91	Batch: E121161AA (Sample number(s): 6624143-6624148)								
Analyte	Spike Added ug/l	LCS Conc ug/l	LCSD Conc ug/l	LCS %Rec	LCSD %Rec	%Rec Limits	%RPD	%RPD Limits	
Dichlorodifluoromethane	20	12.11		61		47-120			
Chloromethane	20	14.01		70		60-129			
Vinyl Chloride	20	15.45		77		56-123			
Bromomethane	20	16.68		83		44-120			
Chloroethane	20	15.48		77		49-129			
Freon 123a	20	19.1		95		70-129			
Freon 113	20	19.06		95		69-128			
Trichlorofluoromethane	20	16.9		84		56-128			
1,1-Dichloroethene	20	20.33		102		80-120			
1,1,1,2-Tetrachloroethane	20	18.93		95		79-120			
Ethylbenzene	20	18.26		91		79-120			
Methylene Chloride	20	19.58		98		80-126			
1,1-Dichloroethane	20	18.4		92		79-120			
Bromoform	20	19.39		97		61-120			
1,1,2,2-Tetrachloroethane	20	16.54		83		75-123			
Bromobenzene	20	18.58		93		80-120			
1,2-Dichloroethene (Total)	40	39.73		99		80-120			
1,2,3-Trichloropropane	20	17.49		87		76-120			
2-Chlorotoluene	20	18.02		90		80-120			
Chloroform	20	19.35		97		77-122			
1,1,1-Trichloroethane	20	18.9		94		70-121			
4-Chlorotoluene	20	18.16		91		80-120			
1,2-Dichloroethane	20	19.41		97		64-130			
Benzene	20	19.41		97		77-121			
Carbon Tetrachloride	20	19.3		97		67-122			
Trichloroethene	20	19.58		98		80-120			
1,2-Dichloropropane	20	18.57		93		80-120			
Dibromomethane	20	19.51		98		80-120			
1,3-Dichlorobenzene	20	18.53		93		80-120			
Bromodichloromethane	20	19.1		95		73-120			
cis-1,3-Dichloropropene	20	18.56		93		78-120			
1,4-Dichlorobenzene	20	18.26		91		80-120			
Toluene	20	18.83		94		79-120			
trans-1,3-Dichloropropene	20	17.86		89		79-120			
1,1,2-Trichloroethane	20	19.18		96		80-120			
1,2-Dichlorobenzene	20	18.3		92		80-120			
Benzyl Chloride	20	16.89		84		60-120			
Tetrachloroethene	20	19.94		100		79-120			
Dibromochloromethane	20	18.76		94		72-120			
Chlorobenzene	20	18.72		94		80-120			
Xylene (Total)	60	56.08		93		77-120			

QAPP Limits (63157)

See DVR

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_GSK08___

Lab File ID: em21t01.d BFB Injection Date: 03/21/12

Instrument ID: HP15648 BFB Injection Time: 11:35

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.46
75	30.0 - 60.0% of mass 95	46.62
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.62
173	Less than 2.0% of mass 174	0.57 (0.90)1
174	Greater than 50.0% of mass 95	63.02
175	5.0 - 9.0% of mass 174	4.94 (7.84)1
176	Greater than 95.0%, but less than 101.0% of mass 174	60.81 (96.49)1
177	5.0 - 9.0% of mass 176	4.00 (6.58)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	em21i01.d	03/21/12	12:03
02	VSTD100	em21i02.d	03/21/12	12:23
03	VSTD50	em21i03.d	03/21/12	12:43
04	VSTD20	em21i04.d	03/21/12	13:03
05	VSTD10	em21i05.d	03/21/12	13:23
06	VSTD4	em21i06.d	03/21/12	13:43
07	MDL001 - MDL001	em21m01.d	03/21/12	14:03
08	ICVELG	em21cv1.d	03/21/12	14:23
09	VBLKE42	em21b01.d	03/21/12	14:43
10	1MDL#1 - MDL001	em21m11.d	03/21/12	15:03
11	1MDL#2 - MDL001	em21m12.d	03/21/12	15:23
12	1MDL#3 - MDL001	em21m13.d	03/21/12	15:43
13	1MDL#4 - MDL001	em21m14.d	03/21/12	16:03
14	1MDL#5 - MDL001	em21m15.d	03/21/12	16:23
15	1MDL#6 - MDL001	em21m16.d	03/21/12	16:43
16	1MDL#7 - MDL001	em21m17.d	03/21/12	17:03

GSK08 0050

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date(s): 03/21/12 03/21/12

Heated Purge: (Y/N) Y Calibration Times: 12:03 13:43

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 4 = em21106.d RRF 10= em21105.d RRF 20= em21104.d
RRF 50= em21103.d RRF100= em21102.d RRF300= em21101.d RRF =

