October 2017

Remedial Investigation Work Plan Master Cleaners Site (BCP#C401072) Charles Bohl Incorporated Town of Guilderland Albany County, New York

Prepared for:

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REMEDIAL INVESTIGATION WORK PLAN
MASTER CLEANERS SITE
2312 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY, NEW YORK

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ATTACHMENTS

1.0 INTRODUCTION & PURPOSE

1.1 Introduction

This document presents a Remedial Investigation Work Plan (RIWP) designed to assess environmental conditions at the Master Cleaners Site (Site) located at 2312 Western Avenue in the Town of Guilderland, New York (Figure 1, Site Location Map). Charles Bohl Incorporated has submitted an application for entry into the Brownfield Cleanup Program (BCP) as a "Volunteer".

The proposed investigation includes the collection and analysis of surface soil samples, advancement of borings for conversion to monitoring wells, and the collection and analysis of groundwater samples from existing and proposed monitoring wells. Previous investigations indicate the presence of chlorinated solvents within the soil and groundwater at the subject Site. Further data must be collected from the proposed sampling locations to determine the nature and extent of the known contamination. This data will also assist in evaluating potential contaminant transport mechanisms and to determine if off-site sensitive receptors may be impacted.

The Site meets the New York State Department of Environmental Conservation (NYSDEC) definition of a "Brownfield" site. The past use of the property was as a dry cleaning business but the property has been vacant for many years. An investigation conducted by others in the fall of 2015, revealed the presence of chlorinated VOC impacts to groundwater in excess of NYSDEC standards for the anticipated future use of the site for restricted residential or commercial uses.

1.2 Purpose

The purpose of the RI will be to define the nature and extent of Site contamination. The data developed through the completion of the RI will form the basis for a decision regarding (i) the need for remedial action, and (ii) the appropriate analysis of remedial alternatives based in part on potential future uses of the Site (i.e. residential, commercial, industrial, etc.). The RIWP outlines a systematic investigation specific to the Site characteristics considering the Site's history, geology, hydrogeology, known or suspected contaminants and contemplated future use. The target goals of this

investigation will be to identify contaminants of concern and their origin, define the extent of such contamination, and to produce data of sufficient quantity and quality to support the development of potential remedial alternatives, as necessary, which allow the Volunteer to develop an Interim Remedial Measures Work Plan or Remedial Work Plan for NYSDEC review and ultimate implementation.

This RIWP describes the investigative techniques to be employed during the investigation as well as the type, frequency and number of media samples to be collected for laboratory analyses. The specifics regarding the investigative techniques, methods, and procedures to be followed are detailed within the Field Sampling Plan (FSP) (Appendix A) and Quality Assurance Project Plan (QAPP) (Appendix B). Health and safety requirements are presented in the Site specific Health and Safety Plan (HASP) (Appendix C). The Citizen Participation Plan (CPP) (Appendix D) provides the requirements for disseminating information to the public regarding the RI activities, the availability of information and applicable reports, and public participation opportunities prior to the NYSDEC selection of a remedial action.

1.3 Project Objectives and Goals

The project objective is to investigate, identify and assess known and suspected sources of contamination. The project goal is to develop appropriate data to define the nature and extent of chlorinated solvent contamination, and remedial alternatives for the identified contaminants which will ultimately achieve compliance with established regulatory clean up guidance levels and criteria. For this project, achieving the standard and guidance values established in the following NYSDEC documents will be the overall Site remediation goal.

Media	Regulation	Standards, Criteria & Guidance (SCGs)
Soil	6 NYCRR Part 375 (December 14, 2007)	Table 375-6.8(b) Restricted-Residential Use Soil Cleanup Objectives (SCOs)
	NYSDEC Policy CP-51/Soil Cleanup Guidance October 21, 2010	Table 1 Supplemental Soil Cleanup Objectives

Media	Regulation	Standards, Criteria & Guidance (SCGs)
Groundwater	NYSDEC Division of Water TOGS 1.1.1	Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998)
Soil Vapor	None	NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006

The SCOs (a.k.a. SCGs) for Restricted Residential Use Sites are identified under the column heading "Protection of Public Health – Restricted-Residential". The NYSDEC Division of Water TOGS 1.1.1 document is not included within this work plan, but the standard or guidance values for the remedial action will be the GA (groundwater) class values. Currently, there is no regulation that establishes SCGs for soil vapor investigation or mitigation. In lieu of a regulation, the NYSDOH prepared guidance document listed in the Table above will be used for applicable SCGs, if necessary.

There are no surface water bodies on the Site. Therefore applicable SCGs for surface water are not included in this RIWP.

1.4 RIWP Requirements

In addition to the items noted above, the RIWP was developed to meet the following requirements:

- Identification and characterization of the potential sources of contamination;
- Determination of the amount, concentration, persistence, mobility, state (solid, liquid) and other significant characteristics of the contamination present.
- Evaluation of the extent to which natural or manmade barriers currently contain the contamination;
- Definition of the extent to which the contaminants may have migrated or may be expected to migrate, and whether future migration may pose a threat to human health or the environment;

- Identification of potential routes of exposure;
- Definition of hydrogeological factors (e.g. soil permeability, depth to saturated zone, hydrologic gradients, proximity to a drinking water aquifer, flood plain, or wetland);
- Description of groundwater characteristics and current and potential groundwater use;
- Qualitative description of the impact of the Site's contamination on air, land, water, biota, or food chain; and
- Determination of the extent to which contamination levels pose an unacceptable risk to public health and/or the environment by a qualitative human health risk assessment, and ecological risk assessment (Appendix 3C - NYSDEC DER-10).

1.5 Project Schedule

A proposed schedule, starting at BCP Application submission is presented below.

- BCP Application and RIWP were submitted concurrently in July 2016. Updates were made In August 2016 to reach document completeness.
- Public comment period held from about August 31 through September 30, 2016.
- Address NYSDEC comments and finalize RIWP in April 2017.
- Prepare updated RIWP for project repositories and send out fact sheet in May 2017.
- Conduct RI in late May/ early June 2017.
- Submit Draft RI Report and as applicable AA Report about six (6) weeks following receipt of independent validation (Data Usability Summary Report) of the laboratory data collected from the RI. This is estimated to be August 2017.
- NYSDEC/NYSDOH comment period estimated to be 45 days.
- NYSDEC to prepare and issue a Decision Document.
- Design Interim Remedial Measures (IRM) Work Plan (IRM) or Remedial Work Plan, as applicable, including public comment period through Winter 2017.
- Implement remedial work and concurrently prepare Environmental Easement in Spring 2018.
- Prepare Site Management Plan and Final Engineering Report, as applicable in Summer 2018, respectively.
- Obtain Certificate of Completion in the Fall, but no later than December 2018.

2.0 SITE DESCRIPTION & HISTORY

2.1 Site Description

The proposed BCP Site is located at 2312 Western Avenue in the Town of Guilderland, Albany County, New York. The general location of the Site can be seen in Figure 1: Site Location Map. The proposed Site consists of one tax parcel (S.B.L. 40.17-2-12). This parcel is approximately 0.43 acres. The bounds of this parcel are shown in Figure 2: Tax Map. The intersection of NY Route 20 and Foundry Road lies west of the Site and the intersection of Schoolcraft Street and NY Route 20 lies east of the Site.

2.2 Adjacent Land Use

The land uses for properties surrounding the Site are municipal properties, and commercial vacant or occupied properties. The Site is bounded to the north by NY Route 20, beyond which lies the Guilderland Fire Department. West of the Site lies a vacant house. To the west of the vacant house lies the location of a former bus garage. To the east of the Site lies an empty lot, beyond which lies a vacant house. South of the Site lies a storage barn, as well as vacant apartments.

2.3 Site History

The property was purchased by the current owner, Charles Bohl Incorporated on September 30, 2011 from Tomhanock, LLC. The property was previously occupied by a dry cleaning business known as "Master Cleaners" but has been vacant for many years. Below is a summary of the ownership information for the Site:

Owner	Purchase Date
Penguin Snack Bar, Inc.	3/11/50
Master Cleaners	Unknown
Albany County	2/8/2001
Daniel Marshall	1/31/2005
Marshall & Sons, LLC	6/6/2008
Tomhanock, LLC	6/24/2011
Charles Bohl Incorporated	9/30/2011

To the best of the Applicant's knowledge and records researched, Master Cleaners & Dyers, Inc. was dissolved in March 2001. The Applicant has no specific knowledge of when the dry cleaning operations ceased at the property but believes that the operations at this facility ceased in the mid 1990's, long before the dissolution of the corporation. Albany County took title to the property in 2001 through In Rem tax foreclosure.

2.4 Site Utilities

This Site has municipal drinking water and sanitary sewer. Natural gas and electric are also available at this Site.

2.5 Topographic Description and Nearby Surface Water Bodies

According to the United States Geological Survey (USGS) Topographic Map (Figure 1), elevation at the Site is approximately 200 feet above Mean Sea Level. Hunger Kill lies approximately 1,000 feet southwest of the Site. Hunger Kill is a tributary to Norman Kill, which then feeds into the Hudson River in Bethlehem, NY.

2.6 Site Geology

2.6.1 Mapped Soils

Soils in the vicinity of the Site are mapped by the United States Department of Agriculture Web Soil Survey as the following:

- Urban land-Udorthents complex, 0 to 8 percent slopes in the northern and central portions of the Site. These moderately well drained soils consist of silt loam, silty clay, and clay.
- Hudson silt loam, 25 to 45 percent slopes in the southeast portion of the Site. These moderately well drained soils consist of silt loam, silty clay, and clay.
- Hudson silt loam, 8 to 15 percent slopes in the southwest portion of the Site. These moderately well drained soils consist of channery loam.

2.6.2 Pre-BCP Acceptance Soil Borings

On October 20, 2015, PS Property Solutions, Inc. of Hudson Falls New York advanced four (4) soil borings around each exterior side of the existing Site building. A summary of the major soil units reported on the boring logs prepared by PS Property Solutions, Inc. is below:

- Fill layer of gravel sand and asphalt starting at the ground surface (generally 2 to 3 feet thick).
- At about 2 to 3 feet below ground surface, the soils changed to a brown fine sand and silt with little fine to coarse gravel extending to about 4 or 5 feet below ground surface.
- At about 4 to 5 feet below ground surface, the soils graded to a very fine to fine sand with trace silt with the percentage of silt increasing with depth.
- At 20 to 25 feet below ground surface, the soil unit was equal portions of sand and silt.
- At about 28 to 30 feet below the silt content remains the same but the percentage of sand lessons with depth to about 40 feet below ground surface.

2.7 Environmental Site History

2.7.1 Previous Property Use

This Site was previously the location of Master Cleaners, a dry cleaning company, which was likely in operation from the early 1950's until mid 1990's. Sites previously utilized by dry cleaning companies typically exhibit soil and groundwater contamination in the form of Perchloroethylene (PCE), Trichloroethylene (TCE), and associated breakdown products. Historic dry cleaning companies typically utilized chlorinated solvents, such as PCE, in their processes leading to possible contamination of soil, groundwater and/or soil vapor from PCE and its associated breakdown products such as TCE and DCE.

2.7.2 Environmental Orders, Decrees and Violations Associated with the Site

No portion of the proposed BCP Site is currently listed on the National Priorities List. To the best of our knowledge, the proposed BCP Site is not subject to State administrative orders, court orders, or administrative orders on consent or judicial consent decrees issued to or entered into by parties under CERCLA; or subject to the jurisdiction, custody or control of the United States government.

2.8 Previous Site Investigations

The Site was investigated by Charles Bohl Incorporated in late 2015. A Phase 2 Subsurface Investigation Report was prepared for Charles Bohl Incorporated by P.S. Property Solutions, Inc. on November 30, 2015. This investigation included the sampling of soil from the completion of four (4) soil borings (SB-1 through SB-4), and the installment of four (4) monitoring wells within these borings (MW-1 through MW-4) within the same boreholes. During this investigation, subsurface contamination was encountered and NYSDEC was notified through the petroleum spill hotline.

Soil boring SB-1, which was determined to be an upgradient well, did not detect visual evidence of petroleum/solvent related contamination based on the soil vapor screening. This boring was advanced on the north side of the existing Site building. Analysis of groundwater samples from MW-1, which was installed after completion of sampling, did not detect volatile organic compounds (VOC) or semi-volatile organic compounds (SVOCs).

Soil borings SB-2, SB-3 and SB-4 were advanced on the east, west and south sides of the building. These borings yielded similar results in terms of soil vapor screening. Elevated vapor readings were generally detected from about 5 feet below grade to about 30 feet below grade at SB-2; and to about 20 feet below grade at SB-3 and SB-4.

Based upon the investigations conducted, the contaminants of concern for the Site are chlorinated solvents. A summary of contaminants in soil and groundwater is presented below and lab reports are provided in Attachment A - Previous Investigations.

Soil - Several VOC compounds were detected within the soil boring samples. The soil data indicates no exceedences of the 6 NYCRR Part 375 Restricted Residential SCOs or the Commercial SCOs. The soil data indicates seven (7) exceedences of the 6 NYCRR

Part 375 Unrestricted Use SCOs. These compounds are tetrachloroethene (PCE), vinyl chloride, trans-1,2-dichloroethene (trans-1,2-DCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), acetone, and 2-butanone (also known as methyl ethyl ketone or MEK).

Groundwater – Several VOCs were detected in groundwater samples collected from the four (4) monitoring wells on Site. Of the compounds detected, seven (7) VOCs were at concentrations substantially above their respective 6 NYCRR Part 703 groundwater standard values. These compounds included tetrachloroethene, vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, cis-1,2-dichloroethene, trichloroethene, and 1,2,4-trimethylbenzene.

Soil Vapor & Indoor Air – To date, no soil vapor sampling, indoor/outdoor ambient air sampling and lab analysis has been performed.

Copies of pertinent reports from previous investigations performed at the subject Site are provided as Attachment A: Previous Investigations.

3.0 OBJECTIVES, SCOPE & RATIONALE

3.1 Objectives

A conceptual model of geologic and hydrogeologic conditions has been developed for this Site. As indicated by the soil borings in the Phase 2 Subsurface Investigation Report, the contamination within the subsurface soil was not found past 36 feet below grade. Areas of high VOC concentration generally occur between 8 – 24 feet below grade. This suggests that the fine silt with some very fine sand and trace clay as indicated by the Soil Boring Logs may slow or restrict the vertical transport of the contaminants.

Hunger Kill is located 1,000 feet southwest of the Site. Hunger Kill is likely to receive surface water drainage from the Site. Groundwater drainage to the Hunger Kill may occur, but is contingent on the direction of groundwater flow, which will be evaluated during the RI.

The readily available reports and the conceptual model of Site conditions were used to develop an investigative approach to characterize the nature and extent of potential Site contaminants. The objective of this Work Plan is to complete an appropriate level of investigation to support the preparation of a Remedial Investigation Report that presents the nature and extent of contamination at the Site. The intent is to obtain sufficient information to develop a suitable remedy to foster residential and/or commercial redevelopment of the property.

Potential remedial actions based upon the investigation will be developed and presented in the alternatives analysis evaluation. The proposed investigation approach is outlined herein.

3.2 Scope

The scope of work was developed based on the conceptual model of Site conditions and the existing data collected from various investigations performed on and around the Site.

The potential chemical parameters of concern were selected based on the history of the Site and previous sampling efforts at the Site. Previous analyses detected chlorinated solvents.

This part of the Town of Guilderland is provided with public water and sewer. A well survey is not proposed; however, visual inspection of the adjacent properties will be conducted to confirm the absence of nearby potable water supply wells.

The type and analysis for the samples to be collected for laboratory analysis during the RI are summarized in Table 1: Proposed Sampling Locations and Analyses, which is presented in the tables of this RIWP.

The scope of work is described in the following sections.

3.2.1 Surface Soil Sampling

Surface soil samples will be collected within the Site as depicted on the Proposed Sampling Locations Plan (Figure 3). Five (5) surface soil samples will be collected at the Site. Analysis will consist of the Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TCL PCBs, and Target Analyte List (TAL) metals.

The surface soil samples will be collected at the ground surface from the top two (2) inches of soil beneath any vegetative root zone. In the absence of vegetation, pavement and/or concrete, the samples will be collected from grade to six (6) inches below grade.

3.2.2 Exploratory Test Borings/Monitoring Wells

Eight (8) exploratory test borings advanced using Geoprobe drilling methods will be completed on the Site at the approximate locations identified on Figure 3. All test borings are to be advanced to a depth of 40 feet below existing grades. A site visit will be performed prior to drilling to layout the locations of the proposed test borings.

Soil samples from the borings will be collected at continuous 4 or 5-foot sampling intervals starting at the ground surface, below the crushed stone pavement where present, or the concrete floor slab of the building. Soil samples from each 2-foot sample interval will be collected for vapor field screening. The results of the soil screening will be used to select one soil sample per boring for laboratory analysis. Laboratory analysis

will consist of TCL VOCs, SVOCs (including 1,4-dioxane), PCBs/Pesticides, and TAL metals (including cyanide).

Table 1 in the Tables section provides a summary of the soil samples to be collected and analyzed for TCL/TAL parameters and PCBs/Pesticides from each boring.

All recovered soil samples will be screened in the field for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). The soil boring techniques, screening methods, and sampling methods are presented in the Field Sampling Plan (FSP) (Appendix A).

The monitoring wells will be constructed of flush-threaded sections of 1" diameter PVC well screen (0.010" slot) and solid riser pipe. The wells will be installed such that the screened interval intersects the water table (which is anticipated to be present at a depth of 8 to 11 feet below existing grades) and extends to the bottom of the saturated soil unit. The screened portion of each well will be filter-packed with sand, if possible via Geoprobe, above which a minimum 2-foot bentonite seal will be installed. The remainder of the annulus will be grouted with bentonite chips. Monitoring well construction details are outlined in the FSP.

3.2.3 Monitoring Well Sampling

Groundwater samples will be collected from up to eight (8) new monitoring wells and four (4) pre-existing monitoring wells installed during the Phase 2 Subsurface Investigation by PS Property Solutions, Inc. (SB-1/MW-1, SB-2/MW-2, SB-3/MW-3 and SB-4/MW-4).

Prior to the collection of groundwater samples from the newly installed monitoring wells, each well will be developed utilizing a combination of manual surging/bailing and pumping to restore the hydraulic connection between the wells and the surrounding aquifer.

Approximately three (3) days following well development activities, both the new and pre-existing shallow monitoring wells will be purged and sampled, and the samples will be analyzed for TCL VOCs, SVOCs, PCBs, TAL metals on a total (unfiltered) basis, and total cyanide, as depicted in Table 1.

Well development, purging and sampling methods/protocols/requirements are presented in the FSP. Quality control requirements are set forth in the QAPP.

3.2.4 Fish and Wildlife Resources Impact Analysis

The need for conducting a Fish and Wildlife Resources Impact Analysis (FWRIA) will be determined on the basis of the Fish and Wildlife Resources Impact Analysis Decision Key in Appendix 3C of NYSDEC DER-10.

3.2.5 Soil Vapor Investigation

Soil vapor is considered an environmental medium, like soil or groundwater, which is routinely characterized during the investigation of a site. Given the documented chlorinated solvent impacts to soil and groundwater, there is the potential for soil vapor to be an issue for future development. However, implementing a formal soil vapor survey at this time would be premature for two reasons; the building is in no condition to be retrofitted thereby completion of a formal soil vapor survey would not be representative of future building conditions; and it is likely that interim or other remedial action will be required which may reduce or possibly eliminate the impacts, also affecting the results of a soil vapor survey at this time. Requirements for vapor mitigation will need to be addressed at a later time in conjunction with future development, but in order to determine the nature and extent of vapor intrusion potential for off-site exposures, an initial soil vapor survey will be performed.

The soil vapor survey will consist of installing a four (4) temporary soil vapor probes into the subsurface to a total depth of three (3) feet below ground surface. An expendable screen point will be attached to the end of the sampling tubing and set into inert backfill material from two (2) to three (3) feet below grade. The point will then be sealed from the surface with cement or cement-bentonite mixture. The locations of the temporary points will be the extreme south and southwest corners, midpoint of the western property line and the midpoint of the northern property line.

3.2.6 Qualitative Exposure Assessment

A qualitative human health exposure assessment of the Site will be completed in general accordance with Appendix 3B of NYSDEC DER-10. At a minimum, the

exposure assessment will evaluate the five (5) elements associated with exposure pathways. The elements include the following.

1. A description of the contaminant source(s) including the location of the contaminant release to the environment or if the original source is unknown, the contaminated environmental medium at the point of exposure.

2. An explanation of the contaminant release and transport mechanisms to the exposed population.

3. Identification of all potential exposure point(s) where actual or potential human contact with a contaminated medium may occur.

4. Description(s) of the route(s) of exposure (i.e., ingestion, inhalation, dermal absorption).

5. A characterization of the receptor populations who may be exposed to contaminants at a point of exposure.

The assessment need not include a full delineation of the nature and extent of off-site impacts since the remedial party is a volunteer in the BCP. In this case, only off-site field information is needed sufficient to identify the presence of contamination and support the qualitative off-site exposure assessment for this Site.

3.2.7 Quality Assurance/Quality Control Program

Quality Assurance/Quality Control (QA/QC) samples at a ratio of 1 set of QA/QC samples per 20 media samples will be collected and analyzed. The QA/QC samples will include a blind duplicate sample, MS/MSD samples, equipment blank and a trip blank. The QA/QC requirements and procedures are discussed in the QAPP.

3.2.8 Data Quality

A Data Usability Summary Report (DUSR) of the analytical data developed during this investigation will be prepared to confirm that it is of adequate quality for subsequent decision making purposes in accordance with Appendix 2B of DER-10. The DUSR will be completed by an independent data validator to be determined.

3.2.9 Surveying of Investigative Locations

Exploratory locations including surface soil, test borings/monitoring wells, and other pertinent surface features will be located in relation to the existing building. Tape measurements will be collected and recorded in relation to the exterior walls and corners of the building.

3.3 Rationale

The Site is currently vacant, and has historically been occupied by a dry cleaning business. Results of past environmental investigations have shown elevated levels of chlorinated solvents. The potential source areas for Site contaminants include areas under and down gradient of the building.

Based on the readily available information and C.T. Male's conceptual model of Site conditions, the following rationale is presented:

- Available sampling indicates that the subsurface soil and groundwater is impacted by historic Site use. There are potential exposure pathways, especially if the Site is redeveloped. Identification of those exposure pathways and the development of mitigation measures to address the exposure routes is the desired outcome. The proposed surface soil, subsurface soil and groundwater sampling locations are depicted on Figure 3.

- The proposed surface sampling locations are positioned to provide reasonable coverage. There will be five (5) total surface soil samples collected at the Site.

- The exploratory test borings converted to monitoring wells will allow a better understanding of the Site's subsurface conditions beneath the Site building and at the downgradient property line, will permit the development of a groundwater contour map, and will further evaluate the environmental quality of the Site's subsurface soil and groundwater.

4.0 SUPPLEMENTAL PLANS

4.1 Field Sampling Plan

The field activities for this project will include collection and laboratory analysis of surface soil samples, subsurface soil samples, and groundwater samples from monitoring wells. The procedures relative to implementation of these field activities are presented in the Field Sampling Plan (FSP) in Appendix A, which also conforms to the Quality Assurance/Quality Control Plan in Appendix B. The FSP describes in detail the various methods and techniques to be followed during the completion of the soil and groundwater sampling activities, instrument operation and calibration, and chain of custody procedures.

4.2 Quality Assurance/Quality Control Plan

The Quality Assurance Project Plan (QAPP) describes the quality assurance and quality control procedures to be followed from the time media samples are collected to the time they are analyzed by the environmental analytical laboratory and evaluated by a third party according to the NYSDEC DUSR guidelines. The QAPP is presented in Appendix B of this RIWP.

The QAPP will be followed by field personnel during the Site investigation activities and media sampling events. It will also be used by the project management team and Quality Assurance Officer to assure the data collected and generated is representative and accurate. The laboratory results will be reported with NYSDEC ASP Category B deliverables, which will be subjected to NYSDEC's Data Usability Summary Report guidelines to determine if the data is valid and usable.

The QAPP will also identify the requirements for how to report environmental analytical data to NYSDEC. Data submitted to NYSDEC will be stored in the agency's Environmental Information Management System (EIMS). NYSDEC uses EQuIS software, developed by EarthSoft, specifically as the EIMS. The QAPP will set forth the procedural and formatting requirements for creating and submitting electronic data deliverables (EDDs) to NYSDEC.

4.3 Health and Safety Plan

A Site specific Health and Safety Plan (HASP) has been prepared for this project to address C.T. Male Site worker health and safety and potential hazards. The HASP is presented in Appendix C of this RIWP. Although the plan addresses all of the planned Site activities, subcontractors will be required to develop their own HASP for work they will perform, as well.

A site specific Community Air Monitoring Plan (CAMP) will be followed for the project on the basis of the New York State Department of Health Generic Community Air Monitoring Plan dated May 2010. The Generic CAMP is provided in Appendix C of the HASP.

A total of two (2) organic vapor and two (2) particulate (dust) monitors will be used for the CAMP. The locations of the environmental enclosures each containing the two instruments will be selected on a daily basis on the basis of the prevailing wind direction. The prevailing wind direction will be determined based on review of available weather data such as Weatherbug and/or temporary wind direction markers installed in the field such as a wooden stake and light/loose flagging. The location and wind direction shall be recorded daily in the field notes.

4.4 Citizen Participation (CP) Plan

A project-specific Citizen Participation Plan (CP Plan) has been developed for this project in general accordance with NYSDEC DER-23, Citizen Participation Handbook, dated January 21, 2010. The CP Plan is presented in Appendix D of this RIWP. The objective of the plan is to disseminate information to the public regarding the RI and to involve the public in the decision making process. This is accomplished by keeping the public informed of the investigation through direct mailing, public notice in local newspapers and other publications, and by having project documents available for review at public accessible repository locations. Although the CP Plan is a standalone document available for review in the document repositories, it also should be considered an integral part of the RIWP.

5.0 REPORTING

5.1 General

Upon completion of field activities and receipt of the analytical laboratory data and DUSR, a Draft Remedial Investigation (RI) Report will be prepared and submitted to NYSDEC. The RI Report will summarize the investigations completed as well as any non-conformance to the approved RIWP. The report will present the investigations at the Site, analytical results of samples collected and analyzed, interpretations of the data, overall conclusions regarding residual Site contaminants, and recommendations for further investigative work and/or Interim Remedial Measures (IRMs) or Remedial Measures, if any. Upon review and acceptance by the NYSDEC, the final approved RI Report will be submitted in electronic format, as requested by the NYSDEC.

5.2 Development and Analysis of Remedial Alternatives

The development and analysis of remedial alternatives, if necessary, will be dependent upon analytical data obtained during the Remedial Investigation.

At a minimum, the Alternatives Analysis Report (AAR) or a section of the Remedial Work Plan will evaluate no action relative to the documented conditions disclosed through the investigation, and an action that would reduce/remove all documented media impacts to levels below applicable standards, criteria and guidance values (SCGs).

Once developed, a detailed evaluation will be conducted on the alternatives pursuant to factors identified in 6 NYCRR 375-1.10(c). These criteria include:

1. Overall protection of public health and the environmental;
2. Compliance with Standards, Criteria, and Guidance Values (SCGs);
3. Short-term effectiveness;
4. Long-term effectiveness;
5. Reduction of toxicity, mobility, and volume;
6. Implementability;

7. Land Use;
8. Cost; and
9. Community acceptance.

The first eight (8) of the preceding nine (9) criteria form the basic components of the detailed analysis of each alternative, whereby each criterion is compared to the others to determine the most cost effective, protective remedy. The NYSDEC will use criterion #9 in their evaluation, once the 45-day public comment period has ended.

The AAR or Remedial Work Plan will be prepared under the guidance of a currently registered New York State Licensed Professional Engineer.

6.0 SUBMITTALS

Written communications will be transmitted by United States Postal Service, private courier, or hand delivered to the following individuals. Final documents, as they become available, will also be submitted to the following individuals:

- NYSDEC Project Manager
  John Durnin
  625 Broadway
  Albany, NY 12233

- NYSDOH Project Manager
  Runey Ghosh
  Empire State Plaza – Corning Tower Room 1787
  Albany, NY 12237

- Volunteer
  Charles Bohl
  Charles Bohl Incorporated
  P.O. Box 59
  Guilderland, NY 12084

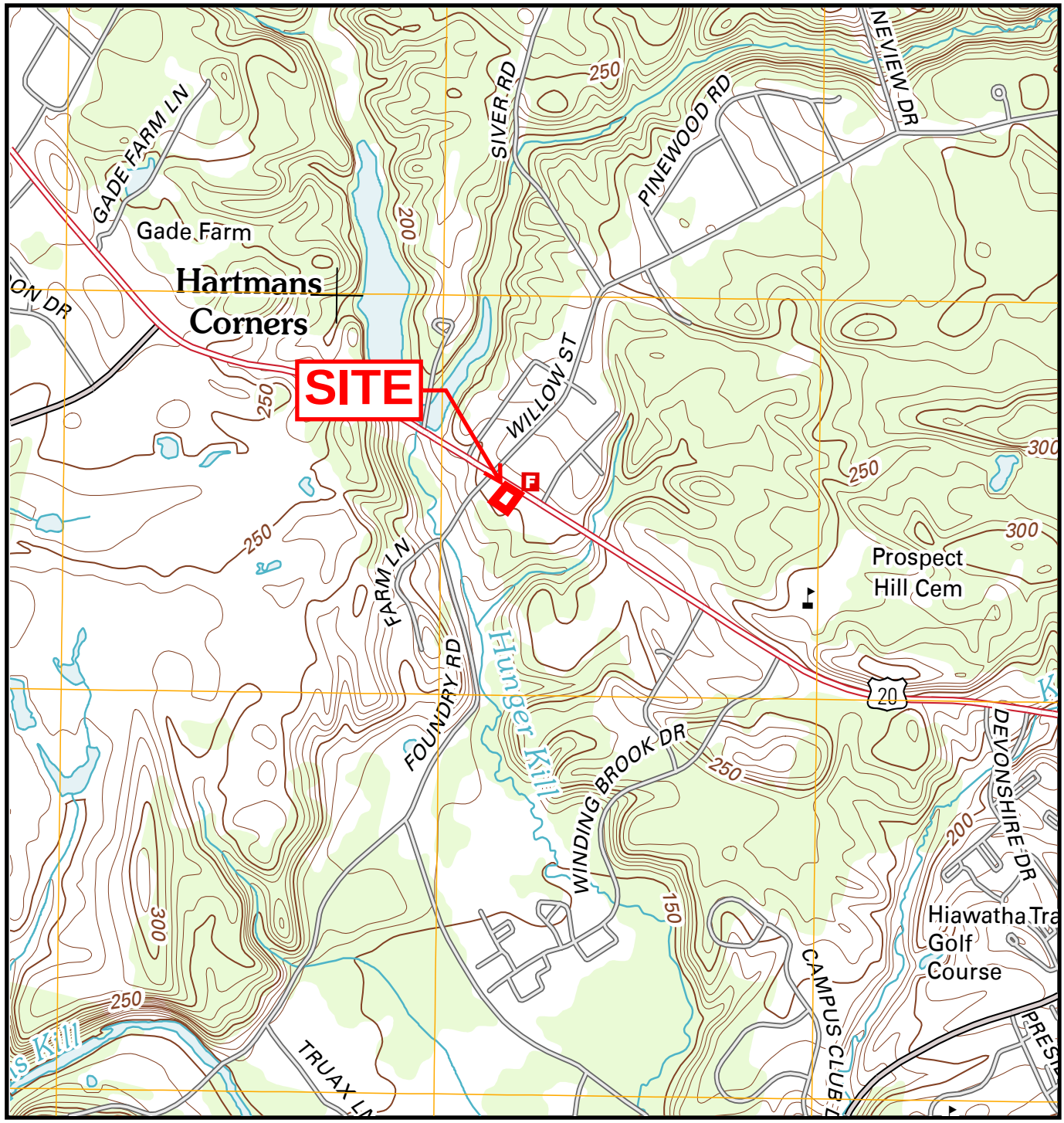
- Volunteer's Attorney
  Gary Bowitch
  Bowitch & Coffey, LLC
  17 Elk Street
  Albany, NY 12207

The NYSDEC shall review submittals as required.

FIGURES

FIGURE 1

SITE LOCATION MAP



MAP REFERENCE
USGS
Voorheesville Quad.
7.5-Minute Series

N

ARCHITECTURE &
BUILDING SYSTEMS
ENGINEERING
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SURVEY & LAND
INFORMATIONAL SERVICES

C.T. MALE ASSOCIATES

50 CENTURY HILL DRIVE, LATHAM, NY 12110
PHONE (518) 786- 7400 FAX (518) 786-7299

FIGURE 1: SITE LOCATION MAP

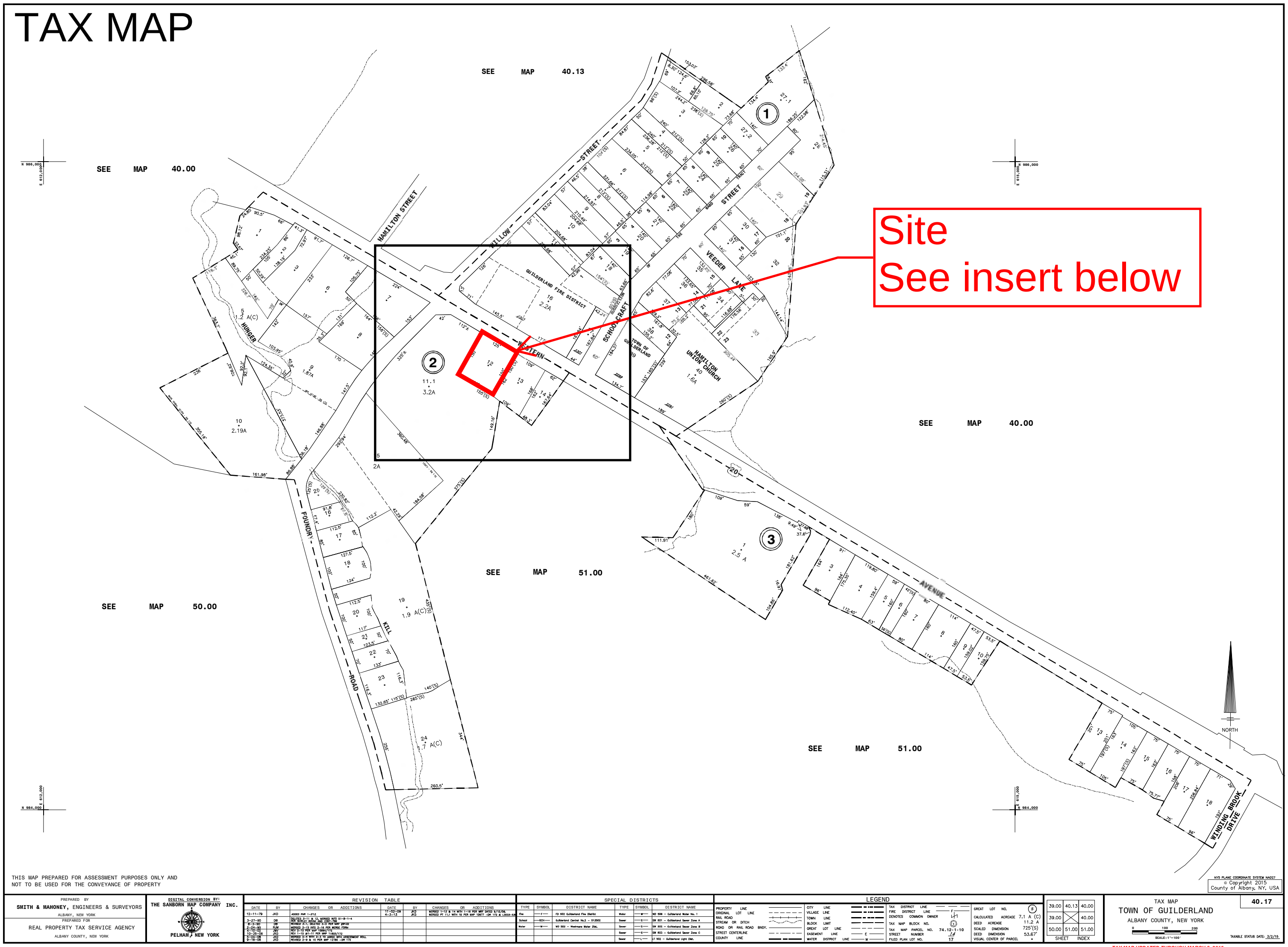
2312 Western Avenue
Guilderland, New York

TOWN OF GUILDERLAND	ALBANY COUNTY, NY
SCALE: None	
DRAFTER: PAL	
PROJECT No. 16.6345	

FIGURE 2

TAX MAP

AN OFFICIAL VERSION OF THIS TAX MAP MAY BE PURCHASED BY CONTACTING THE REAL PROPERTY TAX SERVICE AGENCY AT (518-487-5290) OR BY E-MAIL AT "TAXMAPS@ALBANYCOUNTY.COM"



TAX MAP UPDATED THROUGH MARCH 2, 2015

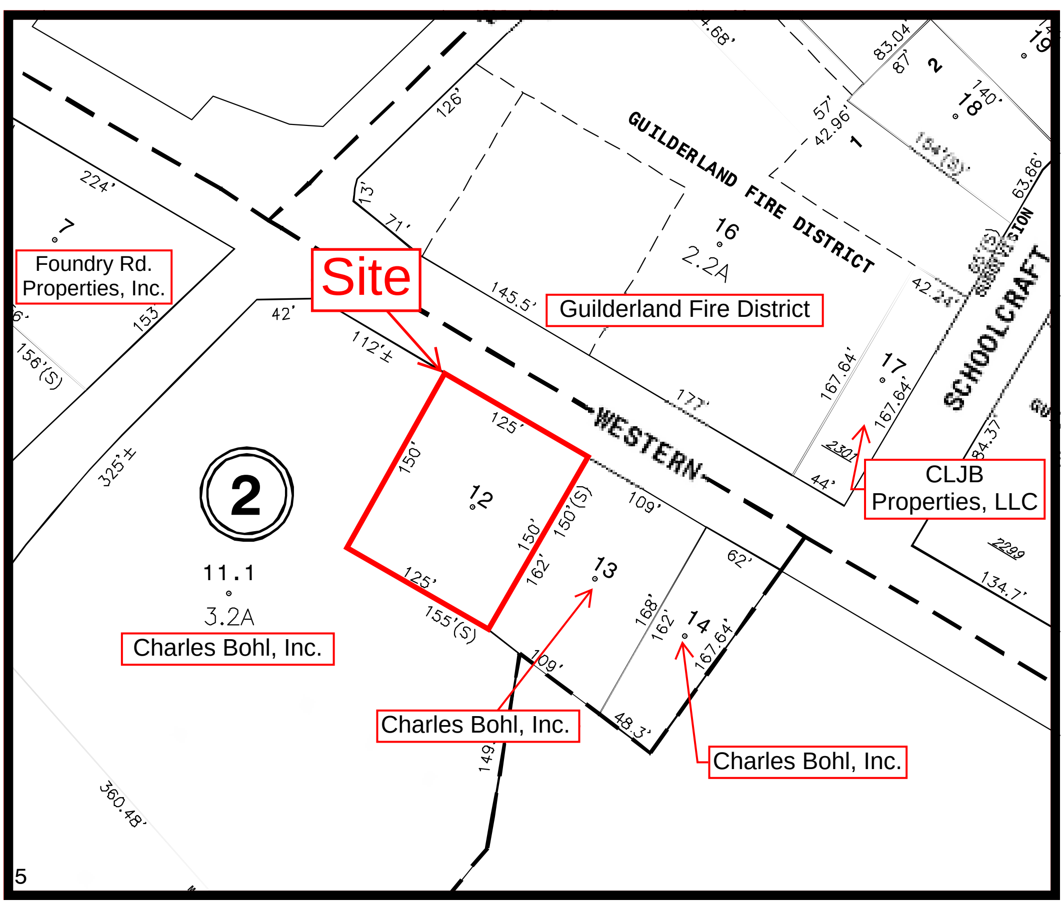
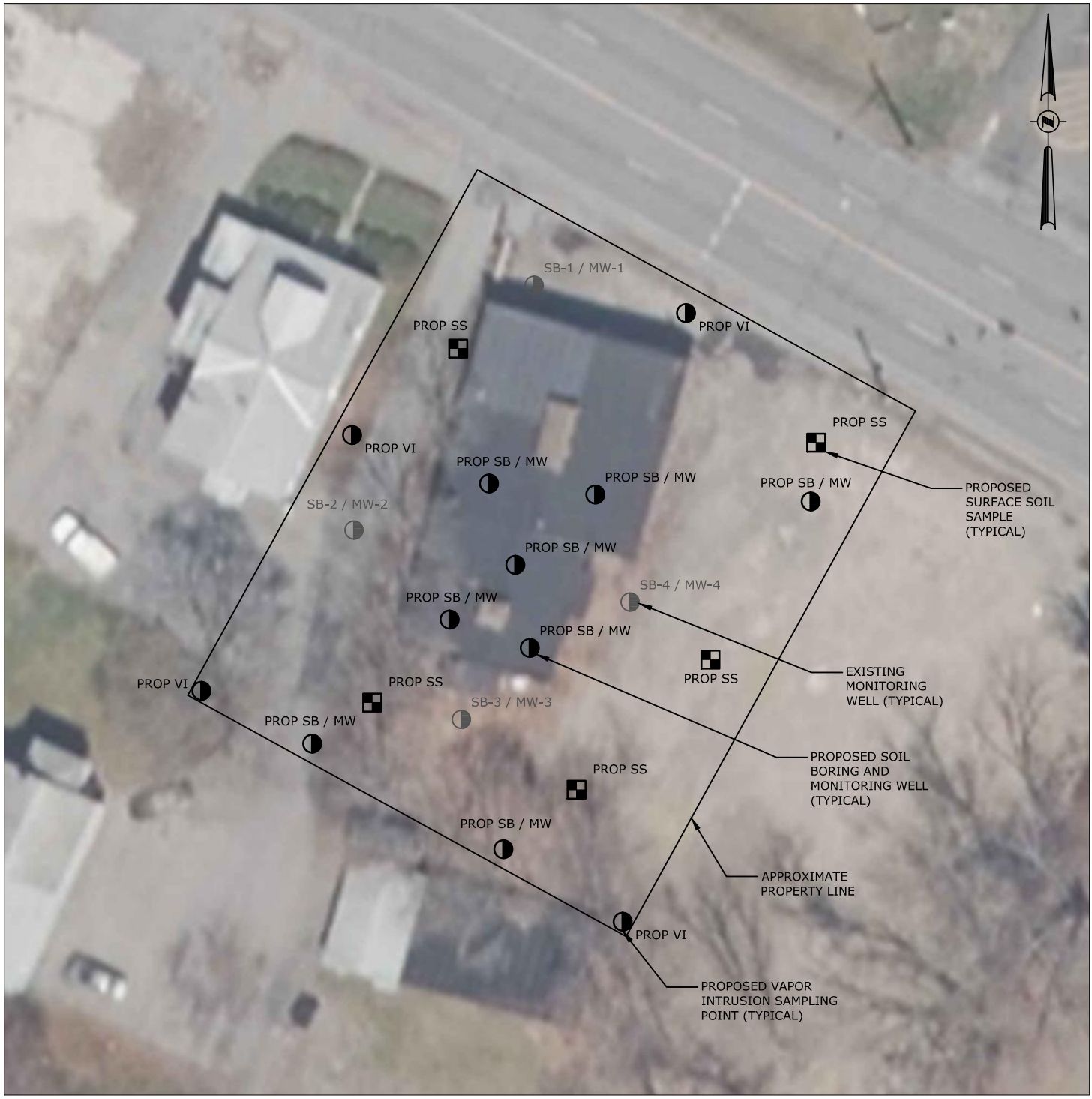


FIGURE 3

PROPOSED SAMPLING LOCATIONS PLAN

NONE :XREFS



GENERAL NOTES:
THE LOCATIONS AND FEATURES DEPICTED ON THIS MAP ARE APPROXIMATE AND DO NOT REPRESENT AN ACTUAL FIELD SURVEY.

MAP REFERENCE:
AERIAL PHOTOGRAPHY OBTAINED FROM NYS GIS CLEARINGHOUSE WEBSITE.

Date	RECORD OF WORK	Appr.

Drafter: J.MARX	Checker: K.MOLINE
Appr. by:	Proj. No. 16.6345

FIGURE 3
PROPOSED SAMPLING LOCATIONS PLAN
2312 WESTERN AVENUE

TOWN OF GUILDERLAND	ALBANY COUNTY, NY

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture & Landscape Architecture, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

SCALE: NOT TO SCALE	DATE: OCTOBER 2017

CAD DWG. FILE NAME: K:\Projects\16634S\Env\Drawings and Maps\Base Map_Rev1.dwg

TABLES

TABLE 1

PROPOSED SAMPLING LOCATIONS AND ANALYSES

TABLE 1: Proposed Sampling Locations and Analyses

Media	Depth Interval	Proposed Analysis						Total # of Samples	Sampling Method	Rationale
		TCL VOCs	TCL SVOCs	TCL PCBs/ Pesticides	TAL Metals & Cyanide	Mercury	1,4-Dioxane			
Surface Soil	0 - 2"	**X**	**X**	**X**	**x**	**x**		**5**	Decontaminated hand spade, trowel and/or new clean nitrile gloves	To determine the quality of surface soils at the Site.
Subsurface Soil (One PerTest Boring)	0 - 40'	**X**	**X**	**X**	**x**	**x**		**8 +**	Soil taken from soil boring with new clean nitrile gloves on a maximum 2-foot interval	To gain a better understanding of the Site's subsurface conditions and environmental quality.
Groundwater (Monitoring Wells)	5 - 40'	**X**	**X**	**X**	**x**	**x**	**x (3 only)**	**12**	New disposable bailer (or pump) and new clean nitrile gloves with appropriate purging procedure	To develop a groundwater contour map and to evaluate the environmental quality of the Site's groundwater.
Soil Vapor	2 - 3'	**x (TO-15)**						**4**	2.7 L batch cleaned canister	To evalute soil vapor intrusion potential.

Notes:

(1) Quality Assurance/Quality Control (QA/QC) samples will be prepared for each media type at a ratio of one (1) set of QA/QC samples per each 20 media samples.

(2)The QA/QC samples will consist of a duplicate (replicate) sample, equiptment (field) blank sample, matrix spike (MS) sample, and matrix spike duplicate (MSD) sample.

(3) TAL metals includes total cyanide.

APPENDICES

APPENDIX A

FIELD SAMPLING PLAN

October 2017

Appendix A
Field Sampling Plan
Master Cleaners Site (BCP#C401072)

Charles Bohl Incorporated
Guilderland
Albany County, New York

Prepared for:

Charles Bohl Incorporated
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Prepared by:

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C.T. Male Associates Project No: 16.6345

FIELD SAMPLING PLAN
MASTER CLEANERS SITE
2312 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY, NEW YORK

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MASTER CLEANERS SITE

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1.0 INTRODUCTION

This document is the Field Sampling Plan (FSP) for the remedial investigation (RI) to be conducted at the Master Cleaners Site ("the Site") located at 2312 Western Avenue in the Town of Guilderland, Albany County, New York. It has been developed in accordance with the RIWP as prepared by C.T. Male. A description of the property, available background information, objectives, and the proposed Brownfield Cleanup Program scope of work, are presented in the RIWP Prepared by C.T. Male.

This FSP is an appendix to the RIWP in that it presents the standard field sampling and data gathering procedures to be followed during implementation of the field activity portion of the scope of work. This plan addresses sampling locations and frequencies, drilling methods including advancement of soil borings and installation of monitoring wells, decontamination procedures, sampling procedures, field screening and testing procedures, field instrumentation operating procedures, field measurements, sample handling and chain of custody procedures, and water level measurement procedures. The applicable portions of the RIWP that coincide with the FSP will be provided to, and followed by, the field team. This FSP is intended to be applicable to field sampling activities conducted by C.T. Male and its subcontractors.

The FSP forms an integral part of the Quality Assurance Project Plan (QAPP). The field sampling and data gathering procedures presented in the FSP are incorporated into the QAPP by reference. The FSP and the QAPP document the laboratory quality assurance/quality control procedures to be followed during analysis of samples collected in the field so that valid data of a known quality is generated.

The FSP has been prepared, in part, in general accordance with the following USEPA and NYSDEC guidance documents:

- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004, USEPA, October 1988.
- Quality Assurance Guidance for Conducting Brownfields Site Assessments, EPA 540-R-98-038, September 1998.

- DER-10, Technical Guidance for Site Investigation and Remediation, NYSDEC, May 2010.
- 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 & 375-6, Effective December 14, 2006.

2.0 SAMPLING LOCATIONS AND FREQUENCY

Sampling will be performed for volatile organic vapor screening, subjective media assessment, laboratory analyses, and for geologic and hydrogeologic characterization of the project Site. The environmental media to be sampled include:

- Surface Soil;
- Subsurface Soil;
- Groundwater, and
- Soil Vapor.

Subsurface soil samples will be collected during the exploratory soil borings. Groundwater samples will be collected from test borings that are converted to monitoring wells, as well as existing monitoring wells. The sampling locations and proposed frequencies are discussed in the appropriate work task section of the RIWP.

3.0 SITE INVESTIGATION OVERVIEW

3.1 General

The proposed Site investigations include:

- collection and laboratory analysis of surface soil samples;
- installation of test borings and groundwater monitoring wells to characterize the Site's subsurface;
- collection and analysis of groundwater samples from monitoring wells; and
- collection and analysis of soil vapor.

3.1.1 Surface Soil Sampling

Surface soil samples are anticipated to be collected from across the Site. The samples will be collected from the five (5) locations indicated on Figure 3 of the RIWP. The surface soil samples will be analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) Metals (including cyanide), and TCL PCBs.

The samples will be collected from grade to two (2) inches below grade if the sampling point does not lie within a vegetated location (i.e. exposed surface soils). At locations where there is vegetation, the vegetation will be removed to a point below the root zone and the surficial soil sample will be collected to a depth of two (2) inches below the root zone. In areas where asphalt and/or concrete exist, the sample will be collected of soils immediately beneath the asphalt/concrete to a depth of two (2) inches below grade.

3.1.2 Test Borings

Test borings will be advanced at select locations across the Site to evaluate subsurface conditions and depth to groundwater, assess the environmental quality of subsurface soils, and to install monitoring wells.

3.1.3 Subsurface Soil Sampling

Subsurface soil samples will be collected from test soil borings to delineate the environmental quality of subsurface soils and for characterization of the Site's subsurface. Subsurface soil samples exhibiting evidence of subjective impacts, such as elevated Photoionization Detector (PID) headspace readings, odors, or visible staining will be subjected to laboratory analysis. If the soil samples do not exhibit evidence of subjective impacts, then select soil samples from the soil-groundwater interface will be selected for laboratory analysis. Samples submitted for laboratory analysis will be analyzed for TCL VOCs, TCL SVOCs, TAL Metals (including cyanide), and Pesticides/PCBs.

3.1.4 Monitoring Well Installations

Monitoring wells will be installed to facilitate the collection of groundwater samples. The wells will be installed to evaluate groundwater quality and collect water level data to assess groundwater flow direction.

3.1.5 Groundwater Sampling

Groundwater samples will be collected from monitoring wells installed as part of this investigation as well as the existing monitoring wells at the Site. The samples will be collected using new, disposable bailers or a peristaltic pump following appropriate well development and purging procedures as outlined in Sections 3.6 and 4.0. The groundwater samples will be analyzed for TCL VOCs, TCL SVOCs, TAL Metals, and TCL PCBs.

3.1.6 Soil Vapor Sampling

Soil vapor samples will be collected from four (4) temporary soil vapor probes into the subsurface to a total depth of three (3) feet below ground surface. An expendable screen point will be attached to the end of the sampling tubing and set into inert backfill material from two (2) to three (3) feet below grade. The point will then be sealed from the surface with cement or cement-bentonite mixture. The soil vapor samples will be analyzed for VOCs by EPA TO-15.

3.2 Observation of Drilling Operations and Monitoring Well Installations

All drilling, monitoring well installation and associated field work involved in the RI to be performed by C.T. Male subcontractors will be observed by a full time on-site C.T. Male or subcontracted field representative. This representative will be responsible for the collection and field screening of soil samples, recording of drilling sampling data, recording of groundwater data, deciding on the final drilling depths and monitoring well screened intervals (with input from the project manager, hydrogeologist or engineer), recording the monitoring well construction procedures, and monitoring the decontamination procedures. The C.T. Male or subcontracted field representative will also develop and purge the monitoring wells and conduct groundwater sampling.

Field system audits will be conducted and field reports will be prepared that document the daily activities and their conformance to the work plan (described further in the QAPP). A copy of the forms used by the applicable field team personnel as part of the field quality assurance/quality control (QA/QC) procedures are presented in Appendix A of this FSP.

The project manager will be kept informed of the progress of work and any problems encountered during the RI so that the appropriate corrective action can be implemented and the Charlie Bohl Incorporated and NYSDEC can be notified.

3.3 Drilling and Sampling of Overburden for Installation of Monitoring Wells

The test boreholes will be advanced through the overburden using Geoprobe direct push technologies. Installation of the monitoring wells will occur after completion of soil sampling at each location. Continuous soil samples will be collected using a macro-core sampler, which is 24-inches long and 2-inches in diameter. At each four (4) or five (5) foot depth interval, the core sampler will be extracted from the ground and the soils within the acetate liner will be observed. Prior to drilling within the building, a core drill will be used to penetrate and remove the building's concrete flooring.

All soils will be visually classified in the field using the Unified Soil Classification System in general accordance with ASTM D-2488, Standard Practice for Description and Identification of Soils. The soil description may include matrix and class descriptions, moisture content, color, appearance, odor, behavior of the material and any other

pertinent observations. This information will be recorded on a Geoprobe Subsurface Exploration Log form along with the boring identification and elevation, date started and completed, sampling intervals, standard penetration values, length of recovered sample and depth of first groundwater encountered. During the drilling, a photoionization detector (PID) meter will be used to monitor the volatile organic vapors exiting the borehole and of all recovered subsurface samples. These visual observations and field measurements will be recorded on the Geoprobe Subsurface Exploration Log. A blank copy of a Geoprobe Subsurface Exploration Log form is enclosed in Appendix A.