COMPOUND	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	$\overline{RRF}$	% RSD	CAL. METHOD	
Dichlorodifluoromethane	0.5087	0.4415	0.4278	0.4456	0.4241	0.4286		0.4460	7	AVG	
Chloromethane	#0.5695	0.4502	0.4600	0.4746	0.4627	0.4667		0.4806	9	AVG	#
Vinyl Chloride	*0.5635	0.4520	0.4425	0.4474	0.4433	0.4483		0.4662	10	AVG	*
Bromomethane	0.2960	0.2535	0.2469	0.2489	0.2444	0.2455		0.2559	8	AVG	
Chloroethane	0.2877	0.2371	0.2390	0.2443	0.2378	0.2384		0.2474	8	AVG	
Dichlorofluoromethane	0.6437	0.5364	0.5581	0.5511	0.5339	0.5525		0.5626	7	AVG	
Trichlorofluoromethane	0.5014	0.4179	0.4100	0.4275	0.4218	0.4259		0.4341	8	AVG	
Ethyl Ether	0.3050	0.2472	0.2591	0.2642	0.2577	0.2558		0.2648	8	AVG	
Freon 123a	0.4351	0.3476	0.3545	0.3530	0.3422	0.3495		0.3637	10	AVG	
Acrolein	2.6139	2.1604	2.1324	2.2432	2.2795	2.0801		2.2516	9	AVG	
1,1-Dichloroethene	*0.2813	0.2265	0.2264	0.2352	0.2236	0.2268		0.2366	9	AVG	*
Freon 113	0.2629	0.2235	0.2280	0.2367	0.2312	0.2356		0.2363	6	AVG	
Acetone	0.1431	0.1154	0.1127	0.1289	0.1170	0.1136		0.1218	10	AVG	
Methyl Iodide	0.3674	0.3212	0.3309	0.3389	0.3244	0.3270		0.3349	5	AVG	
2-Propanol	0.8886	0.7368	0.7508	0.7847	0.7499	0.7424		0.7755	7	AVG	
Carbon Disulfide	0.8021	0.6597	0.6763	0.6967	0.6677	0.6739		0.6960	8	AVG	
Allyl Chloride	0.6133	0.4923	0.4941	0.5209	0.4987	0.5184		0.5229	9	AVG	
Methyl Acetate	0.3879	0.3003	0.3051	0.3119	0.3011	0.3187		0.3208	10	AVG	
Methylene Chloride	0.2988	0.2476	0.2520	0.2552	0.2477	0.2508		0.2587	8	AVG	
t-Butyl Alcohol	1.4763	1.1776	1.2291	1.2654	1.1431	1.2047		1.2493	10	AVG	
Acrylonitrile	0.1933	0.1638	0.1640	0.1716	0.1687	0.1667		0.1713	7	AVG	
trans-1,2-Dichloroethene	0.2895	0.2515	0.2551	0.2613	0.2488	0.2541		0.2601	6	AVG	
Methyl Tertiary Butyl Ether	0.8980	0.7733	0.8017	0.8162	0.7867	0.8127		0.8148	5	AVG	
n-Hexane	0.5069	0.4220	0.4260	0.4558	0.4364	0.4646		0.4520	7	AVG	
1,2-Dichloroethene (total)	0.3045	0.2654	0.2685	0.2743	0.2615	0.2674		0.2736	6	AVG	
1,1-Dichloroethane	#0.6035	0.5119	0.5263	0.5411	0.5203	0.5323		0.5392	6	AVG	#
di-Isopropyl Ether	1.0958	0.9330	0.9540	0.9916	0.9547	0.9802		0.9849	6	AVG	
2-Chloro-1,3-Butadiene	0.5136	0.4368	0.4423	0.4631	0.4463	0.4593		0.4602	6	AVG	
Ethyl t-Butyl Ether	0.9917	0.8549	0.8550	0.8945	0.8716	0.8911		0.8931	6	AVG	
cis-1,2-Dichloroethene	0.3195	0.2793	0.2819	0.2874	0.2741	0.2807		0.2872	6	AVG	
2-Butanone	0.2545	0.2109	0.2067	0.2150	0.2237	0.2158		0.2211	8	AVG	
2,2-Dichloropropane	0.4626	0.3825	0.3913	0.4054	0.3872	0.3923		0.4035	7	AVG	
Propionitrile	1.8805	1.5829	1.5764	1.6675	1.5454	1.6496		1.6504	7	AVG	
Methacrylonitrile	0.1911	0.1618	0.1673	0.1669	0.1614	0.1706		0.1698	6	AVG	
Bromochloromethane	0.1467	0.1173	0.1172	0.1211	0.1191	0.1211		0.1238	9	AVG	
Tetrahydrofuran	1.5647	1.3163	1.2779	1.4107	1.3643	1.3535		1.3812	7	AVG	
Chloroform	*0.5302	0.4352	0.4375	0.4528	0.4339	0.4446		0.4557	8	AVG	*
1,1,1-Trichloroethane	0.5394	0.4105	0.4199	0.4094	0.3865	0.4021		0.4280	13	AVG	
Cyclohexane	0.6504	0.5529	0.5586	0.5685	0.5542	0.5789		0.5773	6	AVG	
Cyclohexane(mz 84)	0.4906	0.4198	0.4297	0.4414	0.4343	0.4454		0.4435	6	AVG	
Cyclohexane(mz 69)	0.1899	0.1634	0.1596	0.1662	0.1638	0.1686		0.1686	6	AVG	
1,1-Dichloropropene	0.4849	0.3860	0.4036	0.4105	0.3956	0.4093		0.4150	9	AVG	
Carbon Tetrachloride	0.3480	0.2998	0.3052	0.3199	0.3114	0.3208		0.3175	5	AVG	
Isobutyl Alcohol	0.4953	0.4021	0.4296	0.4314	0.4050	0.4376		0.4335	8	AVG	
Benzene	1.3760	1.1493	1.1687	1.2039	1.1480	1.1873		1.2055	7	AVG	
1,2-Dichloroethane	0.3580	0.3151	0.3274	0.3343	0.3241	0.3369		0.3327	4	AVG	
t-Amyl Methyl Ether	0.9056	0.7944	0.8128	0.8362	0.8232	0.8457		0.8363	5	AVG	
n-Heptane	0.5352	0.4439	0.4669	0.4772	0.4731	0.5269		0.4872	7	AVG	
n-Butanol	0.4251	0.3419	0.3755	0.3754	0.3605	0.3885		0.3778	7	AVG	
Trichloroethene	0.3330	0.2718	0.2816	0.2911	0.2768	0.2869		0.2902	8	AVG	
1,2-Dichloropropane	*0.3534	0.3113	0.3170	0.3279	0.3140	0.3263		0.3250	5	AVG	*
Methylcyclohexane	0.6483	0.5321	0.5272	0.5664	0.5600	0.5966		0.5718	8	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

GSK08 0033

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date(s): 03/21/12 03/21/12

Heated Purge: (Y/N) Y Calibration Times: 12:03 13:43

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 4 = em21i06.d RRF 10= em21i05.d RRF 20= em21i04.d
RRF 50= em21i03.d RRF100= em21i02.d RRF300= em21i01.d RRF =