In the event a borehole is not converted into a monitoring well, it will be abandoned by filling it with the uncontaminated cuttings from that borehole and the balance needed to fill the borehole will be filled with a cement/bentonite grout mixture (approximately 20 to 1 ratio). Excess soil or contaminated soil from the borings will be transferred to labeled DOT 17H approved 55-gallon open top drums and stored on-site. Personal protective equipment (PPE) (i.e., gloves) will also be placed in this drum.

3.4 Soil Sampling and Soil Field Screening Procedures

3.4.1 Surface Soil Sampling

The specific soil sampling procedures that will be followed for surface soil samples include the following:

1. Place and secure a new 3'x 3' sheet of plastic over the sampling location and remove a 6"x 6" opening in the center of the sheeting.

2. Remove vegetation, where present, down to ground surface. If sampling location is within asphalt pavement, the pavement will be removed. If a granular subbase is present, remove subbase until soil is encountered.

3. A cleaned (per Section 3.7) stainless steel/disposable trowel or hand auger will be used by sampling personnel for collection of the surface soil samples. Clean disposable gloves will be worn when handling the sampling equipment and lab samples. Sampling personnel will don new nitrile gloves at each sampling location.

4. A discrete soil sample will be collected by advancing the trowel and/or hand auger to the desired depth, based on conditions found at each sampling location. Sampling personnel will don new nitrile gloves at each sampling location.

5. For VOCs analysis, immediately upon exposing the sample, a portion of the soil sample for VOC analysis will be collected with a new Terra Core sampler and put directly into laboratory provided glass 40-ml vials and the vials sealed. The samples for VOC analysis are required to be frozen within 48 hours, which will be identified on the chain of custody record to be performed by the laboratory receiving the samples. For non-VOCs analysis, the soil sample will be transferred to a sealable plastic bag and homogenized with a pre-cleaned stainless steel spoon or by hand wearing new nitrile gloves. An aliquot of the sample will then be transferred to laboratory provided sample containers.

6. For samples collected for laboratory analysis, the sample container label will be completed with the surface soil sample location, sample interval, sampler's initials, date, and time. The client, project name, Site location, matrix, sample type (grab/composite) and laboratory analyses to be performed will also be recorded on the sample label.

7. Immediately upon collecting the lab soil sample for VOCs, a portion of the remaining soil will be placed in a new plastic zip lock bag, not more than one-half full, and sealed. This bag sample will be for head space analysis screening in the field for VOCs using a PID.

8. The recovered soil will be classified per Section 3.3 and a Geoprobe Subsurface Exploration Log will be completed.

9. The sampling equipment will be decontaminated between each sampling location per Section 3.7.

3.4.2 Subsurface Soil Samples from Test Borings

The specific subsurface soil sampling procedures that will be followed for the test borings to be converted to monitoring wells include the following:

1. A cleaned (per Section 3.7) maco-core sampler will be given to the driller or driller's assistant who will attach it to the sampling rod. Clean disposable gloves will be worn when handling the macro-core sampler.

2. A soil sample will be collected by advancing the core sampler employing direct push drilling techniques the desired four (4) or five (5) foot sampling interval.

3. The recovered macro-core sampler will be placed on clean polyethylene sheeting. The end cap will be unscrewed and the acetate liner cut open to expose the sample.

4. Immediately upon opening the acetate liner, a portion of the soil (no more than 2.5 feet in length) will be placed in a new plastic zip lock bag, not more than one-half full, and sealed. This sample will be for head space analysis screening in the field for VOCs using a PID.

5. For VOCs analysis, upon completion of the boring, a portion of the soil sample for VOC analysis will be collected with a new Terra Core sampler and put directly into laboratory provided glass 40-ml vials and the vials sealed. This delay in sampling is to determine which sample collected from the boring is relatively the highest impacted sample. The samples for VOC analysis are required to be frozen within 48 hours, which will be identified on the chain of custody record to be performed by the laboratory receiving the samples. For non-VOCs analysis, the soil sample will be homogenized in the sealed plastic bag while wearing new nitrile gloves. An aliquot of the sample will then be transferred to laboratory provided sample containers.

6. The soil samples will be classified per section 3.3 and the Geoprobe Subsurface Exploration Log completed.

7. The sampling equipment will be decontaminated between each sampling location and depth interval per Section 3.7.

All of the macro-core soil samples, where sufficient sample is recovered to generate a headspace sample, will be screened in the field with a PID shortly after collection per Section 5.0.

At completion of the field screening of soil samples and soil classification, the recovered soil samples will be placed in the labeled 55-gallon drum with the excess soil cuttings and PPE.

3.4.3 General Sampling

- Don't remove caps until the actual sampling time and only long enough to fill the container.
- Identify every container by filling out the label with all the required data.
- Fill all containers completely, or as recommended by the laboratory (i.e., Terra Core vials).
- Some containers may contain a fixative (i.e., vials for Terra Core samples) which should not be rinsed out of the bottle. Read the sample label treatment and fixative section to determine if a preservative/fixative has been added. Be careful not to contact fixatives with skin or clothing. If this should occur, rinse liberally with water.
- After the sample is taken, wipe the container with a paper towel and place the container in a cooler with ice packs, to maintain the cooler at 4°C.
- Complete chain of custody record (refer to Section 8.0).
- Deliver or ship samples to the laboratory within 48 hours.

3.5 Monitoring Well Installation

Overburden monitoring wells will be installed within the open bore hole. Once the borehole is advanced to the desired depth, 1-inch diameter monitoring wells with slotted screens will be installed in accordance with standard practices. Typical overburden well construction details are shown in Appendix A. All wells will be constructed of flush-threaded joint, Schedule 40 PVC riser pipe, machine slotted screen, bottom plug, and cap. The screens will be 0.010-inch slotted and generally ten to fifteen feet in length.

Each well will be assembled as it is lowered into the borehole. The annulus around the well screen will be packed with clean silica sand to a maximum of two feet above the screen unless formation collapse occurs. Additionally, a one-half foot choke of fine-

grained sand will be placed on top of the sand pack to preclude the migration of the seal material into the sand pack. A minimum two-foot bentonite seal will be installed in the annulus. The seal will consist of bentonite pellets/chips or slurry. The remainder of the annulus will be filled with cement/bentonite grout (ratio of 20 to 1). A steel monitoring well guard pipe or curb box will be set over each well head and cemented in place. A positive grade will be constructed of cement around the well to divert surface water away from the well. A permanent mark will be made at the top of the PVC riser to serve as a datum for all subsequent static water level measurements. Upon completion, a locking gripper well cap will be installed and locked. Monitoring well depths, and screen lengths and depths will be calculated by the environmental scientist/geologist by maintaining accurate measurements of screen and casing placed in the borehole. A Monitoring Well Construction Log form (Appendix A) will be completed to document the well materials and depths.

3.6 Monitoring Well Development

Well development of the monitoring wells will be performed to remove sediments (silt, clay, and fine sand) from the well screen, well bottom, sand pack, and formation. This will increase the hydraulic conductivity immediately around the well, thus increasing the well yield for sampling. No well will be developed sooner than 24 hours after installation. This will assure that the grout or bentonite seal will be set before increasing the flow to the well. The wells will be developed by surging, bailing, and/or pumping. Reasonable means will be taken to develop the wells to a turbidity of 50 NTU's or less, however, if the Site soils are composed of a high percentage of silt and/or clay, a turbidity value of 50 NTU or less will not likely be achieved.

The monitoring wells will be developed utilizing surge and purge methods. The back and forth flow created within the screened interval dislodges fine sediments in the formation, sand pack, and screen, suspending fines so they can be removed.

The wells will be surged a minimum of five (5) well volumes using a disposable 3-foot long, 0.75-inch diameter polyethylene bailer attached to a 1/8-inch, dedicated, nylon or polypropylene rope. The surging will be accomplished by rapidly raising and lowering the bailer within the screened interval. The bailer will then be used to obtain a water sample to check the color, turbidity, odor, and sand and silt content of the well water during and after the development efforts. If bailer techniques do not appear to be

lowering the turbidity or is taking an excess amount of time removing the groundwater, a peristaltic pump may be used.

The bailing rope and polyethylene bailer will be dedicated to each well to prevent cross-contamination during development. The dedicated bailer can be utilized in the future when the wells are purged for groundwater sampling. If a pump is used, new clean tubing must be used at each well location.

The development water from the monitoring wells will be stored in labeled 55-gallon drum(s) pending analytical results for groundwater sampling.

3.7 Decontamination of Drilling and Sampling Equipment

Drilling equipment including rods, drive caps, tools, drill unit and any piece of equipment that can come in contact with the formation will be cleaned with alconox/tap water wash and tap water rinse prior to the start of work and between each boring to prevent cross-contamination between borings. The equipment will also be cleaned using the same procedure at completion of the work (before leaving the Site) to prevent any contamination from leaving the Site.

The sampling equipment including macro-core samplers and stainless steel trowels, etc., will be cleaned prior to use, in between each boring and at completion of the work by similar process described above. Between each sample interval at the same boring location the sampling equipment will be cleaned using the following procedure:

1. Remove any excess soil remaining on the macro-core sampler.

2. Prepare a solution of tap water and non-phosphate detergent (alconox) in a wash bucket, and scrub the equipment with a brush to remove any adhering particles.

3. Rinse the equipment with copious amounts of tap water.

4. Place clean equipment on clean polyethylene sheeting.

5. Reassemble the clean macro-core sampler with a new acetate liner.

6. New disposable gloves will be worn when cleaning and handling the equipment to avoid contamination.

7. The water in the wash and rinse buckets will be changed frequently to avoid cross contamination.

The decontamination rinse water will be collected and placed in labeled 55-gallon drums and stored at the project Site until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal. Disposable protective clothing such as tyvek suits, gloves, etc. will be placed in the 55-gallon drum containing excess soil from the project. The personnel decontamination procedures are detailed in the Site specific Health and Safety Plan.

3.8 Soil Vapor Sampling Procedure

The soil vapor sampling points will be constructed of expendable points attached to tubing and installed according to the following procedure:

1. Advance a macro-core sampler to three (3) feet below grade.

2. Retract sampler and insert pre-assembled expendable point and attached tubing into the open hole.

3. Place drilling sand into open hole from three (3) feet to two (2) feet below grade.

4. Place bentonite clay from two (2) feet to 0.5 feet below grade.

5. Mix cement with water and pour it in to the balance of the open hole.

6. Allow 24 hours before sampling.

For collecting a soil vapor sample, the following procedure shall be followed:

1. Obtain 2.7 liter certified batch clean sampling canisters from the laboratory.

2. Carefully connect the air regulator to the canister. Confirm that the regulator was set up for two (2) hour sample duration.

3. Securely connect clean new tubing provided by the laboratory to the regulator and the sampling point.

4. Open regulator, record the time and monitor the regulator to assure that the pressure does not go to zero before closing the regulator.

5. Complete chain of custody and deliver the canisters to the laboratory.

One ambient air sample will also be needed during the soil vapor sample collection. Set up canister in the same manner of procedure above although no tubing is needed. No indoor air samples are planned for this work.

4.0 GROUNDWATER SAMPLING PROCEDURES

4.1 General

During groundwater sampling, it is important to follow strict acceptable protocol during the collection and transportation of groundwater samples. This minimizes the potential for sample variation from well to well due to sampling and transportation techniques. Quality control measures will be instituted as discussed in this document and the QAPP as a check on the procedures being utilized so that the quality of the data can be assessed. The groundwater samples will be analyzed in the laboratory by standard methods following the QA/QC procedures outlined in the QAPP.

Prior to sampling, the water level in the well will be measured, and the well will be purged and allowed to recover to near static conditions. Groundwater samples will be taken employing bailing or pumping (low flow) techniques for field and laboratory analyses. The field parameters to be determined are pH, temperature, turbidity and specific conductance. All pertinent groundwater sampling information will be recorded on a C.T. Male Groundwater Services Field Log. A separate log will be completed for each monitoring well sampled. Logs will be dated and signed by the person making the entries and will be submitted to the project manager for inclusion in the project files. The following information will be included on the log forms:

1. Project name and location.
2. Date and times.
3. Monitoring well identification number.
4. Sampling method (i.e. bailer, pump).
5. Well purging data.
6. Physical characteristics of samples.
7. Field analyses results.
8. Name of sampler(s).
9. Recovery times of wells.
10. Any additional observations/information.

An Environmental Services Field Log will also be completed for the groundwater sampling event. Blank copies of the referenced forms are enclosed in Appendix A.

4.2 Preparation for Sampling Groundwater

Prior to groundwater sampling, the equipment and containers needed for sampling will be collected and prepared. A bailer or pump with new disposable tubing will be utilized to facilitate the groundwater sampling. New disposable nitrile gloves will be worn during equipment cleaning and decontamination and handling of the media being sampled. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection/analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (water) to be analyzed are summarized in Table 4.2-1.

TABLE 4.2-1
Analytical Requirements for Containers and Preservatives for Water Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
TCL VOCs (Water)	3-40 ml vials (preserved)	Septum	HCl to pH<2 Cool, 4°C	NA
TCL SVOCs and TCL PCBs (Water)	3-1L amber Glass	Teflon	0.008% Na2S2O3 Cool, 4°C	Store in dark.
TAL Metals (Water)	500 ml Plastic	Poly	HNO3 to pH <2 Cool, 2°C- 4°C	NA
Cyanide (Water)	250 ml Plastic	Poly	NaOH to pH ≥12 Cool, 4°C	NA

Sample labels will be prepared prior to sampling and affixed to the sample containers. The client, project name, Site location, matrix, sample type (grab/composite), preservative and laboratory analyses to be performed will be recorded on the sample labels by the laboratory. The sample location (i.e., monitoring well ID), date, sampler's initials and time will be filled out on the sample label at the time of sampling.

Upon arrival at the sampling location, the well will be observed for any damage, the cover of the guard pipe or curb box will be cleared of any debris and unlocked or unbolted. Clean polyethylene sheeting will be placed adjacent to the well to protect purging and sampling equipment from contamination. The cap and top of the well

casing will be wiped with a clean cloth and then the cap removed. A PID reading will be collected when the well cap is removed. The water level in the well will then be measured.

4.3 Measuring the Water Level

Prior to purging and sampling, static water heights will be measured using a water level indicator to determine the standing water column height. A full set of water levels will be collected from all wells prior to initiating the water sampling. The water column height and depth of the well are used to calculate the well water volume. Non-vented well caps will be removed for a period of ten minutes to allow the water column to reach static conditions prior to taking the water level measurements. Refer to Section 9.0 for a detailed description of water level measurement procedures.

4.4 Well Purging Procedures

Prior to sampling of the groundwater, it is necessary to purge the wells. Purging of the wells allows for a representative sample to be taken from the screened interval of the well by removing stagnant water from the well.

Three (3) to five (5) well volumes of the standing water will be removed from the well. The volume of standing water in the well is calculated by subtracting the water level height from the well depth measurement, and multiplying this value by the applicable conversion factor. The conversion factor is based on the well casing diameter and converts linear feet of water into gallons. In cases where the water recharges at a slow rate, the well will be purged dry when possible.

A bailer or pump with new, factory sealed tubing will be used to purge each well. Physical observations of the purge water will be noted and recorded on the Groundwater Services Field Log form. The actual quantity of purge water removed from the well will be measured by using a bucket graduated in gallons, and the volume will be recorded. Once purging is complete, the peristaltic pump tubing will be removed from the well and placed on the clean polyethylene sheeting adjacent to the well, until completion of the groundwater sampling.

All of the purge water from the monitoring wells will be collected and placed in labeled 55-gallon drums and stored at the project Site until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal.

4.5 Groundwater Sample Collection

Prior to sample collection, the wells will be allowed to recover to at least 80% of their initial static water level. Slow recharging wells will be allowed to recover for a period of three (3) hours before sampling. Recovery times and water depths will be recorded on the Groundwater Services Field Log form.

The sample will be collected using a bailer or pump with new tubing at each monitoring well location. A new pair of disposable nitrile gloves will be used to handle the sampling equipment and containers at each sampling location. Only non-powdered nitrile sampling gloves will be used during sampling.

The disposable tubing will be lowered slowly into the well to minimize the aeration of the samples. Volatile samples will be collected first, followed by field parameters and then in decreasing order of the volatility of the parameters being analyzed for; VOCs, SVOCs, PCBs, metals and cyanide.

In order to insure the integrity of samples, sample containers must be filled properly. The following sections contain general procedures for sampling and specific procedures for sampling volatile organic compounds. Care shall be taken in sampling to assure that analytical results represent the actual sample composition.

4.5.1 General Sampling

1. Don't remove caps until the actual sampling time and only long enough to fill the container.
2. Identify every container by filling out the label with all the required data.
3. Fill all containers completely.
4. Some bottles may contain a fixative which should <u>not</u> be rinsed out of the bottle. Read the sample label treatment and fixative section to determine if a preservative/fixative has been added. Be careful not to contact fixatives with skin or clothing. If this should occur, rinse liberally with water.

5. After the sample is taken, wipe the container with a paper towel and place the container in a cooler with ice packs, to maintain the cooler at 4°C.

6. Complete the Groundwater Services Field Log and Chain of Custody Record forms.

7. Deliver or ship samples to the laboratory within 48 hours.

4.5.2 Sampling for Volatile Organic Compounds

1. Samples are to be collected in glass containers having a total volume in excess of 40 ml with open-top screw caps with Teflon-faced silicone septa. Sample containers will have hydrochloric acid (HCL) added to them as a preservative. This preservative must not be rinsed out.

2. A transport blank should be prepared from organic-free water and carried through the sampling and handling procedure. It will serve as a check for transport and container contamination.

3. Fill sample container slowly to minimize aeration of the sample, until a positive curved meniscus is observed over the bottle rim.

4. Float the septa, Teflon™ side down on the liquid meniscus. The Teflon™ side is the thin layer observed when viewing the septum from the side horizontally.

5. Carefully set on septum, expelling excess sample and being careful to exclude air. Then screw open-top cap down.

6. Check for a good seal by inverting bottle and tapping and checking for visible air bubbles.

7. If air bubbles are visible or there is a bad seal, remove cap and add additional sample and repeat steps 4 to 6.

8. Groundwater samples for volatile analysis will be taken in triplicate.

At completion of the sampling the well cap will be replaced; and the cover to the protective guard pipe or curb box will be locked or bolted in place. The tubing, bailers,

gloves, and sheeting will be properly disposed of. The polyethylene bailer or pump tubing will also be properly disposed of.

4.6 Field Analyses

The field analyses of groundwater include pH, temperature, specific conductivity and turbidity. The field analyses will be measured in the field since these constituents change during storage. A minimum 40 ml sample will be collected and placed in clean unpreserved polyethylene or glass containers for analysis. The containers will be covered if the measurements are not recorded immediately.

The pH, temperature and conductivity of a sample are measured with a portable unit capable of measuring all three parameters concurrently. The portable unit automatically adjusts to compensate for the temperature of the sample. The turbidity of a sample is measured with a separate portable unit. The pH, temperature, conductivity and turbidity will be recorded on the Groundwater Services Field Log. These units will be calibrated to known standards prior to the start of field activities. Measurement and operating procedures for these field analyses are presented in Section 7.0 of this FSP.

5.0 SOIL SAMPLING PROCEDURES

5.1 Headspace Analysis

The surface soil and subsurface soil samples collected will be screened for the presence of petroleum/chemical related hydrocarbons by headspace analysis utilizing a PID, to subjectively assess the recovered samples for evidence of petroleum/chemical contamination. The sample is transferred from the trowel (surface soil) or macro-core sampler (subsurface soil) into a zip lock bag.

The sample will be allowed to equilibrate to ambient temperature; the plastic bag will be shaken for 30 seconds and allowed to equilibrate for one (1) minute; the bag will be pierced with the tip of the PID meter; and the reading taken. The readings will be recorded on a C.T. Male Organic Vapor Headspace Analysis Log form. A blank copy is enclosed in Appendix A. The PID calibration procedures are discussed in Section 7.0.

5.2 Analytical Soil Sampling

Surface soil and select recovered subsurface soil samples will be subjected to laboratory analysis to assist in defining the horizontal and vertical extent of the contamination at the project Site. The samples will be extracted from the sampling equipment in a timely fashion such that the sample has limited exposure to the outside air reducing the chance for volatilization. The interval chosen to be analyzed for subsurface soils from the test borings will be based, in part, on headspace analysis results and visual observations for staining and odor. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection/analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (soil) to be analyzed are summarized in Table 5.2-1.

TABLE 5.2-1
Analytical Requirements for Containers and Preservatives for Soil Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
TCL VOCs	Terra Core Kit with Three (3), 40 mL Glass Vials	Septum	Two (2) Vials with Water – HCl to pH<2, One (1) Vial with Methanol, Cool 4°C, Freeze Within 48 Hours.	NA
TCL SVOCs and TCL PCBs	8 oz Glass	Teflon	Cool 4°C	NA
TAL Metals	8 oz Glass	Poly	Cool 4°C	NA
Cyanide	4 oz Glass	Teflon	Cool 4°C	NA

6.0 QUALITY CONTROL DURING SAMPLING IN THE FIELD

Quality control samples will be taken during the field sampling to monitor sampling technique, sampling equipment cleanliness, sample variability, sample handling and laboratory performance (analytical reproducibility). The quality control samples will include duplicate/replicate samples, equipment/field blanks and trip/transport blanks.

6.1 Replicates

Replicate samples are samples taken from the same location with the same sampling device. Replicate samples are used to check on laboratory reproducibility, sampling technique and sample variability. The replicate samples will be coded so that the laboratory is not biased in performing the analyses. The code that is used will be identified in the field notes and on the sampling logs, but not on laboratory correspondence.

One replicate soil and one replicate groundwater sample will be taken for every twenty (20) samples submitted to the laboratory for analysis. The replicate soil samples except for VOCs analysis will be collected after the sample is thoroughly mixed in a sealable bag to achieve a homogeneous sample and then equally split into the various analytical containers. The replicate groundwater samples, except for VOC analysis, will be taken by splitting the sample by alternating the outlet of the sampling equipment between both sets of containers (sample and replicate containers) until the containers are filled. The replicate surface water and groundwater samples for VOCs analysis will be taken by filling one container completely and then filling the replicate container completely. Groundwater samples for VOCs analysis are typically taken in triplicate, so this procedure will be repeated three times.

The field replicate samples will be identified as FD01_2016.xx.xx (date of sample collection), FD02_2016.xx.xx, etc. The sampling interval and location where the field replicates are collected will be identified in the Environmental Services Field Log.

6.2 Equipment/Field Blanks

Equipment/field blanks are samples taken to monitor sampling equipment cleanliness and decontamination procedures during field sampling. One equipment/field blank

will be taken during soil and groundwater sampling for every twenty (20) samples submitted to the laboratory for analysis of all of the parameters of concern. The equipment/field blanks will be taken as follows per the environmental media being sampled:

Soil - After the sampling trowel or macro-core sampler has been decontaminated and are ready for sampling, pour deionized water through and/or over the sampling equipment and collect it in the sample container(s).

Groundwater - After the new disposable bailer and/or tubing are removed from its packaging and are ready for sampling, pour deionized water into the bailer and/or tubing and then into the sample container(s).

The equipment/field blanks will be identified as such and by the location to be sampled (i.e., equipment blank before SB-8 (2 to 4 feet); or before MW-5). The equipment/field blanks will be identified for the lab as EB01_2016.xx.xx (date of sample collection), EB02_2016.xx.xx, etc.

6.3 Transport Blanks

Transport blanks are prepared when VOCs analysis is to be performed, and they are prepared in the laboratory when the sample containers are prepared. Transport blanks will be prepared by filling 40 ml glass containers (with Teflon™ lined septum) with deionized water. These containers will travel unopened with the sample containers and be analyzed for the same volatile constituents as the samples being submitted. The transport blanks are taken to monitor whether the samples have been contaminated during transport, as a result of handling in the field, during shipment or during storage in the laboratory. One transport blank will accompany each set of samples (groundwater) that are shipped/delivered to the laboratory for VOCs analysis. Transport banks will not accompany soil samples.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD samples are used to check on sample matrix effect and laboratory accuracy and precision.

One MS/MSD soil sample each and one MS/MSD groundwater sample each will be collected for every twenty (20) samples submitted to the laboratory for analysis. The MS/MSD samples for VOC analysis will be collected by equally splitting the sample into the various analytical containers. MS/MSD samples that will not undergo VOC analysis will be homogenized and transferred into the various sample containers.

The MS/MSD samples will be labeled as required for the sample location except that in the comment section of the chain of custody records it shall read "use this sample for the MS/MSD" or equal.

7.0 FIELD INSTRUMENTATION OPERATING PROCEDURES

7.1 General

The field instruments that will be utilized during implementation of the Site investigation are: a photoionization detector (PID) meter for air monitoring of the total VOCs during drilling, and for headspace analysis of soil samples for total VOCs; and a pH/conductivity/thermometer meter and turbidity meter for field analysis of groundwater samples for these parameters. The field instruments used will be calibrated and operated in accordance with the manufacturer's instructions and the procedures identified in the following sections.

7.2 Photoionization Detector Meter

A MiniRae PID meter and data logger with a 10.6 eV lamp will be utilized to measure total VOCs. The instrument is calibrated at the factory upon purchase and annually thereafter using certified service shops who utilize standards of benzene and isobutylene. Prior to use in the field, the instrument will be calibrated in accordance with the manufacturer's instructions using a disposable cylinder containing isobutylene obtained from a reputable supplier. The calibration value varies by the manufacturer, however, 100 parts per million is utilized by C.T. Male. During use the PID meter will be calibrated at least once every work day. The calibration procedure is contained in the Photovac Microtip User's Manual.

Care will be taken when handling and using the PID meter to prevent any debris from entering the sample line which will affect the instrument's operation. If this occurs, the field personnel will clean the unit or replace it with a functional PID meter.

7.3 Temperature, PH and Specific Conductivity Meter

7.3.1 General

The Oakton Portable pH/Con 10 meter, or handheld equivalent unit, will be used to measure temperature, pH and conductivity. This instrument is equipped with an automatic temperature control for accurate adjustment to the temperatures of the

samples and calibration standards. The temperature range is 0°C to 100°C with accuracy of ±0.5°C.

7.3.2 pH

Prior to collecting pH readings, the pH meter will be calibrated with standard buffer solutions of pH 4.0, 7.0 and 10.0 with the unit automatically correcting the temperature. The instrument will be calibrated prior to use each day to ensure accurate measurements. Calibration procedures are presented in the manufacturer's operating instructions.

The pH measurement will be taken by setting the meter function to pH mode, immersing the electrode in the sample (after rinsing the probe with deionized water), gently stirring the water with the electrode probe until equilibrium is reached, and recording the pH when the instrument displays "ready." The pH electrode will be rinsed with deionized water after taking a measurement. The manufacture recommends that the electrode be stored in an electrode storage solution when not in use.

7.3.3 Specific Conductivity

Prior to collecting specific conductance readings, the instrument will be calibrated prior to use each day to ensure accurate measurements. Calibration will be performed using standards of 147.0, 717.8 and 1,413 umhos/centimeter, being sure the instrument is showing automatic temperature correction. Calibration procedures are presented in the manufacturer's operating instructions.

The conductivity cell will be rinsed with distilled water before and after use. The measurement will be taken after rinsing the conductivity probe twice with the sample, immersing the probe in the sample and recording the measured value when the instrument reads "ready."

7.4 Turbidity Meter

A LaMotte Turbidimeter (Model 2020e), or equal unit, will be used to measure turbidity. The Model 2020e is a direct read nephelometer, measuring the amount of light scattered at right angles from a beam of light passing through the test sample. The

instrument range is 0 to 4,000 NTU. The accuracy of this instrument is ±2% of the reading or 0.05 NTU, whichever is greater below 100 NTU (±3% above 100 NTU). The turbidity is pre-calibrated from the manufacturer, but is regularly calibrated to known standards of typically 0, 1, and 10 NTU.

The turbidity measurement is collected by pouring a sample into a dedicated VOA vial or cuvette. The cuvette is wiped clean and them inserted into the instrument's chamber and covered. The reading is noted once stabilized.

8.0 SAMPLE HANDLING AND CHAIN OF CUSTODY PROCEDURES

Prior to sampling and filling the sample containers, the label on the container will be completed with the required information. After filling the sample containers they will be wiped with a paper towel, and placed in a protective bubble or foam wrap to protect it during transport. The container(s) will be placed in a cooler with double bagged ice packs, to maintain a temperature of 4°C.

A Chain of Custody Record will be completed by the sampler in the field after securing analytical samples. The sampler will be responsible for retaining possession of the samples until they are delivered to the laboratory or until they are delivered to a courier or common carrier for shipment to the laboratory. When the samples are released from the custody of the sampling personnel, the Chain of Custody Record will be signed by both relinquishing and receiving parties with the date and time indicated. A copy of the form will be retained by the sampler for inclusion in the project files and the original form will accompany the shipment. The Chain of Custody Record will then be signed by the relinquishing party and receiving laboratory personnel when the samples are ultimately received at the laboratory.

If samples are shipped, a bill of lading or an air bill will be used and retained in the project files as documentation of sample transportation. Prior to shipment, the cooler will be securely wrapped with clear tape to protect it from tampering. A separate additional Chain of Custody Record will be completed for each cooler of samples or a copy of the original chain will be placed in the second cooler. This form will be placed in a plastic bag and taped to the underside of the cooler lid. This form will be used by the laboratory personnel as a check to verify that the containers listed on the form are present in the cooler when they are received at the laboratory. A copy of the signed Chain of Custody Record will accompany the laboratory analysis reports.

9.0 WATER LEVEL MEASUREMENT PROCEDURES

Water levels will be measured in the monitoring wells using a water level indicator probe. The water levels will be measured from the surveyed reference point to the nearest 0.01 foot. Water levels will be measured progressively from upgradient monitoring wells to downgradient monitoring wells, attempting to measure water levels from the cleanest well to the dirtiest well.

To avoid possible cross contamination of the wells, the water level indicator will be decontaminated prior to and following the water measurement of individual wells. The water level indicator will be decontaminated by washing with detergent and tap water, then rinsing it with tap water, and wiping it with a clean cloth or paper towel.

The water depth levels and reference elevations determined from the monitoring well survey will be recorded on a Water Level Record form and the water table elevations calculated. A blank copy of this form is presented in Appendix A.

APPENDIX A

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) FORMS and FIELD REPORT FORM

C.T. MALE ASSOCIATES

WATER LEVEL RECORD

Project Name _____ Project Number _____
Location _____ Measurement Taken By _____
Method or Reading_____ Datum_____

		Date _____		Date_____		Date_____	
Well No.	Ref. Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.

Measuring Point(s) _____

Environmental Services Field Log

Date: Time On-Site: Time Off-Site:

Project Name: Project No.:

Purpose: Field Report No:

Weather Conditions:

Present at Site:

Observations:

Items to Verify:

List of Attachments:

Field Log Prepared by:

Copies to:

C.T. MALE ASSOCIATES

Date _____ Page _____ of _____

Environmental Services Field Log

(continued)

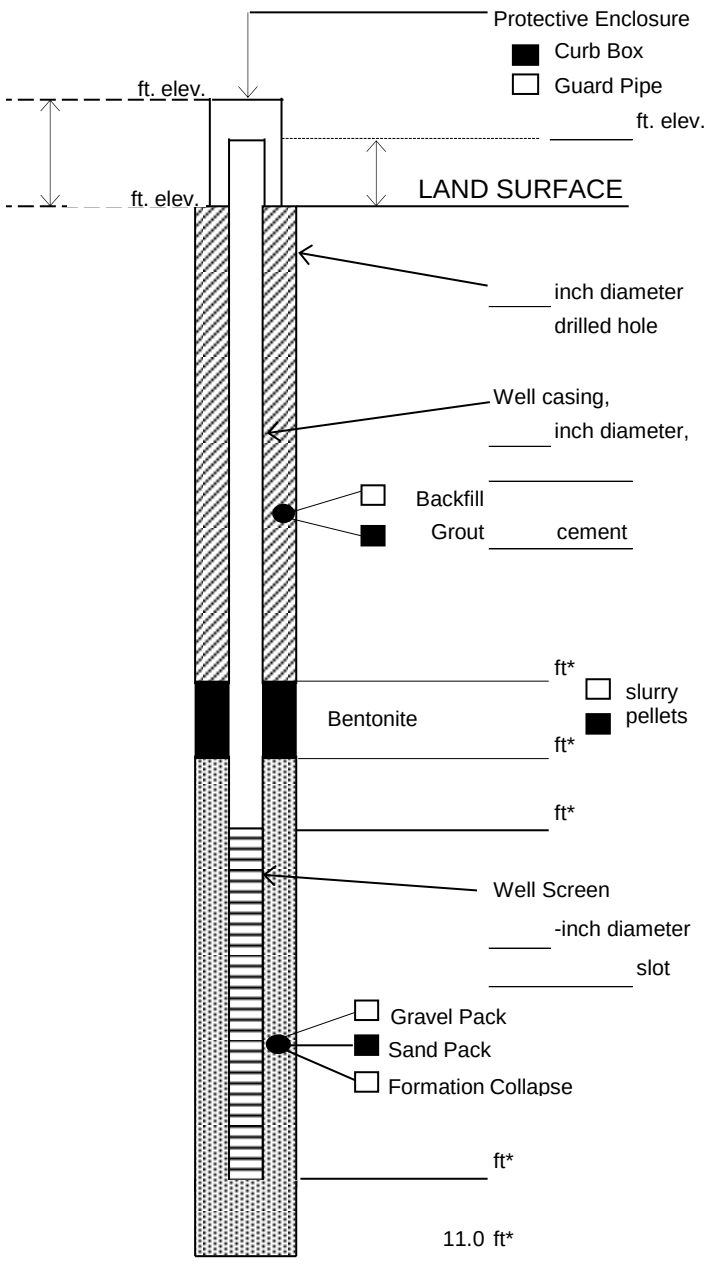
Project Name: _____ Project No.: _____

Observations: _____

C.T. MALE ASSOCIATES, D.P.C.

Well No. _____

MONITORING WELL CONSTRUCTION LOG



* Depth below land surface.

Project Number _____

Project Name _____

Well No. _____ Boring No. _____

Town/City _____

County _____ State _____

Installation Date(s) _____

Drilling Contractor _____

Drilling Method _____

Water Depth From Top of Riser _____ ft _____
Date

C.T. Male Observer _____

Notes:

ORGANIC VAPOR HEADSPACE ANALYSIS LOG

PROJECT:	**PROJECT #:**	**PAGE 1 OF**
CLIENT:		**DATE**
LOCATION:		**COLLECTED:**
INSTRUMENT USED:	**LAMP** **eV**	**DATE**
DATE INSTRUMENT CALIBRATED:	**BY:**	**ANALYZED:**
TEMPERATURE OF SOIL:		**ANALYST:**

EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (FT.)***	SAMPLE TYPE	SAMPLE READING (PPM)**	BACKGROUND READING (PPM)**	REMARKS

*Instrument was calibrated in accordance with manufacturer's recommended procedure using a calibration gas supplied by the manufacturer.
**PPM represents concentration of detectable volatile and gaseous compounds in parts per million of air.
***FT represents depth of sample collected feet below ground surface

C.T. MALE ASSOCIATES

GEOPROBE SUBSURFACE EXPLORATION LOG

BORING NO.:
ELEV.: **DATUM:**
START DATE: **FINISH DATE:**
SHEET 1 OF 1

PROJECT: _____ CTM PROJECT NO.: _____

LOCATION: _____ CTM OBSERVER: _____

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NO.	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
4					
8					
12					
16					
20					
24					
28					

DRILLING CONTRACTOR: _____ GEOPROBE TYPE: _____

METHOD OF SAMPLING: _____

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR C.T. MALE ASSESSMENT PURPOSES. IT IS MADE AVAILABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE ACCESS TO THE SAME INFORMATION AVAILABLE TO C.T.MALE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF SUCH AUTHORIZED USERS.

SAMPLE CLASSIFICATION BY:

Groundwater Services Field Log

DATE: _____ PROJECT NAME: _____

PROJECT NO.: _____ PROJECT LOCATION: _____

SAMPLING PERSONNEL: _____

MONITORING WELL ID#: _____ NOTES TAKEN BY: _____

DEPTH TO WATER: _____ FROM: _____ BAILER ID: _____

DEPTH TO BOTTOM: _____ FROM: _____ BAILER: NEW DISPOSABLE

WATER COLUMN HEIGHT: _____ BAILER: STAINLESS STEEL _____

OTHER _____

CONVERSION FACTORS LINEAR FEET TO GALLONS

1″ = 0.041 GALLONS	3" = 0.38 GALLONS
1.25" = 0.064 GALLONS	4" = 0.66 GALLONS
2" = 0.16 GALLONS	6" = 1.47 GALLONS

WELL CASING DIAMETER

WELL VOLUME: _____ GALLONS

VOLUMES PURGED: _____ GALLONS PURGE METHOD: _____

TIME STARTED: _____ ; TIME FINISHED: _____

OBSERVATIONS: COLOR _____ ; ODOR _____

SHEEN _____ ; TURBIDITY _____

OTHER _____ _____

WATER RECOVERY HEIGHT: _____ ; RECOVERY TIME IN MINUTES: _____

FIELD PARAMETERS: pH _____ , TEMPERATURE _____

CONDUCTIVITY _____ , OTHER _____

SAMPLE COLLECTION TIME: _____

NOTES: _____

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN

October 2017

Appendix B
Quality Assurance Project Plan
Master Cleaners Site (BCP#C401072)
Charles Bohl Incorporated
Guilderland
Albany County, New York

Prepared for:

Charles Bohl Incorporated
P.O. Box 59
Guilderland, NY, 12084

Prepared by:

C.T. MALE ASSOCIATES
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Latham, New York 12110
(518) 786-7400
FAX (518) 786-7299

C.T. Male Associates Project No: 16.6345

QUALITY ASSURANCE PROJECT PLAN
2312 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY, NEW YORK

KEY PERSONNEL AND SIGNATURES

Approved: _____ Date: _____

Project Principal
Dan Reilly, P.E.
Operations Manager, Environmental Services
C.T. Male Associates

Approved: _____ Date: _____

Project Manager/Engineer
Jeffrey A. Marx, P.E.
Environmental Engineer
C.T. Male Associates

Approved: _____ Date: _____

Quality Assurance Officer
Kirk Moline
Managing Geologist
C.T. Male Associates

QUALITY ASSURANCE PROJECT PLAN
2312 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY, NEW YORK

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QUALITY ASSURANCE PROJECT PLAN
2312 WESTERN AVENUE

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1.0 PROJECT DESCRIPTION

1.1 Introduction

This Quality Assurance Project Plan (QAPP) has been prepared for the implementation of the remedial investigation activities at the Master Cleaners Site ("the Site") located at 2312 Western Avenue in the Town of Guilderland, Albany County, New York. It has been developed in conjunction with the Remedial Investigation (RI) Work Plan as prepared by C.T. Male. A description of the Site, available background information, objectives and the remedial investigation scope of work are presented in detail in the RIWP.

This QAPP presents the organizational structure and data quality objectives (DQOs) for the remedial investigation, and the quality assurance (management system) and quality control methods of checks and audits to be implemented to ensure that the quantity and quality of the data required for its intended use is obtained and documented (i.e., that Date Quality Objectives (DQOs) are met). The measurement parameters used to determine the quality of the data are precision, accuracy, completeness, representativeness and comparability, and are discussed further in this QAPP.

A Field Sampling Plan (FSP) has been prepared by C.T. Male as a separate appendix to the RIWP and forms an integral part of this QAPP. The field sampling and data gathering procedures are presented in the FSP and incorporated into the QAPP by reference. The QAPP and FSP document the laboratory quality assurance/quality control (QA/QC) procedures and field sampling and data gathering procedures that will be followed during implementation of the remedial investigation scope of work so that valid data of a known quality is generated.

The project specific field QA/QC procedures and the project specific laboratory QA/QC procedures are presented in the text of this QAPP. The general internal laboratory QA/QC procedures are presented in the subcontractor laboratory's Quality Manual which is retained at the laboratory's place of business. The subcontract laboratory for this project has not yet been determined. The laboratory certifications will be included in Appendix A upon selection of the laboratory.

The QAPP has been prepared in a manner consistent with the following guidance documents:

- Data Quality Objectives for Remedial Response Activities: Development Process, EPA/540/G-87/003, USEPA, March 1987.
- Quality Assurance Guidance for Conducting Brownfields Site Assessments, EPA 540-R-98-038, September 1998.
- DER-10 Technical Guidance For Site Investigation and Remediation, NYSDEC, May 2010.
- 6 NYCRR Part 375, Environmental Remediation Programs, Subparts 375-1 to 375-4 and 375-6, Effective December 14, 2006.

1.2 Objectives and Scope of Work

It is the objective of the RI and this QAPP to obtain and present representative data of a known quality and sufficient quantity. The primary goal is to perform soil and groundwater sampling through a variety of investigative tasks to evaluate the quality of the Site's soils, and groundwater. The data will help document overall protection requirements for human health and the environment based on the Site's contemplated use.

To achieve these objectives, the scope of work will include the following items as presented in the RIWP, in this QAPP and in the FSP. The investigative tasks will include the advancement of test borings, collection and analysis of select surface and sub-surface soil samples, installation of monitoring wells, and collection and analysis of groundwater samples.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

C.T. Male is responsible for providing professional services associated with the quality control/quality assurance of the remedial investigation. These will include project management, coordination and scheduling of activities in-house and with qualified subcontractors. The work tasks that will be performed by a subcontractor to C.T. Male include: direct push drilling of borings, installation of monitoring wells, analytical laboratory testing, and third party data validation.

A project organizational chart listing key individuals of the project and their associated title is presented as Figure 1 at the end of this document. Primary personnel from C.T. Male, the subcontract laboratory and data validator can be reached at the following addresses:

- C.T. Male Associates
  Contact: Jeffrey A. Marx, P.E.
  Phone: (518) 786-7548
  Email: j.marx@ctmale.com

- PS Property Solutions, Inc. (C.T. Male Subcontractor for Field Observation)
  Contact: Paul Shannon
  Phone: (518) 223-0458
  Email: paulmshannon@yahoo.com

- Laboratory: Alpha Analytical
  Contact: Candace Fox
  Phone: (716) 427-5223
  Email: cfox@alphalab.com

- Data Validator: Environmental Data Services, Inc.
  Contact: Doug or Nancy Weaver
  Phone: (757) 564-0090
  Email: dweaver@env-data.com or nweaver@env-data.com

- Drilling Company: Summit Drilling, Inc.
  Contact: James Stair
  Phone: (800) 242-6648
  Email: jstair@summitdrilling.com

A description of the responsibilities by title of the key individuals is presented as follows:

Project Principal is responsible for the review of the RI activities and reports for their technical adequacy and conformance to the scope of work.

Quality Assurance Officer is responsible for the independent review of the RI documents and reports to check that the appropriate project documentation, of the quality control activities performed, exist and are maintained; and for conducting field and sampling audits. Analytical data will also be reviewed by this individual for accuracy and completeness.

Project Manager is responsible for the overall coordination and implementation of the project, the management of staff and resources, the implementation of schedules, the conformance by the technical staff and subcontractors to the scope of work, assessing the adequacy of the work being performed, implementing corrective action as necessary, interaction with the client and regulatory agencies, maintaining complete project documentation, and report preparation.

Health and Safety Coordinator is responsible for implementation of the project specific Health and Safety Plan, and resolution of safety issues which arise during the completion of the work. The Health and Safety Coordinator or designee will be present during the completion of the field work.

Laboratory Quality Assurance Officer is responsible for review of the laboratory data quality control procedures and documentation to determine if the QA objectives are being met; and to report non-conforming events to the laboratory technical staff and Project Manager and implement corrective action as necessary.

Laboratory Director is responsible for all activities within the laboratory, and for the performance of the laboratory work tasks in accordance with the project work plans, interactions with the Project Manager, and the adherence to project schedule.

Project Geologist/Engineer/Scientist is responsible for coordinating and conducting the field hydrogeologic activities and subcontractors, the adherence of activities to the QAPP and the FSP, evaluation of the collected data, soil classifications, report preparation and interaction with Project Manager and Project Team.

Project Team is responsible for adequately performing the work tasks in accordance with the project work plans so that the objectives of investigations and the project are achieved, notifying the Project Manager of any non-conformance to the work plan so that corrective actions can be taken as necessary, and notifying the Project Manager of unforeseen conditions so that modifications to the work plan, if necessary, can be approved and implemented.

Data Validator is responsible for review of all analytical data generated for this project. The data validator will review analytical data in accordance with New York State Department of Environmental Conservation Guidance for the Development of Data Usability Summary Reports (DUSR) and prepare a report documenting if the analytical data is valid and usable. The report will also present data rejection and qualification, where necessary, based on laboratory performance.

3.0 QUALITY ASSURANCE OBJECTIVES FOR DATA MEASUREMENT

3.1 General

The Quality Assurance (QA) objective for this project is to produce data which is technically valid and of a known quality that meets the needs of its intended use. In this section the data quality objectives (DQOs) are defined by describing the intended use of the data; defining the type of data needed (i.e., physical or analytical); specifying the analytical levels, as established by EPA, appropriate to the data uses; specifying the quality control checks on field and laboratory procedures and frequency of checks; and presenting the quality control acceptance criteria.

Laboratory quality assurance objectives for data measurement are established for each measurement parameter in terms of precision, accuracy, completeness, representativeness and comparability. These terms form an integral part of the laboratory's quality assurance programs in that DQOs are set for each parameter.

3.2 Data Uses and Types

The data to be generated during the proposed work will be completion of remedial investigation, and health and safety during implementation of the field activities. Both physical data including air monitoring and analytical data from soil, and groundwater will be needed to provide the necessary information to complete the steps in the remedial investigation. The specific physical and analytical data proposed and its purposes are presented in the RIWP.

3.3 Data Quality Needs

To support data collection activities in obtaining quality data, EPA has established a series of analytical levels that are appropriate to Site investigation/remediation data uses. The analytical levels are defined as follows:

Level I	Field screening or analysis using portable instruments. Qualitative data.
Level II	Field analyses using more sophisticated portable analytical

	instruments. Qualitative and quantitative data can be obtained.
Level III	Laboratory analyses using standard EPA approved procedures/methods.
Level IV	Laboratory analyses by NYSDEC ASP (Analytical Services Protocol) - Category B Data Deliverable with QA/QC protocols and documentation.
Level V	Analyses by non-standard methods.

The data collection activities, the environmental media, the intended use of the data and the corresponding analytical levels that will be used to produce the project data are summarized in Table 3.3-1.

Table 3.3-1
Summary of Work Tasks and Corresponding Analytical Levels

Data Collection Activities	Sample Media & Description	Data Use[(a)]	Analytical Level
PID Monitoring	Soil Vapors	1	I
Air Monitoring (organic vapor, no dust)	Air/Ambient Air	2	II
Test Borings, Monitoring Wells, Surface Soil, Subsurface Soil, and Groundwater Sampling	Surface and Sub-surface Soil, and Groundwater Laboratory Analyses and Field Instrumentation	1, 3 & 4	I, III and IV
Vapor Intrusion Sampling	Subslab Vapor and Outdoor Air	1	IV

Data Uses Key:

1 - Site Characterization.

2 - Health and Safety and Community Air Monitoring During Implementation of Field Activities.

3 - Risk Assessment.

4 - Evaluation of Remediation Alternatives.

Another consideration besides defining the Data Quality Needs is what level of cleanup will be required for the Site. The applicable or relevant and appropriate requirements (ARARs) are related to defining satisfactory cleanup efforts. In order to be able to evaluate the data generated with respect to potential ARARs, the samples will need to be analyzed by analytical methods that can achieve detection limits below or at existing ARAR values. The analytical methods selected for this project are designed to achieve ARAR values.

3.4 Quality Control Checks and Acceptance Criteria

To monitor and document the integrity of such factors as sample variability, sampling equipment cleanliness, sampling technique, analytical reproducibility and sample handling which can affect data quality, several field quality control checks will be implemented. These will include taking equipment/field blanks after the sampling equipment has been decontaminated to check for cross contamination and equipment cleanliness; taking replicate samples to monitor analytical precision/ reproducibility and sampling technique; and preparing transport blanks to be transported with the sample containers for volatile analyses to monitor sample handling. For this project the field Quality Control (QC) checks will consist of one equipment/field blank, and one replicate sample during sampling activities for every twenty (20) analytical samples per media type (i.e. soil and groundwater). A transport blank will be prepared for each groundwater sample set to be submitted for volatile analyses.

Laboratory quality control checks will be those specified in EPA Methods or in the most recent NYSDEC ASP for the analytical method performed and could consist of some of the following:

- blanks (method, preparation),
- initial and continuing calibrations,
- surrogate spikes,
- matrix spikes/matrix spike duplicates,
- duplicate samples, and
- control samples/matrix spike blanks.

The laboratory will be responsible for performing what is necessary for complying with appropriate standards and certifications of the selected EPA method and ASP

requirements. The laboratory quality control acceptance criterion is method specific and will be the laboratory's responsibility to meet the most recent ASP criteria.

4.0 SAMPLING PROCEDURE

Procedures for sampling are presented in the Field Sampling Plan (FSP) and include the following:

- selection of sampling sites and media to be sampled,
- specific sampling procedures for each environmental media to be sampled, and for QC samples to be taken,
- field soil screening procedures,
- a description of the containers, procedures and equipment used for sample collection, preservation, transport and storage,
- procedures for preparing the sample containers and sampling equipment prior to sampling and decontamination of sampling equipment during sampling,
- chain of custody procedures and forms, and
- description of the procedures, forms and notebooks to be used to document sampling activities, sample conditions and field conditions.

5.0 SAMPLE CUSTODY

Proper chain of custody will be established and maintained through a series of steps, beginning in the field and ending with final disposition of the analyzed sample(s). At the time of the field sampling, an external chain of custody record form will be utilized to track sample collection until delivery to the analytical laboratory. An internal or "intra-laboratory" chain of custody will be used by laboratory personnel to track the sample(s) from the point it is received and logged and passed through the laboratory process. Chain of custody procedures are discussed in detail in the FSP.

6.0 CALIBRATION PROCEDURES

Calibration procedures for field equipment including the photo-ionization detector (PID) meter, pH/conductivity/temperature meter, and turbidity meter are presented in the FSP. Calibration procedures for laboratory equipment and instrumentation consist of the production and use of current certifiable standards and the measurement and adjustment of the instrument response. The laboratory is responsible for maintaining records documenting use of current standards and acceptable instrument responses. The laboratory is required to flag analytical data that has had potential contamination or poor instrument calibration that may have occurred during the analytical process.

7.0 SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

The analytical parameters, sample preparation and analysis methods, acceptable holding times and required method detection limits are presented in Table 7-1. The analytical methods specified reflect the requirements of the most recent NYSDEC ASP.

Table 7-1
Analytical Methods and Requirements

Analytical Parameters	EPA Method	Holding Times(1)	Contract Required Quantitative Limits(2)
TCL Volatile Organic Compounds (VOCs)	EPA Analytical Method SW-846 8260C for Water and Soil and EPA Preparation Methods 5030C (Water) and 5035A (Soil).	Water: 7 Days Unpreserved to Analysis, 12 Days Preserved (HCl to pH<2) to Analysis. Soil: 48 hours to freeze, 14 days to analysis once unfrozen.	0.5-5 ug/l (Water) 5 to 20 ug/kg (Soil)
TCL Semi-Volatile Organic Compounds (SVOCs)	EPA Analytical Method SW-846 8270D for Water and Soil and EPA Preparation Methods 3510C (Water) and 3546 (Soil)	5 Days to Extraction, 40 Days to Analyze	0.5-30 ug/l (Water) 17-1,000 ug/kg (Soil)
1,4-Dioxane	EPA Analytical Method SW-846 8270D SIM Mode	5 Days to Extraction, 40 Days to Analyze	0.05 ug/l (Water)
TCL PCBs/Pesticides	EPA Analytical Method SW-846 8082A for Water and Soil and EPA Preparation Methods 3510C (Water) and 3546 (Soil)	5 Days to Extraction, 40 Days to Analyze	0.1-0.2 ug/l (Water) 17 ug/kg (Soil)
TAL Metals (Except Mercury)	EPA Analytical Method SW-846 6010C and 6020A for Water and Soil and EPA Preparation Methods 3005A and 3020A (Water) and 3050B (Soil)	180 Days	0.001-2 mg/l (Water) 0.2-200 mg/kg (Soil)
Mercury	EPA Analytical and Preparation Methods SW-846 7470A (Water) and SW-846 7471B (Soil)	26 days	0.0002 mg/l (Water) 0.02 mg/kg (Soil)
Cyanide	EPA Analytical and Preparation Method SW-846 9012A for Water and Soil	14 Days	0.01 mg/l (Water) 0.5 mg/kg (Soil)
VOCs (Air)	EPA Method TO-15	Pending from lab	Pending from lab

Note:
1) Holding times are relative to the verifiable time of sample receipt at the laboratory.
2) The listed method detection limits are practical quantitation limits (PQLs). The method detection limit (MDL) is the best possible detection. Laboratories report PQLs which are typically 4 times the MDL for liquids and varies for solids depending on the quantity of contamination present. Efforts will be made to obtain the lowest possible detection limit. When the guidance value or standard value is below the detection limit, achieving the detection limit will be considered acceptable for meeting that guidance or standard value.

Where matrix interference is noted, analytical clean-ups will be required to be performed by the laboratory following the procedures specified in SW-846 or the most current NYSDEC ASP, as applicable. In general, samples shall not be diluted more than 1 to 5.

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

8.1 General

The field measurement data and the laboratory analyses results of detected parameters will be compiled and tabulated to facilitate comparison and evaluation, and will be included in the RI Report. The tabulated data will include at a minimum:

- surface and sub-surface soil analysis results,
- groundwater analysis results, and
- quality control results (equipment/field blanks, replicates/duplicates, matrix spike/matrix spike duplicates, and transport blanks).

Field logs will also be compiled and included, in part, in the text and appendices of the Final RI Report, and will consist of:

- subsurface exploration logs,
- monitoring well construction logs,
- organic vapor headspace analysis logs,
- groundwater services field logs,
- environmental services field logs, and
- water level records.

Any observations or problems encountered during field activities which could affect the quality of the data or its validity will be noted on the appropriate field log.

8.2 Validation

Internal data validation will be performed by the laboratory QA officer to ensure that the data package is complete and meets the criteria of the work plan and this QAPP. Any problems encountered in performing the analyses by the laboratory such as out of limits surrogate recoveries, and comments on the quality and limitations of specific data and the validity of the data will be described in the case narrative of the laboratory report.