COMPOUND	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	$\overline{RRF}$	% RSD	CAL. METHOD	
Methyl Methacrylate	0.3049	0.2539	0.2606	0.2668	0.2651	0.2808		0.2720	7	AVG	
Dibromomethane	0.1744	0.1549	0.1544	0.1620	0.1557	0.1623		0.1606	5	AVG	
1,4-Dioxane	0.1113	0.0929	0.0965	0.0911	0.0979	0.0941		0.0973	7	AVG	
Bromodichloromethane	0.3611	0.3090	0.3274	0.3349	0.3248	0.3411		0.3331	5	AVG	
2-Nitropropane	0.1099	0.0913	0.0919	0.0970	0.1084	0.1011		0.1000	8	AVG	
2-Chloroethyl Vinyl Ether	0.2429	0.2153	0.2233	0.2263	0.2268	0.2396		0.2290	5	AVG	
cis-1,3-Dichloropropene	0.4961	0.4434	0.4532	0.4607	0.4545	0.4742		0.4637	4	AVG	
4-Methyl-2-Pentanone	0.4873	0.4388	0.4213	0.4419	0.5209	0.4453		0.4592	8	AVG	
Toluene	*1.3017	1.0726	1.0850	1.1383	1.0726	1.1135		1.1306	8	AVG	*
trans-1,3-Dichloropropene	0.6844	0.5898	0.6183	0.6398	0.6276	0.6562		0.6360	5	AVG	
Ethyl Methacrylate	0.7322	0.6378	0.6657	0.6921	0.6838	0.7189		0.6884	5	AVG	
1,1,2-Trichloroethane	0.3835	0.3447	0.3479	0.3580	0.3512	0.3622		0.3579	4	AVG	
Tetrachloroethene	0.4676	0.3704	0.3837	0.4022	0.3793	0.3949		0.3997	9	AVG	
1,3-Dichloropropane	0.7262	0.6372	0.6604	0.6744	0.6542	0.6813		0.6723	5	AVG	
2-Hexanone	0.5432	0.4900	0.4708	0.4984	0.6162	0.4882		0.5178	10	AVG	
Dibromochloromethane	0.3694	0.3267	0.3442	0.3565	0.3522	0.3689		0.3530	5	AVG	
1,2-Dibromoethane	0.4068	0.3554	0.3667	0.3724	0.3615	0.3780		0.3735	5	AVG	
Chlorobenzene	#1.2906	1.1026	1.1332	1.1603	1.1236	1.1635		1.1623	6	AVG	#
1,1,1,2-Tetrachloroethane	0.3723	0.3354	0.3494	0.3649	0.3522	0.3659		0.3567	4	AVG	
Ethylbenzene	*2.4454	2.0812	2.1629	2.2165	2.1267	2.2156		2.2081	6	AVG	*
m+p-Xylene	0.9253	0.7804	0.8100	0.8444	0.8089	0.8503		0.8365	6	AVG	
Xylene (Total)	0.9155	0.7705	0.8023	0.8317	0.7972	0.8391		0.8261	6	AVG	
o-Xylene	0.8959	0.7508	0.7871	0.8064	0.7738	0.8169		0.8051	6	AVG	
Styrene	1.3857	1.2109	1.2778	1.3170	1.2850	1.3721		1.3081	5	AVG	
Bromoform	#0.2490	0.2147	0.2335	0.2425	0.2422	0.2617		0.2406	7	AVG	#
Isopropylbenzene	2.4127	1.9943	2.0773	2.1728	2.0796	2.1827		2.1532	7	AVG	
Cyclohexanone	0.4453	0.3743	0.3791	0.3863	0.3991	0.4106		0.3991	7	AVG	
1,1,2,2-Tetrachloroethane	#1.4043	1.1589	1.2310	1.2500	1.2015	1.2283		1.2457	7	AVG	#
trans-1,4-Dichloro-2-Butene	0.4152	0.3496	0.3776	0.3837	0.3893	0.4005		0.3860	6	AVG	
Bromobenzene	0.9214	0.7741	0.8226	0.8373	0.8163	0.8257		0.8329	6	AVG	
1,2,3-Trichloropropane	0.3782	0.3128	0.3284	0.3413	0.3268	0.3284		0.3360	7	AVG	
n-Propylbenzene	5.8838	4.9559	5.1304	5.3488	5.1447	5.0182		5.2470	6	AVG	
2-Chlorotoluene	1.0355	0.8875	0.9354	0.9402	0.9130	0.9125		0.9374	6	AVG	
1,3,5-Trimethylbenzene	3.8761	3.2850	3.5006	3.6047	3.4463	3.5540		3.5445	6	AVG	
4-Chlorotoluene	1.0535	0.9197	0.9448	0.9736	0.9413	0.9766		0.9682	5	AVG	
tert-Butylbenzene	0.8577	0.6867	0.7303	0.7766	0.7434	0.7699		0.7607	8	AVG	
Pentachloroethane	0.5502	0.4394	0.4771	0.5194	0.5059	0.5424		0.5058	8	AVG	
1,2,4-Trimethylbenzene	3.8910	3.3518	3.4657	3.6062	3.4798	3.5307		3.5542	5	AVG	
sec-Butylbenzene	5.0879	4.2231	4.4656	4.6831	4.4825	4.5675		4.5850	6	AVG	
p-Isopropyltoluene	4.0298	3.4691	3.6538	3.8175	3.6944	3.8237		3.7480	5	AVG	
1,3-Dichlorobenzene	1.8144	1.5402	1.5989	1.6755	1.6270	1.6729		1.6548	6	AVG	
1,4-Dichlorobenzene	1.9139	1.5790	1.6326	1.6824	1.6327	1.6790		1.6866	7	AVG	
1,2,3-Trimethylbenzene	3.9184	3.2057	3.2384	3.4761	3.3611	3.5061		3.4510	8	AVG	
Benzyl Chloride	2.7648	2.3537	2.5429	2.7078	2.6724	2.8165		2.6430	6	AVG	
1,3-Diethylbenzene	2.4834	1.9825	2.0871	2.2467	2.1754	2.3216		2.2161	8	AVG	
1,4-Diethylbenzene	2.2635	1.9293	1.9543	2.1229	2.0721	2.2265		2.0948	7	AVG	
n-Butylbenzene	2.0822	1.8050	1.9137	2.0042	1.9447	2.0776		1.9712	5	AVG	
1,2-Dichlorobenzene	1.7199	1.4731	1.5320	1.5709	1.5484	1.6066		1.5752	5	AVG	
1,2-Diethylbenzene	2.4085	1.9346	2.0124	2.1525	2.1107	2.2074		2.1377	8	AVG	
1,2-Dibromo-3-Chloropropane	0.3013	0.2726	0.2783	0.2874	0.2761	0.2939		0.2849	4	AVG	
1,3,5-Trichlorobenzene	1.1123	0.9655	1.0188	1.0637	1.0430	1.0891		1.0487	5	AVG	
1,2,4-Trichlorobenzene	0.9858	0.8679	0.9157	0.9442	0.9373	0.9683		0.9365	4	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

GSK08 0034

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date(s): 03/21/12 03/21/12

Heated Purge: (Y/N) Y Calibration Times: 12:03 13:43

Matrix:(soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 4 = em21i06.d RRF 10= em21i05.d RRF 20= em21i04.d
RRF 50= em21i03.d RRF100= em21i02.d RRF300= em21i01.d RRF =

COMPOUND	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	$\overline{RRF}$	% RSD	CAL. METHOD
Hexachlorobutadiene	0.4406	0.3725	0.3939	0.4076	0.3982	0.4173		0.4050	6	AVG
Naphthalene	3.9397	3.4253	3.6413	3.7836	3.7194	3.7526		3.7103	5	AVG
1,2,3-Trichlorobenzene	1.0037	0.8351	0.8906	0.9323	0.8984	0.9043		0.9107	6	AVG
2-Methylnaphthalene	2.0710	1.6810	1.8127	1.9899	1.9291	1.8302		1.8856	7	AVG
Dibromofluoromethane	0.2103	0.2107	0.2100	0.2074	0.2105	0.2074		0.2094	1	AVG
Dibromofluoromethane(mz111)	0.2156	0.2159	0.2143	0.2130	0.2145	0.2135		0.2145	1	AVG
1,2-Dichloroethane-d4	0.0544	0.0551	0.0571	0.0542	0.0556	0.0545		0.0552	2	AVG
1,2-Dichloroethane-d4(mz104)	0.0343	0.0362	0.0352	0.0350	0.0360	0.0354		0.0353	2	AVG
1,2-Dichloroethane-d4(mz65)	0.2602	0.2649	0.2585	0.2602	0.2606	0.2611		0.2609	1	AVG
Toluene-d8(mz100)	0.9341	0.9318	0.9496	0.9347	0.9339	0.9287		0.9354	1	AVG
4-Bromofluorobenzene(mz174)	0.3431	0.3525	0.3433	0.3430	0.3471	0.3458		0.3458	1	AVG
Toluene-d8	1.4569	1.4585	1.4666	1.4598	1.4588	1.4540		1.4591	0	AVG
4-Bromofluorobenzene	0.5152	0.5292	0.5280	0.5206	0.5212	0.5299		0.5240	1	AVG

Average %RSD 6

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

GSK08 0035

FORM VI VOA

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP15648.i/12mar21a.b/em21i01.d VSTD300
/chem/HP15648.i/12mar21a.b/em21i02.d VSTD100
/chem/HP15648.i/12mar21a.b/em21i03.d VSTD050
/chem/HP15648.i/12mar21a.b/em21i04.d VSTD020
/chem/HP15648.i/12mar21a.b/em21i05.d VSTD010
/chem/HP15648.i/12mar21a.b/em21i06.d VSTD004

Area Summary

File ID:

Internal Standard Name	em21i01.d	em21i02.d	em21i03.d	em21i04.d	em21i05.d	em21i06.d	Avg. Area	%RSD	In Spec
t-Butyl Alcohol-d10	209687	222727	205400	223584	218404	214198	215667	3	Yes
Fluorobenzene	1025357	1094649	1037802	1086076	1106658	1081567	1072018	3	Yes
Chlorobenzene-d5	689625	729147	682153	717490	737280	718495	712365	3	Yes
1,4-Dichlorobenzene-d4	355330	357865	334207	351672	358576	350346	351333	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	em21i01.d	em21i02.d	em21i03.d	em21i04.d	em21i05.d	em21i06.d	Avg. RT
t-Butyl Alcohol-d10	2.675	2.688	2.694	2.676	2.663	2.669	2.678
Fluorobenzene	4.955	4.955	4.962	4.949	4.956	4.949	4.955
Chlorobenzene-d5	8.071	8.071	8.071	8.071	8.071	8.071	8.071
1,4-Dichlorobenzene-d4	9.942	9.942	9.942	9.942	9.942	9.942	9.942

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 03/21/2012 at 15:43.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 ICV Date: 03/21/12 Time: 14:23

Lab File ID: em21cv1.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4460	0.3227	14.47	20	-28	
#	Chloromethane	0.4806	0.4091	17.02	20	-15	#
*	Vinyl Chloride	0.4662	0.4106	17.62	20	-12	*
	Bromomethane	0.2559	0.2362	18.46	20	-8	
	Chloroethane	0.2474	0.2141	17.31	20	-13	
	Dichlorofluoromethane	0.5626	0.6094	21.66	20	8	
	Trichlorofluoromethane	0.4341	0.4141	19.08	20	-5	
	Ethyl Ether	0.2648	0.2695	20.36	20	2	
	Freon 123a	0.3637	0.3710	20.40	20	2	
	Acrolein	2.2516	2.1710	144.63	150	-4	
*	1,1-Dichloroethene	0.2366	0.2658	22.47	20	12	*
	Freon 113	0.2363	0.2726	23.08	20	15	
	Acetone	0.1218	0.1214	149.54	150	0	
	Methyl Iodide	0.3349	0.3705	22.12	20	11	
	2-Propanol	0.7755	0.8503	164.46	150	10	
	Carbon Disulfide	0.6960	0.7917	22.75	20	14	
	Allyl Chloride	0.5229	0.4975	19.03	20	-5	
	Methyl Acetate	0.3208	0.3019	18.82	20	-6	
	Methylene Chloride	0.2587	0.2731	21.11	20	6	
	t-Butyl Alcohol	1.2493	1.2313	197.10	200	-1	
	Acrylonitrile	0.1713	0.1560	91.05	100	-9	
	trans-1,2-Dichloroethene	0.2601	0.2716	20.89	20	4	
	Methyl Tertiary Butyl Ether	0.8148	0.8335	20.46	20	2	
	n-Hexane	0.4520	0.5012	22.18	20	11	
	1,2-Dichloroethene (total)	0.2736	0.2795	40.90	40	2	
#	1,1-Dichloroethane	0.5392	0.5539	20.55	20	3	#
	di-Isopropyl Ether	0.9849	0.9756	19.81	20	-1	
	2-Chloro-1,3-Butadiene	0.4602	0.4843	21.05	20	5	
	Ethyl t-Butyl Ether	0.8931	0.8965	20.08	20	0	
	cis-1,2-Dichloroethene	0.2872	0.2874	20.01	20	0	
	2-Butanone	0.2211	0.2015	136.69	150	-9	
	2,2-Dichloropropane	0.4035	0.4050	20.07	20	0	
	Propionitrile	1.6504	1.6660	151.42	150	1	
	Methacrylonitrile	0.1698	0.1648	145.59	150	-3	
	Bromochloromethane	0.1238	0.1198	19.35	20	-3	
	Tetrahydrofuran	1.3812	1.3686	99.08	100	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

GSK08 0037

FORM VII VOA

See DVR

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 ICV Date: 03/21/12 Time: 14:23

Lab File ID: em21cv1.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4557	0.4568	20.05	20	0	*
	1,1,1-Trichloroethane	0.4280	0.4378	20.46	20	2	
	Cyclohexane	0.5773	0.6195	21.46	20	7	
	1,1-Dichloropropene	0.4150	0.4168	20.09	20	0	
	Carbon Tetrachloride	0.3175	0.3165	19.94	20	0	
	Isobutyl Alcohol	0.4335	0.4300	496.00	500	-1	
	Benzene	1.2055	1.2187	20.22	20	1	
	1,2-Dichloroethane	0.3327	0.3376	20.30	20	1	
	t-Amyl Methyl Ether	0.8363	0.8459	20.23	20	1	
	n-Heptane	0.4872	0.4863	19.96	20	0	
	n-Butanol	0.3778	0.3640	963.43	1000	-4	
	Trichloroethene	0.2902	0.2887	19.89	20	-1	
*	1,2-Dichloropropane	0.3250	0.3207	19.73	20	-1	*
	Methylcyclohexane	0.5718	0.5639	19.73	20	-1	
	Methyl Methacrylate	0.2720	0.2663	19.58	20	-2	
	Dibromomethane	0.1606	0.1638	20.39	20	2	
	1,4-Dioxane	0.0973	0.0982	504.67	500	1	
	Bromodichloromethane	0.3331	0.3258	19.56	20	-2	
	2-Nitropropane	0.1000	0.0872	17.45	20	-13	
	2-Chloroethyl Vinyl Ether	0.2290	0.2276	19.87	20	-1	
	cis-1,3-Dichloropropene	0.4637	0.4584	19.77	20	-1	
	4-Methyl-2-Pentanone	0.4592	0.4196	91.38	100	-9	
*	Toluene	1.1306	1.1298	19.98	20	0	*
	trans-1,3-Dichloropropene	0.6360	0.6285	19.76	20	-1	
	Ethyl Methacrylate	0.6884	0.6838	19.87	20	-1	
	1,1,2-Trichloroethane	0.3579	0.3630	20.28	20	1	
	Tetrachloroethene	0.3997	0.4060	20.32	20	2	
	1,3-Dichloropropane	0.6723	0.6802	20.23	20	1	
	2-Hexanone	0.5178	0.4722	91.19	100	-9	
	Dibromochloromethane	0.3530	0.3482	19.73	20	-1	
	1,2-Dibromoethane	0.3735	0.3731	19.98	20	0	
#	Chlorobenzene	1.1623	1.1623	20.00	20	0	#
	1,1,1,2-Tetrachloroethane	0.3567	0.3544	19.87	20	-1	
*	Ethylbenzene	2.2081	2.1846	19.79	20	-1	*
	m+p-Xylene	0.8365	0.8327	39.81	40	0	
	Xylene (Total)	0.8261	0.5414	59.48	60	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 ICV Date: 03/21/12 Time: 14:23