External data validation will be performed by a contracted third party data validator who will utilize the USEPA National and Regional Validation Guidelines/Procedures and the NYSDEC Guidance in the Development of Data Usability Summary Reports to determine the applicable qualifications of the data. The validator will then prepare a NYSDEC Data Usability Summary Report (DUSR) in accordance with NYSDEC guidelines. The data validator will not be involved in any other portions of the project. The independent validator's qualifications and work experience, when selected, will be presented in Appendix B. The NYSDEC DUSR guidance is presented in Appendix C for reference.

8.3 Reporting

The laboratory will generate NYSDEC ASP Category B Data Deliverable Package(s) for analytical data generated. The data deliverables will be provided to the third party data validator for DUSR generation. The data packages will also be presented as part of the RI Report, but due to the volume of material, it will be presented on a CD, not in hardcopy. The data package will include analytical results and quality control data deliverables as required by the most recent NYSDEC ASP used by the laboratory of record.

Analytical data is also required to be electronically submitted to NYSDEC. This data submitted to NYSDEC will be stored in the agency's Environmental Information Management System (EIMS). NYSDEC uses EQuIS software, developed by EarthSoft, specifically as the EIMS. The laboratory of record will be required to provide electronic data deliverables (EDDs) to C.T. Male in NYSDEC Format (EDP Version 6.x) using NYSDEC EDD Format Version 3.00.29 or equal. C.T. Male will be responsible for updating the sample locations with coordinate information (latitude/longitude) and sample depths. The edited EDD will be checked in NYSDEC EQuIS Data Processor (EDP). When successfully meeting the requirements of the EDP (i.e., no errors), the EDD will be electronically signed and sealed through the EDP and submitted to the NYSDEC.

The EDDs will be submitted in two categories; initial EDDs; and chemical EDDs. The initial EDD provides the information on the project, the data provider and the sample locations, which is typically the first phase of EDD submission. The chemical EDDs are

those received from the laboratory that have sample information, test results and batch QC for a particular group of sample analysis.

9.0 INTERNAL QUALITY CONTROL

Field QC will consist of taking equipment/field blanks, replicate samples, and having transport blanks with the groundwater and surface water volatile organic compounds sample sets. Field instrumentation will also be calibrated prior to use and the calibration maintained as discussed in the FSP (Section 7.0).

Internal laboratory QC will generally consist of:

- method (instrument) blanks,
- initial and continuing calibrations,
- surrogate spikes,
- matrix spikes/matrix spike duplicates,
- duplicate samples, and
- laboratory control samples/matrix spike blanks.

The QC samples will be run in accordance with the protocols and frequencies specified in the NYSDEC ASP, SW-846 and EPA Methods as applicable for the analyses being performed.

10.0 PERFORMANCE AND SYSTEM AUDITS

10.1 Field Audits

Field performance audits will consist of taking replicate samples and equipment/field blanks and analyzing them for the same parameters as other samples.

Field system audits will be conducted during field operation to ensure that the field activities are being conducted correctly and in accordance with the RIWP. The project field supervisor will check that the field instrumentation is calibrated prior to use, that field measurements are taken correctly, that equipment is properly decontaminated, and that the field activities are properly documented. Any deficiencies will be reported to the project manager and discussed with the field staff immediately and corrective action taken. The person conducting the field audits will document the field system audits by use of a field report and submit the report to the project manager for review on a bi-weekly basis at a minimum. The project quality assurance officer, scientist/geologist/engineer or project manager will conduct system audits as appropriate or warranted.

The project manager will review the field system audit reports and the field documentation for completeness and correctness, and check that the work is proceeding on schedule and in accordance with the work plans.

10.2 Laboratory Audits

Laboratory system audits are not required, however, the laboratory is required to maintain New York State Department of Health (NYSDOH) ELAP certification. A copy of the laboratory NYSDOH ELAP certification documentation will be provided, if requested by the NYSDEC Project Manager. Part of this certification process typically includes periodic performance evaluations and on-site systems audits.

11.0 PREVENTATIVE MAINTENANCE

C.T. Male keeps an inventory of field equipment and it is kept locked in a designated area. The field equipment is signed out when in use and its condition checked upon its return. The equipment is kept in good working order and frequently checked and calibrated by qualified employees. Additionally, select equipment (i.e., PID) is routinely serviced for cleaning and calibration by an independent repair facility.

The project geologist/engineer/scientist are responsible for assuring that the field equipment is tested, cleaned, charged and calibrated in accordance with the manufacturer's instructions prior to taking the equipment out into the field.

12.0 DATA ASSESSMENT PROCEDURES

The field and laboratory generated data will be assessed for precision, accuracy, representativeness, completeness, and comparability (PARCC parameters). Both quantitative and qualitative procedures will be used for these assessments.

The criteria for assessment of field measurements will be that the measurements were taken in accordance with the procedures specified in the FSP using calibrated instruments. Assessment of the sampling data with respect to field performance will be based on the criteria that the samples were properly collected and handled. Field replicate and equipment/field blank sample results will be used in assessing the sampling technique and representativeness of the samples collected.

The laboratory will calculate and report the precision, accuracy, and completeness of the analytical data. Precision will be expressed as the relative percent difference (RPD) between values of duplicate samples. Accuracy will be expressed as percent difference (PD) for surrogate standards and matrix spike compounds. Completeness is a measure of the amount of valid data derived from a set of samples based on the total amount expected to be derived under normal conditions. The precision and accuracy results will be compared to the QC acceptance criteria specified for each test method in the most recent NYSDEC ASP.

The representativeness of the analysis is dictated primarily by the field sampling technique and sample location, as opposed to laboratory operations. The laboratory will take steps to ensure that the analysis is representative of the sample being submitted. The criteria for ensuring representativeness of the analysis are careful aliquot selection and proper compositing techniques. Laboratory performance will be based on the criteria that the samples were properly handled prior to submission to the laboratory, that the laboratory aliquots taken for analysis are representative (i.e., oversized particles discarded, sample thoroughly mixed except when dealing with volatile organics), that the samples were analyzed within holding times, and that no cross-contamination has occurred based on the method blank results. Data comparability will be assessed based on analyses being performed within required holding times, on consistent units of measure, and that analyses were performed in strict adherence with NYSDEC and EPA analytical methods/protocols.

13.0 CORRECTIVE ACTIONS

The remedial investigation will be performed in accordance with the approved work plan, the contents of the approved FSP and the approved QAPP. Any persons identifying unacceptable conditions or deficiencies in the work being performed such as deviation from or omission of health and safety procedures, sampling procedures or other field procedures, will immediately notify the project field supervisor, where applicable, and the project manager. The unacceptable conditions or deficiencies will be documented and submitted to the project manager. The project manager, with assistance from the technical quality review staff, if necessary, will be responsible for developing and initiating appropriate corrective action, documenting the corrective action and verifying that the corrective action has been effective.

Depending on the significance and potential impact of the problem or deficiency requiring corrective action, the NYSDEC and the Charles Bohl Incorporated will be notified, as warranted, as soon as practical after becoming aware of the situation.

14.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Field system audit/field reports from the project team, where applicable, will be submitted to the project manager on a bi-weekly basis at a minimum. The field report will include the project name, location, time, date, weather, temperature range, work in progress, conformance with schedule, persons present at the Site (arrival and departure times), observations, work start-up and stoppage, items to verify, information or action required, any attachments identified, and the reporting persons signature. The field report notifies the management as to the progress, conformance with the work plan, and any problems that may affect quality control. Field personnel will also keep log books and field notebooks that will discuss day to day procedures followed, any problems encountered, etc. A copy of the field notes will be given to the project manager at least bi-weekly to keep the project manager informed of the project status and as a quality control check. The project manager will review the reports and field notes to assess the quality of the investigate data gathering efforts to make sure the objectives of the work are being met, to make sure the work is progressing on schedule, that the work is being conducted in accordance with the work plan, and that any problems encountered are addressed. These reports will be utilized in assessing the data quality with respect to field activities and the findings will be discussed in the RI Report where applicable.

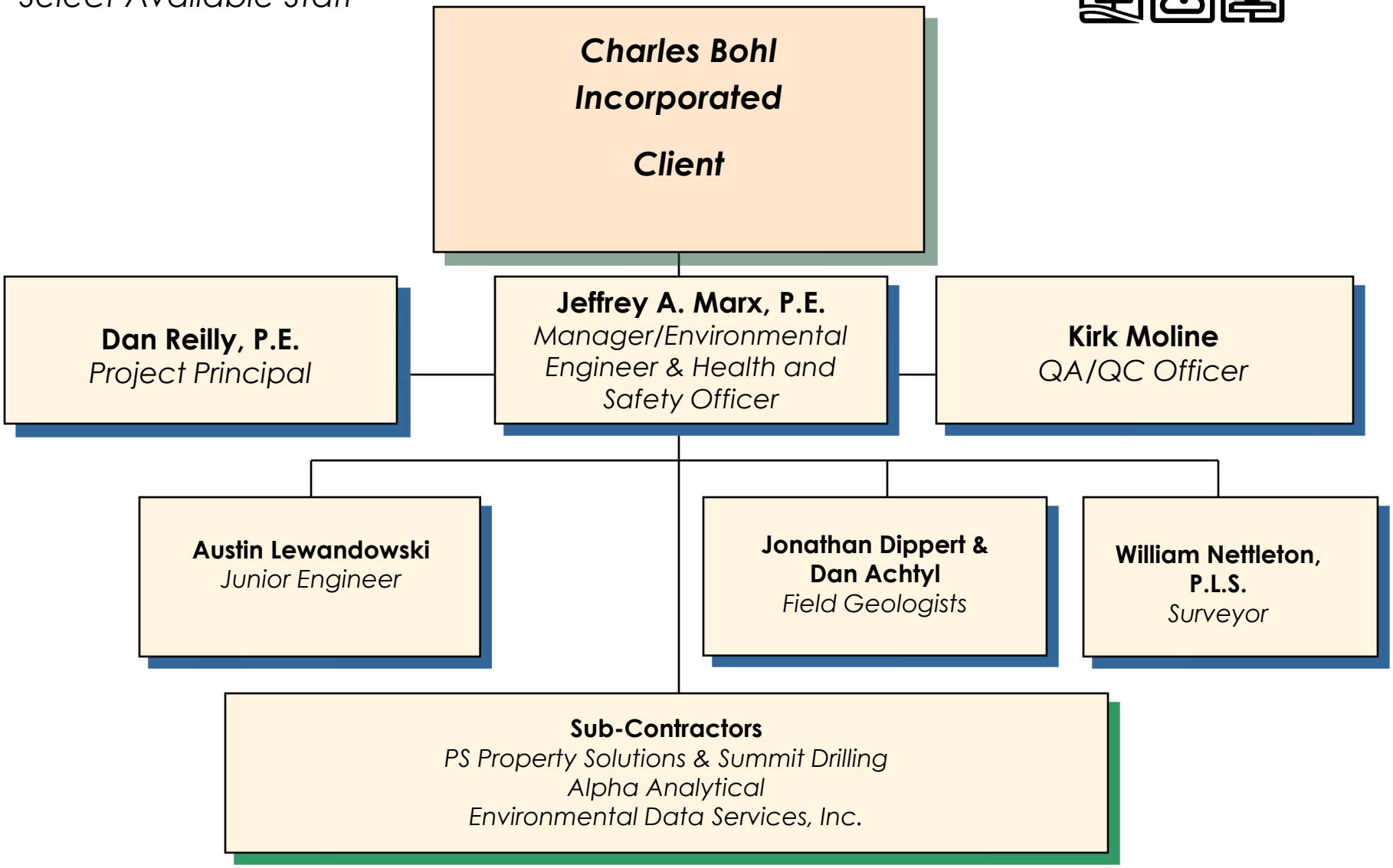
Documentation of each phase of the project and all work tasks performed are kept in the file on the project. The documentation is available at all times for review by the Quality Assurance Officer, who will randomly check files for their completeness.

If any occurrences or conditions are encountered during the course of work that may require a change in the scope of work or departure from the approved work plan, the NYSDEC will be notified and the situation reported as soon as possible.

FIGURE 1
Project Organizational Chart

C.T. Male Project Organization

Select Available Staff



APPENDIX A

Laboratory Certifications (Alpha Analytical)

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	PCB-1016	EPA TO-10A	AE	x	✓	
NY	PCB-1221	EPA TO-10A	AE	x	✓	
NY	PCB-1232	EPA TO-10A	AE	x	✓	
NY	PCB-1242	EPA TO-10A	AE	x	✓	
NY	PCB-1248	EPA TO-10A	AE	x	✓	
NY	PCB-1254	EPA TO-10A	AE	x	✓	
NY	PCB-1260	EPA TO-10A	AE	x	✓	
NY	PCB-1262	EPA TO-10A	AE	x	✓	
NY	PCB-1268	EPA TO-10A	AE	x	✓	
NY	Acenaphthene	EPA TO-13A Full Scan	AE	x	✓	
NY	Acenaphthylene	EPA TO-13A Full Scan	AE	x	✓	
NY	Anthracene	EPA TO-13A Full Scan	AE	x	✓	
NY	Benzo(a)anthracene	EPA TO-13A Full Scan	AE	x	✓	
NY	Benzo(a)pyrene	EPA TO-13A Full Scan	AE	x	✓	
NY	Benzo(b)fluoranthene	EPA TO-13A Full Scan	AE	x	✓	
NY	Benzo(ghi)perylene	EPA TO-13A Full Scan	AE	x	✓	
NY	Benzo(k)fluoranthene	EPA TO-13A Full Scan	AE	x	✓	
NY	Chrysene	EPA TO-13A Full Scan	AE	x	✓	
NY	Dibenzo(a,h)anthracene	EPA TO-13A Full Scan	AE	x	✓	
NY	Fluoranthene	EPA TO-13A Full Scan	AE	x	✓	
NY	Fluorene	EPA TO-13A Full Scan	AE	x	✓	
NY	Indeno(1,2,3-cd)pyrene	EPA TO-13A Full Scan	AE	x	✓	
NY	Naphthalene	EPA TO-13A Full Scan	AE	x	✓	
NY	Phenanthrene	EPA TO-13A Full Scan	AE	x	✓	
NY	Pyrene	EPA TO-13A Full Scan	AE	x	✓	
NY	1,1,1-Trichloroethane	EPA TO-15	AE	x	✓	
NY	1,1,2,2-Tetrachloroethane	EPA TO-15	AE	x	✓	
NY	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA TO-15	AE	x	✓	
NY	1,1,2-Trichloroethane	EPA TO-15	AE	x	✓	
NY	1,1-Dichloroethane	EPA TO-15	AE	x	✓	
NY	1,1-Dichloroethene	EPA TO-15	AE	x	✓	
NY	1,2,4-Trichlorobenzene	EPA TO-15	AE	x	✓	
NY	1,2,4-Trimethylbenzene	EPA TO-15	AE	x	✓	
NY	1,2-Dibromo-3-Chloropropane	EPA TO-15	AE	x	✓	
NY	1,2-Dibromoethane	EPA TO-15	AE	x	✓	
NY	1,2-Dichlorobenzene	EPA TO-15	AE	x	✓	
NY	1,2-Dichloroethane	EPA TO-15	AE	x	✓	
NY	1,2-Dichloropropane	EPA TO-15	AE	x	✓	
NY	1,2-Dichlorotetrafluoroethane	EPA TO-15	AE	x	✓	
NY	1,3,5-Trimethylbenzene	EPA TO-15	AE	x	✓	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	1,3-Butadiene	EPA TO-15	AE	x	✓	
NY	1,3-Dichlorobenzene	EPA TO-15	AE	x	✓	
NY	1,4-Dichlorobenzene	EPA TO-15	AE	x	✓	
NY	1,4-Dioxane	EPA TO-15	AE	x	✓	
NY	2,2,4-Trimethylpentane	EPA TO-15	AE	x	✓	
NY	2-Butanone	EPA TO-15	AE	x	✓	
NY	2-Chlorotoluene	EPA TO-15	AE	x	✓	
NY	3-Chloropropene	EPA TO-15	AE	x	✓	
NY	4-Methyl-2-Pentanone	EPA TO-15	AE	x	✓	
NY	Acetaldehyde	EPA TO-15	AE	x	✓	
NY	Acetone	EPA TO-15	AE	x	✓	
NY	Acetonitrile	EPA TO-15	AE	x	✓	
NY	Acrolein	EPA TO-15	AE	x	✓	
NY	Acrylonitrile	EPA TO-15	AE	x	✓	
NY	Benzene	EPA TO-15	AE	x	✓	
NY	Benzyl Chloride	EPA TO-15	AE	x	✓	
NY	Bromodichloromethane	EPA TO-15	AE	x	✓	
NY	Bromoform	EPA TO-15	AE	x	✓	
NY	Bromomethane	EPA TO-15	AE	x	✓	
NY	Carbon Disulfide	EPA TO-15	AE	x	✓	
NY	Carbon Tetrachloride	EPA TO-15	AE	x	✓	
NY	Chlorobenzene	EPA TO-15	AE	x	✓	
NY	Chloroethane	EPA TO-15	AE	x	✓	
NY	Chloroform	EPA TO-15	AE	x	✓	
NY	Chloromethane	EPA TO-15	AE	x	✓	
NY	cis-1,2-Dichloroethene	EPA TO-15	AE	x	✓	
NY	cis-1,3-Dichloropropene	EPA TO-15	AE	x	✓	
NY	Cyclohexane	EPA TO-15	AE	x	✓	
NY	Dibromochloromethane	EPA TO-15	AE	x	✓	
NY	Dichlorodifluoromethane	EPA TO-15	AE	x	✓	
NY	Ethylbenzene	EPA TO-15	AE	x	✓	
NY	Hexachlorobutadiene	EPA TO-15	AE	x	✓	
NY	Isopropanol	EPA TO-15	AE	x	✓	
NY	Isopropylbenzene	EPA TO-15	AE	x	✓	
NY	m/p-xylene	EPA TO-15	AE	x	✓	
NY	Methanol	EPA TO-15	AE	x	✓	
NY	Methyl Methacrylate	EPA TO-15	AE	x	✓	
NY	Methyl tert-butyl ether	EPA TO-15	AE	x	✓	
NY	Methylene Chloride	EPA TO-15	AE	x	✓	
NY	Naphthalene	EPA TO-15	AE	x	✓	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	n-Heptane	EPA TO-15	AE	x	✓	
NY	n-Hexane	EPA TO-15	AE	x	✓	
NY	o-Xylene	EPA TO-15	AE	x	✓	
NY	Styrene	EPA TO-15	AE	x	✓	
NY	tert-butyl-alcohol	EPA TO-15	AE	x	✓	
NY	Tetrachloroethene	EPA TO-15	AE	x	✓	
NY	Toluene	EPA TO-15	AE	x	✓	
NY	Total Xylenes	EPA TO-15	AE	x	✓	
NY	Trans-1,2-Dichloroethene	EPA TO-15	AE	x	✓	
NY	Trans-1,3-Dichloropropene	EPA TO-15	AE	x	✓	
NY	Trichloroethene	EPA TO-15	AE	x	✓	
NY	Trichlorofluoromethane	EPA TO-15	AE	x	✓	
NY	Vinyl acetate	EPA TO-15	AE	x	✓	
NY	Vinyl Bromide	EPA TO-15	AE	x	✓	
NY	Vinyl Chloride	EPA TO-15	AE	x	✓	
NY	Specific Conductance	EPA 120.1	NPW	✓	x	
NY	Mercury	EPA 1631E	NPW	x	✓	
NY	Oil & Grease	EPA 1664A	NPW	✓	x	
NY	TPH	EPA 1664A	NPW	✓	x	
NY	Oil & Grease	EPA 1664B	NPW	✓	x	
NY	TPH	EPA 1664B	NPW	✓	x	
NY	Turbidity	EPA 180.1	NPW	✓	x	
NY	Aluminum	EPA 200.7	NPW	✓	x	
NY	Antimony	EPA 200.7	NPW	✓	x	
NY	Arsenic	EPA 200.7	NPW	✓	x	
NY	Barium	EPA 200.7	NPW	✓	x	
NY	Beryllium	EPA 200.7	NPW	✓	x	
NY	Boron	EPA 200.7	NPW	✓	x	
NY	Cadmium	EPA 200.7	NPW	✓	x	
NY	Calcium	EPA 200.7	NPW	✓	x	
NY	Chromium	EPA 200.7	NPW	✓	x	
NY	Cobalt	EPA 200.7	NPW	✓	x	
NY	Copper	EPA 200.7	NPW	✓	x	
NY	Iron	EPA 200.7	NPW	✓	x	
NY	Lead	EPA 200.7	NPW	✓	x	
NY	Magnesium	EPA 200.7	NPW	✓	x	
NY	Manganese	EPA 200.7	NPW	✓	x	
NY	Molybdenum	EPA 200.7	NPW	✓	x	
NY	Nickel	EPA 200.7	NPW	✓	x	
NY	Potassium	EPA 200.7	NPW	✓	x	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Selenium	EPA 200.7	NPW	✓	x	
NY	Silica, Dissolved	EPA 200.7	NPW	✓	x	
NY	Silver	EPA 200.7	NPW	✓	x	
NY	Sodium	EPA 200.7	NPW	✓	x	
NY	Thallium	EPA 200.7	NPW	✓	x	
NY	Tin	EPA 200.7	NPW	✓	x	
NY	Titanium	EPA 200.7	NPW	✓	x	
NY	Total Hardness (CaCO3)	EPA 200.7	NPW	✓	x	
NY	Vanadium	EPA 200.7	NPW	✓	x	
NY	Zinc	EPA 200.7	NPW	✓	x	
NY	Aluminum	EPA 200.8	NPW	✓	x	
NY	Antimony	EPA 200.8	NPW	✓	x	
NY	Arsenic	EPA 200.8	NPW	✓	x	
NY	Barium	EPA 200.8	NPW	✓	x	
NY	Beryllium	EPA 200.8	NPW	✓	x	
NY	Cadmium	EPA 200.8	NPW	✓	x	
NY	Chromium	EPA 200.8	NPW	✓	x	
NY	Cobalt	EPA 200.8	NPW	✓	x	
NY	Copper	EPA 200.8	NPW	✓	x	
NY	Lead	EPA 200.8	NPW	✓	x	
NY	Manganese	EPA 200.8	NPW	✓	x	
NY	Molybdenum	EPA 200.8	NPW	✓	x	
NY	Nickel	EPA 200.8	NPW	✓	x	
NY	Selenium	EPA 200.8	NPW	✓	x	
NY	Silver	EPA 200.8	NPW	✓	x	
NY	Thallium	EPA 200.8	NPW	✓	x	
NY	Vanadium	EPA 200.8	NPW	✓	x	
NY	Zinc	EPA 200.8	NPW	✓	x	
NY	Mercury	EPA 245.1	NPW	✓	x	
NY	Bromide	EPA 300.0	NPW	✓	x	
NY	Chloride	EPA 300.0	NPW	✓	x	
NY	Fluoride	EPA 300.0	NPW	✓	x	
NY	Nitrate-N	EPA 300.0	NPW	✓	x	
NY	Sulfate	EPA 300.0	NPW	✓	x	
NY	Acid Digestion of Waters	EPA 3005A	NPW	✓	x	
NY	Acid Digestion of Waters	EPA 3020A	NPW	x	✓	
NY	Ammonia	EPA 350.1	NPW	✓	x	
NY	Nitrogen, Total Kjeldahl	EPA 351.1	NPW	✓	x	
NY	Separatory Funnel Extraction	EPA 3510C	NPW	✓	✓	
NY	Nitrate-N	EPA 353.2	NPW	✓	x	

Alpha Analytical

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Nitrate-N	EPA 353.2	NPW	✓	x	
NY	Chemical Oxygen Demand	EPA 410.4	NPW	✓	x	
NY	Total Phenolics	EPA 420.1	NPW	✓	x	
NY	Aqueous-phase purge and trap	EPA 5030C	NPW	✓	x	
NY	Aluminum	EPA 6010C	NPW	✓	x	
NY	Antimony	EPA 6010C	NPW	✓	x	
NY	Arsenic	EPA 6010C	NPW	✓	x	
NY	Barium	EPA 6010C	NPW	✓	x	
NY	Beryllium	EPA 6010C	NPW	✓	x	
NY	Boron	EPA 6010C	NPW	✓	x	
NY	Cadmium	EPA 6010C	NPW	✓	x	
NY	Calcium	EPA 6010C	NPW	✓	x	
NY	Chromium	EPA 6010C	NPW	✓	x	
NY	Cobalt	EPA 6010C	NPW	✓	x	
NY	Copper	EPA 6010C	NPW	✓	x	
NY	Iron	EPA 6010C	NPW	✓	x	
NY	Lead	EPA 6010C	NPW	✓	x	
NY	Magnesium	EPA 6010C	NPW	✓	x	
NY	Manganese	EPA 6010C	NPW	✓	x	
NY	Molybdenum	EPA 6010C	NPW	✓	x	
NY	Nickel	EPA 6010C	NPW	✓	x	
NY	Potassium	EPA 6010C	NPW	✓	x	
NY	Selenium	EPA 6010C	NPW	✓	x	
NY	Silver	EPA 6010C	NPW	✓	x	
NY	Sodium	EPA 6010C	NPW	✓	x	
NY	Thallium	EPA 6010C	NPW	✓	x	
NY	Tin	EPA 6010C	NPW	✓	x	
NY	Vanadium	EPA 6010C	NPW	✓	x	
NY	Zinc	EPA 6010C	NPW	✓	x	
NY	Aluminum	EPA 6020A	NPW	✓	✓	
NY	Antimony	EPA 6020A	NPW	✓	✓	
NY	Arsenic	EPA 6020A	NPW	✓	✓	
NY	Barium	EPA 6020A	NPW	✓	✓	
NY	Beryllium	EPA 6020A	NPW	✓	✓	
NY	Boron	EPA 6020A	NPW	✓	✓	
NY	Cadmium	EPA 6020A	NPW	✓	✓	
NY	Calcium	EPA 6020A	NPW	✓	✓	
NY	Chromium	EPA 6020A	NPW	✓	✓	
NY	Cobalt	EPA 6020A	NPW	✓	✓	
NY	Copper	EPA 6020A	NPW	✓	✓	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Iron	EPA 6020A	NPW	✓	✓	
NY	Lead	EPA 6020A	NPW	✓	✓	
NY	Magnesium	EPA 6020A	NPW	✓	✓	
NY	Manganese	EPA 6020A	NPW	✓	✓	
NY	Molybdenum	EPA 6020A	NPW	✓	✓	
NY	Nickel	EPA 6020A	NPW	✓	✓	
NY	Potassium	EPA 6020A	NPW	✓	✓	
NY	Selenium	EPA 6020A	NPW	✓	✓	
NY	Silver	EPA 6020A	NPW	✓	✓	
NY	Strontium	EPA 6020A	NPW	x	✓	
NY	Thallium	EPA 6020A	NPW	✓	✓	
NY	Tin	EPA 6020A	NPW	x	✓	
NY	Titanium	EPA 6020A	NPW	✓	✓	
NY	Vanadium	EPA 6020A	NPW	✓	✓	
NY	Zinc	EPA 6020A	NPW	✓	✓	
NY	4,4-DDD	EPA 608	NPW	✓	x	
NY	4,4-DDE	EPA 608	NPW	✓	x	
NY	4,4-DDT	EPA 608	NPW	✓	x	
NY	Aldrin	EPA 608	NPW	✓	x	
NY	Alpha-BHC	EPA 608	NPW	✓	x	
NY	Beta-BHC	EPA 608	NPW	✓	x	
NY	Chlordane	EPA 608	NPW	✓	x	
NY	Delta-BHC	EPA 608	NPW	✓	x	
NY	Dieldrin	EPA 608	NPW	✓	x	
NY	Endosulfan I	EPA 608	NPW	✓	x	
NY	Endosulfan II	EPA 608	NPW	✓	x	
NY	Endosulfan Sulfate	EPA 608	NPW	✓	x	
NY	Endrin	EPA 608	NPW	✓	x	
NY	Endrin Aldehyde	EPA 608	NPW	✓	x	
NY	Heptachlor	EPA 608	NPW	✓	x	
NY	Heptachlor Epoxide	EPA 608	NPW	✓	x	
NY	Lindane (gamma-BHC)	EPA 608	NPW	✓	x	
NY	Methoxychlor	EPA 608	NPW	✓	x	
NY	PCB-1016	EPA 608	NPW	✓	x	
NY	PCB-1221	EPA 608	NPW	✓	x	
NY	PCB-1232	EPA 608	NPW	✓	x	
NY	PCB-1242	EPA 608	NPW	✓	x	
NY	PCB-1248	EPA 608	NPW	✓	x	
NY	PCB-1254	EPA 608	NPW	✓	x	
NY	PCB-1260	EPA 608	NPW	✓	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Toxaphene	EPA 608	NPW	✓	x	
NY	1,1,1-Trichloroethane	EPA 624	NPW	✓	x	
NY	1,1,2,2-Tetrachloroethane	EPA 624	NPW	✓	x	
NY	1,1,2-Trichloroethane	EPA 624	NPW	✓	x	
NY	1,1-Dichloroethane	EPA 624	NPW	✓	x	
NY	1,1-Dichloroethene	EPA 624	NPW	✓	x	
NY	1,2-Dichlorobenzene	EPA 624	NPW	✓	x	
NY	1,2-Dichloroethane	EPA 624	NPW	✓	x	
NY	1,2-Dichloropropane	EPA 624	NPW	✓	x	
NY	1,3-Dichlorobenzene	EPA 624	NPW	✓	x	
NY	1,4-Dichlorobenzene	EPA 624	NPW	✓	x	
NY	2-Chloroethyl Vinyl ether	EPA 624	NPW	✓	x	
NY	Acrolein	EPA 624	NPW	✓	x	
NY	Acrylonitrile	EPA 624	NPW	✓	x	
NY	Benzene	EPA 624	NPW	✓	x	
NY	Bromodichloromethane	EPA 624	NPW	✓	x	
NY	Bromoform	EPA 624	NPW	✓	x	
NY	Bromomethane	EPA 624	NPW	✓	x	
NY	Carbon Tetrachloride	EPA 624	NPW	✓	x	
NY	Chlorobenzene	EPA 624	NPW	✓	x	
NY	Chloroethane	EPA 624	NPW	✓	x	
NY	Chloroform	EPA 624	NPW	✓	x	
NY	Chloromethane	EPA 624	NPW	✓	x	
NY	cis-1,2-Dichloroethene	EPA 624	NPW	✓	x	
NY	cis-1,3-Dichloropropene	EPA 624	NPW	✓	x	
NY	Dibromochloromethane	EPA 624	NPW	✓	x	
NY	Dichlorodifluoromethane	EPA 624	NPW	✓	x	
NY	Ethylbenzene	EPA 624	NPW	✓	x	
NY	Methylene Chloride	EPA 624	NPW	✓	x	
NY	Styrene	EPA 624	NPW	✓	x	
NY	Tetrachloroethene	EPA 624	NPW	✓	x	
NY	Toluene	EPA 624	NPW	✓	x	
NY	Total Xylenes	EPA 624	NPW	✓	x	
NY	Trans-1,2-Dichloroethene	EPA 624	NPW	✓	x	
NY	Trans-1,3-Dichloropropene	EPA 624	NPW	✓	x	
NY	Trichloroethene	EPA 624	NPW	✓	x	
NY	Trichlorofluoromethane	EPA 624	NPW	✓	x	
NY	Vinyl Chloride	EPA 624	NPW	✓	x	
NY	1,2,4-Trichlorobenzene	EPA 625	NPW	✓	x	
NY	2,4,5-Trichlorophenol	EPA 625	NPW	✓	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	2,4,6-Trichlorophenol	EPA 625	NPW	✓	x	
NY	2,4-Dichlorophenol	EPA 625	NPW	✓	x	
NY	2,4-Dimethylphenol	EPA 625	NPW	✓	x	
NY	2,4-Dinitrophenol	EPA 625	NPW	✓	x	
NY	2,4-Dinitrotoluene (2,4-DNT)	EPA 625	NPW	✓	x	
NY	2,6-Dinitrotoluene (2,6-DNT)	EPA 625	NPW	✓	x	
NY	2-Chloronaphthalene	EPA 625	NPW	✓	x	
NY	2-Chlorophenol	EPA 625	NPW	✓	x	
NY	2-Methyl-4,6-dinitrophenol	EPA 625	NPW	✓	x	
NY	2-Methylphenol	EPA 625	NPW	✓	x	
NY	2-Nitrophenol	EPA 625	NPW	✓	x	
NY	3,3-Dichlorobenzidine	EPA 625	NPW	✓	x	
NY	4-Bromophenyl phenyl ether	EPA 625	NPW	✓	x	
NY	4-Chloro-3-methylphenol	EPA 625	NPW	✓	x	
NY	4-Chlorophenyl phenyl ether	EPA 625	NPW	✓	x	
NY	4-Nitrophenol	EPA 625	NPW	✓	x	
NY	Acenaphthene	EPA 625	NPW	✓	x	
NY	Acenaphthylene	EPA 625	NPW	✓	x	
NY	Anthracene	EPA 625	NPW	✓	x	
NY	Benzidine	EPA 625	NPW	✓	x	
NY	Benzo(a)anthracene	EPA 625	NPW	✓	x	
NY	Benzo(a)pyrene	EPA 625	NPW	✓	x	
NY	Benzo(b)fluoranthene	EPA 625	NPW	✓	x	
NY	Benzo(ghi)perylene	EPA 625	NPW	✓	x	
NY	Benzo(k)fluoranthene	EPA 625	NPW	✓	x	
NY	Benzyl butyl phthalate	EPA 625	NPW	✓	x	
NY	Bis(2-chloroethoxy) methane	EPA 625	NPW	✓	x	
NY	Bis(2-chloroethyl) ether	EPA 625	NPW	✓	x	
NY	Bis(2-chloroisopropyl) ether	EPA 625	NPW	✓	x	
NY	Bis(2-ethylhexyl) phthalate	EPA 625	NPW	✓	x	
NY	Carbazole	EPA 625	NPW	✓	x	
NY	Chrysene	EPA 625	NPW	✓	x	
NY	Dibenzo(a,h)anthracene	EPA 625	NPW	✓	x	
NY	Diethyl phthalate	EPA 625	NPW	✓	x	
NY	Dimethyl phthalate	EPA 625	NPW	✓	x	
NY	Di-n-butyl phthalate	EPA 625	NPW	✓	x	
NY	Di-n-octyl phthalate	EPA 625	NPW	✓	x	
NY	Fluoranthene	EPA 625	NPW	✓	x	
NY	Fluorene	EPA 625	NPW	✓	x	
NY	Hexachlorobenzene	EPA 625	NPW	✓	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Hexachlorobutadiene	EPA 625	NPW	✓	x	
NY	Hexachlorocyclopentadiene	EPA 625	NPW	✓	x	
NY	Hexachloroethane	EPA 625	NPW	✓	x	
NY	Indeno(1,2,3-cd)pyrene	EPA 625	NPW	✓	x	
NY	Isophorone	EPA 625	NPW	✓	x	
NY	Naphthalene	EPA 625	NPW	✓	x	
NY	Nitrobenzene	EPA 625	NPW	✓	x	
NY	N-Nitrosodimethylamine	EPA 625	NPW	✓	x	
NY	N-Nitrosodi-n-propylamine	EPA 625	NPW	✓	x	
NY	N-Nitrosodiphenylamine	EPA 625	NPW	✓	x	
NY	Pentachlorophenol	EPA 625	NPW	✓	x	
NY	Phenanthrene	EPA 625	NPW	✓	x	
NY	Phenol	EPA 625	NPW	✓	x	
NY	Pyrene	EPA 625	NPW	✓	x	
NY	Pyridine	EPA 625	NPW	✓	x	
NY	Chromium VI	EPA 7196A	NPW	✓	x	
NY	Mercury	EPA 7470A	NPW	✓	✓	
NY	1,2-Dibromo-3-Chloropropane	EPA 8011	NPW	✓	x	
NY	1,2-Dibromoethane	EPA 8011	NPW	✓	x	
NY	Diesel Range Organics	EPA 8015C	NPW	✓	x	
NY	Gasoline Range Organics	EPA 8015C	NPW	✓	x	
NY	4,4-DDD	EPA 8081B	NPW	✓	✓	
NY	4,4-DDE	EPA 8081B	NPW	✓	✓	
NY	4,4-DDT	EPA 8081B	NPW	✓	✓	
NY	Aldrin	EPA 8081B	NPW	✓	✓	
NY	alpha-BHC	EPA 8081B	NPW	✓	✓	
NY	alpha-Chlordane	EPA 8081B	NPW	✓	✓	
NY	beta-BHC	EPA 8081B	NPW	✓	✓	
NY	Chlordane	EPA 8081B	NPW	✓	✓	
NY	delta-BHC	EPA 8081B	NPW	✓	✓	
NY	Dieldrin	EPA 8081B	NPW	✓	✓	
NY	Endosulfan I	EPA 8081B	NPW	✓	✓	
NY	Endosulfan II	EPA 8081B	NPW	✓	✓	
NY	Endosulfan Sulfate	EPA 8081B	NPW	✓	✓	
NY	Endrin	EPA 8081B	NPW	✓	✓	
NY	Endrin Aldehyde	EPA 8081B	NPW	✓	✓	
NY	Endrin Ketone	EPA 8081B	NPW	✓	✓	
NY	gamma-Chlordane	EPA 8081B	NPW	✓	✓	
NY	Heptachlor	EPA 8081B	NPW	✓	✓	
NY	Heptachlor Epoxide	EPA 8081B	NPW	✓	✓	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Lindane (gamma-BHC)	EPA 8081B	NPW	✓	✓	
NY	Methoxychlor	EPA 8081B	NPW	✓	✓	
NY	Toxaphene	EPA 8081B	NPW	✓	✓	
NY	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)	EPA 8082A	NPW	x	✓	
NY	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	EPA 8082A	NPW	x	✓	
NY	2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	EPA 8082A	NPW	x	✓	
NY	2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138)	EPA 8082A	NPW	x	✓	
NY	2,2',3,5'-Tetrachlorobiphenyl (PCB 44)	EPA 8082A	NPW	x	✓	
NY	2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	EPA 8082A	NPW	x	✓	
NY	2,2',5-Trichlorobiphenyl (PCB 18)	EPA 8082A	NPW	x	✓	
NY	2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	EPA 8082A	NPW	x	✓	
NY	2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	EPA 8082A	NPW	x	✓	
NY	PCB-1016	EPA 8082A	NPW	✓	✓	
NY	PCB-1221	EPA 8082A	NPW	✓	✓	
NY	PCB-1232	EPA 8082A	NPW	✓	✓	
NY	PCB-1242	EPA 8082A	NPW	✓	✓	
NY	PCB-1248	EPA 8082A	NPW	✓	✓	
NY	PCB-1254	EPA 8082A	NPW	✓	✓	
NY	PCB-1260	EPA 8082A	NPW	✓	✓	
NY	PCB-1262	EPA 8082A	NPW	✓	✓	
NY	PCB-1268	EPA 8082A	NPW	✓	✓	
NY	2,4,5-T	EPA 8151A	NPW	✓	x	
NY	2,4,5-TP (Silvex)	EPA 8151A	NPW	✓	x	
NY	2,4-D	EPA 8151A	NPW	✓	x	
NY	Dalapon	EPA 8151A	NPW	✓	x	
NY	Dinoseb	EPA 8151A	NPW	✓	x	
NY	1,1,1,2-Tetrachloroethane	EPA 8260C	NPW	✓	x	
NY	1,1,1-Trichloroethane	EPA 8260C	NPW	✓	x	
NY	1,1,2,2-Tetrachloroethane	EPA 8260C	NPW	✓	x	
NY	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C	NPW	✓	x	
NY	1,1,2-Trichloroethane	EPA 8260C	NPW	✓	x	
NY	1,1-Dichloroethane	EPA 8260C	NPW	✓	x	
NY	1,1-Dichloroethene	EPA 8260C	NPW	✓	x	
NY	1,1-Dichloropropene	EPA 8260C	NPW	✓	x	
NY	1,2,3-Trichlorobenzene	EPA 8260C	NPW	✓	x	
NY	1,2,3-Trichloropropane	EPA 8260C	NPW	✓	x	
NY	1,2,4-Trichlorobenzene	EPA 8260C	NPW	✓	x	
NY	1,2,4-Trimethylbenzene	EPA 8260C	NPW	✓	x	
NY	1,2-Dibromo-3-Chloropropane	EPA 8260C	NPW	✓	x	
NY	1,2-Dibromoethane	EPA 8260C	NPW	✓	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	1,2-Dichlorobenzene	EPA 8260C	NPW	✓	x	
NY	1,2-Dichloroethane	EPA 8260C	NPW	✓	x	
NY	1,2-Dichloropropane	EPA 8260C	NPW	✓	x	
NY	1,3,5-Trimethylbenzene	EPA 8260C	NPW	✓	x	
NY	1,3-Dichlorobenzene	EPA 8260C	NPW	✓	x	
NY	1,3-Dichloropropane	EPA 8260C	NPW	✓	x	
NY	1,4-Dichlorobenzene	EPA 8260C	NPW	✓	x	
NY	1,4-Dioxane	EPA 8260C	NPW	✓	x	
NY	1-Butanol	EPA 8260C	NPW	✓	x	
NY	2,2-Dichloropropane	EPA 8260C	NPW	✓	x	
NY	2-Butanone	EPA 8260C	NPW	✓	x	
NY	2-Chloroethyl Vinyl ether	EPA 8260C	NPW	✓	x	
NY	2-Chlorotoluene	EPA 8260C	NPW	✓	x	
NY	2-Hexanone	EPA 8260C	NPW	✓	x	
NY	4-Chlorotoluene	EPA 8260C	NPW	✓	x	
NY	4-Methyl-2-Pentanone	EPA 8260C	NPW	✓	x	
NY	Acetone	EPA 8260C	NPW	✓	x	
NY	Acrolein	EPA 8260C	NPW	✓	x	
NY	Acrylonitrile	EPA 8260C	NPW	✓	x	
NY	Benzene	EPA 8260C	NPW	✓	x	
NY	Bromochloromethane	EPA 8260C	NPW	✓	x	
NY	Bromodichloromethane	EPA 8260C	NPW	✓	x	
NY	Bromoform	EPA 8260C	NPW	✓	x	
NY	Bromomethane	EPA 8260C	NPW	✓	x	
NY	Carbon Disulfide	EPA 8260C	NPW	✓	x	
NY	Carbon Tetrachloride	EPA 8260C	NPW	✓	x	
NY	Chlorobenzene	EPA 8260C	NPW	✓	x	
NY	Chloroethane	EPA 8260C	NPW	✓	x	
NY	Chloroform	EPA 8260C	NPW	✓	x	
NY	Chloromethane	EPA 8260C	NPW	✓	x	
NY	cis-1,2-Dichloroethene	EPA 8260C	NPW	✓	x	
NY	cis-1,3-Dichloropropene	EPA 8260C	NPW	✓	x	
NY	Cyclohexane	EPA 8260C	NPW	✓	x	
NY	Dibromochloromethane	EPA 8260C	NPW	✓	x	
NY	Dibromomethane	EPA 8260C	NPW	✓	x	
NY	Dichlorodifluoromethane	EPA 8260C	NPW	✓	x	
NY	Diethyl ether	EPA 8260C	NPW	✓	x	
NY	Diisopropyl ether	EPA 8260C	NPW	✓	x	
NY	Ethanol	EPA 8260C	NPW	✓	x	
NY	Ethyl Methacrylate	EPA 8260C	NPW	✓	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Ethylbenzene	EPA 8260C	NPW	✓	x	
NY	Hexachlorobutadiene	EPA 8260C	NPW	✓	x	
NY	Isopropylbenzene	EPA 8260C	NPW	✓	x	
NY	m/p-xylene	EPA 8260C	NPW	✓	x	
NY	Methyl Acetate	EPA 8260C	NPW	✓	x	
NY	Methyl Cyclohexane	EPA 8260C	NPW	✓	x	
NY	Methyl tert-butyl ether	EPA 8260C	NPW	✓	x	
NY	Methylene Chloride	EPA 8260C	NPW	✓	x	
NY	Naphthalene	EPA 8260C	NPW	✓	x	
NY	n-Butylbenzene	EPA 8260C	NPW	✓	x	
NY	n-Propylbenzene	EPA 8260C	NPW	✓	x	
NY	o-Xylene	EPA 8260C	NPW	✓	x	
NY	p-Isopropyltoluene	EPA 8260C	NPW	✓	x	
NY	sec-Butylbenzene	EPA 8260C	NPW	✓	x	
NY	Styrene	EPA 8260C	NPW	✓	x	
NY	Tert-Amyl Methyl Ether (TAME)	EPA 8260C	NPW	✓	x	
NY	Tert-Butyl Alcohol	EPA 8260C	NPW	✓	x	
NY	tert-butyl Ethyl Ether	EPA 8260C	NPW	✓	x	
NY	Tert-Butylbenzene	EPA 8260C	NPW	✓	x	
NY	Tetrachloroethene	EPA 8260C	NPW	✓	x	
NY	Toluene	EPA 8260C	NPW	✓	x	
NY	Total Xylenes	EPA 8260C	NPW	✓	x	
NY	Trans-1,2-Dichloroethene	EPA 8260C	NPW	✓	x	
NY	Trans-1,3-Dichloropropene	EPA 8260C	NPW	✓	x	
NY	Trans-1,4-Dichloro-2-butene	EPA 8260C	NPW	✓	x	
NY	Trichloroethene	EPA 8260C	NPW	✓	x	
NY	Trichlorofluoromethane	EPA 8260C	NPW	✓	x	
NY	Vinyl acetate	EPA 8260C	NPW	✓	x	
NY	Vinyl Chloride	EPA 8260C	NPW	✓	x	
NY	1,2,4,5-Tetrachlorobenzene	EPA 8270D	NPW	✓	✓	
NY	1,2,4-Trichlorobenzene	EPA 8270D	NPW	✓	✓	
NY	1,2-Dichlorobenzene	EPA 8270D	NPW	✓	✓	
NY	1,2-Diphenylhydrazine	EPA 8270D	NPW	✓	✓	
NY	1,3-Dichlorobenzene	EPA 8270D	NPW	✓	✓	
NY	1,4-Dichlorobenzene	EPA 8270D	NPW	✓	✓	
NY	2,3,4,6-Tetrachlorophenol	EPA 8270D	NPW	✓	✓	
NY	2,4,5-Trichlorophenol	EPA 8270D	NPW	✓	✓	
NY	2,4,6-Trichlorophenol	EPA 8270D	NPW	✓	✓	
NY	2,4-Dichlorophenol	EPA 8270D	NPW	✓	✓	
NY	2,4-Dimethylphenol	EPA 8270D	NPW	✓	✓	

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	2,4-Dinitrophenol	EPA 8270D	NPW	✓	✓	
NY	2,4-Dinitrotoluene (2,4-DNT)	EPA 8270D	NPW	✓	✓	
NY	2,6-Dinitrotoluene (2,6-DNT)	EPA 8270D	NPW	✓	✓	
NY	2-Chloronaphthalene	EPA 8270D	NPW	✓	✓	
NY	2-Chlorophenol	EPA 8270D	NPW	✓	✓	
NY	2-Methyl-4,6-dinitrophenol	EPA 8270D	NPW	✓	✓	
NY	2-Methylnaphthalene	EPA 8270D	NPW	✓	✓	
NY	2-Methylphenol	EPA 8270D	NPW	✓	✓	
NY	2-Nitroaniline	EPA 8270D	NPW	✓	✓	
NY	2-Nitrophenol	EPA 8270D	NPW	✓	✓	
NY	3,3-Dichlorobenzidine	EPA 8270D	NPW	✓	✓	
NY	3-Methylphenol	EPA 8270D	NPW	✓	✓	
NY	3-Nitroaniline	EPA 8270D	NPW	✓	✓	
NY	4-Bromophenyl phenyl ether	EPA 8270D	NPW	✓	✓	
NY	4-Chloro-3-methylphenol	EPA 8270D	NPW	✓	✓	
NY	4-Chloroaniline	EPA 8270D	NPW	✓	✓	
NY	4-Chlorophenyl phenyl ether	EPA 8270D	NPW	✓	✓	
NY	4-Methylphenol	EPA 8270D	NPW	✓	✓	
NY	4-Nitroaniline	EPA 8270D	NPW	✓	✓	
NY	4-Nitrophenol	EPA 8270D	NPW	✓	✓	
NY	Acenaphthene	EPA 8270D	NPW	✓	✓	
NY	Acenaphthylene	EPA 8270D	NPW	✓	✓	
NY	Acetophenone	EPA 8270D	NPW	✓	x	
NY	Aniline	EPA 8270D	NPW	✓	✓	
NY	Anthracene	EPA 8270D	NPW	✓	✓	
NY	Atrazine	EPA 8270D	NPW	✓	x	
NY	Benzaldehyde	EPA 8270D	NPW	✓	✓	
NY	Benzidine	EPA 8270D	NPW	✓	✓	
NY	Benzo(a)anthracene	EPA 8270D	NPW	✓	✓	
NY	Benzo(a)pyrene	EPA 8270D	NPW	✓	✓	
NY	Benzo(b)fluoranthene	EPA 8270D	NPW	✓	✓	
NY	Benzo(ghi)perylene	EPA 8270D	NPW	✓	✓	
NY	Benzo(k)fluoranthene	EPA 8270D	NPW	✓	✓	
NY	Benzoic Acid	EPA 8270D	NPW	✓	✓	
NY	Benzyl alcohol	EPA 8270D	NPW	✓	✓	
NY	Benzyl butyl phthalate	EPA 8270D	NPW	✓	✓	
NY	Biphenyl	EPA 8270D	NPW	✓	x	
NY	Bis(2-chloroethoxy) methane	EPA 8270D	NPW	✓	✓	
NY	Bis(2-chloroethyl) ether	EPA 8270D	NPW	✓	✓	
NY	Bis(2-chloroisopropyl) ether	EPA 8270D	NPW	✓	✓	

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Bis(2-ethylhexyl) phthalate	EPA 8270D	NPW	✓	✓	
NY	Caprolactam	EPA 8270D	NPW	✓	✓	
NY	Carbazole	EPA 8270D	NPW	✓	✓	
NY	Chrysene	EPA 8270D	NPW	✓	✓	
NY	Dibenzo(a,h)anthracene	EPA 8270D	NPW	✓	✓	
NY	Dibenzofuran	EPA 8270D	NPW	✓	✓	
NY	Diethyl phthalate	EPA 8270D	NPW	✓	✓	
NY	Dimethyl phthalate	EPA 8270D	NPW	✓	✓	
NY	Di-n-butyl phthalate	EPA 8270D	NPW	✓	✓	
NY	Di-n-octyl phthalate	EPA 8270D	NPW	✓	✓	
NY	Fluoranthene	EPA 8270D	NPW	✓	✓	
NY	Fluorene	EPA 8270D	NPW	✓	✓	
NY	Hexachlorobenzene	EPA 8270D	NPW	✓	✓	
NY	Hexachlorobutadiene	EPA 8270D	NPW	✓	✓	
NY	Hexachlorocyclopentadiene	EPA 8270D	NPW	✓	✓	
NY	Hexachloroethane	EPA 8270D	NPW	✓	✓	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D	NPW	✓	✓	
NY	Isophorone	EPA 8270D	NPW	✓	x	
NY	Naphthalene	EPA 8270D	NPW	✓	✓	
NY	Nitrobenzene	EPA 8270D	NPW	✓	✓	
NY	N-Nitrosodimethylamine	EPA 8270D	NPW	✓	✓	
NY	N-Nitrosodi-n-propylamine	EPA 8270D	NPW	✓	✓	
NY	N-Nitrosodiphenylamine	EPA 8270D	NPW	✓	✓	
NY	Parathion	EPA 8270D	NPW	✓	x	
NY	Pentachlorophenol	EPA 8270D	NPW	✓	✓	
NY	Phenanthrene	EPA 8270D	NPW	✓	✓	
NY	Phenol	EPA 8270D	NPW	✓	✓	
NY	Pyrene	EPA 8270D	NPW	✓	✓	
NY	Pyridine	EPA 8270D	NPW	✓	✓	
NY	Thionazin	EPA 8270D	NPW	✓	x	
NY	Acenaphthene	EPA 8270D-SIM	NPW	✓	✓	
NY	Acenaphthylene	EPA 8270D-SIM	NPW	✓	✓	
NY	Anthracene	EPA 8270D-SIM	NPW	✓	✓	
NY	Benzo(a)anthracene	EPA 8270D-SIM	NPW	✓	✓	
NY	Benzo(a)anthracene	EPA 8270D-SIM	NPW	✓	x	
NY	Benzo(a)pyrene	EPA 8270D-SIM	NPW	✓	✓	
NY	Benzo(a)pyrene	EPA 8270D-SIM	NPW	✓	x	
NY	Benzo(b)fluoranthene	EPA 8270D-SIM	NPW	✓	✓	
NY	Benzo(b)fluoranthene	EPA 8270D-SIM	NPW	✓	x	
NY	Benzo(ghi)perylene	EPA 8270D-SIM	NPW	✓	✓	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Benzo(k)fluoranthene	EPA 8270D-SIM	NPW	✓	x	
NY	Benzo(k)fluoranthene	EPA 8270D-SIM	NPW	✓	✓	
NY	Chrysene	EPA 8270D-SIM	NPW	✓	✓	
NY	Dibenzo(a,h)anthracene	EPA 8270D-SIM	NPW	✓	✓	
NY	Dibenzo(a,h)anthracene	EPA 8270D-SIM	NPW	✓	x	
NY	Fluoranthene	EPA 8270D-SIM	NPW	✓	✓	
NY	Fluorene	EPA 8270D-SIM	NPW	✓	✓	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D-SIM	NPW	✓	✓	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D-SIM	NPW	✓	x	
NY	Naphthalene	EPA 8270D-SIM	NPW	✓	✓	
NY	Phenanthrene	EPA 8270D-SIM	NPW	✓	✓	
NY	Pyrene	EPA 8270D-SIM	NPW	✓	✓	
NY	Formaldehyde	EPA 8315A	NPW	✓	x	
NY	Cyanide - Amenable, Distillation	EPA 9010C	NPW	✓	x	
NY	Cyanide, Distillation	EPA 9010C	NPW	✓	x	
NY	Sulfide	EPA 9030B	NPW	✓	x	
NY	Nitrogen, Total Kjeldahl	Lachat 10-107-06-2	NPW	✓	x	
NY	Cyanide, Total	Lachat 10-204-00-1-X	NPW	✓	x	
NY	Ethane	RSK-175	NPW	x	✓	
NY	Ethene	RSK-175	NPW	x	✓	
NY	Methane	RSK-175	NPW	x	✓	
NY	Propane	RSK-175	NPW	x	✓	
NY	Color	SM 2120B	NPW	✓	x	
NY	Turbidity	SM 2130B	NPW	✓	x	
NY	Acidity	SM 2310B	NPW	✓	x	
NY	Alkalinity	SM 2320B	NPW	✓	x	
NY	Total Hardness (CaCO3)	SM 2340B	NPW	✓	x	
NY	Specific Conductance	SM 2510B	NPW	✓	x	
NY	Total Residue	SM 2540B	NPW	✓	x	
NY	Total Dissolved Solids	SM 2540C	NPW	✓	x	
NY	Total Suspended Solids	SM 2540D	NPW	✓	x	
NY	Chromium VI	SM 3500 Cr B	NPW	✓	x	
NY	Sulfate	SM 426C	NPW	✓	x	
NY	Chloride	SM 4500 CL-E	NPW	✓	x	
NY	Cyanide, Total	SM 4500 CN E	NPW	✓	x	
NY	Fluoride	SM 4500 F-C	NPW	✓	x	
NY	Ammonia	SM 4500 NH3 B	NPW	✓	x	
NY	Ammonia	SM 4500 NH3-H	NPW	✓	x	
NY	Nitrite-N	SM 4500 NO2-B	NPW	✓	x	
NY	Nitrate-N	SM 4500 NO3-F	NPW	✓	x	

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Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Nitrate-N	SM 4500 NO3-F	NPW	✓	x	
NY	Orthophosphate	SM 4500 P-E	NPW	✓	x	
NY	Total Phosphorus	SM 4500 P-E	NPW	✓	x	
NY	Sulfide	SM 4500 S2-D	NPW	✓	x	
NY	Sulfate	SM 4500 SO4-E	NPW	✓	x	
NY	Total Phenolics	SM 510A/C	NPW	✓	x	
NY	Biochemical Oxygen Demand	SM 5210B	NPW	✓	x	
NY	Biochemical Oxygen Demand - Carbonaceous	SM 5210B	NPW	✓	x	
NY	Chemical Oxygen Demand	SM 5220D	NPW	✓	x	
NY	Total Organic Carbon	SM 5310C	NPW	✓	x	
NY	Surfactants (MBAS)	SM 5540C	NPW	✓	x	
NY	Heterotrophic Plate Count	SM 9215B	NPW	✓	x	
NY	Coliform, Total MPN	SM 9221B	NPW	✓	x	
NY	Coliform, Fecal MPN	SM 9221C	NPW	✓	x	
NY	Coliform, Fecal MPN	SM 9221E	NPW	✓	x	
NY	Coliform, Total MF	SM 9222B	NPW	✓	x	
NY	Coliform, Fecal MF	SM 9222D	NPW	✓	x	
NY	Turbidity	EPA 180.1	PW	✓	x	
NY	Aluminum	EPA 200.7	PW	✓	x	
NY	Barium	EPA 200.7	PW	✓	x	
NY	Beryllium	EPA 200.7	PW	✓	x	
NY	Cadmium	EPA 200.7	PW	✓	x	
NY	Calcium	EPA 200.7	PW	✓	x	
NY	Calcium Hardness	EPA 200.7	PW	✓	x	
NY	Chromium	EPA 200.7	PW	✓	x	
NY	Copper	EPA 200.7	PW	✓	x	
NY	Iron	EPA 200.7	PW	✓	x	
NY	Magnesium	EPA 200.7	PW	✓	x	
NY	Manganese	EPA 200.7	PW	✓	x	
NY	Nickel	EPA 200.7	PW	✓	x	
NY	Silver	EPA 200.7	PW	✓	x	
NY	Sodium	EPA 200.7	PW	✓	x	
NY	Zinc	EPA 200.7	PW	✓	x	
NY	Antimony	EPA 200.8	PW	✓	x	
NY	Arsenic	EPA 200.8	PW	✓	x	
NY	Barium	EPA 200.8	PW	✓	x	
NY	Beryllium	EPA 200.8	PW	✓	x	
NY	Cadmium	EPA 200.8	PW	✓	x	
NY	Chromium	EPA 200.8	PW	✓	x	
NY	Copper	EPA 200.8	PW	✓	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Lead	EPA 200.8	PW	✓	x	
NY	Nickel	EPA 200.8	PW	✓	x	
NY	Selenium	EPA 200.8	PW	✓	x	
NY	Silver	EPA 200.8	PW	✓	x	
NY	Thallium	EPA 200.8	PW	✓	x	
NY	Zinc	EPA 200.8	PW	✓	x	
NY	Mercury	EPA 245.1	PW	✓	x	
NY	Chloride	EPA 300.0	PW	✓	x	
NY	Fluoride	EPA 300.0	PW	✓	x	
NY	Sulfate	EPA 300.0	PW	✓	x	
NY	Perchlorate	EPA 332.0	PW	✓	x	
NY	1,2-Dibromo-3-Chloropropane	EPA 504.1	PW	✓	x	
NY	1,2-Dibromoethane	EPA 504.1	PW	✓	x	
NY	1,1,1,2-Tetrachloroethane	EPA 524.2	PW	✓	x	
NY	1,1,1-Trichloroethane	EPA 524.2	PW	✓	x	
NY	1,1,2,2-Tetrachloroethane	EPA 524.2	PW	✓	x	
NY	1,1,2-Trichloroethane	EPA 524.2	PW	✓	x	
NY	1,1-Dichloroethane	EPA 524.2	PW	✓	x	
NY	1,1-Dichloroethene	EPA 524.2	PW	✓	x	
NY	1,1-Dichloropropene	EPA 524.2	PW	✓	x	
NY	1,2,3-Trichlorobenzene	EPA 524.2	PW	✓	x	
NY	1,2,3-Trichloropropane	EPA 524.2	PW	✓	x	
NY	1,2,4-Trichlorobenzene	EPA 524.2	PW	✓	x	
NY	1,2,4-Trimethylbenzene	EPA 524.2	PW	✓	x	
NY	1,2-Dichlorobenzene	EPA 524.2	PW	✓	x	
NY	1,2-Dichloroethane	EPA 524.2	PW	✓	x	
NY	1,2-Dichloropropane	EPA 524.2	PW	✓	x	
NY	1,3,5-Trimethylbenzene	EPA 524.2	PW	✓	x	
NY	1,3-Dichlorobenzene	EPA 524.2	PW	✓	x	
NY	1,3-Dichloropropane	EPA 524.2	PW	✓	x	
NY	1,4-Dichlorobenzene	EPA 524.2	PW	✓	x	
NY	2,2-Dichloropropane	EPA 524.2	PW	✓	x	
NY	2-Chlorotoluene	EPA 524.2	PW	✓	x	
NY	4-Chlorotoluene	EPA 524.2	PW	✓	x	
NY	Benzene	EPA 524.2	PW	✓	x	
NY	Bromobenzene	EPA 524.2	PW	✓	x	
NY	Bromochloromethane	EPA 524.2	PW	✓	x	
NY	Bromodichloromethane	EPA 524.2	PW	✓	x	
NY	Bromoform	EPA 524.2	PW	✓	x	
NY	Bromomethane	EPA 524.2	PW	✓	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Carbon Tetrachloride	EPA 524.2	PW	✓	x	
NY	Chlorobenzene	EPA 524.2	PW	✓	x	
NY	Chloroethane	EPA 524.2	PW	✓	x	
NY	Chloroform	EPA 524.2	PW	✓	x	
NY	Chloromethane	EPA 524.2	PW	✓	x	
NY	cis-1,2-Dichloroethene	EPA 524.2	PW	✓	x	
NY	cis-1,3-Dichloropropene	EPA 524.2	PW	✓	x	
NY	Dibromochloromethane	EPA 524.2	PW	✓	x	
NY	Dibromomethane	EPA 524.2	PW	✓	x	
NY	Dichlorodifluoromethane	EPA 524.2	PW	✓	x	
NY	Ethylbenzene	EPA 524.2	PW	✓	x	
NY	Hexachlorobutadiene	EPA 524.2	PW	✓	x	
NY	Isopropylbenzene	EPA 524.2	PW	✓	x	
NY	Methyl tert-butyl ether	EPA 524.2	PW	✓	x	
NY	Methylene chloride	EPA 524.2	PW	✓	x	
NY	Naphthalene	EPA 524.2	PW	✓	x	
NY	n-Butylbenzene	EPA 524.2	PW	✓	x	
NY	n-Propylbenzene	EPA 524.2	PW	✓	x	
NY	p-Isopropyltoluene	EPA 524.2	PW	✓	x	
NY	sec-Butylbenzene	EPA 524.2	PW	✓	x	
NY	Styrene	EPA 524.2	PW	✓	x	
NY	Tert-Butylbenzene	EPA 524.2	PW	✓	x	
NY	Tetrachloroethene	EPA 524.2	PW	✓	x	
NY	Toluene	EPA 524.2	PW	✓	x	
NY	Total Trihalomethanes	EPA 524.2	PW	✓	x	
NY	Total Xylenes	EPA 524.2	PW	✓	x	
NY	Trans-1,2-Dichloroethene	EPA 524.2	PW	✓	x	
NY	Trans-1,3-Dichloropropene	EPA 524.2	PW	✓	x	
NY	Trichloroethene	EPA 524.2	PW	✓	x	
NY	Trichlorofluoromethane	EPA 524.2	PW	✓	x	
NY	Vinyl chloride	EPA 524.2	PW	✓	x	
NY	Color	SM 2120B	PW	✓	x	
NY	Turbidity	SM 2130B	PW	✓	x	
NY	Alkalinity	SM 2320B	PW	✓	x	
NY	Specific Conductance	SM 2510B	PW	✓	x	
NY	Total Dissolved Solids	SM 2540C	PW	✓	x	
NY	Cyanide, Total	SM 4500 CN E	PW	✓	x	
NY	Fluoride	SM 4500 F-C	PW	✓	x	
NY	Nitrate-N	SM 4500 NO3-F	PW	✓	x	
NY	Nitrite-N	SM 4500 NO3-F	PW	✓	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Total Organic Carbon	SM 5310C	PW	✓	x	
NY	Heterotrophic Plate Count	SM 9215B	PW	✓	x	
NY	Coliform, Total	SM 9223B	PW	✓	x	
NY	E. Coli	SM 9223B	PW	✓	x	P/A
NY	E. Coli	SM9223B	PW	✓	x	Enumeration
NY	Flashpoint	EPA 1010A	SCM	✓	x	
NY	Ignitability	EPA 1030	SCM	✓	x	
NY	TCLP	EPA 1311	SCM	✓	✓	
NY	SPLP	EPA 1312	SCM	✓	x	
NY	Acid Digestion of Waters	EPA 3005A	SCM	✓	x	
NY	Microwave Acid Digestion	EPA 3050B	SCM	✓	✓	
NY	Microwave Acid Digestion	EPA 3051A	SCM	x	✓	
NY	Soxhlet Extraction	EPA 3540C	SCM	✓	✓	
NY	Microwave Extraction	EPA 3546	SCM	✓	x	
NY	Microscale Solvent Extraction (MSE)	EPA 3570	SCM	x	✓	
NY	Waste Dilution	EPA 3580A	SCM	✓	✓	
NY	Purge & Trap Soil Low/High	EPA 5035A	SCM	✓	x	
NY	Aluminum	EPA 6010C	SCM	✓	x	
NY	Antimony	EPA 6010C	SCM	✓	x	
NY	Arsenic	EPA 6010C	SCM	✓	x	
NY	Barium	EPA 6010C	SCM	✓	x	
NY	Beryllium	EPA 6010C	SCM	✓	x	
NY	Boron	EPA 6010C	SCM	✓	x	
NY	Cadmium	EPA 6010C	SCM	✓	x	
NY	Calcium	EPA 6010C	SCM	✓	x	
NY	Chromium	EPA 6010C	SCM	✓	x	
NY	Cobalt	EPA 6010C	SCM	✓	x	
NY	Copper	EPA 6010C	SCM	✓	x	
NY	Iron	EPA 6010C	SCM	✓	x	
NY	Lead	EPA 6010C	SCM	✓	x	
NY	Magnesium	EPA 6010C	SCM	✓	x	
NY	Manganese	EPA 6010C	SCM	✓	x	
NY	Molybdenum	EPA 6010C	SCM	✓	x	
NY	Nickel	EPA 6010C	SCM	✓	x	
NY	Potassium	EPA 6010C	SCM	✓	x	
NY	Selenium	EPA 6010C	SCM	✓	x	
NY	Silver	EPA 6010C	SCM	✓	x	
NY	Sodium	EPA 6010C	SCM	✓	x	
NY	Thallium	EPA 6010C	SCM	✓	x	
NY	Tin	EPA 6010C	SCM	✓	x	

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State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Vanadium	EPA 6010C	SCM	✓	x	
NY	Zinc	EPA 6010C	SCM	✓	x	
NY	Aluminum	EPA 6020A	SCM	✓	✓	
NY	Antimony	EPA 6020A	SCM	✓	✓	
NY	Arsenic	EPA 6020A	SCM	✓	✓	
NY	Barium	EPA 6020A	SCM	✓	✓	
NY	Beryllium	EPA 6020A	SCM	✓	✓	
NY	Cadmium	EPA 6020A	SCM	✓	✓	
NY	Calcium	EPA 6020A	SCM	✓	✓	
NY	Chromium	EPA 6020A	SCM	✓	✓	
NY	Cobalt	EPA 6020A	SCM	✓	✓	
NY	Copper	EPA 6020A	SCM	✓	✓	
NY	Iron	EPA 6020A	SCM	✓	✓	
NY	Lead	EPA 6020A	SCM	✓	✓	
NY	Magnesium	EPA 6020A	SCM	✓	✓	
NY	Manganese	EPA 6020A	SCM	✓	✓	
NY	Molybdenum	EPA 6020A	SCM	x	✓	
NY	Nickel	EPA 6020A	SCM	✓	✓	
NY	Potassium	EPA 6020A	SCM	✓	✓	
NY	Selenium	EPA 6020A	SCM	✓	✓	
NY	Silver	EPA 6020A	SCM	✓	✓	
NY	Sodium	EPA 6020A	SCM	✓	✓	
NY	Thallium	EPA 6020A	SCM	✓	✓	
NY	Tin	EPA 6020A	SCM	x	✓	
NY	Vanadium	EPA 6020A	SCM	✓	✓	
NY	Zinc	EPA 6020A	SCM	✓	✓	
NY	Chromium VI	EPA 7196A	SCM	✓	x	
NY	Mercury	EPA 7471B	SCM	✓	✓	
NY	Mercury	EPA 7474	SCM	x	✓	
NY	Diesel Range Organics	EPA 8015C	SCM	✓	x	
NY	Gasoline Range Organics	EPA 8015C	SCM	✓	x	
NY	4,4-DDD	EPA 8081B	SCM	✓	✓	
NY	4,4-DDE	EPA 8081B	SCM	✓	✓	
NY	4,4-DDT	EPA 8081B	SCM	✓	✓	
NY	Aldrin	EPA 8081B	SCM	✓	✓	
NY	alpha-BHC	EPA 8081B	SCM	✓	✓	
NY	alpha-Chlordane	EPA 8081B	SCM	✓	x	
NY	beta-BHC	EPA 8081B	SCM	✓	✓	
NY	Chlordane	EPA 8081B	SCM	✓	✓	
NY	delta-BHC	EPA 8081B	SCM	✓	✓	

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Dieldrin	EPA 8081B	SCM	✓	✓	
NY	Endosulfan I	EPA 8081B	SCM	✓	✓	
NY	Endosulfan II	EPA 8081B	SCM	✓	✓	
NY	Endosulfan Sulfate	EPA 8081B	SCM	✓	✓	
NY	Endrin	EPA 8081B	SCM	✓	✓	
NY	Endrin Aldehyde	EPA 8081B	SCM	✓	✓	
NY	Endrin Ketone	EPA 8081B	SCM	✓	✓	
NY	gamma-Chlordane	EPA 8081B	SCM	✓	✓	
NY	Heptachlor	EPA 8081B	SCM	✓	✓	
NY	Heptachlor Epoxide	EPA 8081B	SCM	✓	✓	
NY	Lindane (gamma-BHC)	EPA 8081B	SCM	✓	✓	
NY	Methoxychlor	EPA 8081B	SCM	✓	✓	
NY	Toxaphene	EPA 8081B	SCM	✓	✓	
NY	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)	EPA 8082A	SCM	x	✓	
NY	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	EPA 8082A	SCM	x	✓	
NY	2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	EPA 8082A	SCM	x	✓	
NY	2,2',3,4,4',5,5'-Heptacholorbiphenyl (PCB 180)	EPA 8082A	SCM	x	✓	
NY	2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	EPA 8082A	SCM	x	✓	
NY	2,2',3,4,4',5'-Hexachlorobiphenyl (PCB 138)	EPA 8082A	SCM	x	✓	
NY	2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	EPA 8082A	SCM	x	✓	
NY	2,2',3,4,5,5'-Hexachlorobiphenyl (PCB 141)	EPA 8082A	SCM	x	✓	
NY	2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	EPA 8082A	SCM	x	✓	
NY	2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)	EPA 8082A	SCM	x	✓	
NY	2,2',3,5'-Tetrachlorobiphenyl (PCB 44)	EPA 8082A	SCM	x	✓	
NY	2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	EPA 8082A	SCM	x	✓	
NY	2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	EPA 8082A	SCM	x	✓	
NY	2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	EPA 8082A	SCM	x	✓	
NY	2,2',5-Trichlorobiphenyl (PCB 18)	EPA 8082A	SCM	x	✓	
NY	2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	EPA 8082A	SCM	x	✓	
NY	2,3-Dichlorobiphenyl (PCB 5)	EPA 8082A	SCM	x	✓	
NY	2,4'-Trichlorobiphenyl (PCB 31)	EPA 8082A	SCM	x	✓	
NY	2-Chlorobiphenyl (PCB 1)	EPA 8082A	SCM	x	✓	
NY	PCB -1268	EPA 8082A	SCM	✓	x	
NY	PCB-1016	EPA 8082A	SCM	✓	✓	
NY	PCB-1221	EPA 8082A	SCM	✓	✓	
NY	PCB-1232	EPA 8082A	SCM	✓	✓	
NY	PCB-1242	EPA 8082A	SCM	✓	✓	
NY	PCB-1248	EPA 8082A	SCM	✓	✓	
NY	PCB-1254	EPA 8082A	SCM	✓	✓	
NY	PCB-1260	EPA 8082A	SCM	✓	✓	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	PCB-1262	EPA 8082A	SCM	✓	x	
NY	2,4,5-T	EPA 8151A	SCM	✓	x	
NY	2,4,5-TP (Silvex)	EPA 8151A	SCM	✓	x	
NY	2,4-D	EPA 8151A	SCM	✓	x	
NY	Dalapon	EPA 8151A	SCM	✓	x	
NY	Dicamba	EPA 8151A	SCM	✓	x	
NY	Dinoseb	EPA 8151A	SCM	✓	x	
NY	1,1,1,2-Tetrachloroethane	EPA 8260C	SCM	✓	x	
NY	1,1,1-Trichloroethane	EPA 8260C	SCM	✓	x	
NY	1,1,2,2-Tetrachloroethane	EPA 8260C	SCM	✓	x	
NY	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C	SCM	✓	x	
NY	1,1,2-Trichloroethane	EPA 8260C	SCM	✓	x	
NY	1,1-Dichloroethane	EPA 8260C	SCM	✓	x	
NY	1,1-Dichloroethene	EPA 8260C	SCM	✓	x	
NY	1,1-Dichloropropene	EPA 8260C	SCM	✓	x	
NY	1,2,3-Trichloropropane	EPA 8260C	SCM	✓	x	
NY	1,2,4-Trichlorobenzene	EPA 8260C	SCM	✓	x	
NY	1,2,4-Trimethylbenzene	EPA 8260C	SCM	✓	x	
NY	1,2-Dibromo-3-Chloropropane	EPA 8260C	SCM	✓	x	
NY	1,2-Dibromoethane	EPA 8260C	SCM	✓	x	
NY	1,2-Dichlorobenzene	EPA 8260C	SCM	✓	x	
NY	1,2-Dichloroethane	EPA 8260C	SCM	✓	x	
NY	1,2-Dichloropropane	EPA 8260C	SCM	✓	x	
NY	1,3,5-Trimethylbenzene	EPA 8260C	SCM	✓	x	
NY	1,3-Dichlorobenzene	EPA 8260C	SCM	✓	x	
NY	1,3-Dichloropropane	EPA 8260C	SCM	✓	x	
NY	1,4-Dichlorobenzene	EPA 8260C	SCM	✓	x	
NY	1,4-Dioxane	EPA 8260C	SCM	✓	x	
NY	2,2-Dichloropropane	EPA 8260C	SCM	✓	x	
NY	2-Butanone	EPA 8260C	SCM	✓	x	
NY	2-Chloroethyl Vinyl ether	EPA 8260C	SCM	✓	x	
NY	2-Chlorotoluene	EPA 8260C	SCM	✓	x	
NY	2-Hexanone	EPA 8260C	SCM	✓	x	
NY	4-Chlorotoluene	EPA 8260C	SCM	✓	x	
NY	4-Methyl-2-Pentanone	EPA 8260C	SCM	✓	x	
NY	Acetone	EPA 8260C	SCM	✓	x	
NY	Acrolein	EPA 8260C	SCM	✓	x	
NY	Acrylonitrile	EPA 8260C	SCM	✓	x	
NY	Benzene	EPA 8260C	SCM	✓	x	
NY	Bromobenzene	EPA 8260C	SCM	✓	x	

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Bromochloromethane	EPA 8260C	SCM	✓	x	
NY	Bromodichloromethane	EPA 8260C	SCM	✓	x	
NY	Bromoform	EPA 8260C	SCM	✓	x	
NY	Bromomethane	EPA 8260C	SCM	✓	x	
NY	Carbon Disulfide	EPA 8260C	SCM	✓	x	
NY	Carbon Tetrachloride	EPA 8260C	SCM	✓	x	
NY	Chlorobenzene	EPA 8260C	SCM	✓	x	
NY	Chloroethane	EPA 8260C	SCM	✓	x	
NY	Chloroform	EPA 8260C	SCM	✓	x	
NY	Chloromethane	EPA 8260C	SCM	✓	x	
NY	cis-1,2-Dichloroethene	EPA 8260C	SCM	✓	x	
NY	cis-1,3-Dichloropropene	EPA 8260C	SCM	✓	x	
NY	Cyclohexane	EPA 8260C	SCM	✓	x	
NY	Dibromochloromethane	EPA 8260C	SCM	✓	x	
NY	Dibromomethane	EPA 8260C	SCM	✓	x	
NY	Dichlorodifluoromethane	EPA 8260C	SCM	✓	x	
NY	Diethyl Ether	EPA 8260C	SCM	✓	x	
NY	Ethyl Methacrylate	EPA 8260C	SCM	✓	x	
NY	Ethylbenzene	EPA 8260C	SCM	✓	x	
NY	Hexachlorobutadiene	EPA 8260C	SCM	✓	x	
NY	Isopropylbenzene	EPA 8260C	SCM	✓	x	
NY	m/p-xylene	EPA 8260C	SCM	✓	x	
NY	Methyl Acetate	EPA 8260C	SCM	✓	x	
NY	Methyl Cyclohexane	EPA 8260C	SCM	✓	x	
NY	Methyl tert-butyl ether	EPA 8260C	SCM	✓	x	
NY	Methylene Chloride	EPA 8260C	SCM	✓	x	
NY	Naphthalene	EPA 8260C	SCM	✓	x	
NY	n-Butanol	EPA 8260C	SCM	✓	x	
NY	n-Butylbenzene	EPA 8260C	SCM	✓	x	
NY	n-Propylbenzene	EPA 8260C	SCM	✓	x	
NY	o-Xylene	EPA 8260C	SCM	✓	x	
NY	p-Isopropyltoluene	EPA 8260C	SCM	✓	x	
NY	sec-Butylbenzene	EPA 8260C	SCM	✓	x	
NY	Styrene	EPA 8260C	SCM	✓	x	
NY	Tert-Butyl Alcohol	EPA 8260C	SCM	✓	x	
NY	Tert-Butylbenzene	EPA 8260C	SCM	✓	x	
NY	Tetrachloroethene	EPA 8260C	SCM	✓	x	
NY	Toluene	EPA 8260C	SCM	✓	x	
NY	Total Xylenes	EPA 8260C	SCM	✓	x	
NY	Trans-1,2-Dichloroethene	EPA 8260C	SCM	✓	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Trans-1,3-Dichloropropene	EPA 8260C	SCM	✓	x	
NY	Trans-1,4-Dichloro-2-butene	EPA 8260C	SCM	✓	x	
NY	Trichloroethene	EPA 8260C	SCM	✓	x	
NY	Trichlorofluoromethane	EPA 8260C	SCM	✓	x	
NY	Vinyl Acetate	EPA 8260C	SCM	✓	x	
NY	Vinyl Chloride	EPA 8260C	SCM	✓	x	
NY	1,2,4,5-Tetrachlorobenzene	EPA 8270D	SCM	✓	✓	
NY	1,2,4-Trichlorobenzene	EPA 8270D	SCM	✓	✓	
NY	1,2-Dichlorobenzene	EPA 8270D	SCM	✓	✓	
NY	1,2-Diphenylhydrazine	EPA 8270D	SCM	✓	✓	
NY	1,3-Dichlorobenzene	EPA 8270D	SCM	✓	✓	
NY	1,4-Dichlorobenzene	EPA 8270D	SCM	✓	✓	
NY	2,3,4,6-Tetrachlorophenol	EPA 8270D	SCM	✓	✓	
NY	2,4,5-Trichlorophenol	EPA 8270D	SCM	✓	✓	
NY	2,4,6-Trichlorophenol	EPA 8270D	SCM	✓	✓	
NY	2,4-Dichlorophenol	EPA 8270D	SCM	✓	✓	
NY	2,4-Dimethylphenol	EPA 8270D	SCM	✓	✓	
NY	2,4-Dinitrophenol	EPA 8270D	SCM	✓	✓	
NY	2,4-Dinitrotoluene (2,4-DNT)	EPA 8270D	SCM	✓	x	
NY	2,6-Dinitrotoluene (2,6-DNT)	EPA 8270D	SCM	✓	x	
NY	2-Chloronaphthalene	EPA 8270D	SCM	✓	✓	
NY	2-Chlorophenol	EPA 8270D	SCM	✓	✓	
NY	2-Methyl-4,6-dinitrophenol	EPA 8270D	SCM	✓	✓	
NY	2-Methylnaphthalene	EPA 8270D	SCM	✓	✓	
NY	2-Methylphenol	EPA 8270D	SCM	✓	✓	
NY	2-Nitroaniline	EPA 8270D	SCM	✓	✓	
NY	2-Nitrophenol	EPA 8270D	SCM	✓	✓	
NY	3,3-Dichlorobenzidine	EPA 8270D	SCM	✓	✓	
NY	3-Methylphenol	EPA 8270D	SCM	✓	✓	
NY	3-Nitroaniline	EPA 8270D	SCM	✓	✓	
NY	4-Bromophenyl phenyl ether	EPA 8270D	SCM	✓	✓	
NY	4-Chloro-3-methylphenol	EPA 8270D	SCM	✓	✓	
NY	4-Chlorophenyl phenyl ether	EPA 8270D	SCM	✓	✓	
NY	4-Methylphenol	EPA 8270D	SCM	✓	✓	
NY	4-Nitroaniline	EPA 8270D	SCM	✓	✓	
NY	4-Nitrophenol	EPA 8270D	SCM	✓	✓	
NY	Acenaphthene	EPA 8270D	SCM	✓	✓	
NY	Acenaphthylene	EPA 8270D	SCM	✓	✓	
NY	Acetophenone	EPA 8270D	SCM	✓	✓	
NY	Aniline	EPA 8270D	SCM	✓	✓	

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Anthracene	EPA 8270D	SCM	✓	✓	
NY	Atrazine	EPA 8270D	SCM	✓	x	
NY	Benzaldehyde	EPA 8270D	SCM	✓	✓	
NY	Benzidine	EPA 8270D	SCM	✓	✓	
NY	Benzo(a)anthracene	EPA 8270D	SCM	✓	✓	
NY	Benzo(a)pyrene	EPA 8270D	SCM	✓	✓	
NY	Benzo(b)fluoranthene	EPA 8270D	SCM	✓	✓	
NY	Benzo(ghi)perylene	EPA 8270D	SCM	✓	✓	
NY	Benzo(k)fluoranthene	EPA 8270D	SCM	✓	✓	
NY	Benzoic Acid	EPA 8270D	SCM	✓	✓	
NY	Benzyl alcohol	EPA 8270D	SCM	✓	✓	
NY	Benzyl butyl phthalate	EPA 8270D	SCM	✓	✓	
NY	Biphenyl	EPA 8270D	SCM	✓	x	
NY	Bis(2-chloroethoxy) methane	EPA 8270D	SCM	✓	✓	
NY	Bis(2-chloroethyl) ether	EPA 8270D	SCM	✓	✓	
NY	Bis(2-chloroisopropyl) ether	EPA 8270D	SCM	✓	✓	
NY	Bis(2-ethylhexyl) phthalate	EPA 8270D	SCM	✓	✓	
NY	Caprolactam	EPA 8270D	SCM	✓	x	
NY	Carbazole	EPA 8270D	SCM	✓	✓	
NY	Chrysene	EPA 8270D	SCM	✓	✓	
NY	Dibenzo(a,h)anthracene	EPA 8270D	SCM	✓	✓	
NY	Dibenzofuran	EPA 8270D	SCM	✓	✓	
NY	Diethyl phthalate	EPA 8270D	SCM	✓	✓	
NY	Dimethyl phthalate	EPA 8270D	SCM	✓	✓	
NY	Di-n-butyl phthalate	EPA 8270D	SCM	✓	✓	
NY	Di-n-octyl phthalate	EPA 8270D	SCM	✓	✓	
NY	Fluoranthene	EPA 8270D	SCM	✓	✓	
NY	Fluorene	EPA 8270D	SCM	✓	✓	
NY	Hexachlorobenzene	EPA 8270D	SCM	✓	✓	
NY	Hexachlorobutadiene	EPA 8270D	SCM	✓	x	
NY	Hexachlorocyclopentadiene	EPA 8270D	SCM	✓	✓	
NY	Hexachloroethane	EPA 8270D	SCM	✓	✓	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D	SCM	✓	✓	
NY	Isophorone	EPA 8270D	SCM	✓	✓	
NY	Naphthalene	EPA 8270D	SCM	✓	✓	
NY	Nitrobenzene	EPA 8270D	SCM	✓	✓	
NY	N-Nitrosodimethylamine	EPA 8270D	SCM	✓	✓	
NY	N-Nitrosodi-n-propylamine	EPA 8270D	SCM	✓	✓	
NY	N-Nitrosodiphenylamine	EPA 8270D	SCM	✓	✓	
NY	Parathion	EPA 8270D	SCM	✓	x	

Summary of Certification

State	Parameter	Method	Matrix	Alpha Westboro	Alpha Mansfield	Notes
NY	Pentachloronitrobenzene	EPA 8270D	SCM	x	✓	
NY	Pentachlorophenol	EPA 8270D	SCM	✓	✓	
NY	Phenanthrene	EPA 8270D	SCM	✓	✓	
NY	Phenol	EPA 8270D	SCM	✓	✓	
NY	Pyrene	EPA 8270D	SCM	✓	✓	
NY	Pyridine	EPA 8270D	SCM	✓	✓	
NY	Acenaphthene	EPA 8270D-SIM	SCM	✓	x	
NY	Acenaphthylene	EPA 8270D-SIM	SCM	✓	x	
NY	Anthracene	EPA 8270D-SIM	SCM	✓	x	
NY	Benzo(a)anthracene	EPA 8270D-SIM	SCM	✓	x	
NY	Benzo(a)pyrene	EPA 8270D-SIM	SCM	✓	x	
NY	Benzo(b)fluoranthene	EPA 8270D-SIM	SCM	✓	x	
NY	Benzo(ghi)perylene	EPA 8270D-SIM	SCM	✓	x	
NY	Benzo(k)fluoranthene	EPA 8270D-SIM	SCM	✓	x	
NY	Chrysene	EPA 8270D-SIM	SCM	✓	x	
NY	Dibenzo(a,h)anthracene	EPA 8270D-SIM	SCM	✓	x	
NY	Fluoranthene	EPA 8270D-SIM	SCM	✓	x	
NY	Fluorene	EPA 8270D-SIM	SCM	✓	x	
NY	Indeno(1,2,3-cd)pyrene	EPA 8270D-SIM	SCM	✓	x	
NY	Naphthalene	EPA 8270D-SIM	SCM	✓	x	
NY	Phenanthrene	EPA 8270D-SIM	SCM	✓	x	
NY	Pyrene	EPA 8270D-SIM	SCM	✓	x	
NY	Cyanide - Amenable, Distillation	EPA 9010C	SCM	✓	x	
NY	Cyanide, Distillation	EPA 9010C	SCM	✓	x	
NY	Cyanide, Total	EPA 9012B	SCM	✓	x	
NY	Cyanide, Total	EPA 9014	SCM	✓	x	
NY	Sulfide	EPA 9030B	SCM	✓	x	
NY	Sulfate	EPA 9038	SCM	✓	x	
NY	pH	EPA 9040C	SCM	✓	x	
NY	pH	EPA 9045D	SCM	✓	x	
NY	Specific Conductance	EPA 9050A	SCM	✓	x	
NY	Total Organic Carbon	EPA 9060	SCM	x	✓	
NY	Total Phenolics	EPA 9065	SCM	✓	x	
NY	Chloride	EPA 9251	SCM	✓	x	

APPENDIX B

Data Validator Qualifications and Experience

(Environmental Data Services, Inc.)

Nancy Weaver

Education

B.S., Chemistry, University of Colorado, Denver, Colorado

Certifications and Training

State of New York Department of Environmental Conservation certified Asbestos Inspector

40-Hour OSHA Hazardous Waste Training

8-Hour Health and Safety Supervisor Training for Hazardous Waste Operations

Relevant Experience

- More than 20 years combined laboratory, data validation and project management experience
- Experienced in writing Quality Assurance Project Plans (QAPPs), managing subcontracted analytical laboratories, performing laboratory audits, and analyzing samples in a laboratory.

Experience Overview

Ms. Weaver has over twenty years combined laboratory, data validation and project management experience. She is the President and co-founder of EDS and is responsible for the technical data review and validation of laboratory data. Ms. Weaver has performed data validation on thousands of data validation projects. She has extensive knowledge in applying the various regional and project specific data validation guidelines and QAPPs. Her experience also includes writing Quality Assurance Project Plans (QAPPs), managing subcontracted analytical laboratories, performing laboratory audits, participating in field sampling activities and analyzing samples in a laboratory.

Relevant Project Experience

Principal/Senior Chemist, Environmental Data Services, Inc., Williamsburg, Virginia, August 1994 - Present. As the Principal Chemist at Environmental Data Services, Inc., Ms. Weaver has provided Level IV data review on more than 6000 Sample Delivery Groups (SDGs) generated through site investigations and/or remediations. These SDGs have included every analytical fraction possible including VOC, SVOC, pesticides, PCBs, herbicides, DRO, GRO, dioxin/furans, PCB congeners, metals, wet chemistry and radiological parameters. Sample matrices include water, soil, sediment, wipe, concrete and air. The SDGs have included CLP data packages produced under the CLP SOWs and CLP-like data packages with samples analyzed under SW-864 methodologies. Sample quantities validated may reach upwards of 120,000 per fraction over the past 20 years. Ms. Weaver has been using the USEPA National Functional Data Validation Guidelines since 1993 and has provided Level IV (full) and Level III (cursory) validation. Specifically validated PCB congeners by EPA Method 1668 and dioxin/furans by EPA Method 1613 using the USEPA National Functional Guidelines, USEPA Region I and USEPA Region III data validation guidelines. Validated radiological parameters analyzed by alpha and gamma spectrometry using the USACE Kansas City and St. Louis District Radionuclide Data Quality Evaluation Guidance.

Chemist-Analyst Specialist, City & County of Denver, Denver, Colorado, June 1992 - August 1994. As a Chemist-Analyst Specialist for the City and County of Denver, Ms. Weaver supervised performance and compliance sampling for O & M requirements at groundwater treatment facility. She provided assessment of analytical data for quarterly reports to local regulatory agencies. She also acted as liaison between the technical group and laboratory to coordinate sampling events and resolve problems with analyses. While in this capacity, she performed data validation for organic, inorganic and radiological analyses. Ms. Weaver reviewed over 2000 VOC, SVOC, pesticide, PCB, TPH, metals and wet chemistry samples. Ms. Weaver managed the database for groundwater and treatment plant sampling events and performed environmental site assessments for commercial and residential properties. She provided technical review and recommendations of Phase I and Phase II site investigations performed by outside consultants. She also analyzed policy and interpreted city, state and federal environmental regulations.

Data Validation Specialist, C.C. Johnson & Malhotra, Lakewood, Colorado, January 1990 to June 1992. While a Data Validation Specialist at C.C. Johnson & Malhorta, Ms. Weaver performed data validation and interpretation of organic analytical data generated from the EPA Contract Laboratory Program (CLP). Data analysis included VOC,

SVOC, pesticides, PCBs, metals and wet chemistry. Ms. Weaver reviewed more than 600 SDGs and 9000 samples. She interpreted gas chromatograms, gas chromatography/mass spectral data and verified mathematical calculations.

Environmental Chemist, The Anschutz Corporation - SP Environmental Systems, Inc., Denver, Colorado, July 1990 to January 1992. As an Environmental Chemist for The Anschutz Corporation - SP Environmental Systems, Inc., Ms. Weaver assisted in the management of site investigations and remediation for Southern Pacific Transportation Company properties. In this capacity, she performed environmental audits and site assessments and conducted site investigations at potential Superfund sites with state and federal agencies. She researched and prepared responses to regulatory agencies for non-compliant sites and defined the needs for hazardous waste disposal including the analysis required and disposal. Ms. Weaver also supervised the removal of underground storage tanks and remediation. She prepared closure reports for UST removals, as well as annual waste summary forms for TSD facilities throughout the state of Texas. She also constructed, developed, and sampled groundwater monitoring wells.

Environmental Specialist, Martin Marietta Astronautics Group, Denver, Colorado, January 1988 to January 1990. While with Martin Marietta Astronautics Group as an Environmental Specialist, Ms. Weaver performed organic analysis and sampling of wastewater, groundwater, and drinking water in support of NPDES permit. She operated and maintained laboratory instrumentation including GC and GC/MS for volatile, semi-volatile, and pesticide/PCB analysis. Ms. Weaver also coordinated sample collection and preparation activities, developed and authored standard operating procedures for laboratory analysis, and followed EPA protocol for QA/QC requirements for analysis. She calculated and interpreted data and reported results.

Environmental Chemist, Camp, Dresser, & McKee, Boston, Massachusetts, April 1986 to October 1987. As an Environmental Chemist with Camp, Dresser, & McKee, Ms. Weaver analyzed water/wastewater for organic compounds. She operated and maintained laboratory instrumentation including GC and infrared spectrophotometer for volatile, pesticide/PCB, and petroleum hydrocarbon analysis. She also calculated and interpreted data and reported results. Ms. Weaver analyzed more than 2000 samples.

Employment History

Environmental Data Services, Inc.	Principal/Senior Chemist	1994–Present
City & County of Denver	Chemist-Analyst Specialist	1992–1994
C.C. Johnson & Malhorta	Contractor/Data Validation Specialist	1990–1992
The Anschutz Corporation - SP Environmental Systems, Inc.	Environmental Chemist	1990–1992
Martin Marietta Astronautics Group	Environmental Specialist	1988–1990
Camp, Dresser, & McKee	Environmental Chemist	1986–1987

DOUGLAS WEAVER
Contractual Administrator/Database Manager

OVERALL EXPERIENCE

Mr. Weaver has over twenty years combined environmental management experience. He is the Vice-President and co-founder of EDS and is responsible for the administrative and database management. His administrative experience includes business and proposal development, contract administration, financial administration and staff management. His database management includes database development, manipulation, entry and review using Excel and project-specific software.

PROFESSIONAL EXPERIENCE

Environmental Data Services, Inc., Williamsburg, Virginia
June 1995 - Present
Contracts & Administration Manager

- Responsible for the contracts and administration of an environmental consulting firm specializing in the review and validation of environmental laboratory data. Position involves all contract administration, business development, financial analysis and personnel administration of the business.

ERM-Rocky Mountain, Inc., Greenwood Village, Colorado
April 1991 - June 1995
Senior Engineer

- Responsible for negotiating, managing, and reporting on contracts and contract delivery orders at the Department of Energy's Rocky Flats Environmental Technology Site (RFETS). Prepared technical and cost proposals in response to individual delivery order Request for Proposals under three Master Task Subcontracts (MTS) with EG&G Rocky Flats (M&O Prime Contractor). Task orders involved environmental restoration and RCRA permitting and compliance. Interfaced with the EG&G Procurement Managers and technical Project Managers for each contract. Prepared cost and schedule reports required by the MTS and the task orders including monthly accrual reports and Department of Energy Cost and Schedule Control Systems Criteria (C/SCSC) monthly reports.
- Prepared and coordinated federal sector technical proposals in response to Request for Proposals (RFPs). Prepared SF-254 and 255s, SF-1411s, wrote technical sections of proposals, prepared cost estimates and schedules, and organized and prepared proposals in accordance with submittal instructions.
- Prepared RCRA Part A and B Permit Applications for hazardous and mixed waste storage and treatment at RFETS. Responsibilities included the container storage section of the mixed residue Part B permit application which included over 150 container storage areas in all production buildings at the plant.

KMI Energy Services, Boulder, Colorado
August 1990 to April 1991
Project Controls Specialist

- Support services contractor to DOE Program Office for a Major Systems Acquisition (MSA) project. Supported and interfaced with government and contractor personnel with day-to-day program planning and execution. Performed and evaluated project management contractual

documents including labor and cost plans, budgets, and cost and schedule reports. Provided support in developing Major System Acquisition (MSA) documents required by DOE Order 4700.1, Project Management Systems, including a Project Plan, Project Management Plan, and Construction Project Data Sheets.

Systematic Management Services, Inc., Golden, Colorado
October 1988 to August 1990
Project Controls Specialist

- Previous support services contractor to the DOE Program Office. Responsible for monitoring and evaluating contractor cost and schedule performance on the PRMP MSA project as well as a $50 million plutonium recovery design project. Analyzed monthly cost performance reports and provided detailed written assessments. Prepared MSA documentation required by DOE Order 4700.1 and supported DOE presentations to headquarters.

EDUCATION

- Bachelor of Science in Industrial Engineering, Northeastern University, Boston, MA, 1991

COMPUTER PROFICIENCIES

- Microsoft (MS) Windows, MS Word/Excel/Access/PowerPoint, Paradox, and Word Perfect
- Project management software including Primavera and MS Project.

CLEARANCES

- Department of Energy, Top Secret "Q" Clearance - Inactive since 1995

REFERENCES

- Furnished upon request.

APPENDIX C

Guidance for the Development of Data Usability Summary Reports

Appendix 2B
Guidance for Data Deliverables and the Development of
Data Usability Summary Reports

1.0 Data Deliverables

(a) DEC Analytical Services Protocol Category A Data Deliverables:

1. A Category A Data Deliverable as described in the most current DEC Analytical Services Protocol (ASP) includes:

i. a Sample Delivery Group Narrative;

ii. contract Lab Sample Information sheets;

iii. DEC Data Package Summary Forms;

iv. chain-of-custody forms; and,

v. test analyses results (including tentatively identified compounds for analysis of volatile and semi-volatile organic compounds)

2. For a DEC Category A Data Deliverable, a data applicability report may be requested, in which case it will be prepared, to the extent possible, in accordance with the DUSR guidance detailed below.

(b) DEC Analytical Services Protocol Category B Data Deliverables

1. A Category B Data Deliverable is includes the information provided for the Category A Data Deliverable, identified in subdivision (a) above, plus related QA/QC information and documentation consisting of:

i. calibration standards;

ii. surrogate recoveries;

iii. blank results;

iv. spike recoveries;

v. duplicate results;

vi. confirmation (lab check/QC) samples;

vii. internal standard area and retention time summary;

viii. chromatograms;

ix. raw data files; and

x. other specific information as described in the most current DEC ASP.

2. A DEC Category B Data Deliverable is required for the development of a Data Usability Summary Report (DUSR).

2.0 Data Usability Summary Reports (DUSRs)

(a) Background. The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data with the primary objective to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use.

1. The development of the DUSR must be carried out by an experienced environmental scientist, such as the project Quality Assurance Officer, who is fully capable of conducting a full data validation. The DUSR is developed from:

i. a DEC ASP Category B Data Deliverable; or

ii. the *USEPA Contract Laboratory Program National Functional Data Validation Standard Operating Procedures for Data Evaluation and Validation*.

2. The DUSR and the data deliverables package will be reviewed by DER staff. If full third party data validation is found to be necessary (e.g. pending litigation) this can be carried out at a later date on the same data package used for the development of the DUSR.

(b) Personnel Requirements. The person preparing the DUSR must be pre-approved by DER. The person must submit their qualifications to DER documenting experience in analysis and data validation. Data validator qualifications are available on DEC's website identified in the table of contents.

(c) Preparation of a DUSR. The DUSR is developed by reviewing and evaluating the analytical data package. In order for the DUSR to be acceptable, during the course of this review the following questions applicable to the analysis being reviewed must be answered in the affirmative.

1. Is the data package complete as defined under the requirements for the most current DEC ASP Category B or USEPA CLP data deliverables?

2. Have all holding times been met?

3. Do all the QC data; blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used and are they consistent with the most current DEC ASP?

7. Have any quality control (QC) exceedances been specifically noted in the DUSR and have the corresponding QC summary sheets from the data package been attached to the DUSR?

(d) Documenting the validation process in the DUSR. Once the data package has been reviewed and the above questions asked and answered the DUSR proceeds to describe the samples and the analytical parameters, including data deficiencies, analytical protocol deviations and quality control problems are identified and their effect on the data is discussed.

APPENDIX C

SITE SPECIFIC HEALTH AND SAFETY PLAN

October 2017

Appendix C
Health and Safety Plan
Master Cleaners Site (BCP#C401072)
Charles Bohl Incorporated
Guilderland
Albany County, New York

Prepared for:

Charles Bohl Incorporated
P.O. Box 59
Guilderland, NY, 12084

Prepared by:

C.T. MALE ASSOCIATES
50 Century Hill Drive
Latham, New York 12110
(518) 786-7400
FAX (518) 786-7299

C.T. Male Associates Project No: 16.6345

SITE SPECIFIC HEALTH AND SAFETY PLAN
MASTER CLEANERS SITE
2312 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY, NEW YORK

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SITE SPECIFIC HEALTH AND SAFETY PLAN
MASTER CLEANERS SITE

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1.0 GENERAL

1.1 Overview

This Site specific Health and Safety Plan (HASP) has been prepared for use during implementation of a Remedial Investigation (RI) at the Master Cleaners Site ("the Site") at 2312 Western Avenue located in the Town of Guilderland, Albany County, New York. This HASP has been developed as an integral part of the RI Work Plan as prepared by C.T. Male.

A designated Health and Safety Officer (HSO) will be responsible for implementing this HASP during the completion of the field work. All persons or parties who enter the work area (support zone, decontamination zone or exclusion zone) must review, sign and comply with this HASP. A partial list of individuals authorized to enter the exclusion zone at the site is presented in Section 13.0 of this HASP. Others may be added to the list as needed. A copy of this HASP will be maintained at the Site throughout the duration of the project. A complete description of the Remedial Investigation work is presented in the RI Work Plan. A brief description of the proposed scope of work is outlined below:

Remedial Investigation:

- Collect and analyze select soil samples from designated surface sampling locations,
- Collect and analyze select subsurface soil samples from the borings,
- Install monitoring wells and collect groundwater samples, and
- Other unforeseen environmental conditions which may be encountered during investigative work

1.2 Contact Names & Numbers

For this project, the following project contacts have been assigned.

NYSDEC CONTACTS:

PROJECT MANAGER	John Durnin	(518) 402-9768

TOWN OF GUILDERLAND CONTACTS:

CURRENT OWNER:	Charles Bohl Incorporated P.O. Box 59 Guilderland, New York 12084	(518) 456-8353

NYSDOH CONTACT:

TECHNICAL LEAD	Runey Ghosh	(518) 402-7860

CONSULTANT CONTACTS:

CONSULTING ENGINEER:	C.T. Male Associates 50 Century Hill Drive Latham, NY 12110	(518) 786-7400
	Dan Reilly, PE, Project Principal	(518) 786-7625
		Cell Phone: (518) 928-9792
	Jeffrey A. Marx, PE, Project Manager/Engineer	(518)-786-7548
		Cell Phone: (518) 461-2176
	Jeffrey A. Marx, PE, Health & Safety Officer (HSO)	(518) 786-7548
	Austin Lewandowski, Junior Engineer	(518) 786-7481

EMERGENCY PHONE NUMBERS:

PERSONAL INJURY OR EMERGENCY:	St. Peter's Hospital 315 S. Manning Blvd Albany, NY 12208	(518) 525-1550
FIRE DEPARTMENT:	Emergency Town of Guilderland Fire Department 2303 Western Avenue Guilderland, NY 12084	911 (518) 456-5000
POLICE:	Emergency Town of Guilderland Police Department	911 (518) 356-1501

	Guilderland Town Hall – Second Floor 5209 Western Turnpike, Guilderland, NY 12084	
NYS POLICE	Emergency	911
	NYS Troopers Willow Street PO Box 1309, Guilderland, NY 12084	(518) 456-4261
UPSTATE NEW YORK	University Hospital	(800) 222-1222
REGIONAL POISON	Upstate Medical University	
CONTROL CENTER:	SUNY Health Science Center	
	750 East Adams Street Syracuse, NY 13201	
NATIONAL RESPONSE	c/o United States Coast Guard (G-OPF)	(800) 424-8802
CENTER:	2100 2nd Street, Southwest - Room 2611 Washington, DC 20593-0001	
NYSDEC SPILL HOTLINE:		(800) 457-7362

2.0 HEATLH AND SAFETY PERSONNEL

The Health and Safety Officer (HSO) will be responsible for implementation of the HASP and the delegation of health and safety duties. The HSO will coordinate the resolution of safety issues that arise during site work. When field operations require only Level D protection, it will not be necessary for the HSO to be present on-site at all times. When the HSO is not present on-site, a designee will be authorized to perform the duties of the HSO. The designee will be responsible for implementation of the HASP.

The HSO or designee has authority to stop work upon their determination of an eminent safety hazard, emergency situation or other potentially dangerous situations (e.g. weather conditions). Authorization to resume work will be issued by the HSO.

3.0 SITE LOCATION AND DESCRIPTION

The Master Cleaners site consists of one tax parcel located at 2312 Western Avenue within the Town of Guilderland (Albany County, NY). This site is 0.43 acres in size. The site is accessed from Western Avenue, and has a paved driveway on the west side of the property.

The Master Cleaners site is connected to municipal drinking water and sewer. In addition, natural gas and electricity are both supplied to the site. The Site was previously the location of a dry cleaning business.

The Master Cleaners site contains one vacant commercial building. The site is bounded to the north by NY Route 20, beyond which lies the Guilderland Fire Department. West of the site lies a vacant house. Beyond the vacant house lies the location of a former bus garage. To the east of the site lies an empty lot, beyond which lies a vacant house. South of the site lies a storage barn, as well as vacant apartments.

Overall, the site topography slopes gently to moderately from the north to the south. The Site is approximately 200 feet above mean sea level, near Western Avenue.

4.0 POTENTIAL SITE CONTAMINANTS

Potential site contaminants which may be encountered during the RI, as determined by the results of previous environmental investigations (summarized in the RI Work Plan), include chlorinated solvents. Specifically perchloroethylene (PCE), trichloroethylene (TCE), and associated breakdown products, as they are typical of historical dry cleaner contamination. Relevant Safety Data Sheets for the potential site contaminants are presented in Exhibit 1.

5.0 HAZARD ASSESSMENT

5.1 General

The hazard assessment, use of specific protective equipment, and monitoring associated with each field work task of the investigation to be conducted at the subject site are presented in following subsections.

For this project, C.T. Male will be subcontracting portions of the remedial investigation activities. Each subcontractor will be responsible for developing and implementing a site specific health and safety plan for their activities, for protection of their employees, and use of personal protective equipment. The subcontractor will also be responsible for developing and following their own Respiratory Protection Program, as applicable.

5.2 Surface Soil and Groundwater Sampling

Surface soil and groundwater sampling are planned for the site. The potential hazards to personnel during this work are dermal contact, and a low to moderate potential for vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against dermal contact during handling of soils and water. If organic vapors are present at the action levels described in Section 5, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection.

5.3 Subsurface Work

Soil test borings are planned for the site for the installation of monitoring wells. The potential hazards to personnel during this work are dermal contact and a low to moderate potential for vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against dermal contact during handling of the subsurface soils and groundwater. If organic vapors are present at the action levels described in Section 5, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection.

5.4 Air Monitoring

During the completion of direct push borings, the ambient air in the work area will be monitored with a photoionization detector (PID) for total volatile organic compounds (MiniRAE 2000 or 3000) prior to the start of work and periodically as conditions warrant. If a concentration of 10 ppm (sustained for 5 minutes) of total volatile compounds is detected within the work area on the instrument, relative to an isobutylene standard (used to calibrate the instrument), work will cease immediately and the workers shall shut down equipment and leave the area immediately.

The level of personal protective equipment (PPE) protection will be evaluated prior to continuing work in an area where sustained readings are recorded. If a PPE upgrade to Level C is required, it will include: a half face air purifying respirator equipped with combination organic vapor and particulate cartridges for 10-15 ppm exposure levels; and a full-face air purifying respirator for greater than 15 ppm to less than 50 ppm exposure levels, prior to continuing work. If a concentration greater than 50 ppm is encountered, work will cease immediately and the situation will be evaluated by the project manager/engineer in conjunction with the health and safety officer prior to continuation of work. Table 5.4-1 summarizes the action levels relative to the required respiratory protection.