Lab File ID: em21cv1.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.8051	0.7918	19.67	20	-2	
	Styrene	1.3081	1.3086	20.01	20	0	
#	Bromoform	0.2406	0.2313	19.22	20	-4	#
	Isopropylbenzene	2.1532	2.1593	20.06	20	0	
	Cyclohexanone	0.3991	0.3961	496.23	500	-1	
#	1,1,2,2-Tetrachloroethane	1.2457	1.2335	19.80	20	-1	#
	trans-1,4-Dichloro-2-Butene	0.3860	0.3551	92.00	100	-8	
	Bromobenzene	0.8329	0.8279	19.88	20	-1	
	1,2,3-Trichloropropane	0.3360	0.3278	19.52	20	-2	
	n-Propylbenzene	5.2470	5.2779	20.12	20	1	
	2-Chlorotoluene	0.9374	0.9631	20.55	20	3	
	1,3,5-Trimethylbenzene	3.5445	3.5036	19.77	20	-1	
	4-Chlorotoluene	0.9682	0.9654	19.94	20	0	
	tert-Butylbenzene	0.7607	0.7656	20.13	20	1	
	Pentachloroethane	0.5058	0.4853	19.19	20	-4	
	1,2,4-Trimethylbenzene	3.5542	3.5424	19.93	20	0	
	sec-Butylbenzene	4.5850	4.6091	20.11	20	1	
	p-Isopropyltoluene	3.7480	3.6925	19.70	20	-1	
	1,3-Dichlorobenzene	1.6548	1.6561	20.02	20	0	
	1,4-Dichlorobenzene	1.6866	1.6672	19.77	20	-1	
	1,2,3-Trimethylbenzene	3.4510	3.4860	20.20	20	1	
	Benzyl Chloride	2.6430	2.5192	19.06	20	-5	
	1,3-Diethylbenzene	2.2161	2.2109	19.95	20	0	
	1,4-Diethylbenzene	2.0948	2.0816	19.87	20	-1	
	n-Butylbenzene	1.9712	1.9194	19.47	20	-3	
	1,2-Dichlorobenzene	1.5752	1.5743	19.99	20	0	
	1,2-Diethylbenzene	2.1377	2.0800	19.46	20	-3	
	1,2-Dibromo-3-Chloropropane	0.2849	0.2753	19.33	20	-3	
	1,3,5-Trichlorobenzene	1.0487	1.0458	19.94	20	0	
	1,2,4-Trichlorobenzene	0.9365	0.9307	19.88	20	-1	
	Hexachlorobutadiene	0.4050	0.3894	19.23	20	-4	
	Naphthalene	3.7103	3.6889	19.88	20	-1	
	1,2,3-Trichlorobenzene	0.9107	0.9093	19.97	20	0	
	2-Methylnaphthalene	1.8856	1.8814	19.96	20	0	

Average %Drift 3

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)

Maximum %Drift for CCC(*)=20%

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_GSK08___

Lab File ID: ea25t02.d BFB Injection Date: 04/25/12

Instrument ID: HP15648 BFB Injection Time: 07:10

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.13
75	30.0 - 60.0% of mass 95	45.68
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.66
173	Less than 2.0% of mass 174	0.68 (0.87)1
174	Greater than 50.0% of mass 95	78.26
175	5.0 - 9.0% of mass 174	5.90 (7.54)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.93 (97.02)1
177	5.0 - 9.0% of mass 176	4.85 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ea25c01.d	04/25/12	07:38
02	VBLKE91	ea25b01.d	04/25/12	07:58
03	LCSE91	ea25s01.d	04/25/12	08:18
04	6623803	ea25s02.d	04/25/12	09:26
05	6623804	ea25s03.d	04/25/12	09:46
06	6620546	ea25s04.d	04/25/12	10:06
07	6624148	ea25s05.d	04/25/12	10:26
08	6624143	ea25s06.d	04/25/12	10:47
09	6624144	ea25s07.d	04/25/12	11:07
10	6624145	ea25s08.d	04/25/12	11:27
11	6624146	ea25s09.d	04/25/12	11:47
12	6624147	ea25s10.d	04/25/12	12:06
13	6623799	ea25s11.d	04/25/12	12:26
14	6623800MS	ea25s12.d	04/25/12	12:47
15	6623801MSD	ea25s13.d	04/25/12	13:07
16	6620540	ea25s14.d	04/25/12	13:27
17	6620541	ea25s15.d	04/25/12	13:47
18	6620542	ea25s16.d	04/25/12	14:07
19	6620543	ea25s17.d	04/25/12	14:27
20	6620544	ea25s18.d	04/25/12	14:47
21	6620545	ea25s19.d	04/25/12	15:07
22	6622848	ea25s20.d	04/25/12	15:27

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.: GSK08___

Lab File ID: ea25t02.d BFB Injection Date: 04/25/12

Instrument ID: HP15648 BFB Injection Time: 07:10

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.13
75	30.0 - 60.0% of mass 95	45.68
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.66
173	Less than 2.0% of mass 174	0.68 (0.87)1
174	Greater than 50.0% of mass 95	78.26
175	5.0 - 9.0% of mass 174	5.90 (7.54)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.93 (97.02)1
177	5.0 - 9.0% of mass 176	4.85 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	6622849	ea25s21.d	04/25/12	15:47
24	6622849DL	ea25s22.d	04/25/12	16:07
25	6622850	ea25s23.d	04/25/12	16:27
26	6616298	ea25s24.d	04/25/12	16:47

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4460	0.3916	43.89	50	-12	
#	Chloromethane	0.4806	0.3629	37.75	50	-25	#
*	Vinyl Chloride	0.4662	0.3944	42.30	50	-15	*
	Bromomethane	0.2559	0.2248	43.93	50	-12	
	Chloroethane	0.2474	0.2076	41.96	50	-16	
	Dichlorofluoromethane	0.5626	0.4527	40.23	50	-20	
	Trichlorofluoromethane	0.4341	0.3900	44.92	50	-10	
	Ethyl Ether	0.2648	0.1639	30.95	50	-38	NTC
	Freon 123a	0.3637	0.2930	40.29	50	-19	
	Acrolein	2.2516	1.9061	423.28	500	-15	
*	1,1-Dichloroethene	0.2366	0.2528	53.42	50	7	*
	Freon 113	0.2363	0.2596	54.94	50	10	
	Acetone	0.1218	0.0969	79.57	100	-20	
	Methyl Iodide	0.3349	0.3791	56.59	50	13	
	2-Propanol	0.7755	0.5868	189.15	250	-24	NTC
	Carbon Disulfide	0.6960	0.7853	56.41	50	13	
	Allyl Chloride	0.5229	0.4409	42.15	50	-16	
	Methyl Acetate	0.3208	0.2739	42.70	50	-15	
	Methylene Chloride	0.2587	0.2586	49.99	50	0	
	t-Butyl Alcohol	1.2493	0.9256	185.22	250	-26	NTC
	Acrylonitrile	0.1713	0.1545	45.09	50	-10	
	trans-1,2-Dichloroethene	0.2601	0.2719	52.28	50	5	
	Methyl Tertiary Butyl Ether	0.8148	0.8058	49.45	50	-1	
	n-Hexane	0.4520	0.4734	52.37	50	5	
	1,2-Dichloroethene (total)	0.2736	0.2804	102.48	100	2	
#	1,1-Dichloroethane	0.5392	0.5185	48.08	50	-4	#
	di-Isopropyl Ether	0.9849	0.8730	44.32	50	-11	
	2-Chloro-1,3-Butadiene	0.4602	0.4453	48.37	50	-3	
	Ethyl t-Butyl Ether	0.8931	0.8208	45.95	50	-8	
	cis-1,2-Dichloroethene	0.2872	0.2889	50.31	50	1	
	2-Butanone	0.2211	0.1922	86.95	100	-13	
	2,2-Dichloropropane	0.4035	0.4042	50.08	50	0	
	Propionitrile	1.6504	1.6654	252.27	250	1	
	Methacrylonitrile	0.1698	0.1606	118.17	125	-5	
	Bromochloromethane	0.1238	0.1224	49.47	50	-1	
	Tetrahydrofuran	1.3812	1.4880	107.73	100	8	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