Table 5.4-1
C.T. Male Action Levels & Required Respiratory Protection

Action Level	Level of PPE	Type of Respiratory Protection
0-10 parts per million	Level D	No respiratory protection
10-15 parts per million	Level C	Negative pressure half-face respirator
15-50 parts per million	To be determined	Evaluate work procedures
Greater than 50	Cease Work	Evaluate work procedures

-Facial hair is not permitted while wearing respirators.

-Workers required to wear a respirator must have a minimum of OSHA 40 Hour training with current medical monitoring and fit test documentation.

5.5 Community Air Monitoring Plan

A site specific Community Air Monitoring Plan (CAMP) will be followed for the project on the basis of the New York State Department of Health Generic Community Air Monitoring Plan dated May 2010 (Appendix C).

A total of two (2) organic vapor and two (2) particulate (dust) monitors will be used for the CAMP. The locations of the environmental enclosures each containing the two instruments will be selected on a daily basis on the basis of the prevailing wind direction. The prevailing wind direction will be determined based on review of available eather data such as Weatherbug and/or temporary wind direction markers in stalled in the field such as a wooden stake and light/loose flagging. The location and wind direction shall be recorded daily in the field notes.

5.6 Hazard Identification and Control

Table 5.6-1 presents generalized hazards potentially involved with the tasks to be completed on this project and identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the HSO or designee, and initiate control of the hazardous condition.

Table 5.6-1
Potential Hazards and Control

Potential Hazard	Control
Vehicular Traffic	1. Wear safety vest when vehicular hazards exist. 2. Use cones, flags, barricades, and caution tape to define work area. 3. Use vehicle to block work area. 4. Contact police for high traffic situations.
Slip, Trip, and Fall Protection	1. Assess work area to determine if there is a potential for falling. 2. Make sure work area is neat and tools are staged in one general area. 3. Wear steel-toe boots with adequate tread and always watch where the individual is walking. Carry flashlight when walking in poorly lighted areas.
Inclement Weather	1. Stop outdoor work during electrical storms and other extreme weather

Table 5.6-1 Potential Hazards and Control	
Potential Hazard	**Control**
	conditions such as extreme heat or cold temperatures. 2. Take cover indoors or in vehicle. 3. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes, and flash floods.
Utility Lines Contact	1. Contact UFPO to have utility lines marked prior to any underground excavation, trenching or drilling. UFPO must be contacted at least 72 hours prior to work. 2. Refer to site drawings for utility locations. 3. Manually dig 3 to 5 feet below grade and 5 feet on each side of utility marked to avoid breaking utility lines.
Noise	1. Wear hearing protection when equipment such as a drill rig, excavator, jackhammer, or other heavy equipment is operating on-site. 2. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; this much noise indicates the need for protection. 3. Hearing protection is required when measured sound exceeds 85 decibels (dB) where employees stand or conduct work.
Electrical Shock	1. Maintain appropriate distance between heavy equipment and overhead utilities; 20 foot minimum clearance from power lines; and 10 foot minimum clearance from shielded power lines. 2. Contact local underground utility locating service prior to penetrating the ground surface.
Physical Injury	1. Wear hard hats and safety glasses at all times when on-site. 2. Maintain visual contact with equipment operators and wear orange safety vest when heavy equipment is operating on-site. 3. Avoid loose clothing when working around rotary equipment. 4. Keep hands and feet away from drilling augers and excavation equipment tracks/tires. 5. Test emergency shut-off switches on drill rigs and excavation equipment regularly.
Back Injury	1. Use a mechanical lifting device or a lifting aid where appropriate.

Table 5.6-1 Potential Hazards and Control	
Potential Hazard	**Control**
	2. Make sure the route is free of obstructions. 3. Bend at the knees and use leg muscles when lifting. 4. Use the buddy system if lifting heavy or awkward objects. 5. Do not twist or jerk your body when lifting.
Heat Stress	1. Increase water intake while working. 2. Avoid excessive alcohol intake the night before working in heat stress situations. 3. Increase number of rest breaks as necessary, and rest in a shaded area. 4. Watch for signs and symptoms of heat exhaustion and fatigue. 5. Rest in cool, dry areas. 6. In the event of heat stress or heat stroke, bring the victim to a cool environment and call 911.
Cold Stress	1. Wear cotton, wool or synthetics (polypropylene) undergarments to absorb perspiration from the body. 2. Wear additional layers of light clothing as needed for warmth. The layering effect holds in air, trapping body heat, and some layers could be removed as the temperature rises during the day. 3. Pay close attention to body signals and feelings (hypothermia symptoms), especially to the extremities. Correct any problem indications by breaking from the work activity and moving to a rest area to warm up and add additional clothing. 4. Increase water intake while working. 5. Avoid excessive alcohol intake the night before working in cold conditions. 6. Increase the number of rest breaks as necessary, and rest in a warm area. 7. In the event of hypothermia, frost bite, bring the victim to a warm environment and call 911.
Fire Control	1. Smoke only in designated areas. 2. Keep flammable liquids in closed containers. 3. Isolate flammable and combustible materials from ignition sources. 4. Keep fire extinguisher nearby and use only if deemed safe.

Table 5.6-1 Potential Hazards and Control	
Potential Hazard	**Control**
Media Sampling (water, soil, etc.)	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when opening monitoring wells or closed containers/vessels. 3. Conduct air monitoring, whenever necessary to determine level of respiratory protection. 4. If necessary, employ engineering controls to assist in controlling chemical vapors.
Cleaning Equipment	1. Wear appropriate PPE to avoid skin and eye contact with isopropyl alcohol, alconox, or other cleaning materials. 2. Stand upwind to minimize possible inhalation exposure. 3. Properly dispose of spent chemical cleaning solutions and rinse accordingly.
Poor Structural Building Condition	1. Assess building condition prior to entering and note where exit points are at all times. 2. Be cautious when walking inside the building. Always look for holes in the floors or hanging debris which could cause injury. 3. Carry a high power flashlight and use as necessary in low light areas. 4. If working in the building, make sure work area is neat and tools are staged in one general area. 5. Wear steel-toe boots with adequate tread. 6. Try to employ the buddy system so someone knows what part of the building individuals are in.
Deer Ticks	1. Wear light colored pants and long sleeve shirts; spray with tick repellent. 2. Perform personal body checks for the presence of ticks 3. Notify the Health and Safety Officer immediately if you have been bitten by a tick and contact your physician.

Poison Ivy	1. Visual assess area for poison ivy. 2. Avoid contact. 3. Dress appropriately. Wear gloves, a cap, a long-sleeve shirt, and long pants. Wear boots or shoes. Do not wear sandals or open-toed shoes. 4. At the end of the workday, do not take a bath. Urushiol (chemical in ivy sap) can stay in the tub water and can cling to your body when you get out of the tub. Instead, take a shower. 5. Wash all your work clothes and gloves in hot water. Do not wash them with other clothes. 6. Wash off tools with an outdoor water hose.
Note: A first aid kit and fire extinguisher will be located in the C.T. Male company vehicle.	

Response actions to personal exposure from on-site contaminants include skin contact, eye contact, inhalation, ingestion, and puncture or laceration. The recommended response actions are presented in Section 11.0.

6.0 TRAINING

Site specific training of workers and personnel will be conducted and provided by the HSO or designee prior to project start and for new activities. The training will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include area and facility layout, hazards, emergency services (police, hospital, fire, etc.), and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time but employees are reminded to ask questions at any time throughout the project.

Workers and personnel conducting and/or supervising the project must have attended and successfully completed a 40 Hour Health and Safety Training Course for Hazardous Waste Operations, an annual 8 hour Refresher Course, and take part in an employer medical surveillance program in accordance with OSHA 29 CFR Part 1910.120 requirements, specifically, that the workers have had a medical physical within one (1) year prior to the date the work begins and that they are physically able to wear a respirator.

It is also recommended (although not formally required) that an employee complete OSHA's 10 hour Construction Industry Outreach Training Program. The OSHA 10 Hour Construction Industry Outreach Training Program is intended to provide an entry level construction worker's general awareness on recognizing and preventing hazards on a construction site.

Documentation of training and medical surveillance will be submitted to the HSO or designee prior to the start of any on-site work. A copy of the training certificates shall be inserted into the pocket of this HASP in Appendix A.

Exceptions to the training requirements above will be considered on a specific case by case basis. For instance, a survey crew may not be required to have OSHA 40 hour training when the petroleum or chemical hazards are not present at the surface. In this instance, the Health and Safety Officer with provide environmental awareness training regarding the site conditions.

7.0 SITE ACCESS

The Remedial Investigation will generally be performed within the Site boundaries. Due to the site location, it is possible that the public or curious bystanders will be present at the time of the work. Therefore, the "work area" will be considered as a 30 foot radius around the work activity being performed. Only OSHA trained individuals which are qualified to do the work and have read and signed this Site specific HASP will be allowed within the 30 foot radius work zone. The work area will be secured with traffic cones, stakes and/or flagging to prevent unauthorized entry. The HSO or designee will be responsible for limiting access to unauthorized individuals.

During completion of the remedial investigation, the 30 foot circle around the immediate work area will be considered the Exclusion Zone (contaminated area where investigation is to be conducted). The Contamination Reduction Zone (decontamination area), and Support Zone (clean area, everywhere else) will be established outside the Exclusion Zone, as necessary. The exclusion, contamination reduction, and support zone during investigation/remediation work have been identified and designated as follows:

Exclusion Zone - The location of the exclusion zone will be determined in the field prior to the start of work and will vary depending on the work activities conducted. For the most part, the exclusion zone is anticipated to be a 30 foot radius around the work area. The outside exclusion zones may be delineated with cones and yellow caution tape or equal method, where applicable. Only authorized persons with proper training and protective gear will be allowed to enter the exclusion zone. If the exclusion zones, as previously explained, changes orientation during the completion of the work, the HASP will be amended in the field to reflect the change.

Contamination Reduction Zone – If applicable, this zone will generally be a 10'± x 10'± area, containing the decontamination materials. The location will be determined in the field prior to the start of work and will vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and equipment will take place, as necessary, on the basis of the work being performed. It will be located upwind of the Exclusion Zone, if possible.

Support Zone - Area outside of contamination reduction zone and not including the exclusion zone. Unauthorized or untrained individuals must remain in this zone.

8.0 PERSONAL PROTECTION

8.1 Level of Protection

Based on evaluation of the potential hazards, the minimum level of protection to be worn by workers during implementation of the remedial investigation activities is defined as Level D protection, and will be controlled by the HSO or designee.

The minimum level D protective equipment will consist of field clothes, rubber gloves (nitrile and/or PVC), hard hats, safety glasses, high-visibility vest and safety boots (steel-toe required). As appropriate, this level of protection may be modified to include polylaminated Tyvek suits, coveralls, leg chaps, or face shield for additional protection. Both full-face and half-face air purifying respirators should be readily available. Appropriate combination organic vapor and particulate cartridge filters will be available at the site, to use, if necessary with the air purifying respirators.

If required, level C protective equipment will consist of the items listed for Level D protection with the added protection of full-face, air purifying (organic vapor and particulate) respirator, chemical resistant clothing, inner and outer chemically resistant gloves (i.e. solvent resistant nitrile, PVC/nitrile), and chemical resistant safety boots/shoes.

Level B is not anticipated, but if required, level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus (SCBA) will be worn dependent on the level of contaminants present in the work zone, and polylaminated Tyvek suits will be required. When site conditions warrant the need for level B protective equipment, work will cease and the project will be re-evaluated to determine the necessity for employing engineering controls to reduce or eliminate the potential contaminants of concern.

8.2 Safety Equipment

Basic emergency and first aid equipment will be available at an area within the Support Zone clearly marked and available or within C.T. Male's company vehicle. This shall include a first aid kit, fire extinguisher, supply of potable water, soap and towels. The HSO or designee shall be equipped with a cellular phone in case of emergencies.

9.0 COMMUNICATIONS

There are no existing phone services associated with the subject site. The HSO or designee shall be equipped with a cellular phone in case of emergencies. The HSO or designee shall notify the C.T. Male project manager as soon as safely possible in the event of an accident, injury or emergency action.

Hand signals for certain work tasks will be employed, as necessary, and the buddy system will be employed during drilling and sampling activities.

10.0 DECONTAMINATION PROCEDURES

10.1 Personnel Decontamination Procedures

Decontamination procedures will be carried out by all personnel leaving the Exclusion Zone (except under emergency evacuation). The amount of decontamination performed will be dependent on the level of personal protection currently being worn within the exclusion zone.

1. Do not remove respiratory protection until all steps have been completed.
2. Clean outer protective gloves and outer boots, if worn, with water (preferably with a pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.
3. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers.
4. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn and gloves and deposit in designated area to be determined in the field for use the next day or when necessary. If disposable outer boots are worn, remove and discard in designated container.
5. Remove hard hat & safety glasses, rinse with clean water as necessary and deposit in designated area for use the next day or when necessary.
6. Remove Tyvek suit, if worn, and discard in designated container. Remove respirator at this time, if used; and wash and rinse with clean water. Organic vapor cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container. Remove inner gloves and discard in designated container.

10.2 Equipment and Sample Containers Decontamination

All decontamination will be completed by personnel in protective gear appropriate for the level of protection determined by the site HSO or designee. Manual sampling equipment including trowels, hand augers and macro-core samplers, shovels and split-spoon samplers which come into contact with the site's soils, will be cleaned with a tap

water/non phosphate detergent wash and a tap water rinse. The sampling equipment will be washed after each sample is collected and the wash and rinse water will be containerized for proper disposal.

Drill rig equipment (i.e., core samples) which comes into contact with the site's soils will be decontaminated with a non-phosphate detergent/tap water wash and tap water rinse. The decontamination procedure will focus on portions of the equipment that has come into contact with the site's soils such as the core samplers drill rods. The cleaning will be performed at the completion of each boring location and the used cleaning liquids will be stored in labeled 55-gallon drums pending analytical results of the sampled soils and groundwater.

Exterior surfaces of sample containers will be wiped clean with paper towels or disposable wipes in the decontamination zone and transferred to a clean cooler for transportation or shipment to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable wipes will be placed in the designated disposal container and disposed of as solid waste.

11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATOR IS:

Site Health and Safety Officer (HSO) Jeffrey A. Marx, PE

The following standard emergency procedures will be used by on-site personnel. The Project Manager and HSO shall be notified of any on-site emergencies and be responsible for assuring that the appropriate procedures are followed.

11.1 Personal Injury

Emergency first aid shall be administered on-site as deemed necessary and only by a trained individual, if available at the site. If a trained individual is not available on-site, decontaminate, if feasible, and transport individual to nearest medical facility (St. Peter's Hospital). The HSO will supply medical data sheets to appropriate medical personnel and be responsible for completing the incident report. If the HSO is injured or controlling the emergency situation, the medical data sheets are available in Appendix B of this Health and Safety Plan.

11.2 Personal Exposure

The recommended response to worker exposure from contaminants on-site includes the following:

SKIN CONTACT: Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention, as necessary.

EYE CONTACT: Wash eyes thoroughly with potable water supply provided on site. Eyes should be rinsed for at least 15 minutes subsequent to chemical contamination. Provide medical attention, as necessary.

INHALATION: Move worker to fresh air and outside of the work zone and/or, if necessary, decontaminate and transport to hospital (St. Peter's Hospital). If respirator use is implemented at the time of

inhalation, worker must not remove respirator until completely away from the work zone.

INGESTION: Decontaminate, if feasible, and transport to hospital (St. Peter's Hospital).

PUNCTURE WOUND OR
LACERATION: Provide first aid at the site and if wound needs medical attention, decontaminate, if feasible, and transport to hospital (St. Peter's Hospital).

If the affected worker is exposed to contaminants on-site and the injury or accident prevents decontamination of the individual, the emergency responders must be notified of this condition and the exposure must be kept to a minimum.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate area in the event of potential or actual fire or explosion. Notify the local fire and police departments, and other appropriate emergency response groups, as listed in Section 1.2. Perform off-site decontamination and contain wastes for proper disposal. If a fire or explosion occurs, all on-site personnel must meet in the designated area of the site (established by the HSO or designee) for an accurate head count.

11.4 Equipment Failure

Should there be any equipment failure, breakdown, etc. the Project Manager and HSO shall be contacted immediately. The Project Manager or the HSO will make every effort to replace or repair the equipment in a timely manner.

11.5 Spill Response

The site HSO or designee shall initiate a corrective action program with the subcontractors in the event of an accidental release of a hazardous material or suspected hazardous material. The HSO or designee will act as the Emergency Coordinator with the subcontractors for the purposes of: spill prevention; identifying releases; implementing clean up measures; and notification of appropriate personnel.

The corrective action program will be implemented by the HSO and subcontractor to effectively control and minimize any impact accidental releases may have to the environment.

Effective control measures will include:

- Preliminary assessment of the release
- Control of the release source
- Containment of the released material
- Effective clean-up of the released material

Potential sources of accidental releases include: hydraulic oil spills or petroleum leaks from heavy equipment. The HSO/Emergency Coordinator in conjunction with the subcontractor shall respond to an accidental release in the following manner:

- Identify the character, source, amount and area affected by the release.
- Have subcontractor take all reasonable steps to control the release.
- Notify the NYSDEC Spill Hotline at 1-800-457-7362. Notify NYSDEC Project Manager (contact TBD) and Charles Bohl Incorporated (Property Owner).
- Contain the release with sorbent material which should include speedi-dri, spill socks and sorbent pads.
- Prevent the release from entering sensitive receptors (i.e., catch basins and surface water) using the specified sorbent material or sandbags.
- Coordinate cleanup of the release material.
- Oversee proper handling and storage of contaminated material for disposal.

At no time should personal health or safety be compromised or jeopardized in an attempt to control a release. All health and safety measures as outlined in this HASP should be adhered to.

12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system when possible, and for those work tasks which require it. Establish and maintain communications.
- Minimize contact with potentially contaminated soil and water.
- Employ disposable items when possible to minimize risks during decontamination and possible cross-contamination during sample handling.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed (to prevent oral ingestion of potential on-site contaminants).
- Avoid heat and other work stress related to wearing personal protective equipment. Take breaks as necessary and drink plenty of fluids to prevent dehydration.
- Withdrawal from a suspected or actual hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The Project Manager, the HSO, and sampling personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will remain at the project site during the full duration of the project so that replacement personnel may add information while maintaining continuity. These daily records will become part of the permanent project file.

13.0 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone at the Master Cleaners Site in the Town of Guilderland, Albany County, New York while operations are being conducted must be certified by the HSO. Authorization will involve completion of appropriate training courses and review and sign off of this HASP.

Personnel authorized to perform work on-site shall be listed below by the Health and Safety Officer:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

14.0 MEDICAL DATA SHEET

This medical data sheet will be completed by all on-site personnel and will be kept on-site during the duration of the project. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

PROJECT: Remedial Investigation to be conducted at the Master Cleaners site in the Town of Guilderland, Albany County, New York.

Name _____ Home Telephone _____

Address _____

Emergency Contact _____

Drug or Other Allergies _____

Particular Sensitivities _____

Do You Wear Contact Lenses _____

Provide a Checklist of Previous Illness or Exposure to Hazardous Chemicals

_____

What Medications Are You Presently Using _____

_____

Do You Have Any Physical or Medical Restrictions _____

_____

Are You Qualified to Wear Respirator (Provide Fit Test Results)_____

Name, Address, and Telephone Number of Personal Physician:

_____

_____

_____

15.0 FIELD TEAM REVIEW

Each field team member shall sign this section after site specific training is completed and before being permitted to work on-site.

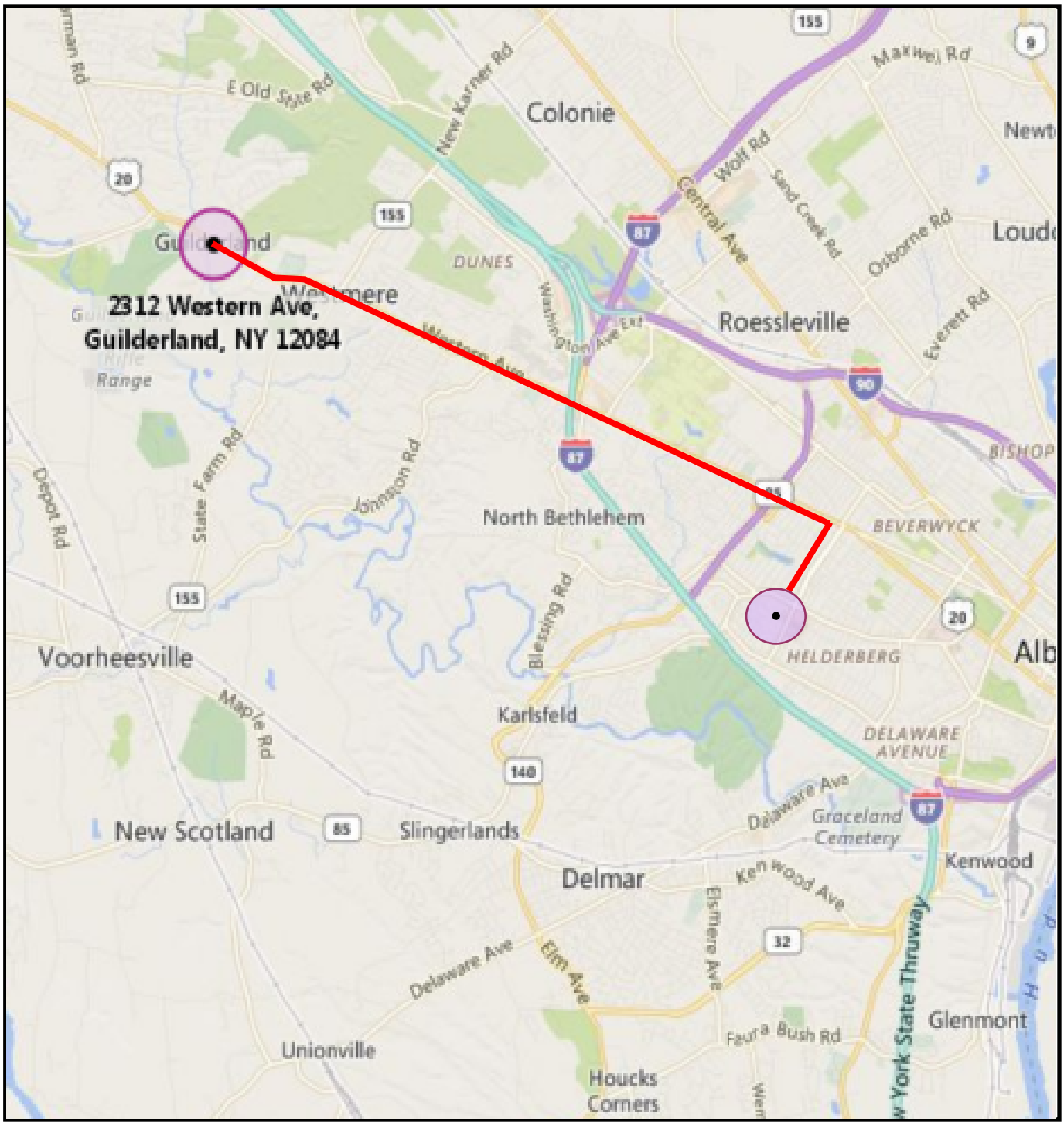
I have read and understood this Site Specific Health and Safety Plan, and I will comply with the provisions contained therein.

PROJECT: Remedial Investigation of Master Cleaners Site
2312 Western Avenue
Town of Guilderland
Albany County, New York

Name: Printed	Signature	Date

FIGURE 1

MAP SHOWING ROUTE TO ST. PETER'S HOSPITAL



MAP REFERENCE

Bing Maps

ARCHITECTURE &
BUILDING SYSTEMS
ENGINEERING
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SURVEY & LAND
INFORMATIONAL SERVICES

C.T. MALE ASSOCIATES

50 CENTURY HILL DRIVE, LATHAM, NY 12110
PHONE (518) 786- 7400 FAX (518) 786-7299

Figure 1: Map Showing Route to St. Peters Hospital

315 South Manning Boulevard
Albany, New York

CITY OF ALBANY	ALBANY COUNTY, NY
SCALE: None	
DRAFTER: PAL	
PROJECT No. 16.6345	

APPENDIX A

TRAINING CERTIFICATES

APPENDIX B

MEDICAL DATA SHEETS
(CONFIDENTIAL: SEE H&S OFFICER)

APPENDIX C

COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

EXHIBIT 1

MATERIAL SAFETY DATA SHEETS

SAFETY DATA SHEET

M47014 - ANSI - EN

PERCHLOROETHYLENE, ALL GRADES

SDS No.: M47014 **SDS Revision Date:** 20-Feb-2015

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, TX 75380-9050 1-800-752-5151
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	**PERCHLOROETHYLENE, ALL GRADES**
Trade Name:	PERCHLOROETHYLENE, TECHNICAL; PERCHLOROETHYLENE, FLUOROCARBON (PTAP); PERCHLOROETHYLENE, INDUSTRIAL; PERCHLOROETHYLENE, VAPOR DEGREASING; PERCHLOROETHYLENE, ISOMERIZATION
Synonyms:	1,1,2,2 TETRACHLOROETHENE, TETRACHLOROETHENE, TETRACHLOROETHYLENE, PERCHLOROETHYLENE, PERCHLOROETHENE
Product Use:	Petroleum industry, Refrigerant manufacturing, Metal cleaning, Paint stripping, Aerosol carrier
Uses Advised Against:	NOT FOR USE IN DRY CLEANING.

2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

****

EMERGENCY OVERVIEW:

Color: Colorless
Physical state Volatile liquid
Appearance: Clear liquid
Odor: Mildly sweet odor, Chloroform-like odor

Signal Word: **DANGER**

MAJOR HEALTH HAZARDS: HARMFUL IF INHALED. MAY CAUSE DROWSINESS OR DIZZINESS. MAY BE HARMFUL IF SWALLOWED. MAY BE HARMFUL IF SWALLOWED AND ENTERS AIRWAYS. MAY BE HARMFUL IN CONTACT WITH SKIN. CAUSES SKIN IRRITATION. CAUSES EYE IRRITATION. CAUSES DAMAGE TO CENTRAL NERVOUS SYSTEM (CNS), LIVER, RESPIRATORY SYSTEM. MAY CAUSE DAMAGE TO CENTRAL NERVOUS SYSTEM (CNS), LIVER, KIDNEY, RESPIRATORY SYSTEM THROUGH PROLONGED OR REPEATED EXPOSURE. MAY CAUSE CANCER.

AQUATIC TOXICITY: TOXIC TO AQUATIC LIFE WITH LASTING EFFECTS.

PRECAUTIONARY STATEMENTS: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist, vapors, or spray. Use with adequate ventilation and wear respiratory protection when exposure to dust, mist, or spray is possible. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Wear protective gloves, protective clothing, eye, and face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment.

****

GHS CLASSIFICATION:

GHS: CONTACT HAZARD - SKIN:	Category 2 - Causes skin irritation.
GHS: CONTACT HAZARD - EYE:	Category 2B - Causes eye irritation
GHS: ACUTE TOXICITY - INHALATION:	Category 4 - Harmful if inhaled
GHS: ASPIRATION HAZARD:	Category 2 - May be harmful if swallowed and enters airways
GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 1 - Causes damage to Central Nervous System (CNS), Liver, Respiratory System
GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 3 - May cause drowsiness or dizziness
GHS: TARGET ORGAN TOXICITY (REPEATED EXPOSURE):	Category 2 - May cause damage to Liver, Kidney, Central Nervous System (CNS), Respiratory System through prolonged or repeated exposure

GHS: CARCINOGENICITY:	Category 1B - May cause cancer.
GHS: HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE HAZARD:	Category 2 - Toxic to aquatic life
GHS: HAZARDOUS TO AQUATIC ENVIRONMENT - CHRONIC HAZARD:	Category 2 - Toxic to aquatic life with long lasting effects

UNKNOWN ACUTE TOXICITY:
Not applicable. This product was tested as a whole. This information only pertains to untested mixtures.

GHS SYMBOL:
Health hazard, Exclamation mark, Environmental hazard

GHS SIGNAL WORD: **DANGER**

GHS HAZARD STATEMENTS:

GHS - Health Hazard Statement(s)
May be harmful if swallowed and enters airways
Harmful if inhaled
May cause drowsiness or dizziness
Causes eye irritation
Causes skin irritation
Causes damage to organs : (Central Nervous System (CNS), Liver, Respiratory System)
May cause damage to organs through prolonged or repeated exposure: (Central Nervous System (CNS), Liver, Kidney, Respiratory System)
May cause cancer

GHS - Environmental Hazard Statement(s)
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

GHS - Precautionary Statement(s) - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Do not breathe mist, vapors, or spray
Use only outdoors or in a well-ventilated area
Wear eye protection, face protection, protective gloves
Use personal protective equipment as required
Wash thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid release to the environment

GHS - Precautionary Statement(s) - Response
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash it before reuse
IF exposed or concerned: Get medical advice/attention
Get medical advice/attention if you feel unwell
Specific treatment (see Section 4 of the safety data sheet and/or the First Aid information on the product label)
Collect spillage. Hazardous to the aquatic environment

GHS - Precautionary Statement(s) - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

GHS - Precautionary Statement(s) - Disposal
Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Hazards Not Otherwise Classified (HNOC)
None Known

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 1,1,2,2 TETRACHLOROETHENE, TETRACHLOROETHENE, TETRACHLOROETHYLENE, PERCHLOROETHYLENE, PERCHLOROETHENE

Component	Percent [%]	CAS Number
Tetrachloroethylene [Perc]	99.0 - 100.0	127-18-4
Carbon Tetrachloride	<0.45	56-23-5

4. FIRST AID MEASURES

INHALATION: If inhaled and adverse effects occur, remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician. See Notes to Physician below and Section 11 for more information.

SKIN CONTACT: If on skin, wash with plenty of water. If skin irritation occurs: Get medical advice/ attention. Take off contaminated clothing and wash before reuse. See Notes to Physician below and Section 11 for more information.

EYE CONTACT: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

INGESTION: If swallowed, rinse mouth with water (only if the person is conscious). Never give anything by mouth to an unconscious or convulsive person. If feeling unwell, contact a poison center or doctor.physician.

Most Important Symptoms/Effects (Acute and Delayed) :.

Acute Symptoms/Effects: Listed below.
Inhalation (Breathing): Respiratory System Effects: Central Nervous System (CNS) effects are characteristic following inhalation of chlorinated hydrocarbons and can range from lightheadedness at low level exposures to loss of consciousness at high levels. CNS effects are an early warning that exposure to high levels has occurred and there is risk of cardiac effects (palpitations, low blood pressure, arrhythmia, arrest). CNS effects include the following symptoms: abdominal pain, nausea, vomiting, headache, lightheadedness, blurry or double vision, personality changes, weakness, slurred speech, stupor, incoordination (disequilibrium, ataxia), coma, and respiratory arrest. May irritate upper airways.
Skin: Skin Irritation. Skin exposure may cause irritation, rough red, dry skin, edema, blisters.
Eye: Eye Irritation. Eye exposure may cause irritation, tearing, pain, conjunctivitis, clouding of cornea.
Ingestion (Swallowing): Ingesting this material may cause gastrointestinal irritation, nausea. vomiting, headache, breathing difficulty, reduced blood pressure, weak and rapid pulse, Central Nervous System (CNS) depression, and Central Nervous System (CNS) symptoms such as sedation, headache, tremor, nystagmus and memory problems. Ingestion may cause unconsciousness and death.
Other Health Effects: Most people can smell perchloroethylene at levels of 5-50 ppm (OSHA PEL is 100 ppm). Odor is an adequate warning for high dose acute exposures, but might not be adequate for prolonged exposure due to olfactory fatigue. Vapors are heavier than air, can collect in low lying areas and cause asphyxiation. CNS effects have been observed at exposures of 100 to 300 ppm. Exposures of 1000 to 1500 ppm for less than 2 hours have caused symptoms of mood changes, slight ataxia, faintness and dizziness. Exposure to higher concentrations for longer periods can lead to collapse, coma, or death.

Delayed Symptoms/Effects:
- Respiratory System Effects: May cause chemical or irritant induced asthma or bronchoconstriction. May cause a chemical pneumonitis. Reduced renal output (oliguria), elevation of liver enzymes, to renal failure and liver failure
- May cause effects to the skin such as chronic dermatitis, dermal hypersensitivity
- May cause eye damage such as corneal damage, decreased vision
- May cause delayed liver and kidney effects
- Prolonged exposures may result in memory and concentration impairment, vision disturbances, dizziness, irritability, ataxia (difficulty walking), and peripheral neuropathy

Interaction with Other Chemicals Which Enhance Toxicity: May potentiate other agents that cause Central Nervous System (CNS) depression and respiratory system depression. Liver toxicity may be enhanced by other agents that cause liver damage, such as alcohol, acetaminophen. Catecholamine administration MAY pose increased risk of cardiac arrhythmias.

Medical Conditions Aggravated by Exposure: May increase potential for cardiac arrhythmia. Liver disorders, kidney disorders, respiratory system disorders.

Protection of First-Aiders: Protect against vapor/gas exposure. Do not breathe gas, fumes, vapor, mist, or spray. Avoid contact with skin and eyes. Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. Consider the possibility of high levels of gas in confined/unventilated spaces or low-lying areas.

Notes to Physician: There is no antidote for perchloroethylene poisoning. Treatment consists of support of respiratory and cardiovascular functions. Catecholamine administration after exposure to this compound MAY pose enhanced risk of cardiac arrhythmia. For ingestion, nasogastric aspiration is recommended if volume ingested is of sufficient volume to aspirate. Protect the airway. Epinephrine and other sympatomimetic amines may initiate cardiac arrhythmias in individuals exposed and experiencing symptoms from this material. Absorption from skin is slow, and unless prevented from evaporating, systemic toxicity is unlikely. This compound is absorbed rapidly by oral administration and causes similar effects to inhalation exposure. Activated charcoal may be administered. Liver injury may be delayed several days after exposure.

5. FIRE-FIGHTING MEASURES

Fire Hazard: Negligible fire hazard.

Extinguishing Media: Use media appropriate for surrounding fire.

Fire Fighting: Avoid inhalation of material or combustion by-products. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Stay upwind and keep out of low areas. Move container from fire area if it can be done without risk. Cool containers with water from unmanned hose holder or monitor nozzles until well after the fire is out. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Keep water runoff out of water supplies and sewers (see Section 6 of the SDS).

Component	Immediately Dangerous to Life/ Health (IDLH)
Tetrachloroethylene [Perc] 127-18-4	150 ppm IDLH
Carbon Tetrachloride 56-23-5	200 ppm IDLH

Hazardous Combustion Products: Thermal decomposition or combustion products: hydrogen chloride, chlorine, phosgene, oxides of carbon

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not flammable

Upper Flammability Level (air): Not flammable

Flash point: Not flammable

Auto-ignition Temperature: Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Keep unnecessary and unprotected persons away. Isolate hazard area and deny entry. Evacuation of surrounding area may be necessary for large spills. Shut off ventilation system if needed. Do not get in eyes, on skin or on clothing. Do not breathe vapors, mist, or spray. Ventilate closed spaces before entering. Most vapors are heavier than air and will spread along ground and collect in low or confined areas (drains, basements, tanks). Wear appropriate personal protective equipment recommended in Section 8, Exposure Controls / Personal Protection, of the SDS.

Methods and Materials for Containment and Cleaning Up:
Stop leak if possible without personal risk. Ventilate closed spaces before entering. Completely contain spilled materials with dikes, sandbags, etc. Remove contaminated soil or collect with appropriate absorbent and place into suitable container. Keep container tightly closed and properly labeled. Liquid material may be removed with a properly rated vacuum truck. Properly dispose of in accordance with all applicable regulations. See Section 13, Disposal considerations, for additional information.

Environmental Precautions:
Keep out of water supplies, sewers and soil. Avoid discharge into drains, surface water or groundwater. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

Precautions for Safe Handling:
Most vapors are heavier than air and will spread along ground and collect in low or confined areas (drains, basements, tanks). Use only in well-ventilated areas. Avoid breathing vapor, mist, or spray. Avoid contact with skin, eyes and clothing. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. Do not taste or swallow. Wash thoroughly after handling. Do not eat, drink or smoke in areas where this material is used.

Safe Storage Conditions:
Store and handle in accordance with all current regulations and standards. Keep container properly labeled and tightly closed. Store in a cool, dry area. Store in a well-ventilated area. Store away from open flames, and combustibles. Do not enter confined spaces without following proper confined space entry procedures. Do not store in aluminum container or use aluminum fittings or transfer lines. Protect from sunlight. Do not reuse drum without recycling or reconditioning in accordance with any applicable federal, state or local laws. Do not use cutting or welding torches, open flames or electric arcs on empty or full containers. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:
acids. bases. Strong oxidizing agents. Oxygen. Peroxides. Reactive metals. aluminum.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): Listed below for the product components that have regulatory occupational exposure limits (OEL's).

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): Listed below for the product components that have non-regulatory occupational exposure limits (OEL's).

- *The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).*

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

ENGINEERING CONTROLS: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits. Monitoring should be performed regularly to determine exposure limit level(s).

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear safety glasses with side-shields. Wear chemical safety goggles with a face-shield to protect against skin and eye contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear chemical resistant clothing to prevent skin contact. Contaminated clothing should be removed, then discarded or laundered. Always place pants legs over boots.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types: Polyvinyl alcohol (PVA), Teflon®, Viton®, 4H®/Silver Shield®, CPF® 3, Responder®, Trellchem®, Tychem®

Respiratory Protection: Where vapor or mist concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator with organic vapor cartridge filter(s) is required. When an air-purifying respirator is not adequate, for exposures above the IDLH, or for spills and/or emergencies of unknown concentrations, a NIOSH approved self-contained breathing apparatus or airline respirator with full-face piece with auxiliary self-contained escape pack is required. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

Component	Immediately Dangerous to Life/ Health (IDLH)
Tetrachloroethylene [Perc] 127-18-4	150 ppm IDLH
Carbon Tetrachloride 56-23-5	200 ppm IDLH

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Volatile liquid
Appearance:	Clear liquid
Color:	Colorless
Odor:	Mildly sweet odor, Chloroform-like odor
Odor Threshold [ppm]:	50 ppm (may cause olfactory fatigue).
Molecular Weight:	165.82
Molecular Formula:	C2-Cl4
Boiling Point/Range:	250 °F (121 °C)
Freezing Point/Range:	-2 °F (-19 °C).
Vapor Pressure:	13 mmHg @ 20 °C
Vapor Density (air=1):	5.8
Relative Density/Specific Gravity (water=1):	1.62 @ 25°C
Water Solubility:	0.015%
pH:	No data available
Volatility:	100%
Evaporation Rate (ether=1):	0.1 (ether=1)
Partition Coefficient (n-octanol/water):	2.88
Flash point:	Not flammable
Flammability (solid, gas):	Not flammable
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Auto-ignition Temperature:	Not applicable
Viscosity:	No data available

10. STABILITY AND REACTIVITY

Reactivity: Not reactive under normal temperatures and pressures.

Chemical Stability: Stable at normal temperatures and pressures.

Possibility of Hazardous Reactions:
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Avoid contact with incompatible substances and conditions due to generation of phosgene and other toxic and irritating substances.

Conditions to Avoid:
(e.g., static discharge, shock, or vibration) -. None known.

Incompatibilities/ Materials to Avoid:
acids. bases. Strong oxidizing agents. Oxygen. Peroxides. Reactive metals. aluminum.

Hazardous Decomposition Products: Thermal decomposition or combustion products: hydrogen chloride, chlorine, phosgene, oxides of carbon

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

PRODUCT TOXICITY DATA: Perchloroethylene, All Grades

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
2629 mg/kg oral-rat LD50	>3228 mg/kg skin-rabbit LD50	5200 ppm (4 hr. - Rat)

COMPONENT TOXICITY DATA:

Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
Tetrachloroethylene [Perc] 127-18-4	2629 mg/kg (Rat)	2800 mg/kg (Mouse)	27.8 mg/L (4 hr-Rat)
Carbon Tetrachloride 56-23-5	2350 mg/kg (Rat)	5070 mg/kg (Rat)	8000 ppm (4 hr-Rat)

Summary of Toxicity Studies:

Single-dose LD50 values of 3835 and 3005 mg/kg were determined for male and female rats by gavage. Death occurred within 24 hours after dosing and was preceded by tremors, ataxia, and CNS depression. Congestion of the lungs was reported in rats exposed intermittently to 1600 ppm for 13 weeks. In mice exposed intermittently at 100 ppm for 103 weeks, acute passive congestion of the lungs was observed. In animals, hypertrophy, fatty degeneration, and peroxisome proliferation characterize liver effects. Kidney effects, including cancer, have been noted in animals, predominantly male rats. The mechanism for the development of kidney effects in rats (protein droplet nephropathy) may differ from that in humans. The carcinogenicity of perchloroethylene has been documented in certain strains of mice and rats exposed by inhalation or oral routes. Other long-term inhalation studies in rats failed to show tumorigenic response. Human data are limited and have not established an association between perchloroethylene exposure and cancer. Hepatic effects were not detected in workers exposed up to 20 ppm for up to 10 years; however, in 141 workers exposed at an average concentration of 11.3 ppm, total GGT was significantly increased. Workers exposed for up to 14 years at an estimated TWA of 10 ppm had increased urinary enzyme levels suggestive of mild tubular damage. Forestomach ulcers were observed in male rats exposed to intermittently to 400 ppm orally for 103 weeks. Classification as a carcinogen is largely based on animal evidence.

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POTENTIAL HEALTH EFFECTS:

Eye contact: Eye contact may cause tearing, redness, pain, conjunctival irritation, corneal edema, whitening, corneal erosion, decreased vision.

Skin contact: Skin contact may cause irritation, rough, red, dry skin, edema, blisters.

Inhalation: Inhaling this material may cause sedation, bronchospasm, shortness of breath, lightheadedness, loss of consciousness, cardiotoxicity, palpitations, low blood pressure, arrhythmia, arrest, nausea, vomiting, headache, alterations of light perception, weakness, stupor, incoordination (disequilibrium, ataxia), coma, and respiratory arrest. May irritate upper airways.

Ingestion: This material can get into the lungs during swallowing or vomiting. Ingestion of this material may cause gastrointestinal irritation, central nervous system (CNS) depression, central nervous system symptoms such as tremor, ataxia (difficulty walking), and memory problems; nausea, vomiting, headache, difficulty breathing, reduced blood pressure, weak and rapid pulse. Ingestion may cause unconsciousness and death.

Chronic Effects: The carcinogenicity of perchloroethylene has been documented in certain strains of mice and rats exposed by inhalation or oral routes. Other long-term inhalation studies in rats failed to show tumorigenic response. Human data are limited and have not established an association between perchloroethylene exposure and cancer.

SIGNS AND SYMPTOMS OF EXPOSURE:

Inhalation (Breathing): Respiratory System Effects: Central Nervous System (CNS) effects are characteristic following inhalation of chlorinated hydrocarbons and can range from lightheadedness at low level exposures to loss of consciousness at high levels. CNS effects are an early warning that exposure to high levels has occurred and there is risk of cardiac effects (palpitations, low blood pressure, arrhythmia, arrest). CNS effects include the following symptoms: abdominal pain, nausea, vomiting, headache, lightheadedness, blurry or double vision, personality changes, weakness, slurred speech, stupor, incoordination (disequilibrium, ataxia), coma, and respiratory arrest. May irritate upper airways.

Skin: Skin Irritation. Skin exposure may cause irritation, rough red, dry skin, edema, blisters.

Eye: Eye Irritation. Eye exposure may cause irritation, tearing, pain, conjunctivitis, clouding of cornea.

Ingestion (Swallowing): Ingesting this material may cause gastrointestinal irritation, nausea. vomiting, headache, breathing difficulty, reduced blood pressure, weak and rapid pulse, Central Nervous System (CNS) depression, and Central Nervous System (CNS) symptoms such as sedation, headache, tremor, nystagmus and memory problems. Ingestion may cause unconsciousness and death.

Other Health Effects: Most people can smell perchloroethylene at levels of 5-50 ppm (OSHA PEL is 100 ppm). Odor is an adequate warning for high dose acute exposures, but might not be adequate for prolonged exposure due to olfactory fatigue. Vapors are heavier than air, can collect in low lying areas and cause asphyxiation. CNS effects have been observed at exposures of 100 to 300 ppm. Exposures of 1000 to 1500 ppm for less than 2 hours have caused symptoms of mood changes, slight ataxia, faintness and dizziness. Exposure to higher concentrations for longer periods can lead to collapse, coma, or death.

TOXICITY:

Chlorinated hydrocarbons can act as simple asphyxiants, posing a risk by their displacement of oxygen in the air, thus causing hypoxic environmental conditions leading to reduced oxygen uptake and hypoxemia. Some direct toxicity is also likely, especially at very high exposure levels. The toxic mechanisms include direct myocardial depression and sensitization of the myocardium to endogenous catecholamines. With very high level, as in inhalation abuse, both direct toxicity and reduced oxygen concentrations may exist and can interact to further increase risk. Sudden death may occur. Effects of low level, accidental exposure to chlorinated aliphatic hydrocarbons are usually limited to mild upper respiratory tract irritation and/or mild CNS effects. Direct pulmonary toxicity is usually of little clinical concern; however, moderate to high levels of exposure may result in significant upper airway irritation, pneumonitis and CNS depressant effects. Very high exposures may result in severe respiratory depression or failure. Cardiac arrhythmias are generally associated with moderate to sever exposures. Exposure to high levels produces direct liver and kidney toxicity. The onset of elevated liver enzymes and indicators of renal impairment may be delayed.

Interaction with Other Chemicals Which Enhance Toxicity: May potentiate other agents that cause Central Nervous System (CNS) depression and respiratory system depression. Liver toxicity may be enhanced by other agents that cause liver damage, such as alcohol, acetaminophen. Catecholamine administration MAY pose increased risk of cardiac arrhythmias.

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GHS HEALTH HAZARDS:

GHS: ACUTE TOXICITY - INHALATION: Category 4 - Harmful if inhaled.

Skin Absorbent / Dermal Route? Yes.

GHS: CONTACT HAZARD - SKIN: Category 2 - Causes skin irritation

GHS: CONTACT HAZARD - EYE: Category 2B - Causes eye irritation

GHS: CARCINOGENICITY:
Category 1B - May cause cancer.

Component	NTP:	IARC (GROUP 1):	IARC (GROUP 2):	OSHA:
Tetrachloroethylene [Perc]	Reasonably Anticipated To Be A Human Carcinogen	Not listed	Group 2	Listed
Carbon Tetrachloride	Reasonably Anticipated To Be A Human Carcinogen	Not listed	Group 2	Listed

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):
Category 1 - Central Nervous System (CNS), Liver, Respiratory System
Category 3 - Narcotic Effects

SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure):
Category 2 - Central Nervous System (CNS), Liver, Kidney, Respiratory System

MUTAGENIC DATA:
Not classified as a mutagen per GHS criteria. Overall both in vitro and in vivo genetic toxicity studies showed an absence of genotoxicity.

REPRODUCTIVE TOXICITY:
Not classified as a developmental or reproductive toxicant. In laboratory animal studies, effects on the fetus and reproductive system have been seen only at doses that produced significant toxicity to the parent animal.

ASPIRATION HAZARD:
Category 2 - May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

Fish Toxicity:
LC50 Fathead minnow (96 hr.) = 18.4 ppm
LC50 Bluegill sunfish (96 hr.) = 12.9 ppm
LC50 Rainbow trout (96 hr.) = 5 ppm
LC50 Sheephead minnow (96 hr.) = 29.4-52.2 ppm

Invertebrate Toxicity:
LC50 (Static) Mysid shrimp (96 hr.) = 10.2 ppm
LC50 Daphnia magna (48 hr.) = 18 mg/L

FATE AND TRANSPORT:

BIODEGRADATION: Biodegradation may occur under anaerobic conditions (in the absence of oxygen).

PERSISTENCE: AIR: Vapors in air are subject to photooxidation, but do not contribute to tropospheric ozone formation. Half-life estimates range from 3 months to less than 1 hour. SOIL: Average Koc of 237 suggests moderate mobility in soil. This material can leach rapidly through sandy soil to reach groundwater. Soil adsorption potential is low. Will not significantly hydrolyze in soil or water under normal environmental conditions. WATER: Slow biodegradation may occur in groundwater where acclimated populations of microorganisms exist. Does not readily adsorb to sediment. This material in water is subject to volatilization, with half-life estimates ranging from less than one day to several weeks.

BIOCONCENTRATION: Bioconcentration potential is low to moderate with a BCF of 26-77.

13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. Keep out of water supplies, sewers and soil. Recovered liquids may be sent to a licensed reclaimer or incineration facility. Dispose in accordance with all applicable regulations.

Container Management:
Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER:	UN1897
PROPER SHIPPING NAME:	Tetrachloroethylene
HAZARD CLASS/ DIVISION:	6.1
PACKING GROUP:	III

LABELING REQUIREMENTS: 6.1
MARINE POLLUTANT: Tetrachloroethylene
RQ (lbs): RQ 100 lbs (Tetrachloroethylene)
RQ 10 Lbs. (Carbon tetrachloride)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER: UN1897
SHIPPING NAME: Tetrachloroethylene
CLASS OR DIVISION: 6.1
PACKING/RISK GROUP: III
LABELING REQUIREMENTS: 6.1
CAN. MARINE POLLUTANT: Tetrachloroethylene

MARITIME TRANSPORT (IMO / IMDG) :

UN NUMBER: UN1897
PROPER SHIPPING NAME: Tetrachloroethylene
HAZARD CLASS / DIVISION: 6.1
Packing Group: III
MARINE POLLUTANT: Tetrachloroethylene

15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	CERCLA Reportable Quantities:
Tetrachloroethylene [Perc]	1 lb (final RQ) 100 lb (final RQ)
Carbon Tetrachloride	1 lb (final RQ) 10 lb (final RQ)

SARA EHS Chemical (40 CFR 355.30)
Not regulated

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):

Acute Health Hazard, Chronic Health Hazard

EPCRA SECTION 313 (40 CFR 372.65):
The following chemicals are listed in 40 CFR 372.65 and may be subject to Community Right-to Know Reporting requirements.

Component	Status:
Tetrachloroethylene [Perc]	0.1 %
Carbon Tetrachloride	0.1 %

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
Not regulated

Safe Drinking Water Act - MCLs: Subject to 40 CFR Part 41 Safe Drinking Water Act (SDWA). A maximum contaminant level 0.005 mg/L. Subject to 40 CFR Part 63 Subsection T: NESHAP's Halogenated Solvent Cleaning

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt.

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

STATE REGULATIONS

California Proposition 65:
This product contains a chemical known to the State of California to cause cancer, and/or birth defects, and/or other reproductive harm as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act.

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Tetrachloroethylene [Perc] 127-18-4	Listed	Not Listed	Not Listed	Listed	1810	carcinogen
Carbon Tetrachloride 56-23-5	Listed	Not Listed	Not Listed	Listed	0347	carcinogen

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Tetrachloroethylene [Perc] 127-18-4	Listed	Listed	Present	Present	Listed
Carbon Tetrachloride 56-23-5	Listed	Listed	Present	Present	Listed

CANADIAN REGULATIONS

• This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations

WHMIS - Classifications of Substances:
• D1B - Poisonous and Infectious Material; Materials causing immediate and serious toxic effects - Toxic material
• D2A - Poisonous and Infectious Material; Materials causing other toxic effects - Very toxic material
• D2B - Poisonous and Infectious Material; Materials causing other toxic effects - Toxic material

16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 20-Feb-2015

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)

Health Rating: 2* **Flammability Rating:** 0 **Reactivity Rating:** 0

NFPA 704 - Hazard Identification Ratings (SCALE 0-4)

Health Rating: 2 **Flammability:** 0 **Reactivity Rating:** 0

Reason for Revision:
• Changed the SDS format to meet the GHS requirements of the revised 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200}
• Updated the (M)SDS header
• Updated 24 Hour Emergency Telephone Number: SEE SECTION 1
• Product Identifier has been added or updated: SEE SECTION 1
• Updated Uses Advised Against information: SEE SECTION 1
• Added OSHA Status: SEE SECTION 2
• Emergency Overview was revised: SEE SECTION 2
• Added GHS Information: SEE SECTION 2
• Added synonym(s): SEE SECTION 3
• Updated First Aid Measures: SEE SECTION 4
• Modified Fire Fighting Measure Recommendations: SEE SECTION 5
• Revised Accidental Release Measures: SEE SECTION 6
• Revised Handling and Storage Recommendations: SEE SECTION 7
• Revised Exposure Controls/Personal Protection information: SEE SECTION 8
• Updated Physical and Chemical Properties. SEE SECTION 9
• Stability and Reactivity recommendations: SEE SECTION 10
• Toxicological Information has been revised: SEE SECTION 11
• Updated Disposal Considerations. SEE SECTION 13
• Updated Transportation Information: SEE SECTION 14
• Regulatory Information Changes: SEE SECTION 15
• Revised Preparer Information: SEE SECTION 16
• Added SDS Revision Date: SEE SECTION 16
• Added/Updated Revision Log: SEE SECTION 16

PERCHLOROETHYLENE, ALL GRADES

SDS No.: M47014 **SDS Revision Date:** 20-Feb-2015

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and OxyChem assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws.

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet

SAFETY DATA SHEET

M9192 - ANSI - EN

Oxy Vinyls, LP
A subsidiary of Occidental Petroleum Corporation

VINYL CHLORIDE (MONOMER)

SDS No.: M9192 **SDS Revision Date:** 06-Apr-2015

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Oxy Vinyls, LP 5005 LBJ Freeway Suite 2200 Dallas, Texas 75244-6119
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	**VINYL CHLORIDE (MONOMER)**
Synonyms:	VCM, Monochloroethylene, Chloroethene, Ethylene, chloro-, Vinyl chloride monomer
Product Use:	PVC Manufacturing
Uses Advised Against:	Aerosol propellant.

2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

VINYL CHLORIDE (MONOMER)

SDS No.: M9192 **SDS Revision Date:** 06-Apr-2015

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EMERGENCY OVERVIEW:

Color: Colorless
Physical state Compressed, liquefied gas
Odor: Sweet

Signal Word: **DANGER**

MAJOR HEALTH HAZARDS: CONTAINS VINYL CHLORIDE, A KNOWN HUMAN CANCER AGENT. MAY CAUSE CANCER. CONTACT WITH LIQUID MAY CAUSE FROSTBITE TO EXPOSED TISSUE. MAY PRODUCE SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION INCLUDING HEADACHE, DIZZINESS, NAUSEA, LOSS OF BALANCE AND DROWSINESS. CAUSES SKIN IRRITATION. CAUSES EYE IRRITATION. MAY CAUSE RESPIRATORY IRRITATION. CAUSES DAMAGE TO LIVER, BLOOD, NERVOUS SYSTEM, LYMPHATIC SYSTEM, AND MUSCULOSKELETAL SYSTEM THROUGH PROLONGED OR REPEATED EXPOSURE. CAUSES DAMAGE TO LUNGS THROUGH PROLONGED OR REPEATED EXPOSURE BY INHALATION. SUSPECTED OF CAUSING GENETIC DEFECTS. SUSPECTED REPRODUCTIVE HAZARD.

PHYSICAL HAZARDS: Extremely flammable gas under pressure.

PRECAUTIONARY STATEMENTS: Keep away from heat, sparks and flame. Wash thoroughly after handling. Avoid contact with eyes, skin and clothing. Do not breathe vapors or spray mist. Do not eat, drink or smoke in areas where this material is used. Use only outdoors or in a well-ventilated area. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Store in well-ventilated place. Keep container tightly closed.

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GHS CLASSIFICATION:

GHS: PHYSICAL HAZARDS:	Flammable Gas - Cat. 1 Extremely Flammable Gas Under Pressure - Liquefied
GHS: CONTACT HAZARD - SKIN:	Category 2 - Causes skin irritation.
GHS: CONTACT HAZARD - EYE:	Category 2B - Causes eye irritation
GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Category 3 - May cause respiratory tract irritation Category 3 - May cause drowsiness or dizziness
GHS: TARGET ORGAN TOXICITY (REPEATED EXPOSURE):	Category 1 - Causes damage to liver, blood, nervous system, lymphatic system, musculoskeletal system, respiratory system through prolonged or repeated exposure
GHS: CARCINOGENICITY:	Category 1A - May cause cancer.
GHS: GERM CELL MUTAGENICITY:	Category 2 - Suspected of causing genetic defects
GHS: REPRODUCTION TOXIN:	Category 2 - Suspected of damaging fertility or the unborn child
GHS - OSHA Hazard(s)	Simple Asphyxiant: May displace oxygen and cause rapid suffocation

Unknown Acute Dermal Toxicity:
100% of this product consists of ingredient(s) of unknown acute dermal toxicity.

Unknown Acute Inhalation Toxicity:
100% of this product consists of ingredient(s) of unknown acute inhalation toxicity.

GHS SYMBOL:
Flame, Gas cylinder, Exclamation mark, Health hazards

GHS SIGNAL WORD: **DANGER**

GHS HAZARD STATEMENTS:

GHS - Physical Hazard Statement(s)
Extremely flammable gas
Contains gas under pressure; may explode if heated
May displace oxygen and cause rapid suffocation

GHS - Health Hazard Statement(s)
Causes eye irritation
Causes skin irritation
May cause drowsiness or dizziness
May cause respiratory irritation
Causes damage to organs through prolonged or repeated exposure: (liver, blood, nervous system, lymphatic system, musculoskeletal system, respiratory system)
May cause cancer
Suspected of causing genetic defects
Suspected of damaging fertility or the unborn child

GHS - OSHA Hazard(s)
Simple Asphyxiant: May displace oxygen and cause rapid suffocation

GHS - Precautionary Statement(s) - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
. HHS DZ D\ IURP KHDWWSDUWV RSHQ IODP HV KRWWXUIDFHV ² 1 R VP RNQJ
Do not breathe dust/fume/gas/mist/vapors/spray
Use personal protective equipment as required
Wear protective gloves/protective clothing/eye protection/face protection
Wash thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area

GHS - Precautionary Statement(s) - Response
Leaking gas fire: Do not extinguish, unless leak can be stopped safely
Eliminate all ignition sources if safe to do so
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
IF ON SKIN: Wash with plenty of water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash it before reuse
Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Specific treatment (see Section 4 of the safety data sheet and/or the First Aid information on the product label)
Get medical advice/attention if you feel unwell
IF exposed or concerned: call a POISON CENTER or doctor/physician

GHS - Precautionary Statement(s) - Storage
Store in a well-ventilated place. Keep container tightly closed
Protect from sunlight
Store locked up

GHS - Precautionary Statement(s) - Disposal
Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations.

Hazards Not Otherwise Classified (HNOC)
Direct contact with liquid may cause frostbite to exposed tissue (eyes, skin, etc.)
Polymerization can occur

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: VCM, Monochloroethylene, Chloroethene, Ethylene, chloro-, Vinyl chloride monomer

Component	Percent [%]	CAS Number
Vinyl chloride	99 - 100	75-01-4

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer basic life support (Cardio-Pulmonary Resuscitation and/or Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

SKIN CONTACT: If frostbite or freezing occur, immediately flush with plenty of lukewarm water (100-105 °F, 38-41 °C). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: Not a likely route of exposure in occupational environment.

Most Important Symptoms/Effects (Acute and Delayed) :.

Acute Symptoms/Effects: Listed below. Prolonged, high concentration exposures may cause unconsciousness or death.
Inhalation (Breathing): Respiratory Tract Irritation: rhinitis, scratchy throat, cough, sore throat, runny nose, wheezing, difficulty breathing (dyspnea). Inhalation of this material may cause central nervous system depression (narcotic effects).
Skin: Skin Irritation. If spilled on skin, rapid evaporation can cause local frostbite with redness, blistering, and scaling.
Eye: Eye Irritation. Rapid evaporation can cause local frostbite with corneal and conjunctival irritation or burns. High concentrations of vapor can cause eye irritation.
Ingestion (Swallowing): Ingestion is not a likely route of exposure.
Other Health Effects: Narcotic Effects (Central Nervous System Depression): Ataxia or dizziness, drowsiness or fatigue, loss of consciousness, headache, euphoria and irritability, visual or hearing disturbances, nausea, memory loss.

Delayed Symptoms/Effects:
- Carcinogen: Long term significant occupational overexposure to VCM has been associated with a specific cancer (angiosarcoma of the liver) and is associated with hepatocellular cancer
- Suspected mutagen and suspected of causing reproductive damage
- Repeated exposure can damage the skin (scleroderma), bones (acro-osteolysis) and blood vessels in the hand (Raynaud's Syndrome)
- Scleroderma is characterized by a hardening and tightening of patches of skin
- Raynaud's syndrome is characterized by an exaggerated response to cold temperatures or emotional distress, which can cause numbness, pain or color changes in the fingers or toes

Interaction with Other Chemicals Which Enhance Toxicity: Alcohol may enhance toxic effects.

Medical Conditions Aggravated by Exposure: Alcoholic Liver Disease. Infectious Hepatitis. Cirrhosis.

Protection of First-Aiders: Protect yourself by avoiding contact with this material. Direct contact with liquid may cause frostbite to exposed tissue (eyes, skin, etc.). Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission.

Notes to Physician: There is no specific antidote. Treat symptoms with supportive care. Cardiac stimulants such as epinephrine should be avoided in persons overexposed to chlorinated hydrocarbons.

5. FIRE-FIGHTING MEASURES

Fire Hazard: Severe fire hazard. Vapor/air mixtures are explosive. Vapors or gases may ignite at distant sources and flash back. Containers may rupture or explode if exposed to heat.

Extinguishing Media: Stop flow of gas before extinguishing fire. Use carbon dioxide, regular dry chemical, foam or water. Use water spray to keep containers cool.

Fire Fighting: Move container from fire area if it can be done without risk. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this can't be done, then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode.

Hazardous Combustion Products:	Oxides of carbon, Hydrogen chloride, Phosgene
Sensitivity to Mechanical Impact:	Not sensitive.
Sensitivity to Static Discharge:	Electrostatic charges may build up during handling and may form ignitable vapor-air mixtures in storage containers. Ground equipment in accordance with industry standards and best practices such as NFPA 77 [Recommended Practices on Static Electricity (2007)] and American Petroleum Institute (API) RP Recommended Practice 2003 [Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents (2008)].
Lower Flammability Level (air):	3.6%
Upper Flammability Level (air):	33.0%
Flash point:	-108 °F (-78 °C)
Auto-ignition Temperature:	882 °F (472 °C)

GHS: PHYSICAL HAZARDS:
- Flammable Gas - Cat. 1 Extremely Flammable
- Gas Under Pressure - Liquefied

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Isolate hazard area and deny entry. Keep unnecessary and unprotected persons away. Eliminate all sources of heat and ignition. Ventilate closed spaces before entering. Wear appropriate personal protective equipment recommended in Section 8, Exposure Controls / Personal Protection, of the SDS. Refer to Section 7, Handling and Storage, for additional precautionary measures.

Methods and Materials for Containment and Cleaning Up:
Remove sources of ignition. Ventilate closed spaces before entering. Stop leak if possible without personal risk. Vapors or gases may ignite at distant ignition sources and flash back. See Section 13, Disposal considerations, for additional information.

Environmental Precautions:
Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

Precautions for Safe Handling:
Avoid breathing vapor or mist. Avoid contact with skin, eyes and clothing. Keep away from heat, sparks and flame. Ground any equipment used in handling. Use non-sparking tools and equipment. All energized electrical equipment must be designed in accordance with the electrical classification of the area.

Safe Storage Conditions:
Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Store in a cool, dry area. Store in a well-ventilated area. Do not enter confined spaces unless adequately ventilated. Avoid heat, flames, sparks and other sources of ignition. May be subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:
oxidizing agents, oxides of nitrogen, metals, aluminum, aluminum alloys, copper, metal alkyl complexes and alkali metals such as sodium, potassium and their alloys

GHS: PHYSICAL HAZARDS:
- Flammable Gas - Cat. 1 Extremely Flammable
- Gas Under Pressure - Liquefied

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): As listed below.

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PELCeiling
Vinyl chloride 75-01-4	1 ppm	5 ppm	-----

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): As listed below.

Component	CAS Number	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)

Vinyl chloride	75-01-4	1 ppm	-----	-----	-----	-----	-----

- The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

ENGINEERING CONTROLS: Use closed systems when possible. Provide local exhaust ventilation where vapor may be generated. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear safety glasses with side-shields. If eye contact is likely, wear chemical resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear appropriate chemical resistant clothing.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types: Butyl rubber, Nitrile, Silver Shield®, Viton®

Respiratory Protection: Refer to 29 CFR 1910.1017 for selection of respirators for vinyl chloride. A respiratory protection program that meets applicable regulatory requirements must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Compressed, liquefied gas
Color:	Colorless
Odor:	Sweet
Odor Threshold [ppm]:	Not reliable to prevent excessive exposure.
Molecular Weight:	62.5
Molecular Formula:	C2ClH3
Decomposition Temperature:	Not applicable
Boiling Point/Range:	7 °F (-14 °C)
Freezing Point/Range:	No data available.
Melting Point/Range:	Not applicable
Vapor Pressure:	2660 mmHg @ 25 °C
Vapor Density (air=1):	2.15
Relative Density/Specific Gravity (water=1):	0.91 @ 25/25 °C
Water Solubility:	2.7 g/L

pH:	Not applicable
VOC Content (%):	100%
Volatility:	100%
Evaporation Rate (ether=1):	>15
Partition Coefficient (n-octanol/water):	Log Kow = 1.36
Flash point:	-108 °F (-78 °C)
Flammability (solid, gas):	No data available
Lower Flammability Level (air):	3.6%
Upper Flammability Level (air):	33.0%
Auto-ignition Temperature:	882 °F (472 °C)
Viscosity:	Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Not reactive under normal temperatures and pressures.

Chemical Stability: Stable at normal temperatures and pressures.

Possibility of Hazardous Reactions:
Avoid air and sunlight. Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Conditions to Avoid:
(e.g., static discharge, shock, or vibration) -. Electrostatic charges may build up during handling and may form ignitable vapor-air mixtures in storage containers. Ground equipment in accordance with industry standards and best practices such as NFPA 77 [Recommended Practices on Static Electricity (2007)] and American Petroleum Institute (API) RP Recommended Practice 2003 [Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents (2008)].

Incompatibilities/ Materials to Avoid:
oxidizing agents. oxides of nitrogen. metals. aluminum. aluminum alloys. copper. metal alkyl complexes and alkali metals such as sodium, potassium and their alloys.

Hazardous Decomposition Products: oxides of carbon, chlorine, hydrogen chloride, phosgene

Hazardous Polymerization: Polymerization can occur. Avoid elevated temperatures, oxidizing agents, oxides of nitrogen, oxygen, peroxides, other polymerization catalysts/initiators, air and sunlight.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

PRODUCT TOXICITY DATA: VINYL CHLORIDE (MONOMER)

VINYL CHLORIDE (MONOMER)

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
> 4,000 mg/kg oral-rat LD50	-----	-----

COMPONENT TOXICITY DATA:

Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
Vinyl chloride 75-01-4	-----	-----	18 pph (15 minr-Rat)

****

POTENTIAL HEALTH EFFECTS:

Eye contact: Causes eye irritation. Rapid evaporation of the material may cause frostbite.

Skin contact: Causes skin irritation. Rapid evaporation of the material may cause frostbite.

Inhalation: May cause respiratory tract irritation. Several minutes of exposure to high, but attainable concentrations (over 1000 ppm) may cause difficulty breathing, central nervous system depression and symptoms such as: ataxia or dizziness, drowsiness or fatigue, loss of consciousness, headache, euphoria and irritability, visual and or hearing disturbances, nausea, memory loss. Prolonged, high concentration exposures may cause unconsciousness or death. Cardiac: Acute intoxication may cause irregular heartbeats.

Ingestion: Not a likely route of exposure in occupational settings.

Chronic Effects: Chronic exposure to vinyl chloride monomer (VCM) may cause damage to the nervous system, respiratory system, musculoskeletal system, and lymphatic system. Occupational overexposure has produced a specific cancer (angiosarcoma of the liver) and is associated with hepatocellular cancer. Repeated prolonged exposure may damage: skin (scleroderma), bones (acro-osteolysis), blood vessels in the hands (Raynaud's Syndrome). Suspected of causing genetic defects. Suspected of damaging fertility or the unborn child. Reproductive effects and testes damage occurred in rats exposed to vinyl chloride. These endpoints, however, were generally noted at concentrations greater than those necessary to cause liver damage.

SIGNS AND SYMPTOMS OF EXPOSURE:

Listed below.

Inhalation (Breathing): Respiratory Tract Irritation: rhinitis, scratchy throat, cough, sore throat, runny nose, wheezing, difficulty breathing (dyspnea). Inhalation of this material may cause central nervous system depression (narcotic effects).
Skin: Skin Irritation. If spilled on skin, rapid evaporation can cause local frostbite with redness, blistering, and scaling.
Eye: Eye Irritation. Rapid evaporation can cause local frostbite with corneal and conjunctival irritation or burns. High concentrations of vapor can cause eye irritation.
Ingestion (Swallowing): Ingestion is not a likely route of exposure.

Other Health Effects: Narcotic Effects (Central Nervous System Depression): Ataxia or dizziness, drowsiness or fatigue, loss of consciousness, headache, euphoria and irritability, visual or hearing disturbances, nausea, memory loss.

Interaction with Other Chemicals Which Enhance Toxicity: Alcohol may enhance toxic effects.

****

GHS HEALTH HAZARDS:

Skin Absorbent / Dermal Route? No.

GHS: CONTACT HAZARD - SKIN: Category 2 - Causes skin irritation

GHS: CONTACT HAZARD - EYE: Category 2B - Causes eye irritation

GHS: CARCINOGENICITY:
Category 1A - May cause cancer.

Component	NTP:	IARC (GROUP 1):	IARC (GROUP 2):	OSHA:
Vinyl chloride	Listed	Group 1	Not listed	Listed

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):
Category 3 - Respiratory Tract Irritation
Category 3 - Narcotic Effects

SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure):
Category 1 - Liver, Blood, Nervous System, Lymphatic System, Musculoskeletal System, Respiratory System

MUTAGENIC DATA:
Category 2 - Suspected of causing genetic defects. Mutagenic in bacteria studies. Genetic studies in animals were negative in some cases and positive in others.

REPRODUCTIVE TOXICITY:
Category 2 - Suspected of damaging fertility or the unborn child. Reproductive effects and testes damage occurred in rats exposed to vinyl chloride. These endpoints, however, were generally noted at concentrations greater than those necessary to cause liver damage.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

Aquatic Toxicity:
This material is believed to be practically non-toxic to fish on an acute basis (LC50>100 mg/L).

FATE AND TRANSPORT:

BIODEGRADATION: Vinyl chloride may degrade under anaerobic conditions.

PERSISTENCE: Tropospheric half-life is estimated to be 23 hours. If released to air, this material will remain in the gas phase. If released to soil, volatilization will occur, but material that does not volatilize may be highly mobile. If released to water, evaporation will occur.

BIOCONCENTRATION: Bioconcentration potential is low (BCF <100 or log Kow <3).

13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations.

Container Management:
Refer to manufacturer/supplier for information on recovery/recycling. Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:

UN NUMBER:	UN1086
PROPER SHIPPING NAME:	Vinyl chloride, stabilized
HAZARD CLASS/ DIVISION:	2.1
LABELING REQUIREMENTS:	2.1
RQ (lbs):	RQ 1 Lbs. (Vinyl chloride)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER:	UN1086
SHIPPING NAME:	Vinyl chloride, stabilized
CLASS OR DIVISION:	2.1
LABELING REQUIREMENTS:	2.1

MARITIME TRANSPORT (IMO / IMDG) Regulated

UN NUMBER:	UN1086
PROPER SHIPPING NAME:	Vinyl chloride, stabilized

HAZARD CLASS / DIVISION: 2.1
LABELING REQUIREMENTS: 2.1

15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	CERCLA Reportable Quantities:
Vinyl chloride	1 lb (final RQ)

SARA EHS Chemical (40 CFR 355.30)
Not regulated

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):
Fire Hazard, Reactive Hazard, Sudden Release of Pressure, Acute Health Hazard, Chronic Health Hazard

EPCRA SECTION 313 (40 CFR 372.65):
The following chemicals are listed in 40 CFR 372.65 and may be subject to Community Right-to Know Reporting requirements.

Component	Status:
Vinyl chloride	0.1 %

OSHA SPECIFICALLY REGULATED SUBSTANCES:
OSHA 29 CFR 1910.1017 (Vinyl chloride); The U.S. Department of Labor, Occupational Safety and Health Administration specifically regulates manufacturing, handling and processing of vinyl chloride. Such regulations have been published at 29 CFR 1910.1017.

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
The PSM standard may apply to processes which involve a flammable liquid or gas in a quantity of 10,000 pounds (4535.9 kg) or more.

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt.

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

VINYL CHLORIDE (MONOMER)

SDS No.: M9192 **SDS Revision Date:** 06-Apr-2015

STATE REGULATIONS

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Vinyl chloride 75-01-4	Listed	Not Listed	Not Listed	Listed	2001	carcinogen; flammable - fourth degree; mutagen

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Vinyl chloride 75-01-4	Listed	Listed	Present	Present	Not Listed

CANADIAN REGULATIONS

/ 7KLV SURGXFW KDV EHHQ FODVVLILHG LQ DFFRUGDQFH ZLWK WKH &RQWUROOHG 3URGXFWV 5HJXODWLRQV DQG the SDS contains all the information required by the Controlled Products Regulations

WHMIS - Classifications of Substances:

/ $ &RPSUHVVHG* DV
/ %) ODP P DEOH* DV
/ ' $ 3RLVRQRXV DQG,QIHFWLRXV0 DWHULDO0 DWHULDOY FDXVLQJ RWKHUWR[LF HIIHFWV 9HU WR[LF P DWHULDO
/ ' % 3RLVRQRXV DQG,QIHFWLRXV0 DWHULDO0 DWHULDOY FDXVLQJ RWKHUWR[LF HIIHFWV 7R[LF P DWHULDO
/) ' DQJHURXV UHDFWLYH P DWHULDO

16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 06-Apr-2015

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)

Health Rating: 2* **Flammability Rating:** 4 **Reactivity Rating:** 1

NFPA 704 - Hazard Identification Ratings (SCALE 0-4)

Health Rating: 2 **Flammability:** 4 **Reactivity Rating:** 2

VINYL CHLORIDE (MONOMER)

SDS No.: M9192 **SDS Revision Date:** 06-Apr-2015

Reason for Revision:
/ 5HYLVHG0 DWRU+HDOWK+DJDUGV, 6((6(&7,21
/ 5HYLVHG* +6 ,QIRUP DWLRQ 6((6(&7,21
/ 8SGDWHG)LWWLQJ0HDVXUHV, 6((6(&7,21
/ 33(UHFRP PHQGDWLRQVKDYHEHHQPRGLILHG, 6((6(&7,21
/ 7R[LFRORJLFDO,QIRUP DWLRQKDVEHHQUHYLVHG, 6((6(&7,21
/ 8SGDWHG' LVSRVDO&RQVLGHUDWLRQV 6((6(&7,21
/ 8SGDWHG7UDQVSRUWDWLRQ,QIRUP DWLRQ 6((6(&7,21

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and OxyChem assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet

SAFETY DATA SHEET

Creation Date 22-Sep-2009 **Revision Date** 22-Sep-2015 **Revision Number** 3

1. Identification

Product Name **Vinylidene chloride, stabilized**

Cat No. : **AC172290000; AC172290010; AC172290025; AC172290250**

Synonyms 1,1-Dichloroethylene

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 1
Acute oral toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4
Serious Eye Damage/Eye Irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity - (repeated exposure)	Category 2

Label Elements

Signal Word
Danger

Hazard Statements
Extremely flammable liquid and vapor
Harmful if swallowed
Causes serious eye irritation
Harmful if inhaled
Suspected of causing cancer
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Wear eye/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep cool
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects

3. Composition / information on ingredients

Component	CAS-No	Weight %
Vinylidene chloride	75-35-4	>95
4-Methoxyphenol	150-76-5	0.02

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.

Ingestion Do not induce vomiting. Obtain medical attention.

Most important symptoms/effects Breathing difficulties. . Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Use water spray to cool unopened containers. Chemical foam. Cool closed containers exposed to fire with water spray.

Unsuitable Extinguishing Media No information available

Flash Point -25 °C / -13 °F
Method - No information available

Autoignition Temperature 520 °C / 968 °F
Explosion Limits
Upper 16.5%
Lower 8.4%
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Extremely flammable. Vapors may travel to source of ignition and flash back. Vapors may form explosive mixture with air. Containers may explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products
Hydrogen chloride gas Carbon monoxide (CO) Carbon dioxide (CO_2) Formaldehyde peroxides
Protective Equipment and Precautions for Firefighters
Vapors are heavier than air and may spread along floors. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	4	1	N/A

6. Accidental release measures

Personal Precautions Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.

Methods for Containment and Clean Up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Do not let this chemical enter the environment.

7. Handling and storage

Handling Ensure adequate ventilation. Wear personal protective equipment. Avoid contact with skin and eyes. Take precautionary measures against static discharges. Do not ingest. Use only in area provided with appropriate exhaust ventilation. Use explosion-proof equipment. Use only non-sparking tools. Avoid shock and friction. Avoid breathing dust/fume/gas/mist/vapours/spray. Keep away from open flames, hot surfaces and sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Storage Refrigerator/flammables. Keep away from heat and sources of ignition. Protect from light. May form explosive peroxides on prolonged storage. Keep under nitrogen. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Vinylidene chloride	TWA: 5 ppm	(Vacated) TWA: 1 ppm (Vacated) TWA: 4 mg/m³	
4-Methoxyphenol	TWA: 5 mg/m³	(Vacated) TWA: 5 mg/m³	TWA: 5 mg/m³

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Vinylidene chloride	TWA: 1 ppm TWA: 4 mg/m³	TWA: 5 ppm TWA: 20 mg/m³ STEL: 20 ppm STEL: 80 mg/m³	TWA: 1 ppm TWA: 4 mg/m³ STEL: 20 ppm STEL: 80 mg/m³
4-Methoxyphenol	TWA: 5 mg/m³		TWA: 5 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	7 2.5 g/l aq.sol
Melting Point/Range	-122 °C / -187.6 °F
Boiling Point/Range	31.2 - 32 °C / 88.2 - 89.6 °F @ 760 mmHg
Flash Point	-25 °C / -13 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	16.5%
Lower	8.4%
Vapor Pressure	665 mbar @ 20 °C
Vapor Density	3.4 (Air = 1.0)
Specific Gravity	1.218

Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	520 °C / 968 °F
Decomposition Temperature	No information available
Viscosity	.377 mPa.s at 15 °C
Molecular Formula	C2 H2 Cl2
Molecular Weight	96.94

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability May form explosive peroxides. Hazardous polymerization may occur upon depletion of inhibitor. Moisture sensitive. Air sensitive. Light sensitive.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Excess heat. Exposure to air. Exposure to light. Incompatible products. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Strong bases, Powdered metal salts, oxygen, Peroxides, Metals, copper, Powdered metals, Acids

Hazardous Decomposition Products Hydrogen chloride gas, Carbon monoxide (CO), Carbon dioxide (CO_2), Formaldehyde, peroxides

Hazardous Polymerization Hazardous polymerization may occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Oral LD50 Category 4. ATE = 300 - 2000 mg/kg.

Vapor LC50 Category 4. ATE = 10 - 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Vinylidene chloride	LD50 = 200 mg/kg (Rat) LD50 = 1500 mg/kg (Rat)	Not listed	LC50 = 1.66 mg/L (Rat) 4 h LC50 = 6350 ppm (Rat) 4 h
4-Methoxyphenol	1600 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation May cause eye, skin, and respiratory tract irritation

Sensitization No information available

Carcinogenicity Limited evidence of a carcinogenic effect. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Vinylidene chloride	75-35-4	Not listed	Not listed	Not listed	Not listed	A3
4-Methoxyphenol	150-76-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Ames test: positive.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting
Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Vinylidene chloride	Not listed	LC50: 161 - 179 mg/L, 96h static (Pimephales promelas) LC50: 57 - 91 mg/L, 96h static (Lepomis macrochirus) LC50: 85 - 117 mg/L, 96h flow-through (Pimephales promelas)	EC50 > 2000 mg/L 17 h	LC50: 9.0 - 14.0 mg/L, 48h Static (Daphnia magna) LC50: 62 - 110 mg/L, 48h Static (Daphnia magna)
4-Methoxyphenol	Not listed	LC50: = 28.5 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: = 84.3 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 3.66 mg/L 5 min EC50 = 4.30 mg/L 15 min EC50 = 4.61 mg/L 30 min	Not listed

Persistence and Degradability No information available
Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Vinylidene chloride	2.02
4-Methoxyphenol	1.34

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Vinylidene chloride - 75-35-4	U078	-

14. Transport information

DOT

UN-No UN1303
Proper Shipping Name VINYLIDENE CHLORIDE, STABILIZED
Hazard Class 3
Packing Group I

TDG

UN-No UN1303
Proper Shipping Name VINYLIDENE CHLORIDE, STABILIZED
Hazard Class 3
Packing Group I

IATA

UN-No UN1303
Proper Shipping Name VINYLIDENE CHLORIDE, STABILIZED
Hazard Class 3
Packing Group I

IMDG/IMO

UN-No UN1303
Proper Shipping Name VINYLIDENE CHLORIDE, STABILIZED
Hazard Class 3
Subsidiary Hazard Class P
Packing Group I

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Vinylidene chloride	X	X	-	200-864-0	-		X	X	X	X	X
4-Methoxyphenol	X	X	-	205-769-8	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Vinylidene chloride	75-35-4	>95	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard Yes
Chronic Health Hazard Yes
Fire Hazard Yes
Sudden Release of Pressure Hazard No
Reactive Hazard No

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Vinylidene chloride	X	100 lb	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors

Vinylidene chloride	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Vinylidene chloride	100 lb 1 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Vinylidene chloride	X	X	X	X	X
4-Methoxyphenol	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard
Vinylidene chloride	7500 lb STQ

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class B2 Flammable liquid
D1B Toxic materials
D2B Toxic materials

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 22-Sep-2009
Revision Date 22-Sep-2015
Print Date 22-Sep-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally

Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

SAFETY DATA SHEET

Creation Date 16-Sep-2014 **Revision Date** 10-Feb-2015 **Revision Number** 1

1. Identification

Product Name **trans-1,2-Dichloroethylene, stabilized**

Cat No. : **AC406840000; AC406840250; AC406842500**

Synonyms trans-Acetylene dichloride

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Acute oral toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4

Label Elements

Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor
Harmful if swallowed
Harmful if inhaled

Precautionary Statements

Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Ingestion
Rinse mouth
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Explosion risk in case of fire
Fight fire with normal precautions from a reasonable distance
Evacuate area
Storage
Store in a well-ventilated place. Keep cool
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Harmful to aquatic life with long lasting effects

3. Composition / information on ingredients

Component	CAS-No	Weight %
trans-1,2-Dichloroethylene	156-60-5	>95

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation Remove from exposure, lie down. Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Obtain medical attention.

Ingestion Do not induce vomiting. Obtain medical attention.

Most important symptoms/effects Breathing difficulties. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. chemical foam. Use water spray to cool unopened containers.

Unsuitable Extinguishing Media No information available

Flash Point	6 °C / 42.8 °F
Method -	No information available
Autoignition Temperature	440 °C / 824 °F
Explosion Limits	
Upper	12.80%
Lower	9.70%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air. Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Hydrogen chloride gas Carbon monoxide (CO) Carbon dioxide (CO_2) Phosgene
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	3	0	N/A

6. Accidental release measures

Personal Precautions	Remove all sources of ignition. Take precautionary measures against static discharges. Use personal protective equipment. Ensure adequate ventilation.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.
Methods for Containment and Clean Up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment. Ensure adequate ventilation. Avoid contact with skin and eyes. Do not breathe dust. Use only in area provided with appropriate exhaust ventilation. Use explosion-proof equipment. Use only non-sparking tools. Keep away from open flames, hot surfaces and sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.
Storage	Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
trans-1,2-Dichloroethylene	TWA: 200 ppm		

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
trans-1,2-Dichloroethylene			TWA: 200 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	6.5-7.2
Melting Point/Range	-50 °C / -58 °F
Boiling Point/Range	48 °C / 118.4 °F @ 760 mmHg
Flash Point	6 °C / 42.8 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	12.80%
Lower	9.70%
Vapor Pressure	331 mmHg @ 25 °C
Vapor Density	3.34 (Air = 1.0)
Relative Density	1.260
Solubility	Immiscible with water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	440 °C / 824 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C2 H2 Cl2
Molecular Weight	96.94

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Exposure to light. Incompatible products. Exposure to moist air or water.

Incompatible Materials Bases, Strong acids, Strong oxidizing agents

Hazardous Decomposition Products Hydrogen chloride gas, Carbon monoxide (CO), Carbon dioxide (CO_2), Phosgene

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
trans-1,2-Dichloroethylene	1235 mg/kg (Rat)	>5 g/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
trans-1,2-Dichloroethylene	156-60-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
trans-1,2-Dichloroethylene	Not listed	135 mg/L LC50 96 h	Not listed	Not listed

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
trans-1,2-Dichloroethylene	1.48

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
trans-1,2-Dichloroethylene - 156-60-5	U079	-

14. Transport information

DOT

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

TDG

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

IATA

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

IMDG/IMO

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
trans-1,2-Dichloroethylene	X	X	-	205-860-2	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
trans-1,2-Dichloroethylene	-	-	-	X

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
trans-1,2-Dichloroethylene	1000 lb 1 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
trans-1,2-Dichloroethylene	X	-	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class B2 Flammable liquid
D1B Toxic materials

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 16-Sep-2014
Revision Date 10-Feb-2015
Print Date 10-Feb-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally

Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer

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End of SDS

SAFETY DATA SHEET

Creation Date 28-Apr-2009 **Revision Date** 12-Mar-2014 **Revision Number** 1

1. Identification

Product Name **Acetone**

Cat No. : **AC177170000; AC177170010; AC177170025; AC177170050; AC177170100; AC177170250**

Synonyms 2-Propanone

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, spleen, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor
Causes serious eye irritation
May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Keep cool
Response
Get medical attention/advice if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Repeated exposure may cause skin dryness or cracking

3. Composition / information on ingredients

Component	CAS-No	Weight %
Acetone	67-64-1	>95

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.

Ingestion Do not induce vomiting. Obtain medical attention.

Most important symptoms/effects Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: May cause pulmonary edema: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media CO_2, dry chemical, dry sand, alcohol-resistant foam. Water spray. Cool closed containers exposed to fire with water spray.

Unsuitable Extinguishing Media Water may be ineffective

Flash Point -20 °C / -4 °F
Method - Closed cup

Autoignition Temperature 465 °C / 869 °F

Explosion Limits
Upper 12.8 vol %
Lower 2.5 vol %

Oxidizing Properties Not oxidising

Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Flammable. Risk of ignition. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2) Formaldehyde Methanol
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
1	3	0	N/A

6. Accidental release measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and inhalation of vapors.

Environmental Precautions Should not be released into the environment.

Methods for Containment and Clean Up Remove all sources of ignition. Take precautionary measures against static discharges. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling Wear personal protective equipment. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Use only non-sparking tools. Use explosion-proof equipment. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Storage Flammables area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Acetone	TWA: 500 ppm STEL: 750 ppm	(Vacated) TWA: 750 ppm (Vacated) TWA: 1800 mg/m³ (Vacated) STEL: 2400 mg/m³ (Vacated) STEL: 1000 ppm TWA: 1000 ppm TWA: 2400 mg/m³	IDLH: 2500 ppm TWA: 250 ppm TWA: 590 mg/m³

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Acetone	TWA: 500 ppm TWA: 1190 mg/m³ STEL: 1000 ppm STEL: 2380 mg/m³	TWA: 1000 ppm TWA: 2400 mg/m³ STEL: 1260 ppm STEL: 3000 mg/m³	TWA: 500 ppm STEL: 750 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	sweet
Odor Threshold	19.8 ppm
pH	7
Melting Point/Range	-95 °C / -139 °F
Boiling Point/Range	56 °C / 132.8 °F
Flash Point	-20 °C / -4 °F
Method -	Closed cup
Evaporation Rate	5.6 (Butyl Acetate = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	12.8 vol %
Lower	2.5 vol %
Vapor Pressure	247 mbar @ 20 °C
Vapor Density	2.0
Relative Density	0.790
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available

Autoignition Temperature	465 °C / 869 °F
Decomposition Temperature	> 4°C
Viscosity	0.32 mPa.s @ 20 °C
Molecular Formula	C3 H6 O
Molecular Weight	58.08
Refractive index	1.358 - 1.359

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Heat, flames and sparks. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials Strong oxidizing agents, Strong reducing agents, Strong bases, Peroxides, Halogenated compounds, Alkali metals, Amines

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2), Formaldehyde, Methanol

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetone	5800 mg/kg (Rat)	> 15800 mg/kg (rabbit) > 7400 mg/kg (rat)	76 mg/l, 4 h, (rat)

Toxicologically Synergistic Products Carbon tetrachloride; Chloroform; Trichloroethylene; Bromodichloromethane; Dibromochloromethane; N-nitrosodimethylamine; 1,1,2-Trichloroethane; Styrene; Acetonitrile, 2,5-Hexanedione; Ethanol; 1,2-Dichlorobenzene

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Acetone	67-64-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)

STOT - repeated exposure Kidney Liver spleen Blood

Aspiration hazard No information available

Symptoms / effects,both acute and Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting:

delayed May cause pulmonary edema: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects Neurotoxic effects have occurred in experimental animals.

12. Ecological information

Ecotoxicity

.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Acetone	NOEC = 430 mg/l (algae; 96 h)	Oncorhynchus mykiss: LC50 = 5540 mg/l 96h Alburnus alburnus: LC50 = 11000 mg/l 96h Leuciscus idus: LC50 = 11300 mg/L/48h Salmo gairdneri: LC50 = 6100 mg/L/24h	EC50 = 14500 mg/L/15 min	EC50 = 8800 mg/L/48h EC50 = 12700 mg/L/48h EC50 = 12600 mg/L/48h

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Acetone	-0.24

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Acetone - 67-64-1	U002	-

14. Transport information

DOT

- **UN-No** UN1090
- **Proper Shipping Name** ACETONE
- **Hazard Class** 3
- **Packing Group** II

TDG

- **UN-No** UN1090
- **Proper Shipping Name** ACETONE
- **Hazard Class** 3
- **Packing Group** II

IATA

- **UN-No** UN1090
- **Proper Shipping Name** ACETONE
- **Hazard Class** 3
- **Packing Group** II

IMDG/IMO

- **UN-No** UN1090
- **Proper Shipping Name** ACETONE
- **Hazard Class** 3
- **Packing Group** II

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Acetone	X	X	-	200-662-2	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Acetone	5000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Acetone	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ):	Y
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security
This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard
Acetone	2000 lb STQ

Other International Regulations

Mexico - Grade Serious risk, Grade 3

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class B2 Flammable liquid
D2B Toxic materials

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 28-Apr-2009
Revision Date 12-Mar-2014
Print Date 12-Mar-2014
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

SAFETY DATA SHEET

Revision Date 10-Feb-2015 **Revision Number** 1

1. Identification

Product Name **1,2,4-Trimethylbenzene**

Cat No. : **AC140090000; AC140090010; AC140090025; AC140090100; AC140090250**

Synonyms Pseudocumene

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute Inhalation Toxicity - Vapors	Category 4
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Warning

Hazard Statements
Flammable liquid and vapor
Causes skin irritation
Causes serious eye irritation
Harmful if inhaled
May cause respiratory irritation

Precautionary Statements
Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition / information on ingredients

Component	CAS-No	Weight %
Benzene, 1,2,4-trimethyl-	95-63-6	98

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Obtain medical attention.

Inhalation Remove from exposure, lie down. Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Obtain medical attention.

Ingestion Do not induce vomiting. Clean mouth with water. Get medical attention.

Most important symptoms/effects Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Use water spray to cool unopened containers. chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point 48 °C / 118.4 °F
Method - No information available

Autoignition Temperature 500 °C / 932 °F

Explosion Limits
Upper 6.4%
Lower 0.9%
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	2	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment.
Environmental Precautions See Section 12 for additional ecological information.

Methods for Containment and Clean Up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Provide adequate ventilation. Do not let this chemical enter the environment.

7. Handling and storage

Handling Avoid contact with skin and eyes. Do not breathe dust. Do not breathe vapors or spray mist. Take precautionary measures against static discharges. Do not ingest. Use only in area provided with appropriate exhaust ventilation. Use explosion-proof equipment. Use only non-sparking tools.

Storage Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Benzene, 1,2,4-trimethyl-			TWA: 25 ppm TWA: 125 mg/m^3

Legend

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-44 °C / -47.2 °F
Boiling Point/Range	168 °C / 334.4 °F @ 760 mmHg
Flash Point	48 °C / 118.4 °F
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	6.4%
Lower	0.9%
Vapor Pressure	7 mmHg @ 44.4 °C
Vapor Density	4.15 (Air = 1.0)
Relative Density	0.880
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	500 °C / 932 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C9 H12
Molecular Weight	120.19

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Benzene, 1,2,4-trimethyl-	3280 mg/kg (Rat)	3160 mg/kg (Rabbit)	18 g/m³ (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Benzene, 1,2,4-trimethyl-	95-63-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Benzene, 1,2,4-trimethyl-	Not listed	7.19 - 8.28 mg/L LC50 96 h	Not listed	6.14 mg/L EC50 = 48 h

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility .

Component	log Pow
Benzene, 1,2,4-trimethyl-	3.63

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

- **UN-No** UN1993
- **Hazard Class** 3
- **Packing Group** III

TDG

- **UN-No** UN1993
- **Hazard Class** 3
- **Packing Group** III

IATA

- **UN-No** 1993
- **Proper Shipping Name** FLAMMABLE LIQUID, N.O.S.*
- **Hazard Class** 3
- **Packing Group** III

IMDG/IMO

- **UN-No** 1993
- **Proper Shipping Name** Flammable liquid, n.o.s.
- **Hazard Class** 3
- **Packing Group** III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Benzene, 1,2,4-trimethyl-	X	X	-	202-436-9	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Benzene, 1,2,4-trimethyl-	95-63-6	98	1.0

SARA 311/312 Hazardous Categorization

- **Acute Health Hazard** Yes
- **Chronic Health Hazard** No
- **Fire Hazard** Yes
- **Sudden Release of Pressure Hazard** No

Reactive Hazard No

Clean Water Act Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzene, 1,2,4-trimethyl-	X	X	X	X	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class B3 Combustible liquid
D1B Toxic materials
D2B Toxic materials

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 10-Feb-2015
Print Date 10-Feb-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

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transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

Established in 1981 megaloid laboratories limited
2221 Ninth Line | Oakville, ON L6H 7G7
Phone: 905-337-7411 | Fax: 905-337-1686
megaloid.ca

Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name **Trichloroethylene**
Synonyms **1,1,2-trichloroethylene, acetylene trichloride, TCE & trade names**
CAS# **79-01-6**
Europe EC# **201-167-4**
Product Uses **cleaning solvent for vapour degreasing**

EMERGENCY INFORMATION
Canada **Call CANUTEC (collect)** **(613) 996-6666**
U.S.A. **Call CHEMTREC** **(800) 424-9300**

2. HAZARDS

GHS Class (Category)	***skin irritant* (2)**	***eye irritant* (2)**	***STOT* (3)**	***carcinogen* (1B)**	***aquatic chronic* (2)**
Signal Words	***WARNING***	***WARNING***	***WARNING***	***DANGER***	***no Signal Word***
Hazard Statements	*causes skin irritation (H315)*	*causes serious eye irritation (H319)*	*may cause drowsiness or dizziness (H336)*	*may cause cancer (H350)*	*toxic to aquatic life with long-lasting effects (H411)*

GHS Precautionary Statements for Labelling

P261 P271	**Avoid breathing vapour. Use only in a well ventilated area**
P262 P264	**Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.**
P270	**Do not eat, drink or smoke when using this product.**
P280	**Wear eye protection, protective gloves and clothing of butyl or "Viton".**
P273 P391	**Avoid release to the environment. Collect spillage.**

Canada – WHMIS Key: **D 1B, D 2A, D 2B**
B 2 *– Flash Point <38°C,* ***B 3*** *– Flash Point >38°C & <93°C*
D 1 *– Immediately Toxic,* ***D 2*** *– Chronic Toxicity*
C *– Oxidising Substance,* ***E*** *– Corrosive,* ***F*** *– Reactive Substance*

3. COMPOSITION

	%	TWAEV / TLV ppm / mg/m^3	LD_{50} (mg/kg) ORAL	LD_{50} (mg/kg) SKIN	LC_{50} ppm INHALATION
1,1,2-trichloroethylene	100%	10 / 55	2400	29,280	7175

4. FIRST AID

SKIN: Wash with soap & plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if irritation persists.
INHALATION: Remove from contaminated area promptly. ***CAUTION: Rescuer must not endanger himself!*** If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victimôs head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

Please ensure that this SDS is given to, and explained to people using this product.

5. FIRE FIGHTING & FLAMMABILITY

Flash Point	will not flash[1]
Autoignition Temperature	410°C / 770°F[1]
Flammable Limits	8% ï 50% ï *only burns in continuous contact with ignition source*
Combustion Products	hydrogen chloride & chlorine (*both corrosive*), plus phosgene (*highly toxic*)
Firefighting Precautions	as for substances sustaining fire; firefighters must wear SCBA
Static Discharge	will accumulate a static charge, but cannot be ignited by a spark

NOTE: *Trichloroethylene may ignite in the presence of a welding torch – and then produce highly hazardous vapours.*

6. ACCIDENTAL RELEASE MEASURES

Leak Precaution	dyke to control spillage; dyke must be able to contain the entire volume of a bulk storage tank
Handling Spill	ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep shovel & store in closed containers for recycling or disposal

7. HANDLING & STORAGE

Store in a cool environment, away from substances named in Part 10 (below).

Avoid breathing product vapour. Product should be used in equipment designed for the purpose (eg: vapour degreaser) Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator (see Part 8). ***Do not routinely wear a respirator for handling this product! Effective ventilation or engineering control of vapour is the ONLY acceptable way to protect people working with this product.***

When transferring product, if there is any danger of contact, wear appropriate protective clothing.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

NOTE: *Although trichloroethylene is hard to ignite, fire can convert vapours into highly toxic, corrosive gases – Part 5, above.*

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	10ppm / 55mg/m^3	Ontario STEV	25ppm / 135mg/m^3
ACGIH TLV	10ppm / 55mg/m^3	ACGIH STEL	25ppm / 135mg/m^3
OSHA PEL	50ppm / 270mg/m^3	OSHA STEL	200ppm / 1080mg/m^3

Ventilation	product should only be used in specially designed equipment (eg: vapour degreaser); mechanical ventilation should not be required so long as the equipment is working properly; ***using this product in open air and relying on mechanical ventilation is NOT ACCEPTABLE****;* a respirator with organic vapour cartridge should be available for escape purposes, should vapour containment fail (*always store respirators in airtight containers [eg: "Tupperware"] to maintain cartridge "freshness"*)
Hands	ñVitonò gloves ï *other types also protect, always confirm suitability with supplier*
Eyes	safety glasses with side shields or chemical goggles – *always protect eyes!*
Clothing	impermeable (hands, above) apron, boots, long sleeves, if splashing is anticipated

9. PHYSICAL PROPERTIES

Odour & Appearance	clear, colourless, liquid with mild, sweet, *pleasant* ether odour
Odour Threshold	80ppm ï 100ppm ï *well above the TLV; hazardous below odour threshold!*
Vapour Pressure	60mmHg / 8kPa (20°C/ 68°F); also 74.5mmHg / 9.9kPa (25°C / 77°F)[1]
Evaporation Rate (*Butyl Acetate = 1*)	4.5-4.9
Vapour Density (air = 1)	4.5
Boiling Point	87°C / 189°F
Freezing Point	-73°C / -99°F; also -85°C / -121°F[1]
Specific Gravity	1.46 (20/20°C)
Water Solubility	1.1 grams/litre (20°C / 68°F)
- in other solvents	most organic solvents
Log $P_{O/W}$ (Octanol/H_2O partition)	2.53[1]
Viscosity	0.58centipoise (20°C / 68°F)[1]
pH	none ï *does not yield hydrogen ions in solution*
Conversion Factor	1ppm = 5.36mg/m^3
Molecular Weight	131

10. REACTIVITY

Dangerously Reactive With	strong oxidising agents or reducing agents; reactive metals (eg: Na, K, Ca, Ba)
Also Reactive With	strong alkalies forming explosive dichloroacetylene gas; copper reacts with any dichloroethylene present to form explosive acetylides; reactive with epoxides; unstabilised trichloroethylene may corrode aluminium, copper, zinc in presence of moisture
Chemical Stability	stable; will not polymerize ï except under x-ray or other radiation source, or in the presence of aluminium chloride
Decomposes in Presence of	iron, copper, zinc or aluminium at 250-600°C cause decomposition to phosgene; reactive metals cause decomposition to dichloroacetylene
Decomposition Products	apart from Hazardous Combustion Products ï dichloroacetylene
Mechanical Impact	not sensitive

11. TOXICITY

Effects, Acute Exposure

Skin Contact	severely irritating if not removed promptly; chemical burns if contact is prolonged (*>5 minutes*)
Skin Absorption	slight ï no systemic toxic effects by this route
Eye Contact	liquid severely irritating, may damage eyes; vapour irritates some above 160ppm, others at 350ppm blurred vision & other disturbances have been reported following contact with eyes
Inhalation	headache, dizzyness, drowsiness, intoxication may occur at above 350ppm; irritating above 1000ppm; high concentrations can lead to unconsciousness & death, numbness & muscle weakness also reported
Ingestion	burning sensation in mouth & throat; headache, dizzyness, drowsiness, intoxication & vomiting, followed by muscle weakness, plus possible delayed heart, kidney & liver damage
LD_{50} (oral)	4920 & 5620mg/kg (rat), 2400mg/kg (mouse), >7330mg/kg (rabbit), >5865mg/kg (cat), 5680mg/kg (dog)
LD_{50} (skin)	29,280mg/kg (rabbit)
LC_{50} (inhalation)	7175, 7440, 8450, 40,920 & 48,730ppm (mouse), 7250 & 26,170ppm (rat)

Effects, Chronic Exposure

General	prolonged or repeated exposure may cause dermatitis; neurological damage (headache, sleeplessness, mood change), plus blurred or tunnel vision may be seen; loss of sensation in hands & feet may occur
Sensitising	not a sensitiser
Carcinogen/Tumorigen	probable carcinogen ï IARC ï Group 1, ACGIH ï A2; the NTP rates trichloroethylene a carcinogen
Reproductive Effect	no known effect on humans or animals
Mutagen	mutagen in a few animal tests, but not in others[1]; not known to be a mutagen or teratogen in humans
Synergistic With	alcohol ï prior exposure to trichloroethylene followed by alcohol consumption causes upper body flush ï called ñ*degreasers flush*ò

12. ECOLOGICAL INFORMATION

Bioaccumulation	trichloroethylene metabolised & excreted (½-life ~40hr) and will not bioaccumulate
Biodegradation	biodegrades in aerobic sewage treatment facilities, but only in the presence of other carbon sources; biodegradation is much slower under anaerobic conditions
Abiotic Degradation	reacts with atmospheric hydroxyl (OH) radicals; estimated ½-life in air 5-7 days
Mobility in soil, water	shown to have moderate mobility in soil and the water column
Marine Toxicity	
LC_{50} (96 hr) Fish	28 & 63mg/litre/96hr (Jordanella floridae), 41mg/litre/96hr (Pimephelas promelas), 16mg/litre Limada limada), 52 & 99mg/litre (Cyprinodon variegatus), 45mg/litre (Lepomis macrochirus)
LC_{50} (48hr) Shrimp	58mg/litre/ (Daphnia cucullata), 2.2, 8, 21 & 42-97mg/litre (Daphnia magna) & others
EC_{50} (Algae)	450mg/litre (Scenedesmus subspicatus), 175mg/litre (Selenastrum capricornutum), 95 & 150mg/litre (Skeletonema costatum)
EC_{50} (Bacteria)	235mg/litre (Bacillus subtilis), >400mg/litre (Chilomonas paramecium), 975mg/litre (Photobacterium phosphoreum) & others

13. DISPOSAL

Waste Disposal **do not flush to sewer**, recycle solvent if possible, may be incinerated in approved facility ***with flue gas monitoring and scrubbing*** *after mixing with a suitable flammable waste solvent*

Containers **Drums** should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.
Pails must be vented and thoroughly dried prior to crushing and recycling.
IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years.
Never cut, drill, weld or grind on or near this container, even if empty

14. TRANSPORT CLASSIFICATION

Canada TDG	**PIN**	**UN-1710**
AND	**Shipping Name**	**trichloroethylene**
U.S.A. 49 CFR	**Class**	**6.1**
	Packing Group	**III**
Marine Pollutant		not a marine pollutant
ERAP Required		**NO**

15. REGULATIONS

Canada DSL	**on inventory**
U.S.A. TSCA	**on inventory**
Europe EINECS	**on inventory**

U.S.A. Regulations:

Immediately Dangerous to Life or Health: 1000 ppm; NIOSH considers trichloroethylene to be a potential occupational carcinogen.

Allowable Tolerances: Tolerances are established for residues of trichloroethylene resulting from its use as a solvent in the manufacture of foods as follows:

Food	Parts per million
Decaffeinated ground coffee	25
Decaffeinated soluble (instant) coffee extract	10
Spice oleoresins	30 parts per million (*provided that if residues of other chlorinated solvents are also present, the total of all residues of such solvents in spice oleoresins shall not exceed 30 parts per million*).

OSHA Standards: Permissible Exposure Limit: Table Z-2 8-hr Time Weighted Avg: 100 ppm. Permissible Exposure Limit: Table Z-2 Acceptable Ceiling Concentration: 200 ppm. Permissible Exposure Limit: Table Z-2 Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. Concentration: 300 ppm. Maximum Duration: 5 minutes in any 2 hours. Vacated 1989 OSHA PEL TWA 50 ppm (270 mg/cu m); STEL 200 ppm (1080 mg/cu m) is still enforced in some states.

NIOSH Recommendations: NIOSH considers trichloroethylene to be a potential occupational carcinogen. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration. Recommended Exposure Limit: 60 Minute Ceiling Value: 2 ppm. /During the usage of trichloroethylene as an anesthetic agent/ Recommended Exposure Limit: 10 Hour Time-Weighted Average: 25 ppm. /During exposures to trichloroethylene other than as an anesthetic agent/

15. REGULATIONS, cont'd

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 10 ppm; 15min Short Term Exposure Limit (STEL) 25 ppm, A2: Suspected human carcinogen.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Trichloroethylene is produced, as an intermediate or a final product, by process units covered under this subpart. Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Trichloroethylene is included on this list.

Federal Drinking Water Standards: Maximum contaminant level goals for organic contaminants: Trichloroethylene, MCLG: zero. Maximum contaminant levels (MCL) for organic contaminants apply to community and non-transient, non-community water systems: Trichloroethylene, MCL 0.005 mg/L. EPA 5 ug/l

State Drinking Water Standards: Florida 3 ug/l, New Jersey 1 ug/l

State Drinking Water Guidelines: Arizona 3.2 ug/l, Connecticut 5 ug/l, Maine 32 ug/l, Minnesota 5 ug/L

Clean Water Act Requirements: Toxic pollutant designated pursuant to section 307(a)(1) of the Federal Water Pollution Control Act and is subject to effluent limitations. Trichloroethylene is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 100 lb or 45.4 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

RCRA Requirements: As stipulated in 40 CFR 261.33, when trichloroethylene, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). A solid waste containing trichloroethylene may or may not become characterized as a hazardous waste when subjected to the Toxicity Characteristic Leaching Procedure listed in 40 CFR 261.24, and if so characterized, must be managed as a hazardous waste. When trichloroethylene is a spent solvent, it is classified as a hazardous waste from a nonspecific source, as stated in 40 CFR 261.31, and must be managed according to state and/or federal hazardous waste regulations.

FDA Requirements: Trichloroethylene is an indirect food additive for use as a component of adhesives. Tolerances are established for residues of trichloroethylene resulting from its use as a solvent in the manufacture of foods as follows:

Food	Parts per million
Decaffeinated ground coffee	25
Decaffeinated soluble (instant) coffee extract	10
Spice oleoresins	30 parts per million (*provided that if residues of other chlorinated solvents are also present, the total of all residues of such solvents in spice oleoresins shall not exceed 30 parts per million*).