GSK08 0040

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4557	0.4452	48.84	50	-2	*
	1,1,1-Trichloroethane	0.4280	0.4140	48.36	50	-3	
	Cyclohexane	0.5773	0.5678	49.18	50	-2	
	Cyclohexane(mz 84)	0.4435	0.4623	52.12	50	4	
	Cyclohexane(mz 69)	0.1686	0.1678	49.78	50	0	
	1,1-Dichloropropene	0.4150	0.4047	48.76	50	-2	
	Carbon Tetrachloride	0.3175	0.3363	52.96	50	6	
	Isobutyl Alcohol	0.4335	0.3730	537.78	625	-14	
	Benzene	1.2055	1.1852	49.16	50	-2	
	1,2-Dichloroethane	0.3327	0.3284	49.36	50	-1	
	t-Amyl Methyl Ether	0.8363	0.8229	49.20	50	-2	
	n-Heptane	0.4872	0.4540	46.60	50	-7	
	n-Butanol	0.3778	0.3450	1141.44	1250	-9	
	Trichloroethene	0.2902	0.2875	49.54	50	-1	
*	1,2-Dichloropropane	0.3250	0.3024	46.52	50	-7	*
	Methylcyclohexane	0.5718	0.5359	46.86	50	-6	
	Methyl Methacrylate	0.2720	0.2555	46.96	50	-6	
	Dibromomethane	0.1606	0.1583	49.29	50	-1	
	1,4-Dioxane	0.0973	0.0936	601.25	625	-4	
	Bromodichloromethane	0.3331	0.3257	48.90	50	-2	
	2-Nitropropane	0.1000	0.0942	94.29	100	-6	
	2-Chloroethyl Vinyl Ether	0.2290	0.2178	47.56	50	-5	
	cis-1,3-Dichloropropene	0.4637	0.4467	48.16	50	-4	
	4-Methyl-2-Pentanone	0.4592	0.3897	84.86	100	-15	
*	Toluene	1.1306	1.0776	47.66	50	-5	*
	trans-1,3-Dichloropropene	0.6360	0.5908	46.44	50	-7	
	Ethyl Methacrylate	0.6884	0.6371	46.27	50	-7	
	1,1,2-Trichloroethane	0.3579	0.3510	49.03	50	-2	
	Tetrachloroethene	0.3997	0.4173	52.20	50	4	
	1,3-Dichloropropane	0.6723	0.6206	46.16	50	-8	
	2-Hexanone	0.5178	0.4154	80.23	100	-20	
	Dibromochloromethane	0.3530	0.3564	50.49	50	1	
	1,2-Dibromoethane	0.3735	0.3620	48.47	50	-3	
#	Chlorobenzene	1.1623	1.1188	48.13	50	-4	#
	1,1,1,2-Tetrachloroethane	0.3567	0.3452	48.39	50	-3	
*	Ethylbenzene	2.2081	2.1129	47.85	50	-4	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)

Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.8365	0.8081	96.60	100	-3	
	Xylene (Total)	0.8261	0.7968	144.68	150	-4	
	o-Xylene	0.8051	0.7742	48.08	50	-4	
	Styrene	1.3081	1.2763	48.79	50	-2	
#	Bromoform	0.2406	0.2440	50.72	50	1	#
	Isopropylbenzene	2.1532	2.0715	48.10	50	-4	
	Cyclohexanone	0.3991	0.3531	552.91	625	-12	
#	1,1,2,2-Tetrachloroethane	1.2457	1.0585	42.49	50	-15	#
	trans-1,4-Dichloro-2-Butene	0.3860	0.3009	97.44	125	-22	NTC
	Bromobenzene	0.8329	0.7911	47.49	50	-5	
	1,2,3-Trichloropropane	0.3360	0.2964	44.12	50	-12	
	n-Propylbenzene	5.2470	4.7272	45.05	50	-10	
	2-Chlorotoluene	0.9374	0.8664	46.21	50	-8	
	1,3,5-Trimethylbenzene	3.5445	3.2057	45.22	50	-10	
	4-Chlorotoluene	0.9682	0.8964	46.29	50	-7	
	tert-Butylbenzene	0.7607	0.7034	46.23	50	-8	
	Pentachloroethane	0.5058	0.4716	46.63	50	-7	
	1,2,4-Trimethylbenzene	3.5542	3.2016	45.04	50	-10	
	sec-Butylbenzene	4.5850	4.1426	45.18	50	-10	
	p-Isopropyltoluene	3.7480	3.4646	46.22	50	-8	
	1,3-Dichlorobenzene	1.6548	1.5596	47.12	50	-6	
	1,4-Dichlorobenzene	1.6866	1.5603	46.26	50	-7	
	1,2,3-Trimethylbenzene	3.4510	3.0208	43.77	50	-12	
	Benzyl Chloride	2.6430	2.3681	44.80	50	-10	
	1,3-Diethylbenzene	2.2161	2.0055	45.25	50	-10	
	1,4-Diethylbenzene	2.0948	1.8729	44.70	50	-11	
	n-Butylbenzene	1.9712	1.7465	44.30	50	-11	
	1,2-Dichlorobenzene	1.5752	1.4670	46.57	50	-7	
	1,2-Diethylbenzene	2.1377	1.8575	43.45	50	-13	
	1,2-Dibromo-3-Chloropropane	0.2849	0.2339	41.05	50	-18	
	1,3,5-Trichlorobenzene	1.0487	1.0248	48.86	50	-2	
	1,2,4-Trichlorobenzene	0.9365	0.8940	47.73	50	-5	
	Hexachlorobutadiene	0.4050	0.3969	49.00	50	-2	
	Naphthalene	3.7103	3.2729	44.11	50	-12	
	1,2,3-Trichlorobenzene	0.9107	0.8667	47.58	50	-5	
	2-Methylnaphthalene	1.8856	1.4785	39.20	50	-22	NTC

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)

Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP15648 Calibration Date: 04/25/12 Time: 07:38

Lab File ID: ea25c01.d Init. Calib. Date(s): 03/21/12 03/21/12

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane	0.2094	0.2139	51.08	50	2
Dibromofluoromethane(mz111)	0.2145	0.2196	51.19	50	2
1,2-Dichloroethane-d4	0.0552	0.0556	50.44	50	1
1,2-Dichloroethane-d4(mz104)	0.0353	0.0357	50.46	50	1
Toluene-d8(mz100)	0.9354	0.9304	49.73	50	-1
1,2-Dichloroethane-d4(mz65)	0.2609	0.2621	50.22	50	0
4-Bromofluorobenzene(mz174)	0.3458	0.3777	54.62	50	9
Toluene-d8	1.4591	1.4510	49.72	50	-1
4-Bromofluorobenzene	0.5240	0.5120	48.85	50	-2