16. OTHER INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577
*Data from **RTECS**, **HSDB** (Haz. Substance Data Base), **Cheminfo** (CCOHS), **IUCLID** Datasheets (ESIS – European Chem. Substance Info. System), & others.*
*Preparation Date: **May 2005** Revision Date: **June 2008, June 2011, June 2014***

European Chemicals Agency (EChA) dossier for Trichloroethylene:
http://apps.echa.europa.eu/registered/data/dossiers/DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249/DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249_DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249.html

SAFETY DATA SHEET

Creation Date 22-Sep-2009 **Revision Date** 10-Feb-2015 **Revision Number** 1

1. Identification

Product Name **cis-1,2-Dichloroethylene**

Cat No. : **AC113380000; AC113380025; AC113380100; AC113380500**

Synonyms cis-Acetylene dichloride.

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Acute oral toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor
Harmful if swallowed
Harmful if inhaled
Causes serious eye irritation
Causes skin irritation
May cause respiratory irritation

Precautionary Statements
Prevention
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Avoid breathing dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Take precautionary measures against static discharge
Do not eat, drink or smoke when using this product
Response
Call a POISON CENTER or doctor/physician if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation occurs: Get medical advice/attention
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
Rinse mouth
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Fire
Explosion risk in case of fire
Fight fire with normal precautions from a reasonable distance
Evacuate area
Storage
Store in a well-ventilated place. Keep cool
Store in a closed container
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition / information on ingredients

Component	CAS-No	Weight %
cis-1,2-Dichloroethylene	156-59-2	97

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.

Ingestion Do not induce vomiting. Obtain medical attention.

Most important symptoms/effects Breathing difficulties. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Use water spray to cool unopened containers. chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point 6 °C / 42.8 °F
Method - No information available

Autoignition Temperature 440 °C / 824 °F

Explosion Limits
Upper 12.80%
Lower 9.70%
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Flammable. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products
Hydrogen chloride gas Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	3	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing.

Environmental Precautions See Section 12 for additional ecological information.

Methods for Containment and Clean Up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling Ensure adequate ventilation. Wear personal protective equipment. Use explosion-proof equipment. Use only non-sparking tools. Avoid contact with skin, eyes and clothing. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
cis-1,2-Dichloroethylene	TWA: 200 ppm		

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
cis-1,2-Dichloroethylene			TWA: 200 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-80 °C / -112 °F
Boiling Point/Range	60 °C / 140 °F @ 760 mmHg
Flash Point	6 °C / 42.8 °F
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	12.80%
Lower	9.70%
Vapor Pressure	201 mmHg @ 25 °C
Vapor Density	3.34 (Air = 1.0)
Relative Density	1.280
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	440 °C / 824 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C2 H2 Cl2
Molecular Weight	96.94

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Exposure to light. Incompatible products. Exposure to moist air or water.

Incompatible Materials Bases

Hazardous Decomposition Products Hydrogen chloride gas, Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes, respiratory system and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
cis-1,2-Dichloroethylene	156-59-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

Do not empty into drains. Do not flush into surface water or sanitary sewer system.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
cis-1,2-Dichloroethylene	Not listed	Not listed	EC50 = 721 mg/L 5 min EC50 = 905 mg/L 30 min	Not listed

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

TDG

UN-No	UN1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

IATA

UN-No	1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

IMDG/IMO

UN-No	1150
Proper Shipping Name	1,2-DICHLOROETHYLENE
Hazard Class	3
Packing Group	II

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
cis-1,2-Dichloroethylene	X	-	X	205-859-7	-		-	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes

Sudden Release of Pressure Hazard No
Reactive Hazard No

Clean Water Act Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA

Component	Hazardous Substances RQs	CERCLA EHS RQs
cis-1,2-Dichloroethylene	1000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
cis-1,2-Dichloroethylene	X	-	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class B2 Flammable liquid
D1B Toxic materials
D2B Toxic materials

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 22-Sep-2009
Revision Date 10-Feb-2015
Print Date 10-Feb-2015
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally

Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS

APPENDIX D

CITIZEN PARTICIPATION PLAN

October 2017

Citizen Participation Plan
Master Cleaners Site (BCP#C401072)
Charles Bohl Incorporated
Town of Guilderland
Albany County, New York

Prepared for:

Charles Bohl Incorporated
P.O. Box 59
Guilderland, NY, 12084

Prepared by:

C.T. MALE ASSOCIATES
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Latham, New York 12110
(518) 786-7400
FAX (518) 786-7299

C.T. Male Associates Project No: 16.6345

CITIZEN PARTICIPATION PLAN
MASTER CLEANERS SITE
2312 WESTERN AVENUE
TOWN OF GUILDERLAND
ALBANY COUNTY, NEW YORK

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CITIZEN PARTICIPATION PLAN
MASTER CLEANERS SITE

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Note: The information presented in this Citizen Participation Plan is current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicants: **Charles Bohl Incorporated and Guilderland Project Associates, LLC ("Applicant")**
Site Name: **Master Cleaners Site ("Site")**
Site Address: **2312 Western Avenue, Guilderland, NY**
Site County: **Albany**
Site Number: **C401072**

1. WHAT IS NEW YORK'S BROWNFIELD CLEANUP PROGRAM?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

FOR MORE INFORMATION ABOUT THE BCP, GO ONLINE AT:
HTTP://WWW.DEC.NY.GOV/CHEMICAL/8450.HTML.

2. CITIZEN PARTICIPATION ACTIVITIES

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;
- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process;
- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;
- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and
- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility; and
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See http://www.dec.ny.gov/chemical/61092.html.

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site

investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

Public forums, comment periods and contact with project managers provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup. The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at
http://www.dec.ny.gov/regulations/2590.html.

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies) • Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	At time of preparation of application to participate in the BCP. When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period.	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

3. MAJOR ISSUES OF PUBLIC CONCERN

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

Historical evidence indicates that the proposed BCP site was previously the site of a dry cleaning business. During an investigation of the site, it was determined that hazardous chemicals associated with dry cleaning were released at an undetermined time into the soil and groundwater at the site.

Impacts to public water supply are unlikely. Potential Impacts to private water supply wells will be determined through this remedial investigation. If the remedial investigation indicates that the contamination is likely to impact private water supply wells, appropriate action will be taken. Chlorinated solvents in the groundwater on-site have the potential to volatilize and migrate into the interior of future on-site buildings and potentially off-site properties from soil gas. This Vapor Intrusion in on site buildings over or near existing contamination is potentially of concern and is further discussed in the section titled *History of Site Use, Investigation, and Cleanup.* If the remedial investigation indicates that the contamination is likely to cause vapor intrusion, appropriate mitigations action will be taken.

4. SITE INFORMATION

Appendix C contains a map identifying the location of the site.

Site Description

The proposed BCP Property is located at 2312 Western Avenue in the Town of Guilderland, Albany County, New York. The proposed site consists of one tax parcel (S.B.L. 40.17-2-12) and is 0.43 acres in size.

The properties surrounding the Master Cleaners Site are vacant commercial land, occupied commercial land and municipal land. The site is bounded to the north by Western Avenue. Beyond Western Avenue lies the Guilderland Fire Department. To the west of the Site lies a vacant house. This property extends to the south of the Site and also contains a storage barn and vacant apartments. The commercial property located east of the site contains a vacant house.

The Master Cleaners Site is vacant, with an abandoned commercial building on site. The Site topography slopes moderately from northeast to southwest. (See Site Location Map, Appendix C)

History of Site Use, Investigation, and Cleanup

The Site was previously the location of an active dry cleaning business named Master Cleaners, which was likely in operation from the early 1950's until mid 1990's. Based on the results of the previously conducted sampling, it is suspected that at some point during the operation of this business, dry cleaning chemicals were released into the soil and groundwater of the Site.

A subsurface investigation was completed by PS Property Solutions, Inc, in November 2015. The findings of a subsurface investigation already performed on the Master Cleaners Site confirm the presence of environmental contamination at the site; however,

the nature and extent of the contamination is not fully characterized. The primary contaminants of concern for this site are chlorinated volatile organic compounds (VOCs), particularly tetrachloeothene (PCE), trichloroethene (TCE) and associated breakdown products. PCE and TCE are manufactured chemical solvents that are most widely used in the dry-cleaning of fabrics. These compounds are nonflammable, colorless liquids at room temperature, which readily evaporate into air and have an ether-like odor. These chemicals were detected in both soil and groundwater at the Site. The concentrations of these chemicals previously detected in the soil were below the soil cleanup objectives for restricted use; however, groundwater concentrations of these chemicals were above applicable NYSDEC Standards and therefore warrant further investigation and, if deemed necessary, remedial action.

Although the property and surrounding properties obtain public drinking water from the Town of Guilderland, chlorinated solvents in the groundwater on site have the potential to volatilize and migrate into the interior of future on-site buildings from soil gas (air spaces within the soil). This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is commonly referred to as soil vapor intrusion, and could be an issue for future development.

5. INVESTIGATION AND CLEANUP PROCESS

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has potentially migrated from the site.

The Applicant in its Application proposes that the site does not have a specific future site use at this time. The future site use will be in accordance with zoning regulations. The site is currently zoned as LB, Light Business.

To achieve this goal, the Applicant will conduct investigation activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation work plan, which is subject to public comment.

The site investigation has several goals:

1) define the nature and extent of contamination in soil, groundwater and any other parts of the environment that may be affected;

2) identify the source(s) of the contamination;
3) assess the impact of the contamination on public health and the environment; and
4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submited a draft "Remedial Investigation Work Plan" to NYSDEC for review and approval. NYSDEC made the draft plan available to the public review during the 30-day public comment period for the BCP application.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a "significant threat," it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that remedial action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant

completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system to address soil vapor intrusion at on-site buildings. Site management continues until NYSDEC determines that it is no longer needed.

APPENDIX A: PROJECT CONTACTS AND LOCATIONS OF REPORTS AND INFORMATION

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

John Durnin
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7010
(518) 402-9768
john.durnin@dec.ny.gov

Rick Georgeson
Citizen Participation Specialist
NYSDEC
Region 4 Headquarters
1130 North Wescott Road
Schenectady, NY 12230-2014
(518) 357-2045
rick.georgeson@dec.ny.gov

New York State Department of Health (NYSDOH):

Runey Ghosh
Public Health Specialist
Bureau of Environmental Exposure
Investigation
NYS Department of Health
Empire State Plaza – Corning Tower
Room 1787
Albany, NY 12237
(518) 402-7860
runey.ghosh@health.state.ny.us

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Town of Guilderland Public Library
2228 Western Avenue
Guilderland, NY 12084
Phone: (518) 456-2400
Hours: M-F: 10am to 9pm
Sat: 10am to 5pm
Sun:1pm to 5pm (Sept-June)

APPENDIX B - SITE CONTACT LIST

Table 1: Elected Representatives & Government Officials

Local Government Officials		
Town of Guilderland Officials/Elected Representatives		
Peter Barber Town Supervisor Guilderland Town Hall – 2nd Floor P.O. Box 339 Guilderland, NY 12084	Jan Weston Town Planner Guilderland Town Hall P.O. Box 339 Guilderland, NY 12084	Thomas Remmert Zoning Board Chairperson Guilderland Town Hall P.O. Box 339 Guilderland, NY 12084
Jean Cataldo Town Clerk Guilderland Town Hall – 2nd Floor P.O. Box 339 Guilderland, NY 12084	Stephen Feeney Planning Board Chairperson Guilderland Town Hall P.O. Box 339 Guilderland, NY 12084	Donald Csaposs Industrial Development Agency CEO Guilderland Town Hall P.O. Box 339 Guilderland, NY 12084
Federal Elected Representatives		
Hon. Charles Schumer US Senate Washington, DC 20510	Hon. Kirsten Gillibrand US Senate Washington, DC 20510	Rep. Paul Tonko US House of Representatives Washington, DC 20515
State Elected Representatives		
State Senator George A. Amedore, Jr Legislative Office Building, Room 802 Albany, NY 12247	Patricia Fahy 109th State Assembly District Legislative Office Building Room 452 Albany, NY 12248	
Albany County Officials/Elected Representatives		
Daniel P. McCoy County Executive Harold L. Joyce Albany County Office Building 112 State St. Room 900 Albany, NY 12207	Sean E. Ward Albany County Legislature Chairman Harold L. Joyce Albany County Office Building 112 State St. Room 710 Albany, NY 12207	David Latina Commissioner General Services Harold L. Joyce Albany County Office Building 112 State St. Room 1220 Albany, NY 12207

Albany County Officials/Elected Representatives (Continued)		
Bruce A. Hidley County Clerk Office of the Albany County Clerk County Court House, Rom 128 16 Eagle Street Albany, NY 12207-1077	Elizabeth F. Whalen Commissioner Albany County Department of Health 175 Green Street Albany, NY 12202	Dominic Rigosu Planning Board Acting Chair 2022 Western Ave. Albany, NY 12203
Darell Duncan Commisioner Public Works 449 New Salem Road Voorhesville, NY 12186-4826		

Table 2: State Officials (email only)

John Durnin, DEC Project Manager john.durnin@dec.ny.gov	Janet Brown, DEC Section Chief janet.brown@dec.ny.gov	Gerard Burke, DEC Bureau Director gerard.burke@dec.ny.gov
Michael Ryan, DEC DER Assistance Division Director Michael.ryan@dec.ny.gov	Robert Schick, DEC DER Division Director Robert.schick@dec.ny.gov	Runey Ghosh, DOH Project Manager runey.ghosh@health.state.ny.us
Justin Deming, DOH Regional Chief	Krista Anders, DOH BEEI Director	

Table 3: Media Representatives

Albany Times Union Attention: News Director PO Box 15000, News Plaza Albany, NY 12212	Time Warner Cable News Albany Attention: News Director 104 Watervliet Avenue Extension Albany, NY 12206	WNYT TV 13 Attention: News Director 715 North Pearl Street Albany, NY 12204 (800) 999-WNYT
WRGB TV 6 Attention: News Director 1400 Balltown Road Schenectady, NY 12309 (518) 346-6666	The Daily Gazette Attention: News Director 2345 Maxon Road Extension Schenectady, NY 12308 (518) 374-4141	Albany Communications Attention: News Director 91 Colvin Avenue Albany, NY (518) 482-8851

Table 3: Media Representatives (continued)

WTEN TV 10 & WXXA TV 23 Attention: News Director 341 Northern Boulevard Albany, NY 12204 (518) 436-4822	Capital Broadcasting Attention: News Director 51 South Pearl Street, #13 Albany, NY (518) 813-4975	WROW AM 590 Attention: News Director 6 Johnson Road Latham, New York 12110 (518) 786-6600
The Spotlight 125 Adams Street Delmar, NY 12054 news@spotlightnews.com	Altamont Enterprise 123 Maple Avenue Altamont, NY 12009 altamontenterprise@csdsl.net	

Table 4: Environmental Groups

Environmental Advocates of New York 352 Hamilton Street Albany, NY 12210	Environmental Citizens Coalition 22 Central Avenue Albany, NY 12210	Sierra Club Hudson-Mohawk Chapter P.O. Box 8447 Albany, NY 12208-8447

Table 5: Community Groups

Guilderland YMCA 250 Winding Brook Drive Guilderland, NY 12084		

Table 6: Requested Persons

No interested persons have requested to be on site contact list.

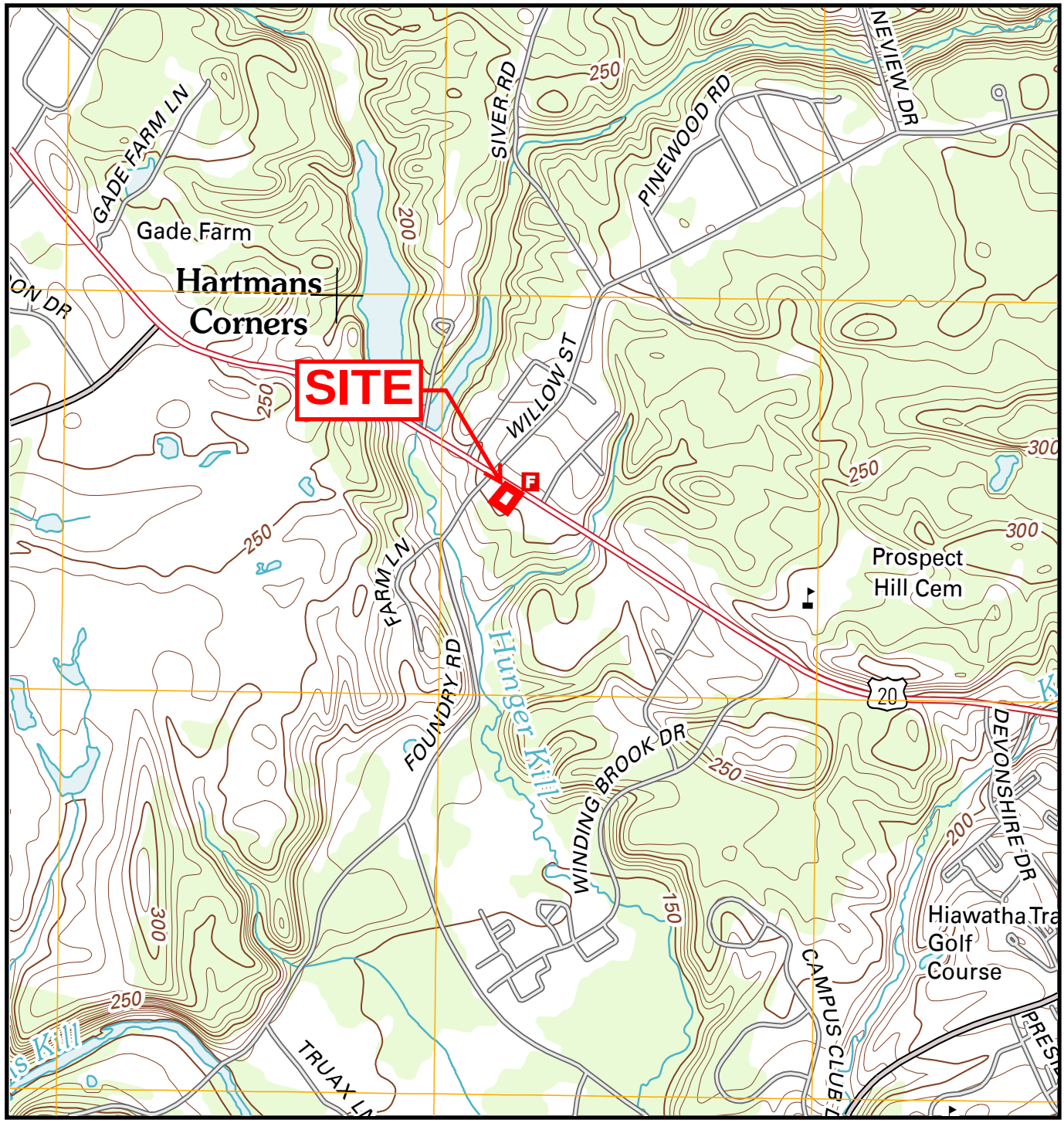
Table 7: Public Water Supplier

Albany County Conservation District P.O. Box 497 24 Martin Road Voorheesville, NY 12186	Department of Water/Wastewater 6011 State Farm Road Guilderland, NY 12084	

Table 8: Site Owners and Adjacent Property Owners/Occupants

Site Tax ID: 40.17-2-12 Property Address: 2312 Western Ave. Owner Name/Address: Charles Bohl Incorporated 2314 Western Ave. Guilderland, New York 12084	Site Tax ID: 40.17-2-13 Property Address: 2310 Western Ave. Owner Name/Address: Charles Bohl Incorporated 2314 Western Ave. Guilderland, NY 12084
Site Tax ID: 40.17-2-11.1 Property Address: 2314 Western Ave. Owner Name/Address: Charles Bohl Incorporated 2314 Western Ave. Guilderland, NY 12084	Site Tax ID: 40.17-1-16 Property Address: 2303 Western Ave. Owner Name/Address: Guilderland Fire District 2303 Western Ave. Guilderland, NY 12084

APPENDIX C:
SITE LOCATION MAP



MAP REFERENCE
USGS
Voorheesville Quad.
7.5-Minute Series

N

ARCHITECTURE &
BUILDING SYSTEMS
ENGINEERING
CIVIL ENGINEERING
ENVIRONMENTAL SERVICES
SURVEY & LAND
INFORMATIONAL SERVICES

C.T. MALE ASSOCIATES

50 CENTURY HILL DRIVE, LATHAM, NY 12110
PHONE (518) 786- 7400 FAX (518) 786-7299

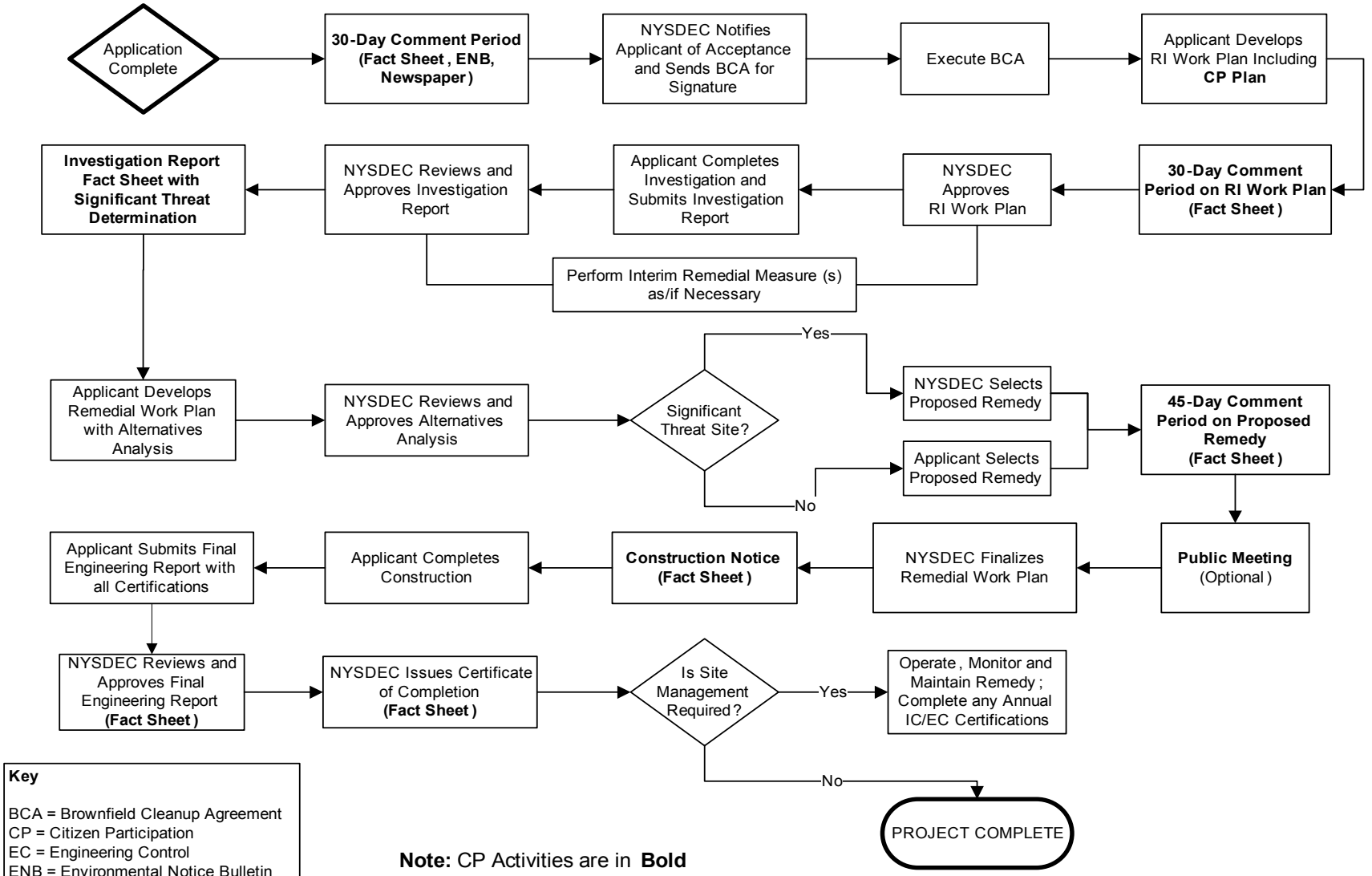
Appendix C: Site Location Map

2312 Western Avenue
Guilderland, New York

TOWN OF GUILDERLAND	ALBANY COUNTY, NY
SCALE: None	
DRAFTER: PAL	
PROJECT No. 16.6345	

APPENDIX D:
BROWNFIELD CLEANUP PROGRAM PROCESS

Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

ATTACHMENTS

ATTACHMENT A

PREVIOUS INVESTIGATIONS

PS PROPERTY SOLUTIONS, INC.

10 Catherine Street
Hudson Falls, NY 12839
Ph: (518) 223-0458
Cell: (518) 932-9121
pspropertysolutions@albany.twcbc.com
paulmshannon@yahoo.com

November 30, 2015

Ms. Teri Bohl
c/o Charles Bohl
Charles Bohl, Inc.
P.O. Box 59
Guilderland, NY 12084

RE: Phase 2 Subsurface Investigation Report
Parcel No. 40.17-2-12
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597

Dear Ms. Bohl:

PS Property Solutions, Inc. (Property Solutions) has prepared the following correspondence to summarize the environmental investigation (Phase 2) activities performed at the above referenced site (the Property) on October 20, 2015 and November 2, 2015 (**Appendix A** - **Figure 1**). The purpose of this environmental work was to determine whether the subsurface soil and/or groundwater at the subject Property have been impacted by its former use as a dry cleaning business. The environmental activities performed as part of this are shown below.

- The scope of work on October 20, 2015 consisted of advancement of four (4) soil borings (all of which were converted into one [1]-inch diameter monitoring wells), field screening of soil, logging/classification of soil, and collection of four (4) soil samples for laboratory analysis.

- The scope of work on November 2, 2015 consisted of gauging, purging, and sampling of the four (4) monitoring wells installed on October 20, 2015 at the Property.

The results of the investigation and sampling activities indicated that concentrations of volatile organic compounds (VOCs) were detected in the soil and groundwater at the Property in at least three (3) of the four (4) soil borings / monitoring wells installed. As such, a recommendation for additional investigation will be made. A photographic log of the investigation activities performed at the Property is attached (**Appendix B**).

Property Notes

The subject Property is a 0.43+/- acre parcel containing a former dry cleaning business. Based on a very rudimentary review, the Property appears to have been used as a dry cleaner from approximately 1956 until 1996. The surrounding area generally consists of mixed commercial / residential sites (Appendix A - **Figure 2**). Municipal water services, along with natural gas services, are available at the Property and appear to be connected to the building. Municipal sewer services are available, but it was not identified whether the subject Property building is connected.

Subsurface Investigation

On October 20, 2015, Property Solutions oversaw the advancement of four (4) soil borings (SB-1 through SB-4) at the Property (Appendix A – **Figure 3**; Appendix B - Photographs 1 through 4). Summit Drilling, Inc. of Latham, New York, performed drilling and subsurface macrocore soil sampling duties. A track-mounted drilling rig was utilized during the soil boring and soil sampling activities. The soil borings were advanced using direct-push, dual-tube drilling methods. Prior to advancement of

each soil boring, a magnetometer was used to scan the subsurface for a general indication of metal objects. Based on the results of the magnetometer scans, the locations of the soil borings may have been modified in the field based on conditions. The subsurface investigation targeted the four (4) exterior sides of the former dry cleaning business building. This included: the north side of the Property, along Western Ave. (soil boring SB-1); the western/southwestern side (soil boring SB-2); the southern side (soil boring SB-3); and, the eastern/southeastern side (soil boring SB-4).

All four (4) of the soil borings were converted into one (1)-inch outside diameter monitoring wells. Each of the monitoring wells was constructed of schedule 40 PVC 10-slot well screen and solid riser. The annular space between the monitoring well screen and borehole wall was filled with grade 0 sand. A bentonite seal was emplaced near the top of the casing of the monitoring well and then hydrated. The base of the borehole for monitoring wells MW-2, MW-3, and MW-4 were sealed with granulated bentonite. A more detailed description of the construction of the monitoring wells installed at the Property as part of this investigation is attached (**Appendix C**).

Soil Headspace Screening

During borehole advancement, continuous sampling of the soil occurred in order to obtain depth-discrete soil samples for characterizing soil type and possible analytical testing. The soil samples were placed into airtight, re-sealable bags, and allowed to volatilize. After volatilization, soil headspace vapor concentrations from each sample were measured using a handheld photoionization detector (PID). The headspace of each container was then measured and the maximum concentration was recorded in parts per million (ppm). During the investigation, Property Solutions utilized a BW Technologies GasAlertMicro 5 PID with a 10.6 electro-volt lamp.

In general, the soil encountered during the drilling program consisted of fill material (silt, gravel, sand) from underneath the asphalt (when applicable) to about three (3) feet below grade (fbg). From around that depth until roughly between 20 and 30 fbg, very fine-grained sand and silt was present. From around those depths until the termination of each soil boring, silt, very fine-grained sand, and small amounts of clay was documented. Silt content appeared to increase with depth in all soil borings. Suspected groundwater was observed between six (6) to 10 fbg in the soil borings during their advancement.

During drilling, the soil headspace readings recorded by the PID were non-detectable (i.e., 0 ppm) throughout soil boring SB-1. PID readings in the other soil borings maximized at 95 ppm (SB-2, approximately 20 to 25 fbg); 250 ppm (SB-3; approximately 10 to 13 fbg); and, 150 ppm (SB-4; approximately 10 to 15 fbg). Due to the suspected staining, odors, and/or elevated PID readings observed and recorded during advancement of three (3) of the four (4) of the soil borings, the New York State Department of Environmental Conservation (NYSDEC) Spills Hotline was contacted and NYSDEC Spill No. 15-07597 was assigned.

Soil Sampling

Four (4) soil samples were retained for laboratory analysis from the soil borings advanced on October 20, 2015. To confirm the non-detectable PID readings recorded during advancement of soil boring SB-1, a soil sample was collected from the bottom of the borehole (around 35 to 40 fbg). From the remaining soil borings (SB-2, SB-3, and SB-4), the sampling interval exhibiting the highest PID readings was submitted for laboratory analysis.

The soil samples were placed on ice and sent under a proper chain of custody to Alpha Analytical, Inc. (Alpha), in Westborough, Massachusetts. The soil samples were analyzed within applicable holding times. The soil samples were analyzed for VOCs via EPA Method 8260, and for semi-VOCs via EPA Method 8270.

Laboratory Soil Analytical Results

The laboratory soil analytical results (**Appendix D - Table 1**), as compared to the NYSDEC Subpart 375 6.8(a) - Soil Cleanup Objectives (SCO) for Unrestricted Use, indicated that the samples from soil boring SB-1 recorded VOCs above applicable SCO (total VOCs concentrations 10,340 parts per billion [ppb]). This laboratory analytical result does not concur with the observations (both olfactory and visual) and PID readings in the field, where no suspected evidence of significant impacts were observed or recorded during advancement of soil boring SB-1. As such, this laboratory analytical result for the soil sample form soil boring SB-1 may be the result of a sample/label switch or similar instance, and does not appear to be representative of the environmental conditions in this soil boring. This is supported by the non-detectable follow-up groundwater sample results from this borehole (to be discussed).

The remaining soil samples recorded concentrations of VOCs above applicable NYSDEC SCO. Specifically, the laboratory analytical results for the soil sample collected from soil boring SB-2 recorded 63,630 ppb of total VOCs. The laboratory analytical results for the soil sample collected from soil boring SB-3 recorded 31,876 ppb of total VOCs. the laboratory analytical results for the soil sample collected from soil boring SB-4 recorded 8,740 ppb of total VOCs. The detected VOC compounds appear to consist of formerly-used dry cleaning fluid impacts and/or breakdown constituents. No semi-VOCs were detected in any of the soil samples analyzed. A hardcopy of the laboratory analytical report is attached (**Appendix E**).

Monitoring Well Gauging

On November 2, 2015, Property Solutions gauged the monitoring wells (MW-1 through MW-4) at the Property. Prior to gauging, each monitoring well was opened and allowed to equilibrate to atmospheric conditions for approximately 10 minutes. A water level indicator, graduated to one hundredth of a foot (0.01'), was then used to measure the depth to groundwater in each monitoring well. The approximate depth to the water table in the monitoring wells averaged approximately five (5) to eight (8) fbg on November 2, 2015.

Monitoring Well Sampling

After gauging, and prior to sampling, each of the newly-installed monitoring wells were purged of a minimum of three (3) casing volumes of groundwater using a new, disposable bailer. The groundwater samples were collected in pre-preserved (as applicable) laboratory supplied sampling containers, placed on ice, and delivered or sent under a proper chain of custody to Alpha. The groundwater samples for the samples collected from monitoring wells MW-1, MW-3, and MW-4 were analyzed for VOCs via EPA Method 8260. The groundwater sample from monitoring well MW-2 (the most impacted soil boring based on the previously referenced laboratory soil analytical results) was analyzed for VOCs EPA Method 8260 and for semi-VOCs via EPA Method 8270. All groundwater samples were analyzed within applicable holding times.

Laboratory Groundwater Analytical Results

The laboratory groundwater analytical results (Appendix D - **Table 2**), as compared to the NYSDEC Class GA Groundwater Standards (6 NYCRR Part 703), indicated that the samples from monitoring wells MW-2, MW-3, and MW-4 recorded detections of VOCs above applicable NYSDEC Groundwater Standards (Appendix A - **Figure 4**). The majority of the VOCs detected are suspected historical dry cleaning fluids (e.g., chlorinated compounds), along with a few VOCs such as trimethylbenzenes (7.5 ppb) and xylenes (two [2] ppb). Specifically, monitoring well MW-2, installed along the western / southwestern side of the former dry cleaner building, recorded a total VOCs concentration of 25,554 ppb. Monitoring well MW-3, installed immediately to the south of the building, recorded a total VOCs

concentration of 204,000 ppb. Monitoring well MW-4, installed outside an overhead door along the eastern / southeastern side of the building, recorded a total VOCs concentration of 42,317 ppb. It should be noted that many of the laboratory reporting limits for the groundwater sample collected from monitoring well MW-3 were elevated (some were elevated above applicable NYSDEC Groundwater Standards). No VOC compounds were detected in the groundwater sample collected from monitoring well MW-1. No semi-VOC compounds were detected in the groundwater sample collected from monitoring well MW-2. A hardcopy of the laboratory analytical report is attached (Appendix E).

Summary / Conclusion

- Four (4) soil borings (all of which were converted into one [1]-inch diameter temporary monitoring wells) were advanced/installed at the subject Property on October 20, 2015. A total of four (4) soil samples (one [1] from each borehole) were collected on that date and analyzed for the full suite of VOC and semi-VOC compounds. The samples were selected in order to confirm a non-impacted (based on PID, visual, and olfactory field indications) soil boring (soil boring SB-1); and, from the most impacted soil sampling intervals (based on field indications) of the remaining soil borings. The laboratory analytical results for the soil samples indicated VOCs above applicable NYSDEC SCOs in all soil borings. It should be noted, however, it is Property Solutions' opinion that the soil sample collected from soil boring SB-1 may have been inadvertently switched, mislabeled, and/or similar instance, as no field indications of significant impacts were noted during advancement of this borehole while in the field on October 20, 2015.

- On November 2, 2015, all four (4) monitoring wells at the subject Property were gauged, purged, and sampled. The samples collected from monitoring wells MW-1, MW-3, and MW-4 were analyzed for VOCs, while the sample from monitoring well MW-2 was analyzed for VOCs and semi-VOCs. The laboratory groundwater analytical results for the samples collected on that date indicated non-detectable VOC concentrations in the groundwater sample obtained from monitoring well MW-1, and elevated (i.e., above applicable NYSDEC standards) VOC concentrations in the groundwater samples obtained from the remaining monitoring wells.

- Based on the PID readings and the visual and olfactory indications in the field during the investigation, along with the laboratory analytical results for the groundwater samples, it is Property Solution's opinion that the most significant subsurface impacts at the Property in the areas investigated are in the groundwater and are mainly along the southern side of the former dry cleaner building. This high concentration of VOCs is suggestive of a possible source area (e.g., drywell or similar instance) in the vicinity. The lack of apparent impacts in the field during borehole advancement of soil boring SB-1, and the non-detectable groundwater results from the corresponding monitoring well (MW-1), suggest lesser, or a lack of, such VOC impacts in this area.

Opinion

VOC impacts were identified in the soil and groundwater at the Property, especially along the southern, southeastern, and southwestern sides of the building, during the subsurface investigation and subsequent groundwater sampling. Based on the groundwater sample results and the observations (olfactory, visual, and/or PID readings) made in the field during the subsurface investigation, it is Property Solutions' opinion that the VOC impacts in the vicinity have not been sufficiently defined to characterize the nature and extent in the groundwater at the Property. Therefore, it is Property Solutions' opinion that additional delineation of the subsurface VOC impacts at the Property is warranted. As such, an addendum subsurface investigation, consisting of advancement of additional soil borings/monitoring wells and associated soil and groundwater sampling, is recommended.

If you have any questions or comments with regard to the information presented herein, please contact the undersigned at your convenience at (518) 223-0458 or (518) 932-9121.

Sincerely,
PS PROPERTY SOLUTIONS, INC.

Paul M. Shannon
Senior Geologist / President

APPENDICES

APPENDIX A – FIGURES
APPENDIX B – PHOTOGRAPHIC LOG
APPENDIX C – SOIL BORING LOGS
APPENDIX D – TABLES
APPENDIX E – LABORATORY ANALYTICAL REPORTS

cc: Mr. Matt Franklin, NYSDEC Region 4 Division of Environmental Remediation, 1130 North Westcott Rd., Schenectady, NY 12306

APPENDIX A

FIGURES

Scale Not Determined

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pspropertysolutions@albany.twcbc.com
PS
PROPERTY SOLUTIONS, INC.

Figure 1

PROPERTY LOCATION MAP
Parcel No. 40.17-2-12
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597
(USGS)

Scale Not Determined

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Figure 2
AREA MAP
Parcel No. 40.17-2-12
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597
(GOOGLE Maps)

Soil boring sizes not to scale

SB: Soil Boring

MW: Monitoring Well

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Figure 3

SOIL BORING/MONITORING WELL LOCATIONS
Parcel No. 40.17-2-12
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597
(BING Maps)

Soil boring sizes not to scale

SB: Soil Boring

MW: Monitoring Well

20 ft

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Figure 4

GROUNDWATER VOC DISTRIBUTION
Monitoring Wells
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597
(BING Maps)

APPENDIX B

PHOTOGRAPHIC LOG

Photograph #1 – Advancement of soil boring SB-1 (monitoring well MW-1) at subject Property on October 20, 2015. Facing westerly.

Photograph #2 – Advancement of soil boring SB-2 (monitoring well MW-2) at subject Property on October 20, 2015. Facing northerly.

Photograph #3 – Advancement of soil boring SB-3 (monitoring well MW-3) at subject Property on October 20, 2015. Facing westerly.

Photograph #4 – Advancement of soil boring SB-4 (monitoring well MW-4) at subject Property on October 20, 2015015. Facing westerly.

APPENDIX C

SOIL BORING LOGS

SOIL BORING LOG

PS PROPERTY SOLUTIONS, INC. 10 Catherine St., Hudson Falls, New York 12839. Ph: (518) 223-0458; Cell: (518) 932-9121		**BORING NO.: SB-1 / MW-1**
PROJECT: Phase 2 Subsurface Investigation		Sheet 1 of 1
CLIENT: Charles Bohl, Inc.		Well Type: Monitoring
SITE NAME: 2312 Western Ave., Guilderland, NY 12084		Total Depth: ~ 40 ft.
DRILLING CONTRACTOR: Summit Drilling, Inc.		Screen: ~40-5 ft.
DRILLING METHOD: Direct Push / Dual Tube		Riser: ~5 ft - grade
SPILL NO. 15-07597	GRADE 0 SAND / RISER / SCREEN / BENTONITE	Start Date: 11/2/15
GROUNDWATER DEPTH: ~ 8 ft.		End Date: 11/2/15
MEASURING POINT: Grade	Diameter: 1.0 " / 1.0 " / Schedule 40 PVC	Driller: Travis
DATE OF MEASUREMENT: 11/2/15	Bentonite Seal: ~ 1 - 5' / Filter: ~ 5 - 40'	Inspector: Paul M. Shannon

Depth (Ft.)	Sample No.	Monitoring Well Construction	% Rec. (of 5 ft.)	PID (ppm)	Geologic Description	Remarks
0.0						
			Rec: ~ 40%	PID (~0-5') = 0 ppm	(~ 0 - 3'): Asphalt, fill (Gravel and fine to coarse SAND with varying amounts of silt)	Moist No odors
4.0					(~ 3 - 5'): Brown SILT and fine SAND, little fine to coarse gravel	
			Rec: ~ 100%	PID (~5-10') = 0 ppm	(~ 5 -15'): Brown Fine to very fine SAND, trace silt	Moist No odors
8.0						
12			Rec: ~ 100%	PID (~10-15') = 0 ppm	**SATURATION OBSERVED ~11 ft. While Drilling**	No odors Saturation Observed
16			Rec: ~ 100%	PID (~15-20') = 0 ppm	(~ 15 -20'): Gray Fine to very fine SAND, some SILT	No odors Saturation Observed
20			Rec: ~ 100%	PID (~20-25') = 0 ppm	(~ 20 -30'): Gray Very Fine SAND and SILT, trace clay	Saturation Observed No odors
24						
28			Rec: ~ 100%	PID (~25-30') = 0 ppm		No odors Saturation Observed
32			Rec: ~ 100%	PID (~30-35') = 0 ppm	(~ 30 - 40'): Gray SILT, some very fine SAND, trace clay	No odors Saturation Observed
36			Rec: ~ 100%	PID (~35-40') = 0 ppm		No odors Saturation Observed
40						
44					End of Soil Boring ~40 ft. Set temporary monitoring well MW-1 at ~ 40 ft. Collected Soil Sample from ~35-40 ft. depth for laboratory analysis via EPA Method 8260/EPA Method 8270	
48						

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SOIL BORING LOG

PS PROPERTY SOLUTIONS, INC. 10 Catherine St., Hudson Falls, New York 12839. Ph: (518) 223-0458; Cell: (518) 932-9121

BORING NO.: SB-2 / MW-2

PROJECT: Phase 2 Subsurface Investigation					Sheet 1 of 1
CLIENT: Charles Bohl, Inc.					Well Type: Monitoring
SITE NAME: 2312 Western Ave., Guilderland, NY 12084					Total Depth: ~ 40 ft.
DRILLING CONTRACTOR: Summit Drilling, Inc.					Screen: ~40-5 ft.
DRILLING METHOD: Direct Push / Dual Tube					Riser: ~5 ft - grade
SPILL NO. 15-07597	GRADE 0 SAND	RISER	SCREEN	BENTONITE	Start Date: 11/2/15
GROUNDWATER DEPTH: ~ 6.5 ft.					End Date: 11/2/15
MEASURING POINT: Grade	Diameter	1.0 "	1.0 "	Schedule 40 PVC	Driller: Travis
DATE OF MEASUREMENT: 11/2/15	Bentonite Seal	~ 1 - 5'	Filter	~ 5 - 40'	Inspector: Paul M. Shannon

Depth (Ft.)	Sample No.	Monitoring Well Construction	% Rec. (of 5 ft.)	PID (ppm)	Geologic Description	Remarks
0.0						
			Rec: ~ 60%	PID (~0-5') = 5 ppm	(~ 0 - 2'): Asphalt, fill (Gravel and fine to coarse SAND with varying amounts of silt)	Moist
4.0					(~ 2 4'): Brown SILT and fine SAND, little fine to coarse gravel	No odors
					(~ 4 -13'): Brown Fine to very fine SAND, trace silt	
			Rec: ~ 100%	PID (~5-10') = 15 ppm		Moist
8.0					**SATURATION OBSERVED ~8 ft. While Drilling**	Slight odors
			Rec: ~ 100%	PID (~10-15') = 51 ppm		Saturation Observed
12						Strong odors
					(~ 13 -25'): Gray Fine to very fine SAND, some silt, trace clay	
			Rec: ~ 100%	PID (~15-20') = 16 ppm		Saturation Observed
16						Slight odors
			Rec: ~ 100%	**PID (~20-25') = 95 ppm**		Saturation Observed
20						Strong odors
24						
			Rec: ~ 100%	PID (~25-30') = 38 ppm	(~ 25 -30'): Gray SILT and very fine SAND, trace clay	Moderate odors
						Saturation Observed
28						
					(~ 30 - 40'): Gray SILT, some very fine SAND, trace clay	
			Rec: ~ 100%	PID (~30-35') = 3 ppm		No odors
32						Saturation Observed
36						
			Rec: ~ 100%	PID (~35-40') = 0 ppm		No odors
						Saturation Observed
40						
44					End of Soil Boring ~40 ft. Set temporary monitoring well MW-2 at ~ 40 ft. Collected Soil Sample from ~20-25 ft. depth for laboratory analysis via EPA Method 8260/EPA Method 8270	
48						

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SOIL BORING LOG

PS PROPERTY SOLUTIONS, INC. 10 Catherine St., Hudson Falls, New York 12839. Ph: (518) 223-0458; Cell: (518) 932-9121

BORING NO.: SB-3 / MW-3

PROJECT: Phase 2 Subsurface Investigation					Sheet 1 of 1
CLIENT: Charles Bohl, Inc.					Well Type: Monitoring
SITE NAME: 2312 Western Ave., Guilderland, NY 12084					Total Depth: ~ 25 ft.
DRILLING CONTRACTOR: Summit Drilling, Inc.					Screen: ~25-5 ft.
DRILLING METHOD: Direct Push / Dual Tube					Riser: ~5 ft - grade
SPILL NO. 15-07597	GRADE 0 SAND	RISER	SCREEN	BENTONITE	Start Date: 11/2/15
GROUNDWATER DEPTH: ~ 5.5 ft.					End Date: 11/2/15
MEASURING POINT: Grade	Diameter	1.0 "	1.0 "	Schedule 40 PVC	Driller: Travis
DATE OF MEASUREMENT: 11/2/15	Bentonite Seal	~ 1 - 5'	Filter	~ 5 - 25'	Inspector: Paul M. Shannon

Depth (Ft.)	Sample No.	Monitoring Well Construction	% Rec. (of 5 ft.)	PID (ppm)	Geologic Description	Remarks
0.0						
			Rec: ~ 60%	PID (~0-5') = 1 ppm	(~ 0 - 2'): Asphalt, fill (Gravel and fine to coarse SAND with varying amounts of silt)	Moist
4.0					(~ 3 - 5'): Brown Fine SAND and SILT, little fine to coarse gravel	No odors
			Rec: ~ 100%	PID (~5-10') = 121 ppm	(~ 5 -14'): Light brown Fine to very fine SAND, trace silt	Moist
8.0					**SATURATION OBSERVED ~8 ft. While Drilling**	Strong odors
			Rec: ~ 100%	PID (~10-13') = 250 ppm PID (~13-15') = 109 ppm		Strong odors
12						
16			Rec: ~ 100%	PID (~15-20') = 5 ppm	(~ 14 -19'): Gray Fine to very fine SAND, some silt	Slight odors
20					(~ 19-23'): Gray Very Fine SAND, some silt	
			Rec: ~ 100%	PID (~20-25') = 0 ppm		No odors
24					(~ 23 -28'): Gray Very Fine SAND and SILT, trace clay	
			Rec: ~ 100%	PID (~25-30') = 0 ppm		No odors
28					(~ 28 - 40'): Gray SILT, some very fine SAND, trace clay	
32			Rec: ~ 100%	PID (~30-35') = 0 ppm		No odors
36			Rec: ~ 100%	PID (~35-40') = 0 ppm		No odors
40						
44					End of Soil Boring ~40 ft. Set temporary monitoring well MW-3 at ~ 25 ft. Sealed ~ 25 to 40 ft. with bentonite Collected Soil Sample from ~10-13 ft. depth for laboratory analysis via EPA Method 8260/EPA Method 8270	
48						

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SOIL BORING LOG

PS PROPERTY SOLUTIONS, INC. 10 Catherine St., Hudson Falls, New York 12839. Ph: (518) 223-0458; Cell: (518) 932-9121

BORING NO.: SB-4 / MW-4

PROJECT: Phase 2 Subsurface Investigation					Sheet 1 of 1
CLIENT: Charles Bohl, Inc.					Well Type: Monitoring
SITE NAME: 2312 Western Ave., Guilderland, NY 12084					Total Depth: ~ 30 ft.
DRILLING CONTRACTOR: Summit Drilling, Inc.					Screen: ~30-5 ft.
DRILLING METHOD: Direct Push / Dual Tube					Riser: ~5 ft - grade
SPILL NO. 15-07597	GRADE 0 SAND	RISER	SCREEN	BENTONITE	Start Date: 11/2/15
GROUNDWATER DEPTH: ~ 7.5 ft.					End Date: 11/2/15
MEASURING POINT: Grade	Diameter	1.0 "	1.0 "	Schedule 40 PVC	Driller: Travis
DATE OF MEASUREMENT: 11/2/15	Bentonite Seal	~ 1 - 5'	Filter	~ 5 - 30'	Inspector: Paul M. Shannon

Depth (Ft.)	Sample No.	Monitoring Well Construction	% Rec. (of 5 ft.)	PID (ppm)	Geologic Description	Remarks
0.0						
			Rec: ~ 60%	PID (~0-5') = 70 ppm	(~ 0 - 2'): Asphalt, fill (Gravel and fine to coarse SAND with varying amounts of silt)	Moist
4.0					(~ 3 - 5'): Brown Fine SAND and SILT, little fine to coarse gravel	No odors
			Rec: ~ 100%	PID (~5-10') = 105 ppm	(~ 5 -14'): Light brown SILT and fine SAND	Moist
8.0						Strong odors
					SATURATION OBSERVED ~ 10 ft. While Drilling	
12			Rec: ~ 100%	PID (~10-15') = 150 ppm	(~ 14 -28'): Gray Fine to very fine SAND, some silt	Strong odors
			Rec: ~ 100%	PID (~15-20') = 18 ppm		Slight odors
16						
20					(~ 18 -23'): Gray Very Fine SAND, some silt	
			Rec: ~ 100%	PID (~20-25') = 5 ppm		No odors
24					(~ 23 -28'): Gray Very Fine SAND and SILT, trace clay	
			Rec: ~ 100%	PID (~25-30') = 0 ppm		No odors
28					(~ 28 - 40'): Gray SILT, some very fine SAND, trace clay	
32			Rec: ~ 100%	PID (~30-35') = 0 ppm		No odors
36			Rec: ~ 100%	PID (~35-40') = 0 ppm		No odors
40						
44					End of Soil Boring ~40 ft. Set temporary monitoring well MW-4 at ~ 30 ft. Sealed ~ 30 to 40 ft. with bentonite Collected Soil Sample from ~10-15 ft. depth for laboratory analysis via EPA Method 8260/EPA Method 8270	
48						

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APPENDIX D

TABLES

TABLE 1
LABORATORY SOIL ANALYTICAL RESULTS
Phase 2 Subsurface Investigation
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597

VOCs By EPA Method Method 8260					
8260 Compound List	**Subpart 375-6.8(a) SCO (ppb)**	**SB-1 (35-40) *** **10/20/15**	**SB-2 (20-25)** **10/20/15**	**SB-3 (10-13)** **10/20/15**	**SB-4 (10-15)** **10/20/15**
PID Reading (ppm)		*0*	*95*	*250*	*150*
Methylene chloride	50	**ND**	**ND**	**ND**	**ND**
1,1-Dichloroethane	270	ND	ND	ND	ND
Chloroform	370	ND	ND	ND	ND
Carbon tetrachloride	760	ND	ND	ND	ND
1,2-Dichloropropane		ND	ND	ND	ND
Dibromochloromethane		ND	ND	ND	ND
1,1,2-Trichloroethane		ND	ND	ND	ND
Tetrachloroethene	1,300	**10,000**	**8,800**	**16,000**	**8,300**
Chlorobenzene	1,100	ND	ND	ND	ND
Trichlorofluoromethane		ND	ND	ND	ND
1,2-Dichloroethane	20	**ND**	**ND**	**ND**	**ND**
1,1,1-Trichloroethane	680	ND	ND	ND	ND
Bromodichloromethane		ND	ND	ND	ND
trans-1,3-Dichloropropene		ND	ND	ND	ND
cis-1,3-Dichloropropene		ND	ND	ND	ND
Bromoform		ND	ND	ND	ND
1,1,2,2-Tetrachloroethane		ND	ND	ND	ND
Benzene		**ND**	**ND**	**ND**	**ND**
Toluene	60	ND	ND	ND	ND
Ethylbenzene	700	ND	ND	ND	ND
Chloromethane	1,000	ND	ND	ND	ND
Bromomethane		ND	ND	ND	ND
Vinyl chloride		**ND**	**340**	**76**	**ND**
Chloroethane	20	ND	ND	ND	ND
1,1-Dichloroethene		ND	ND	ND	ND
trans-1,2-Dichloroethene	330	**ND**	**340**	ND	ND
Trichloroethene	190	ND	**20,000**	**2,800**	**260**
1,2-Dichlorobenzene	470	ND	ND	ND	ND
1,3-Dichlorobenzene	1,100	ND	ND	ND	ND
1,4-Dichlorobenzene	2,400	ND	ND	ND	ND
Methyl tert butyl ether	1,800	ND	ND	ND	ND
p/m-Xylene	930	ND	ND	ND	ND
o-Xylene		ND	ND	ND	ND
cis-1,2-Dichloroethene		ND	**34,000**	**13,000**	**180**
Styrene	260	ND	ND	ND	ND
Dichlorodifluoromethane	250	ND	ND	ND	ND
Acetone		**340**	**ND**	**ND**	**ND**
Carbon disulfide		ND	ND	ND	ND
2-Butanone		**ND**	**150**	**ND**	**ND**
4-Methyl-2-pentanone	50	ND	ND	ND	ND
2-Hexanone		ND	ND	ND	ND
Bromochloromethane	120	ND	ND	ND	ND
1,2-Dibromoethane		ND	ND	ND	ND
1,2-Dibromo-3-chloropropane		ND	ND	ND	ND
Isopropylbenzene		ND	ND	ND	ND
1,2,3-Trichlorobenzene		ND	ND	ND	ND
1,2,4-Trichlorobenzene	12,000	ND	ND	ND	ND
Methyl Acetate	11,000	ND	ND	ND	ND
Cyclohexane	5,900	ND	ND	ND	ND
1,4-Dioxane		**ND**	**ND**	**ND**	**ND**
Freon-113		ND	ND	ND	ND
Methyl cyclohexane		ND	ND	ND	ND
TOTAL VOCs	-	10,340	63,630	31,876	8,740

* This sample is suspected to have been inadvertently mislabeled/switched or similar instance while in the field. This is supported by the non-detectable PID readings and non-detectable VOC / semi-VOC grondwater results for this soil boring/monitoring well (Appendix C - Table 2).