Average %Drift 8

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP15648.i/12mar21a.b/em21i06.d
/chem/HP15648.i/12mar21a.b/em21i05.d
/chem/HP15648.i/12mar21a.b/em21i04.d
/chem/HP15648.i/12mar21a.b/em21i03.d
/chem/HP15648.i/12mar21a.b/em21i02.d
/chem/HP15648.i/12mar21a.b/em21i01.d

File /chem/HP15648.i/12mar21a.b/em21i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP15648.i/12apr25a.b/ea25c01.d

RT Summary

Internal Standard Name	File ID: ea25c01.d	ICAL RT	In Spec
t-Butyl Alcohol-d10	2.676	2.694	Yes
Fluorobenzene	4.956	4.962	Yes
Chlorobenzene-d5	8.071	8.071	Yes
1,4-Dichlorobenzene-d4	9.942	9.942	Yes

A "No" indicates the retention time is greater than 30 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ea25c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl Alcohol-d10	191440	205400	102700	410800	Yes
Fluorobenzene	1054251	1037802	518901	2075604	Yes
Chlorobenzene-d5	725652	682153	341076	1364306	Yes
1,4-Dichlorobenzene-d4	378429	334207	167104	668414	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 04/25/2012 at 07:57

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.: GSK08

Lab File ID (Standard): ea25c01.d Date Analyzed: 04/25/12

Instrument ID: HP15648 Time Analyzed: 07:38

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(FBZ)		IS2(CBZ)		IS3(DCB)		IS4(TBA)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1054251	4.956	725652	8.071	378429	9.942	191440	2.676
	UPPER LIMIT	2108502	5.456	1451304	8.571	756858	10.442	382880	3.176
	LOWER LIMIT	527126	4.456	362826	7.571	189214	9.442	95720	2.176
	LAB SAMPLE ID								
01	VBLKE91	1077050	4.956	733879	8.071	366349	9.936	187682	2.676
02	LCSE91	1061588	4.956	736277	8.071	378839	9.936	189408	2.669
03	6623803	1076485	4.956	729984	8.071	374287	9.942		
04	6623804	1089004	4.962	733371	8.071	377767	9.936		
05	6620546	1030769	4.962	695661	8.071	357458	9.936		
06	6624148	1067845	4.956	722480	8.071	368699	9.936	158696	2.669
07	6624143	1098261	4.949	739591	8.064	380669	9.936	184162	2.657
08	6624144	1074037	4.956	732251	8.071	367024	9.936	182235	2.675
09	6624145	1057845	4.956	711699	8.071	364829	9.936	178735	2.669
10	6624146	999526	4.962	663729	8.065	345217	9.936	169755	2.682
11	6624147	1031593	4.955	706341	8.071	360590	9.936	183972	2.669
12	6623799	1028527	4.956	705989	8.071	367238	9.936	187813	2.669
13	6623800MS	1036719	4.956	708448	8.071	376784	9.936	186778	2.663
14	6623801MSD	1012882	4.955	704074	8.071	367115	9.936	178345	2.669
15	6620540	1044565	4.956	716456	8.071	370115	9.936		
16	6620541	1020570	4.949	695868	8.065	356562	9.936		
17	6620542	1071610	4.949	738105	8.065	378624	9.936		
18	6620543	1048820	4.950	721754	8.065	367740	9.936		
19	6620544	1052599	4.956	721850	8.071	372170	9.936		
20	6620545	1002836	4.949	697792	8.065	359421	9.936		
21	6622848	1036694	4.949	708998	8.065	363245	9.936		
22	6622849	1071581	4.962	729492	8.071	374096	9.936		

IS1 (FBZ)=Fluorobenzene
IS2 (CBZ)=Chlorobenzene-d5
IS3 (DCB)=1,4-Dichlorobenzene-d4
IS4 (TBA)=t-Butyl Alcohol-d10

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

GSK08 0046

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_GSK08___

Lab File ID (Standard): ea25c01.d Date Analyzed: 04/25/12

Instrument ID: HP15648 Time Analyzed: 07:38

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(FBZ) AREA #	RT #	IS2(CBZ) AREA #	RT #	IS3(DCB) AREA #	RT #	IS4(TBA) AREA #	RT #
12 HOUR STD	1054251	4.956	725652	8.071	378429	9.942	191440	2.676
UPPER LIMIT	2108502	5.456	1451304	8.571	756858	10.442	382880	3.176
LOWER LIMIT	527126	4.456	362826	7.571	189214	9.442	95720	2.176
LAB SAMPLE ID								
23 6622849DL	1021896	4.955	698671	8.071	364157	9.936		
24 6622850	1031378	4.949	698144	8.064	359816	9.936		
25 6616298	1064506	4.956	726337	8.071	372889	9.936	157794	2.663

IS1 (FBZ)=Fluorobenzene
IS2 (CBZ)=Chlorobenzene-d5
IS3 (DCB)=1,4-Dichlorobenzene-d4
IS4 (TBA)=t-Butyl Alcohol-d10

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Lancaster Laboratories
Runlog for Hewelet Packard GC/MS System HP15648 **HP #27**

** Shift #1 Analyst: JML ** Shift #2 Analyst: _____ ** Shift #3 Analyst: _____ *

Comment Code:
R = Reinjection necessary
S = Surrogate problem
NU = Not used
MR = Meets requirements
Cz = Confirms z, (z = S, I or X)
X = Sample sent to be reextracted
I = Internal Standard problem
F = Further dilution required
IUO = Internal use only
T = Injected outside valid tune period

Other problems or comments are as follows:

8260_WATERS

Data Directory Path is - d:\data\12MAR21A\

FILE	SAMPLE	LLI#	DATE	TIME	BATCH	D.F.	NOTES
EM21T01.D	50ng BFB	BFB SEP28-11	21 Mar 2012	11:35			MR
EM21X01.D	BLK	BLK	21 Mar 2012	11:43			NU
EM21I01.D	VSTD300	VSTD300	21 Mar 2012	12:03			MR
EM21I02.D	VSTD100	VSTD100	21 Mar 2012	12:23			MR
EM21I03.D	VSTD050	VSTD050	21 Mar 2012	12:43			MR
EM21I04.D	VSTD020	VSTD020	21 Mar 2012	13:03			MR
EM21I05.D	VSTD010	VSTD010	21 Mar 2012	13:23			MR
EM21I06.D	VSTD004	VSTD004	21 Mar 2012	13:43			MR
EM21M01.D	MDL001	MDL001	21 Mar 2012	14:03			MR
EM21CV1.D	ICVELG	ICVELG	21 Mar 2012	14:23	E120819AA		MR
EM21B01.D	VBLKE42	VBLKE42	21 Mar 2012	14:43	E120811AA		
EM21M11.D	MDL001	1MDL#1	21 Mar 2012	15:03	E120811AA		
EM21M12.D	MDL001	1MDL#2	21 Mar 2012	15:23	E120811AA		

Lancaster Laboratories
Runlog for Hewelet Packard GC/MS System HP15648 **HP #27**

** Shift #1 Analyst:___JML_____** Shift #2 Analyst:___KAS_____** Shift #3 Analyst:_____*

Comment Code:

R =	Reinjection necessary	X =	Sample sent to be reextracted
S =	Surrogate problem	I =	Internal Standard problem
NU =	Not used	F =	Further dilution required
MR =	Meets requirements	IUO =	Internal use only
Cz =	Confirms z, (z = S, I or X)	T =	Injected outside valid tune period

Other problems or comments are as follows:

_____

_____

_____

_____

Data Directory Path is - d:\data\12APR25A\

FILE	SAMPLE	LLI#	DATE	TIME	BATCH	D.F.	NOTES
EA25T01.D	50ng BFB	BFB MAR28-12	25 Apr 2012	06:57			NU
EA25T02.D	50ng BFB	BFB MAR28-12	25 Apr 2012	07:10			MR
EA25X01.D	BLK	BLK	25 Apr 2012	07:18			NU
EA25C01.D	VSTD050	VSTD050	25 Apr 2012	07:38	E121161AA		MR
EA25B01.D	VBLKE91	VBLKE91	25 Apr 2012	07:58	E121161AA		MR
EA25S01.D	LCSE91	LCSE91	25 Apr 2012	08:18	E121161AA		MR
EA25X02.D	BLK	BLK	25 Apr 2012	09:06			NU
EA25S02.D	CHREB	6623803	25 Apr 2012	09:26	E121161AA		MR
EA25S03.D	CHRTR	6623804	25 Apr 2012	09:46	E121161AA		MR
EA25S04.D	CHFTB	6620546	25 Apr 2012	10:06	E121161AA		MR
EA25S05.D	CTRBL	6624148	25 Apr 2012	10:26	E121161AA		MR
EA25S06.D	C0220	6624143	25 Apr 2012	10:47	E121161AA	5	MR
EA25S07.D	C0221	6624144	25 Apr 2012	11:07	E121161AA	5	MR
EA25S08.D	C1078	6624145	25 Apr 2012	11:27	E121161AA	5	MR
EA25S09.D	1078D	6624146	25 Apr 2012	11:47	E121161AA	5	MR
EA25S10.D	C0219	6624147	25 Apr 2012	12:06	E121161AA	5	MR
EA25S11.D	CHR1R	6623799	25 Apr 2012	12:26	E121161AA		MR
EA25S12.D	CHR1RMS	6623800MS	25 Apr 2012	12:47	E121161AA		MR
EA25S13.D	CHR1RMSD	6623801MSD	25 Apr 2012	13:07	E121161AA		MR
EA25S14.D	CHF02	6620540	25 Apr 2012	13:27	E121161AA		MR
EA25S15.D	CHF05	6620541	25 Apr 2012	13:47	E121161AA		MR
EA25S16.D	CHFE5	6620542	25 Apr 2012	14:07	E121161AA		MR
EA25S17.D	CHF18	6620543	25 Apr 2012	14:27	E121161AA		MR
EA25S18.D	CHF9R	6620544	25 Apr 2012	14:47	E121161AA		MR
EA25S19.D	CHF9D	6620545	25 Apr 2012	15:07	E121161AA		MR
EA25S20.D	52263	6622848	25 Apr 2012	15:27	E121161AA		MR
EA25S21.D	52264	6622849	25 Apr 2012	15:47	E121161AA	5	F
EA25S22.D	52264DL	6622849DL	25 Apr 2012	16:07	E121161AA	50	MR
EA25S23.D	52265	6622850	25 Apr 2012	16:27	E121161AA		MR
EA25S24.D	R10S5	6616298	25 Apr 2012	16:47	E121161AA	5	MR

eurofins | Lancaster Laboratories

LOQ/MDL Summary
GC/MS Volatiles

SDG: GSK08

Fraction: Volatiles by GC/MS

10904: Volatiles by 8260B Analyte Name	Default MDL	Default LOQ	Units
Dichlorodifluoromethane	2	5	ug/l
Chloromethane	1	5	ug/l
Vinyl Chloride	1	5	ug/l
Bromomethane	1	5	ug/l
Chloroethane	1	5	ug/l
Trichlorofluoromethane	2	5	ug/l
1,1-Dichloroethene	0.8	5	ug/l
Freon 113	2	10	ug/l
Freon 123a	2	5	ug/l
Methylene Chloride	2	5	ug/l
1,1-Dichloroethane	1	5	ug/l
1,2-Dichloroethene (Total)	0.8	5	ug/l
Chloroform	0.8	5	ug/l
1,1,1-Trichloroethane	0.8	5	ug/l
Carbon Tetrachloride	1	5	ug/l
Benzene	0.5	5	ug/l
1,2-Dichloroethane	1	5	ug/l
Trichloroethene	1	5	ug/l
1,2-Dichloropropane	1	5	ug/l
Dibromomethane	1	5	ug/l
Bromodichloromethane	1	5	ug/l
cis-1,3-Dichloropropene	1	5	ug/l
Toluene	0.7	5	ug/l
trans-1,3-Dichloropropene	1	5	ug/l
1,1,2-Trichloroethane	0.8	5	ug/l
Tetrachloroethene	0.8	5	ug/l
Dibromochloromethane	1	5	ug/l
Chlorobenzene	0.8	5	ug/l
1,1,1,2-Tetrachloroethane	1	5	ug/l
Ethylbenzene	0.8	5	ug/l
Xylene (Total)	0.8	5	ug/l
Bromoform	1	5	ug/l
Bromobenzene	1	5	ug/l
1,1,2,2-Tetrachloroethane	1	5	ug/l
1,2,3-Trichloropropane	1	5	ug/l
2-Chlorotoluene	1	5	ug/l
4-Chlorotoluene	1	5	ug/l
1,3-Dichlorobenzene	1	5	ug/l
1,4-Dichlorobenzene	1	5	ug/l
Benzyl Chloride	1	5	ug/l
1,2-Dichlorobenzene	1	5	ug/l

eurofins | Lancaster Laboratories

GC/MS Volatiles pH Log

Batch: E121161AA

LLI#	pH	Date Checked	Initials/ Employee #	Comments
6623803	<2	4/25/2012	KAS 2648	038a
6623804	<2	4/25/2012	KAS 2648	038a
6620546	<2	4/25/2012	KAS 2648	038a
6624148	<2	4/25/2012	KAS 2648	038a
6624143	<2	4/25/2012	JML 1693	038a
6624144	<2	4/25/2012	JML 1693	038a
6624145	<2	4/25/2012	JML 1693	038a
6624146	<2	4/25/2012	JML 1693	038a
6624147	<2	4/25/2012	JML 1693	038a
6623799	<2	4/25/2012	KAS 2648	038a
6623800	<2	4/25/2012	KAS 2648	038a
6623801	<2	4/25/2012	KAS 2648	038a
6620540	<2	4/25/2012	KAS 2648	038a
6620541	<2	4/25/2012	KAS 2648	038a
6620542	<2	4/25/2012	KAS 2648	038a
6620543	<2	4/25/2012	KAS 2648	038a
6620544	<2	4/25/2012	KAS 2648	038a
6620545	<2	4/25/2012	KAS 2648	038a
6616298	7	4/25/2012	JML 1693	099a

ATTACHMENT E

PROJECT CORRESPONDENCE

No Project Correspondence associated with this SDG