PID: Photoionization Detector

ppm: Parts Per Million

SCO: Soil Cleanup Objectives

Subpart 375-6.8(a) SCO - NYSDEC Remedial Program Soil Cleanup Objectives for Unrestricted Use

Bold values indicate elevated laboratory detection limit above applicable NYSDEC SCO

"ND" Indicates Concentration of Analyte Below Applicable Laboratory Reporting Limit

Red values exceed the NYSDEC SCO

Soil Sample Analysis: VOCs via EPA Method 8260 (Full)

All values are reported in parts per billion (ppb or ug/kg) unless indicated otherwise

TABLE 1 (Continued)
LABORATORY SOIL ANALYTICAL RESULTS
Phase 2 Subsurface Investigation
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597

Semi-VOCs By EPA Method 8270 (FULL)					
8270 (STARS) Compound List	**Subpart 375-6.8(a) SCO (ppb)**	**SB-1 (35-40) *** **10/20/15**	**SB-2 (20-25)** **10/20/15**	**SB-3 (10-13)** **10/20/15**	**SB-4 (10-15)** **10/20/15**
PID Reading (ppm)		*0*	*95*	*250*	*150*
Acenaphthene	20,000	ND	ND	ND	ND
Hexachlorobenzene	330	ND	ND	ND	ND
Bis(2-chloroethyl)ether		ND	ND	ND	ND
2-Chloronaphthalene		ND	ND	ND	ND
3,3'-Dichlorobenzidine		ND	ND	ND	ND
2,4-Dinitrotoluene		ND	ND	ND	ND
2,6-Dinitrotoluene		ND	ND	ND	ND
Fluoranthene	100,000	ND	ND	ND	ND
4-Chlorophenyl phenyl ether		ND	ND	ND	ND
4-Bromophenyl phenyl ether		ND	ND	ND	ND
Bis(2-chloroisopropyl)ether		ND	ND	ND	ND
Bis(2-chloroethoxy)methane		ND	ND	ND	ND
Hexachlorobutadiene		ND	ND	ND	ND
Hexachlorocyclopentadiene		ND	ND	ND	ND
Hexachloroethane		ND	ND	ND	ND
Isophorone		ND	ND	ND	ND
Naphthalene	12,000	ND	ND	ND	ND
Nitrobenzene		ND	ND	ND	ND
NDPA/DPA		ND	ND	ND	ND
n-Nitrosodi-n-propylamine		ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate		ND	ND	ND	ND
Butyl benzyl phthalate		ND	ND	ND	ND
Di-n-butylphthalate		ND	ND	ND	ND
Di-n-octylphthalate		ND	ND	ND	ND
Diethyl phthalate		ND	ND	ND	ND
Dimethyl phthalate		ND	ND	ND	ND
Benzo(a)anthracene	1,000	ND	ND	ND	ND
Benzo(a)pyrene	1,000	ND	ND	ND	ND
Benzo(b)fluoranthene	1,000	ND	ND	ND	ND
Benzo(k)fluoranthene	800	ND	ND	ND	ND
Chrysene	1,000	ND	ND	ND	ND
Acenaphthylene	100,000	ND	ND	ND	ND
Anthracene	100,000	ND	ND	ND	ND
Benzo(ghi)perylene	100,000	ND	ND	ND	ND
Fluorene	30,000	ND	ND	ND	ND
Phenanthrene	100,000	ND	ND	ND	ND
Dibenzo(a,h)anthracene	330	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	500	ND	ND	ND	ND
Pyrene	100,000	ND	ND	ND	ND
Biphenyl		ND	ND	ND	ND
4-Chloroaniline		ND	ND	ND	ND
2-Nitroaniline		ND	ND	ND	ND
3-Nitroaniline		ND	ND	ND	ND
4-Nitroaniline		ND	ND	ND	ND
Dibenzofuran	7,000	ND	ND	ND	ND
2-Methylnaphthalene		ND	ND	ND	ND
1,2,4,5-Tetrachlorobenzene		ND	ND	ND	ND
Acetophenone		ND	ND	ND	ND
2,4,6-Trichlorophenol		ND	ND	ND	ND
p-Chloro-m-cresol		ND	ND	ND	ND
2-Chlorophenol		ND	ND	ND	ND
2,4-Dichlorophenol		ND	ND	ND	ND
2,4-Dimethylphenol		ND	ND	ND	ND
2-Nitrophenol		ND	ND	ND	ND
4-Nitrophenol		ND	ND	ND	ND
2,4-Dinitrophenol		ND	ND	ND	ND
4,6-Dinitro-o-cresol		ND	ND	ND	ND
Pentachlorophenol	800	ND	ND	ND	ND
Phenol	330	ND	ND	ND	ND
2-Methylphenol	330	ND	ND	ND	ND
3-Methylphenol/4-Methylphen	330	ND	ND	ND	ND
2,4,5-Trichlorophenol		ND	ND	ND	ND
Carbazole		ND	ND	ND	ND

TABLE 2
LABORATORY GROUNDWATER ANALYTICAL RESULTS
Phase 2 Subsurface Investigation
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597

VOCs By EPA Method 8260					
EPA Method 8260 Compound List	**NYSDEC Standard (ppb)**	**MW-1 11/2/15**	**MW-2 11/2/15**	**MW-3 11/2/15**	**MW-4 11/2/15**
Methylene chloride	5.0	ND	ND	**ND**	ND
1,1-Dichloroethane	5.0	ND	ND	**ND**	ND
Chloroform	7.0	ND	ND	**ND**	ND
Carbon tetrachloride	5.0	ND	ND	**ND**	ND
1,2-Dichloropropane	1.0	ND	ND	**ND**	ND
Dibromochloromethane	50	ND	ND	**ND**	ND
1,1,2-Trichloroethane	1.0	ND	ND	**ND**	ND
Tetrachloroethene	5.0	ND	**19,000**	**65,000**	**36,000**
Chlorobenzene	5.0	ND	ND	**ND**	0.72
Trichlorofluoromethane	5.0	ND	ND	**ND**	ND
1,2-Dichloroethane	0.6	ND	ND	**ND**	ND
1,1,1-Trichloroethane	5.0	ND	ND	**ND**	ND
Bromodichloromethane	50	ND	ND	**ND**	ND
trans-1,3-Dichloropropene	0.4	**ND**	**ND**	**ND**	**ND**
cis-1,3-Dichloropropene	0.4	**ND**	**ND**	**ND**	**ND**
Bromoform	50	ND	ND	**ND**	ND
1,1,2,2-Tetrachloroethane	5.0	ND	ND	**ND**	ND
Benzene	1.0	ND	ND	**ND**	ND
Toluene	5.0	ND	ND	**ND**	ND
Ethylbenzene	5.0	ND	ND	**ND**	ND
p/m-Xylene	5.0	ND	ND	**ND**	ND
Chloromethane		ND	ND	ND	ND
Bromomethane	5.0	ND	ND	**ND**	ND
Vinyl chloride	2.0	ND	**120**	**4,000**	**180**
Chloroethane	5.0	ND	ND	**ND**	ND
1,1-Dichloroethene	5.0	ND	**7.0**	**ND**	**8.8**
trans-1,2-Dichloroethene	5.0	ND	**26**	**ND**	**20**
cis-1,2-Dichloroethene	5.0	ND	**1,700**	**110,000**	**2,900**
Trichloroethene	5.0	ND	**4,700**	**25,000**	**3,200**
1,2-Dichlorobenzene	3.0	ND	ND	**ND**	ND
1,3-Dichlorobenzene	3.0	ND	ND	**ND**	ND
1,4-Dichlorobenzene	3.0	ND	ND	**ND**	ND
Styrene	5.0	ND	ND	**ND**	ND
o-Xylene	5.0	ND	ND	**ND**	ND
1,1-Dichloropropene	5.0	ND	ND	**ND**	ND
2,2-Dichloropropane	5.0	ND	ND	**ND**	ND
1,1,1,2-Tetrachloroethane	5.0	ND	ND	**ND**	ND
1,2,3-Trichloropropane	0.04	**ND**	**ND**	**ND**	**ND**
Bromochloromethane	5.0	ND	ND	**ND**	ND
n-Butylbenzene	5.0	ND	ND	**ND**	ND
Dichlorodifluoromethane	5.0	ND	ND	**ND**	ND
Hexachlorobutadiene	0.5	**ND**	**ND**	**ND**	ND
Isopropylbenzene	5.0	ND	ND	**ND**	ND
p-Isopropyltoluene	5.0	ND	ND	**ND**	ND
Naphthalene	10	ND	ND	**ND**	ND
n-Propylbenzene	5.0	ND	ND	**ND**	ND
sec-Butylbenzene	5.0	ND	ND	**ND**	ND
tert-Butylbenzene	5.0	ND	ND	**ND**	ND
1,2,3-Trichlorobenzene	5.0	ND	ND	**ND**	ND
1,2,4-Trichlorobenzene	5.0	ND	ND	**ND**	ND
1,2,4-Trimethylbenzene	5.0	ND	0.89	**ND**	**5.5**
1,3,5-Trimethylbenzene	5.0	ND	ND	**ND**	2.0
Bromobenzene	5.0	ND	ND	**ND**	ND
o-Chlorotoluene	5.0	ND	ND	**ND**	ND
p-Chlorotoluene	5.0	ND	ND	**ND**	ND
Dibromomethane	5.0	ND	ND	**ND**	ND
1,2-Dibromoethane	0.0006	**ND**	**ND**	**ND**	**ND**
1,2-Dibromo-3-chloropropane	0.04	**ND**	**ND**	**ND**	**ND**
1,3-Dichloropropane	5.0	ND	ND	**ND**	ND
Methyl tert butyl ether	10	ND	ND	**ND**	ND
Xylenes, Total	5.0	ND	**ND**	**ND**	2.0
TOTAL VOCs	-	ND	25,554	204,000	42,317

ppb: Parts Per Billion

Bold values indicate elevated laboratory detection limit above applicable NYSDEC guidance values

"ND" Indicates Concentration of Analyte Below Applicable Laboratory Reporting Limit

All values are reported in parts per billion (ppb or ug/kg) unless indicated otherwise

Red values exceed the NYSDEC TOGS Guidance Value or Class GA Drinking Water Std. (6 NYCRR Part 703)

Groundwater Sample Analysis: Volatile Organic Compounds (VOCs) by EPA Method 8260

TABLE 2 (Continued)
LABORATORY GROUNDWATER ANALYTICAL RESULTS
Phase 2 Subsurface Investigation
2312 Western Ave.
Guilderland, NY 12084
NYSDEC Spill No. 15-07597

Semi-VOCs By EPA Method 8270		
EPA Method 8270 Compound List	**NYSDEC Standard (ppb)**	**MW-2 11/2/15**
Bis(2-chloroethyl)ether	1.0	**ND**
3,3'-Dichlorobenzidine	5.0	**ND**
2,4-Dinitrotoluene	5.0	**ND**
2,6-Dinitrotoluene	5.0	**ND**
4-Chlorophenyl phenyl ether		ND
4-Bromophenyl phenyl ether		ND
Bis(2-chloroisopropyl)ether	5.0	ND
Bis(2-chloroethoxy)methane	5.0	**ND**
Hexachlorocyclopentadiene	5.0	**ND**
Isophorone	50	ND
Nitrobenzene	0.4	**ND**
NDPA/DPA	50	ND
n-Nitrosodi-n-propylamine		ND
Bis(2-ethylhexyl)phthalate	5.0	ND
Butyl benzyl phthalate	50	ND
Di-n-butylphthalate	50	ND
Di-n-octylphthalate	50	ND
Diethyl phthalate	50	ND
Dimethyl phthalate	50	ND
Biphenyl	5.0	ND
4-Chloroaniline	5.0	**ND**
2-Nitroaniline	5.0	**ND**
3-Nitroaniline	5.0	**ND**
4-Nitroaniline	5.0	**ND**
Dibenzofuran		ND
1,2,4,5-Tetrachlorobenzene	5.0	**ND**
Acetophenone		ND
2,4,6-Trichlorophenol		ND
p-Chloro-m-cresol		ND
2-Chlorophenol		ND
2,4-Dichlorophenol	1.0	**ND**
2,4-Dimethylphenol	50	ND
2-Nitrophenol		ND
4-Nitrophenol		ND
2,4-Dinitrophenol	10	**ND**
4,6-Dinitro-o-cresol		ND
Phenol	1.0	**ND**
3-Methylphenol/4-Methylphenol		ND
2,4,5-Trichlorophenol		ND
Carbazole		ND
Benzaldehyde		ND
Caprolactam		ND
Atrazine	7.5	**ND**
2,3,4,6-Tetrachlorophenol		ND
Acenaphthene	20	ND
2-Chloronaphthalene	10	ND
Fluoranthene	50	ND
Hexachlorobutadiene	0.5	**ND**
Naphthalene	10	ND
Benzo(a)anthracene	0.002	**ND**
Benzo(a)pyrene	0.000	**ND**
Benzo(b)fluoranthene	0.002	**ND**
Benzo(k)fluoranthene	0.002	**ND**
Chrysene	0.002	**ND**
Acenaphthylene		**ND**
Anthracene	50	ND
Benzo(ghi)perylene		ND
Fluorene	50	ND
Phenanthrene	50	ND
Dibenzo(a,h)anthracene		ND
Indeno(1,2,3-cd)pyrene	0.002	ND
Pyrene	50	ND
2-Methylnaphthalene		ND
Pentachlorophenol	1.0	ND
Hexachlorobenzene	0.04	ND
Hexachloroethane	5.0	ND
TOTAL SEMI-VOCs	-	ND

ppb: Parts Per Billion

Bold values indicate elevated laboratory detection limit above applicable NYSDEC guidance values

"ND" Indicates Concentration of Analyte Below Applicable Laboratory Reporting Limit

All values are reported in parts per billion (ppb or ug/kg) unless indicated otherwise

Red values exceed the NYSDEC TOGS Guidance Value or Class GA Drinking Water Std. (6 NYCRR Part 703)

Groundwater Sample Analysis: Semi-VOCs by EPA Method 8270

APPENDIX E

LABORATORY ANALYTICAL REPORTS

ANALYTICAL REPORT

Lab Number:	L1526710
Client:	PS Property Solutions, Inc. 10 Catherine Street Hudson Falls, NY 12839
ATTN:	Paul Shannon
Phone:	(518) 223-0458
Project Name:	C. BOHL, INC.-2312 WESTERN AVE
Project Number:	CHARLES BOHL, INC.
Report Date:	10/27/15

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1526710-01	DRAIN-1	SOIL	GUILDERLAND, NY	10/20/15 08:30	10/20/15
L1526710-02	SB-1 (35-40)	SOIL	GUILDERLAND, NY	10/20/15 09:30	10/20/15
L1526710-03	SB-2 (20-25)	SOIL	GUILDERLAND, NY	10/20/15 10:30	10/20/15
L1526710-04	SB-3 (10-13)	SOIL	GUILDERLAND, NY	10/20/15 12:00	10/20/15
L1526710-05	SB-4 (10-15)	SOIL	GUILDERLAND, NY	10/20/15 14:00	10/20/15

Project Name:	C. BOHL, INC.-2312 WESTERN AVE	**Lab Number:**	L1526710
Project Number:	CHARLES BOHL, INC.	**Report Date:**	10/27/15

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	C. BOHL, INC.-2312 WESTERN AVE	**Lab Number:**	L1526710
Project Number:	CHARLES BOHL, INC.	**Report Date:**	10/27/15

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

Any reported concentrations that are below 200 ug/kg may be biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative Date: 10/27/15

ORGANICS

VOLATILES

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-02 D
Client ID: SB-1 (35-40)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 10/27/15 09:23
Analyst: BN
Percent Solids: 74%

Date Collected: 10/20/15 09:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/kg	1400	150	100
1,1-Dichloroethane	ND		ug/kg	200	12.	100
Chloroform	ND		ug/kg	200	50.	100
Carbon tetrachloride	ND		ug/kg	140	28.	100
1,2-Dichloropropane	ND		ug/kg	480	31.	100
Dibromochloromethane	ND		ug/kg	140	21.	100
1,1,2-Trichloroethane	ND		ug/kg	200	41.	100
Tetrachloroethene	10000		ug/kg	140	19.	100
Chlorobenzene	ND		ug/kg	140	47.	100
Trichlorofluoromethane	ND		ug/kg	680	53.	100
1,2-Dichloroethane	ND		ug/kg	140	15.	100
1,1,1-Trichloroethane	ND		ug/kg	140	15.	100
Bromodichloromethane	ND		ug/kg	140	24.	100
trans-1,3-Dichloropropene	ND		ug/kg	140	16.	100
cis-1,3-Dichloropropene	ND		ug/kg	140	16.	100
Bromoform	ND		ug/kg	540	32.	100
1,1,2,2-Tetrachloroethane	ND		ug/kg	140	14.	100
Benzene	ND		ug/kg	140	16.	100
Toluene	ND		ug/kg	200	26.	100
Ethylbenzene	ND		ug/kg	140	17.	100
Chloromethane	40	J	ug/kg	680	40.	100
Bromomethane	120	J	ug/kg	270	46.	100
Vinyl chloride	ND		ug/kg	270	16.	100
Chloroethane	ND		ug/kg	270	43.	100
1,1-Dichloroethene	ND		ug/kg	140	36.	100
trans-1,2-Dichloroethene	ND		ug/kg	200	29.	100
Trichloroethene	59	J	ug/kg	140	17.	100
1,2-Dichlorobenzene	ND		ug/kg	680	21.	100
1,3-Dichlorobenzene	ND		ug/kg	680	18.	100
1,4-Dichlorobenzene	ND		ug/kg	680	19.	100

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-02 D
Client ID: SB-1 (35-40)
Sample Location: GUILDERLAND, NY

Date Collected: 10/20/15 09:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/kg	270	11.	100
p/m-Xylene	ND		ug/kg	270	27.	100
o-Xylene	ND		ug/kg	270	23.	100
cis-1,2-Dichloroethene	ND		ug/kg	140	19.	100
Styrene	ND		ug/kg	270	55.	100
Dichlorodifluoromethane	ND		ug/kg	1400	26.	100
Acetone	340	J	ug/kg	1400	140	100
Carbon disulfide	ND		ug/kg	1400	150	100
2-Butanone	ND		ug/kg	1400	37.	100
4-Methyl-2-pentanone	ND		ug/kg	1400	33.	100
2-Hexanone	ND		ug/kg	1400	91.	100
Bromochloromethane	ND		ug/kg	680	38.	100
1,2-Dibromoethane	ND		ug/kg	540	24.	100
1,2-Dibromo-3-chloropropane	ND		ug/kg	680	54.	100
Isopropylbenzene	ND		ug/kg	140	14.	100
1,2,3-Trichlorobenzene	ND		ug/kg	680	20.	100
1,2,4-Trichlorobenzene	ND		ug/kg	680	25.	100
Methyl Acetate	ND		ug/kg	2700	37.	100
Cyclohexane	ND		ug/kg	2700	20.	100
1,4-Dioxane	ND		ug/kg	14000	2000	100
Freon-113	ND		ug/kg	2700	37.	100
Methyl cyclohexane	ND		ug/kg	540	21.	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03 D2
Client ID: SB-2 (20-25)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 10/27/15 10:42
Analyst: BN
Percent Solids: 76%

Date Collected: 10/20/15 10:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
cis-1,2-Dichloroethene	34000		ug/kg	260	38.	200

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03 D
Client ID: SB-2 (20-25)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 10/27/15 09:49
Analyst: BN
Percent Solids: 76%

Date Collected: 10/20/15 10:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/kg	660	73.	50
1,1-Dichloroethane	ND		ug/kg	99	5.6	50
Chloroform	ND		ug/kg	99	24.	50
Carbon tetrachloride	ND		ug/kg	66	14.	50
1,2-Dichloropropane	ND		ug/kg	230	15.	50
Dibromochloromethane	ND		ug/kg	66	10.	50
1,1,2-Trichloroethane	ND		ug/kg	99	20.	50
Tetrachloroethene	8800		ug/kg	66	9.2	50
Chlorobenzene	ND		ug/kg	66	23.	50
Trichlorofluoromethane	ND		ug/kg	330	26.	50
1,2-Dichloroethane	ND		ug/kg	66	7.5	50
1,1,1-Trichloroethane	ND		ug/kg	66	7.3	50
Bromodichloromethane	ND		ug/kg	66	11.	50
trans-1,3-Dichloropropene	ND		ug/kg	66	7.9	50
cis-1,3-Dichloropropene	ND		ug/kg	66	7.7	50
Bromoform	ND		ug/kg	260	16.	50
1,1,2,2-Tetrachloroethane	ND		ug/kg	66	6.6	50
Benzene	ND		ug/kg	66	7.8	50
Toluene	13	J	ug/kg	99	13.	50
Ethylbenzene	ND		ug/kg	66	8.4	50
Chloromethane	29	J	ug/kg	330	19.	50
Bromomethane	60	J	ug/kg	130	22.	50
Vinyl chloride	140		ug/kg	130	7.7	50
Chloroethane	ND		ug/kg	130	21.	50
1,1-Dichloroethene	96		ug/kg	66	17.	50
trans-1,2-Dichloroethene	340		ug/kg	99	14.	50
Trichloroethene	20000		ug/kg	66	8.2	50
1,2-Dichlorobenzene	ND		ug/kg	330	10.	50
1,3-Dichlorobenzene	ND		ug/kg	330	8.9	50
1,4-Dichlorobenzene	ND		ug/kg	330	9.1	50

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03 D
Client ID: SB-2 (20-25)
Sample Location: GUILDERLAND, NY

Date Collected: 10/20/15 10:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/kg	130	5.6	50
p/m-Xylene	ND		ug/kg	130	13.	50
o-Xylene	ND		ug/kg	130	11.	50
cis-1,2-Dichloroethene	32000	E	ug/kg	66	9.4	50
Styrene	ND		ug/kg	130	26.	50
Dichlorodifluoromethane	ND		ug/kg	660	12.	50
Acetone	ND		ug/kg	660	68.	50
Carbon disulfide	ND		ug/kg	660	72.	50
2-Butanone	150	J	ug/kg	660	18.	50
4-Methyl-2-pentanone	ND		ug/kg	660	16.	50
2-Hexanone	ND		ug/kg	660	44.	50
Bromochloromethane	ND		ug/kg	330	18.	50
1,2-Dibromoethane	ND		ug/kg	260	11.	50
1,2-Dibromo-3-chloropropane	ND		ug/kg	330	26.	50
Isopropylbenzene	ND		ug/kg	66	6.8	50
1,2,3-Trichlorobenzene	ND		ug/kg	330	9.7	50
1,2,4-Trichlorobenzene	ND		ug/kg	330	12.	50
Methyl Acetate	ND		ug/kg	1300	18.	50
Cyclohexane	ND		ug/kg	1300	9.6	50
1,4-Dioxane	ND		ug/kg	6600	950	50
Freon-113	ND		ug/kg	1300	18.	50
Methyl cyclohexane	ND		ug/kg	260	10.	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	99		70-130

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-04 D
Client ID: SB-3 (10-13)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 10/26/15 11:35
Analyst: BN
Percent Solids: 73%

Date Collected: 10/20/15 12:00
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/kg	600	66.	50
1,1-Dichloroethane	ND		ug/kg	90	5.1	50
Chloroform	ND		ug/kg	90	22.	50
Carbon tetrachloride	ND		ug/kg	60	13.	50
1,2-Dichloropropane	ND		ug/kg	210	14.	50
Dibromochloromethane	ND		ug/kg	60	9.2	50
1,1,2-Trichloroethane	ND		ug/kg	90	18.	50
Tetrachloroethene	16000		ug/kg	60	8.4	50
Chlorobenzene	ND		ug/kg	60	21.	50
Trichlorofluoromethane	ND		ug/kg	300	23.	50
1,2-Dichloroethane	ND		ug/kg	60	6.8	50
1,1,1-Trichloroethane	ND		ug/kg	60	6.6	50
Bromodichloromethane	ND		ug/kg	60	10.	50
trans-1,3-Dichloropropene	ND		ug/kg	60	7.2	50
cis-1,3-Dichloropropene	ND		ug/kg	60	7.1	50
Bromoform	ND		ug/kg	240	14.	50
1,1,2,2-Tetrachloroethane	ND		ug/kg	60	6.0	50
Benzene	ND		ug/kg	60	7.1	50
Toluene	ND		ug/kg	90	12.	50
Ethylbenzene	ND		ug/kg	60	7.6	50
Chloromethane	ND		ug/kg	300	18.	50
Bromomethane	ND		ug/kg	120	20.	50
Vinyl chloride	76	J	ug/kg	120	7.0	50
Chloroethane	ND		ug/kg	120	19.	50
1,1-Dichloroethene	ND		ug/kg	60	16.	50
trans-1,2-Dichloroethene	32	J	ug/kg	90	13.	50
Trichloroethene	2800		ug/kg	60	7.5	50
1,2-Dichlorobenzene	ND		ug/kg	300	9.2	50
1,3-Dichlorobenzene	ND		ug/kg	300	8.1	50
1,4-Dichlorobenzene	ND		ug/kg	300	8.3	50

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-04 D
Client ID: SB-3 (10-13)
Sample Location: GUILDERLAND, NY

Date Collected: 10/20/15 12:00
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/kg	120	5.1	50
p/m-Xylene	ND		ug/kg	120	12.	50
o-Xylene	ND		ug/kg	120	10.	50
cis-1,2-Dichloroethene	13000		ug/kg	60	8.6	50
Styrene	ND		ug/kg	120	24.	50
Dichlorodifluoromethane	ND		ug/kg	600	11.	50
Acetone	ND		ug/kg	600	62.	50
Carbon disulfide	ND		ug/kg	600	66.	50
2-Butanone	ND		ug/kg	600	16.	50
4-Methyl-2-pentanone	ND		ug/kg	600	15.	50
2-Hexanone	ND		ug/kg	600	40.	50
Bromochloromethane	ND		ug/kg	300	16.	50
1,2-Dibromoethane	ND		ug/kg	240	10.	50
1,2-Dibromo-3-chloropropane	ND		ug/kg	300	24.	50
Isopropylbenzene	ND		ug/kg	60	6.2	50
1,2,3-Trichlorobenzene	ND		ug/kg	300	8.9	50
1,2,4-Trichlorobenzene	ND		ug/kg	300	11.	50
Methyl Acetate	ND		ug/kg	1200	16.	50
Cyclohexane	ND		ug/kg	1200	8.8	50
1,4-Dioxane	ND		ug/kg	6000	870	50
Freon-113	ND		ug/kg	1200	16.	50
Methyl cyclohexane	ND		ug/kg	240	9.3	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	99		70-130

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-05 D
Client ID: SB-4 (10-15)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 10/26/15 12:02
Analyst: BN
Percent Solids: 77%

Date Collected: 10/20/15 14:00
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/kg	550	61.	50
1,1-Dichloroethane	ND		ug/kg	83	4.7	50
Chloroform	ND		ug/kg	83	20.	50
Carbon tetrachloride	ND		ug/kg	55	12.	50
1,2-Dichloropropane	ND		ug/kg	190	12.	50
Dibromochloromethane	ND		ug/kg	55	8.5	50
1,1,2-Trichloroethane	ND		ug/kg	83	17.	50
Tetrachloroethene	8300		ug/kg	55	7.7	50
Chlorobenzene	ND		ug/kg	55	19.	50
Trichlorofluoromethane	ND		ug/kg	280	21.	50
1,2-Dichloroethane	ND		ug/kg	55	6.3	50
1,1,1-Trichloroethane	ND		ug/kg	55	6.1	50
Bromodichloromethane	ND		ug/kg	55	9.6	50
trans-1,3-Dichloropropene	ND		ug/kg	55	6.7	50
cis-1,3-Dichloropropene	ND		ug/kg	55	6.5	50
Bromoform	ND		ug/kg	220	13.	50
1,1,2,2-Tetrachloroethane	ND		ug/kg	55	5.6	50
Benzene	ND		ug/kg	55	6.5	50
Toluene	ND		ug/kg	83	11.	50
Ethylbenzene	ND		ug/kg	55	7.0	50
Chloromethane	ND		ug/kg	280	16.	50
Bromomethane	ND		ug/kg	110	19.	50
Vinyl chloride	ND		ug/kg	110	6.5	50
Chloroethane	ND		ug/kg	110	17.	50
1,1-Dichloroethene	ND		ug/kg	55	14.	50
trans-1,2-Dichloroethene	ND		ug/kg	83	12.	50
Trichloroethene	260		ug/kg	55	6.9	50
1,2-Dichlorobenzene	ND		ug/kg	280	8.5	50
1,3-Dichlorobenzene	ND		ug/kg	280	7.4	50
1,4-Dichlorobenzene	ND		ug/kg	280	7.6	50

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-05 D
Client ID: SB-4 (10-15)
Sample Location: GUILDERLAND, NY

Date Collected: 10/20/15 14:00
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/kg	110	4.7	50
p/m-Xylene	ND		ug/kg	110	11.	50
o-Xylene	ND		ug/kg	110	9.5	50
cis-1,2-Dichloroethene	180		ug/kg	55	7.9	50
Styrene	ND		ug/kg	110	22.	50
Dichlorodifluoromethane	ND		ug/kg	550	10.	50
Acetone	ND		ug/kg	550	57.	50
Carbon disulfide	ND		ug/kg	550	61.	50
2-Butanone	ND		ug/kg	550	15.	50
4-Methyl-2-pentanone	ND		ug/kg	550	13.	50
2-Hexanone	ND		ug/kg	550	37.	50
Bromochloromethane	ND		ug/kg	280	15.	50
1,2-Dibromoethane	ND		ug/kg	220	9.6	50
1,2-Dibromo-3-chloropropane	ND		ug/kg	280	22.	50
Isopropylbenzene	ND		ug/kg	55	5.7	50
1,2,3-Trichlorobenzene	ND		ug/kg	280	8.2	50
1,2,4-Trichlorobenzene	ND		ug/kg	280	10.	50
Methyl Acetate	ND		ug/kg	1100	15.	50
Cyclohexane	ND		ug/kg	1100	8.1	50
1,4-Dioxane	ND		ug/kg	5500	800	50
Freon-113	ND		ug/kg	1100	15.	50
Methyl cyclohexane	ND		ug/kg	220	8.5	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	106		70-130

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/26/15 09:25
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04-05 Batch: WG834177-3					
Methylene chloride	ND		ug/kg	10	1.1
1,1-Dichloroethane	ND		ug/kg	1.5	0.09
Chloroform	ND		ug/kg	1.5	0.37
Carbon tetrachloride	ND		ug/kg	1.0	0.21
1,2-Dichloropropane	ND		ug/kg	3.5	0.23
Dibromochloromethane	ND		ug/kg	1.0	0.15
1,1,2-Trichloroethane	ND		ug/kg	1.5	0.30
Tetrachloroethene	ND		ug/kg	1.0	0.14
Chlorobenzene	ND		ug/kg	1.0	0.35
Trichlorofluoromethane	ND		ug/kg	5.0	0.39
1,2-Dichloroethane	ND		ug/kg	1.0	0.11
1,1,1-Trichloroethane	ND		ug/kg	1.0	0.11
Bromodichloromethane	ND		ug/kg	1.0	0.17
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
cis-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
Bromoform	ND		ug/kg	4.0	0.24
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	0.10
Benzene	ND		ug/kg	1.0	0.12
Toluene	0.21	J	ug/kg	1.5	0.19
Ethylbenzene	ND		ug/kg	1.0	0.13
Chloromethane	ND		ug/kg	5.0	0.29
Bromomethane	ND		ug/kg	2.0	0.34
Vinyl chloride	ND		ug/kg	2.0	0.12
Chloroethane	ND		ug/kg	2.0	0.32
1,1-Dichloroethene	ND		ug/kg	1.0	0.26
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.21
Trichloroethene	ND		ug/kg	1.0	0.12
1,2-Dichlorobenzene	ND		ug/kg	5.0	0.15
1,3-Dichlorobenzene	ND		ug/kg	5.0	0.14

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/26/15 09:25
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04-05 Batch: WG834177-3					
1,4-Dichlorobenzene	ND		ug/kg	5.0	0.14
Methyl tert butyl ether	ND		ug/kg	2.0	0.08
p/m-Xylene	ND		ug/kg	2.0	0.20
o-Xylene	ND		ug/kg	2.0	0.17
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.14
Styrene	ND		ug/kg	2.0	0.40
Dichlorodifluoromethane	ND		ug/kg	10	0.19
Acetone	1.7	J	ug/kg	10	1.0
Carbon disulfide	ND		ug/kg	10	1.1
2-Butanone	ND		ug/kg	10	0.27
4-Methyl-2-pentanone	ND		ug/kg	10	0.24
2-Hexanone	ND		ug/kg	10	0.67
Bromochloromethane	ND		ug/kg	5.0	0.28
1,2-Dibromoethane	ND		ug/kg	4.0	0.17
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	0.40
Isopropylbenzene	ND		ug/kg	1.0	0.10
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	0.15
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	0.18
Methyl Acetate	ND		ug/kg	20	0.27
Cyclohexane	ND		ug/kg	20	0.15
1,4-Dioxane	ND		ug/kg	100	14.
Freon-113	ND		ug/kg	20	0.27
Methyl cyclohexane	ND		ug/kg	4.0	0.15

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/26/15 09:25
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04-05 Batch: WG834177-3					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	102		70-130

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/15 08:57
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG834577-3					
Methylene chloride	ND		ug/kg	10	1.1
1,1-Dichloroethane	ND		ug/kg	1.5	0.09
Chloroform	ND		ug/kg	1.5	0.37
Carbon tetrachloride	ND		ug/kg	1.0	0.21
1,2-Dichloropropane	ND		ug/kg	3.5	0.23
Dibromochloromethane	ND		ug/kg	1.0	0.15
1,1,2-Trichloroethane	ND		ug/kg	1.5	0.30
Tetrachloroethene	ND		ug/kg	1.0	0.14
Chlorobenzene	ND		ug/kg	1.0	0.35
Trichlorofluoromethane	ND		ug/kg	5.0	0.39
1,2-Dichloroethane	ND		ug/kg	1.0	0.11
1,1,1-Trichloroethane	ND		ug/kg	1.0	0.11
Bromodichloromethane	ND		ug/kg	1.0	0.17
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
cis-1,3-Dichloropropene	ND		ug/kg	1.0	0.12
Bromoform	ND		ug/kg	4.0	0.24
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	0.10
Benzene	ND		ug/kg	1.0	0.12
Toluene	ND		ug/kg	1.5	0.19
Ethylbenzene	ND		ug/kg	1.0	0.13
Chloromethane	0.48	J	ug/kg	5.0	0.29
Bromomethane	1.4	J	ug/kg	2.0	0.34
Vinyl chloride	ND		ug/kg	2.0	0.12
Chloroethane	ND		ug/kg	2.0	0.32
1,1-Dichloroethene	ND		ug/kg	1.0	0.26
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.21
Trichloroethene	ND		ug/kg	1.0	0.12
1,2-Dichlorobenzene	ND		ug/kg	5.0	0.15
1,3-Dichlorobenzene	ND		ug/kg	5.0	0.14

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/15 08:57
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG834577-3					
1,4-Dichlorobenzene	ND		ug/kg	5.0	0.14
Methyl tert butyl ether	ND		ug/kg	2.0	0.08
p/m-Xylene	ND		ug/kg	2.0	0.20
o-Xylene	ND		ug/kg	2.0	0.17
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.14
Styrene	ND		ug/kg	2.0	0.40
Dichlorodifluoromethane	ND		ug/kg	10	0.19
Acetone	ND		ug/kg	10	1.0
Carbon disulfide	ND		ug/kg	10	1.1
2-Butanone	ND		ug/kg	10	0.27
4-Methyl-2-pentanone	ND		ug/kg	10	0.24
2-Hexanone	ND		ug/kg	10	0.67
Bromochloromethane	ND		ug/kg	5.0	0.28
1,2-Dibromoethane	ND		ug/kg	4.0	0.17
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	0.40
Isopropylbenzene	ND		ug/kg	1.0	0.10
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	0.15
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	0.18
Methyl Acetate	ND		ug/kg	20	0.27
Cyclohexane	ND		ug/kg	20	0.15
1,4-Dioxane	ND		ug/kg	100	14.
Freon-113	ND		ug/kg	20	0.27
Methyl cyclohexane	ND		ug/kg	4.0	0.15

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/27/15 08:57
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG834577-3					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG834177-1 WG834177-2								
Methylene chloride	118		114		70-130	3		30
1,1-Dichloroethane	119		115		70-130	3		30
Chloroform	115		109		70-130	5		30
Carbon tetrachloride	119		116		70-130	3		30
1,2-Dichloropropane	121		116		70-130	4		30
Dibromochloromethane	99		96		70-130	3		30
2-Chloroethylvinyl ether	106		101		70-130	5		30
1,1,2-Trichloroethane	104		102		70-130	2		30
Tetrachloroethene	111		109		70-130	2		30
Chlorobenzene	105		102		70-130	3		30
Trichlorofluoromethane	114		110		70-139	4		30
1,2-Dichloroethane	110		109		70-130	1		30
1,1,1-Trichloroethane	120		112		70-130	7		30
Bromodichloromethane	115		109		70-130	5		30
trans-1,3-Dichloropropene	99		98		70-130	1		30
cis-1,3-Dichloropropene	118		115		70-130	3		30
1,1-Dichloropropene	123		117		70-130	5		30
Bromoform	94		94		70-130	0		30
1,1,2,2-Tetrachloroethane	97		95		70-130	2		30
Benzene	124		119		70-130	4		30
Toluene	106		100		70-130	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG834177-1 WG834177-2								
Ethylbenzene	104		101		70-130	3		30
Chloromethane	110		107		52-130	3		30
Bromomethane	105		100		57-147	5		30
Vinyl chloride	122		117		67-130	4		30
Chloroethane	122		116		50-151	5		30
1,1-Dichloroethene	128		120		65-135	6		30
trans-1,2-Dichloroethene	125		119		70-130	5		30
Trichloroethene	126		120		70-130	5		30
1,2-Dichlorobenzene	98		96		70-130	2		30
1,3-Dichlorobenzene	101		98		70-130	3		30
1,4-Dichlorobenzene	100		97		70-130	3		30
Methyl tert butyl ether	112		107		66-130	5		30
p/m-Xylene	108		106		70-130	2		30
o-Xylene	106		103		70-130	3		30
cis-1,2-Dichloroethene	126		118		70-130	7		30
Dibromomethane	119		113		70-130	5		30
Styrene	107		105		70-130	2		30
Dichlorodifluoromethane	89		86		30-146	3		30
Acetone	110		112		54-140	2		30
Carbon disulfide	127		120		59-130	6		30
2-Butanone	127		120		70-130	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG834177-1 WG834177-2								
Vinyl acetate	115		112		70-130	3		30
4-Methyl-2-pentanone	106		104		70-130	2		30
1,2,3-Trichloropropane	93		89		68-130	4		30
2-Hexanone	81		80		70-130	1		30
Bromochloromethane	130		125		70-130	4		30
2,2-Dichloropropane	120		114		70-130	5		30
1,2-Dibromoethane	101		98		70-130	3		30
1,3-Dichloropropane	100		99		69-130	1		30
1,1,1,2-Tetrachloroethane	102		99		70-130	3		30
Bromobenzene	98		99		70-130	1		30
n-Butylbenzene	102		96		70-130	6		30
sec-Butylbenzene	100		96		70-130	4		30
tert-Butylbenzene	99		94		70-130	5		30
o-Chlorotoluene	101		97		70-130	4		30
p-Chlorotoluene	97		93		70-130	4		30
1,2-Dibromo-3-chloropropane	92		90		68-130	2		30
Hexachlorobutadiene	100		97		67-130	3		30
Isopropylbenzene	98		96		70-130	2		30
p-Isopropyltoluene	101		95		70-130	6		30
Naphthalene	94		93		70-130	1		30
Acrylonitrile	118		108		70-130	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG834177-1 WG834177-2								
Isopropyl Ether	114		109		66-130	4		30
tert-Butyl Alcohol	112		111		70-130	1		30
n-Propylbenzene	99		95		70-130	4		30
1,2,3-Trichlorobenzene	103		100		70-130	3		30
1,2,4-Trichlorobenzene	103		98		70-130	5		30
1,3,5-Trimethylbenzene	99		96		70-130	3		30
1,2,4-Trimethylbenzene	97		94		70-130	3		30
Methyl Acetate	113		108		51-146	5		30
Ethyl Acetate	111		108		70-130	3		30
Acrolein	103		105		70-130	2		30
Cyclohexane	125		118		59-142	6		30
1,4-Dioxane	113		111		65-136	2		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	125		120		50-139	4		30
p-Diethylbenzene	100		94		70-130	6		30
p-Ethyltoluene	101		97		70-130	4		30
1,2,4,5-Tetramethylbenzene	95		91		70-130	4		30
Tetrahydrofuran	113		105		66-130	7		30
Ethyl ether	122		118		67-130	3		30
trans-1,4-Dichloro-2-butene	96		91		70-130	5		30
Methyl cyclohexane	125		118		70-130	6		30
Ethyl-Tert-Butyl-Ether	114		109		70-130	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04-05 Batch: WG834177-1 WG834177-2								
Tertiary-Amyl Methyl Ether	116		111		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		93		70-130
Toluene-d8	90		91		70-130
4-Bromofluorobenzene	92		93		70-130
Dibromofluoromethane	104		103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG834577-1 WG834577-2								
Methylene chloride	88		88		70-130	0		30
1,1-Dichloroethane	92		93		70-130	1		30
Chloroform	97		97		70-130	0		30
Carbon tetrachloride	109		109		70-130	0		30
1,2-Dichloropropane	88		90		70-130	2		30
Dibromochloromethane	94		97		70-130	3		30
2-Chloroethylvinyl ether	79		78		70-130	1		30
1,1,2-Trichloroethane	94		92		70-130	2		30
Tetrachloroethene	111		108		70-130	3		30
Chlorobenzene	100		99		70-130	1		30
Trichlorofluoromethane	121		118		70-139	3		30
1,2-Dichloroethane	94		96		70-130	2		30
1,1,1-Trichloroethane	106		105		70-130	1		30
Bromodichloromethane	94		97		70-130	3		30
trans-1,3-Dichloropropene	95		97		70-130	2		30
cis-1,3-Dichloropropene	92		95		70-130	3		30
1,1-Dichloropropene	103		104		70-130	1		30
Bromoform	91		92		70-130	1		30
1,1,2,2-Tetrachloroethane	90		90		70-130	0		30
Benzene	95		95		70-130	0		30
Toluene	100		100		70-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG834577-1 WG834577-2								
Ethylbenzene	103		103		70-130	0		30
Chloromethane	88		88		52-130	0		30
Bromomethane	104		98		57-147	6		30
Vinyl chloride	92		91		67-130	1		30
Chloroethane	113		107		50-151	5		30
1,1-Dichloroethene	99		98		65-135	1		30
trans-1,2-Dichloroethene	98		98		70-130	0		30
Trichloroethene	102		102		70-130	0		30
1,2-Dichlorobenzene	100		100		70-130	0		30
1,3-Dichlorobenzene	104		101		70-130	3		30
1,4-Dichlorobenzene	104		102		70-130	2		30
Methyl tert butyl ether	87		88		66-130	1		30
p/m-Xylene	105		105		70-130	0		30
o-Xylene	104		104		70-130	0		30
cis-1,2-Dichloroethene	94		95		70-130	1		30
Dibromomethane	90		93		70-130	3		30
Styrene	103		102		70-130	1		30
Dichlorodifluoromethane	101		98		30-146	3		30
Acetone	76		80		54-140	5		30
Carbon disulfide	94		95		59-130	1		30
2-Butanone	77		81		70-130	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG834577-1 WG834577-2								
Vinyl acetate	80		85		70-130	6		30
4-Methyl-2-pentanone	79		82		70-130	4		30
1,2,3-Trichloropropane	90		92		68-130	2		30
2-Hexanone	76		81		70-130	6		30
Bromochloromethane	96		95		70-130	1		30
2,2-Dichloropropane	104		105		70-130	1		30
1,2-Dibromoethane	94		94		70-130	0		30
1,3-Dichloropropane	91		93		69-130	2		30
1,1,1,2-Tetrachloroethane	99		100		70-130	1		30
Bromobenzene	100		97		70-130	3		30
n-Butylbenzene	113		112		70-130	1		30
sec-Butylbenzene	112		108		70-130	4		30
tert-Butylbenzene	107		106		70-130	1		30
o-Chlorotoluene	103		102		70-130	1		30
p-Chlorotoluene	105		104		70-130	1		30
1,2-Dibromo-3-chloropropane	81		87		68-130	7		30
Hexachlorobutadiene	113		109		67-130	4		30
Isopropylbenzene	107		105		70-130	2		30
p-Isopropyltoluene	111		108		70-130	3		30
Naphthalene	95		97		70-130	2		30
Acrylonitrile	73		76		70-130	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG834577-1 WG834577-2								
Isopropyl Ether	83		86		66-130	4		30
tert-Butyl Alcohol	75		82		70-130	9		30
n-Propylbenzene	107		105		70-130	2		30
1,2,3-Trichlorobenzene	102		102		70-130	0		30
1,2,4-Trichlorobenzene	106		106		70-130	0		30
1,3,5-Trimethylbenzene	106		106		70-130	0		30
1,2,4-Trimethylbenzene	107		104		70-130	3		30
Methyl Acetate	74		80		51-146	8		30
Ethyl Acetate	78		82		70-130	5		30
Acrolein	70		74		70-130	6		30
Cyclohexane	96		98		59-142	2		30
1,4-Dioxane	80		86		65-136	7		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	105		104		50-139	1		30
p-Diethylbenzene	110		109		70-130	1		30
p-Ethyltoluene	108		105		70-130	3		30
1,2,4,5-Tetramethylbenzene	106		104		70-130	2		30
Tetrahydrofuran	74		80		66-130	8		30
Ethyl ether	94		95		67-130	1		30
trans-1,4-Dichloro-2-butene	85		88		70-130	3		30
Methyl cyclohexane	106		105		70-130	1		30
Ethyl-Tert-Butyl-Ether	86		87		70-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG834577-1 WG834577-2								
Tertiary-Amyl Methyl Ether	88		89		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	106		102		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	102		102		70-130

SEMIVOLATILES

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-02
Client ID: SB-1 (35-40)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 10/25/15 20:29
Analyst: KR
Percent Solids: 74%

Date Collected: 10/20/15 09:30
Date Received: 10/20/15
Field Prep: Not Specified
Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	180	46.	1
Hexachlorobenzene	ND		ug/kg	140	42.	1
Bis(2-chloroethyl)ether	ND		ug/kg	200	63.	1
2-Chloronaphthalene	ND		ug/kg	230	74.	1
3,3'-Dichlorobenzidine	ND		ug/kg	230	60.	1
2,4-Dinitrotoluene	ND		ug/kg	230	49.	1
2,6-Dinitrotoluene	ND		ug/kg	230	58.	1
Fluoranthene	ND		ug/kg	140	42.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	230	69.	1
4-Bromophenyl phenyl ether	ND		ug/kg	230	52.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	270	80.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	240	68.	1
Hexachlorobutadiene	ND		ug/kg	230	64.	1
Hexachlorocyclopentadiene	ND		ug/kg	650	140	1
Hexachloroethane	ND		ug/kg	180	41.	1
Isophorone	ND		ug/kg	200	60.	1
Naphthalene	ND		ug/kg	230	75.	1
Nitrobenzene	ND		ug/kg	200	54.	1
NDPA/DPA	ND		ug/kg	180	47.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	230	67.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	230	59.	1
Butyl benzyl phthalate	ND		ug/kg	230	44.	1
Di-n-butylphthalate	ND		ug/kg	230	44.	1
Di-n-octylphthalate	ND		ug/kg	230	56.	1
Diethyl phthalate	ND		ug/kg	230	48.	1
Dimethyl phthalate	ND		ug/kg	230	57.	1
Benzo(a)anthracene	ND		ug/kg	140	44.	1
Benzo(a)pyrene	ND		ug/kg	180	55.	1
Benzo(b)fluoranthene	ND		ug/kg	140	46.	1
Benzo(k)fluoranthene	ND		ug/kg	140	43.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-02 Date Collected: 10/20/15 09:30

Client ID: SB-1 (35-40) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Chrysene	ND		ug/kg	140	44.	1
Acenaphthylene	ND		ug/kg	180	42.	1
Anthracene	ND		ug/kg	140	38.	1
Benzo(ghi)perylene	ND		ug/kg	180	47.	1
Fluorene	ND		ug/kg	230	65.	1
Phenanthrene	ND		ug/kg	140	44.	1
Dibenzo(a,h)anthracene	ND		ug/kg	140	44.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	180	50.	1
Pyrene	ND		ug/kg	140	44.	1
Biphenyl	ND		ug/kg	520	74.	1
4-Chloroaniline	ND		ug/kg	230	60.	1
2-Nitroaniline	ND		ug/kg	230	64.	1
3-Nitroaniline	ND		ug/kg	230	62.	1
4-Nitroaniline	ND		ug/kg	230	61.	1
Dibenzofuran	ND		ug/kg	230	75.	1
2-Methylnaphthalene	ND		ug/kg	270	72.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	230	70.	1
Acetophenone	ND		ug/kg	230	70.	1
2,4,6-Trichlorophenol	ND		ug/kg	140	43.	1
p-Chloro-m-cresol	ND		ug/kg	230	66.	1
2-Chlorophenol	ND		ug/kg	230	68.	1
2,4-Dichlorophenol	ND		ug/kg	200	73.	1
2,4-Dimethylphenol	ND		ug/kg	230	67.	1
2-Nitrophenol	ND		ug/kg	490	70.	1
4-Nitrophenol	ND		ug/kg	320	73.	1
2,4-Dinitrophenol	ND		ug/kg	1100	310	1
4,6-Dinitro-o-cresol	ND		ug/kg	590	83.	1
Pentachlorophenol	ND		ug/kg	180	48.	1
Phenol	ND		ug/kg	230	67.	1
2-Methylphenol	ND		ug/kg	230	73.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	320	74.	1
2,4,5-Trichlorophenol	ND		ug/kg	230	73.	1
Carbazole	ND		ug/kg	230	49.	1
Benzaldehyde	ND		ug/kg	300	91.	1
Caprolactam	ND		ug/kg	230	62.	1
Atrazine	ND		ug/kg	180	51.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	230	38.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-02 Date Collected: 10/20/15 09:30

Client ID: SB-1 (35-40) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		25-120
Phenol-d6	70		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	73		30-120
2,4,6-Tribromophenol	82		10-136
4-Terphenyl-d14	74		18-120

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03
Client ID: SB-2 (20-25)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 10/25/15 20:56
Analyst: KR
Percent Solids: 76%

Date Collected: 10/20/15 10:30
Date Received: 10/20/15
Field Prep: Not Specified
Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	170	44.	1
Hexachlorobenzene	ND		ug/kg	130	40.	1
Bis(2-chloroethyl)ether	ND		ug/kg	190	60.	1
2-Chloronaphthalene	ND		ug/kg	210	70.	1
3,3'-Dichlorobenzidine	ND		ug/kg	210	57.	1
2,4-Dinitrotoluene	ND		ug/kg	210	46.	1
2,6-Dinitrotoluene	ND		ug/kg	210	55.	1
Fluoranthene	ND		ug/kg	130	39.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	210	65.	1
4-Bromophenyl phenyl ether	ND		ug/kg	210	49.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	260	76.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	230	65.	1
Hexachlorobutadiene	ND		ug/kg	210	61.	1
Hexachlorocyclopentadiene	ND		ug/kg	610	140	1
Hexachloroethane	ND		ug/kg	170	39.	1
Isophorone	ND		ug/kg	190	57.	1
Naphthalene	ND		ug/kg	210	71.	1
Nitrobenzene	ND		ug/kg	190	51.	1
NDPA/DPA	ND		ug/kg	170	45.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	210	64.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	210	56.	1
Butyl benzyl phthalate	ND		ug/kg	210	42.	1
Di-n-butylphthalate	ND		ug/kg	210	41.	1
Di-n-octylphthalate	ND		ug/kg	210	53.	1
Diethyl phthalate	ND		ug/kg	210	45.	1
Dimethyl phthalate	ND		ug/kg	210	55.	1
Benzo(a)anthracene	ND		ug/kg	130	42.	1
Benzo(a)pyrene	ND		ug/kg	170	52.	1
Benzo(b)fluoranthene	ND		ug/kg	130	43.	1
Benzo(k)fluoranthene	ND		ug/kg	130	41.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03 Date Collected: 10/20/15 10:30

Client ID: SB-2 (20-25) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Chrysene	ND		ug/kg	130	42.	1
Acenaphthylene	ND		ug/kg	170	40.	1
Anthracene	ND		ug/kg	130	36.	1
Benzo(ghi)perylene	ND		ug/kg	170	45.	1
Fluorene	ND		ug/kg	210	62.	1
Phenanthrene	ND		ug/kg	130	42.	1
Dibenzo(a,h)anthracene	ND		ug/kg	130	42.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	170	48.	1
Pyrene	ND		ug/kg	130	42.	1
Biphenyl	ND		ug/kg	490	71.	1
4-Chloroaniline	ND		ug/kg	210	57.	1
2-Nitroaniline	ND		ug/kg	210	61.	1
3-Nitroaniline	ND		ug/kg	210	59.	1
4-Nitroaniline	ND		ug/kg	210	58.	1
Dibenzofuran	ND		ug/kg	210	72.	1
2-Methylnaphthalene	ND		ug/kg	260	69.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	210	67.	1
Acetophenone	ND		ug/kg	210	67.	1
2,4,6-Trichlorophenol	ND		ug/kg	130	40.	1
p-Chloro-m-cresol	ND		ug/kg	210	62.	1
2-Chlorophenol	ND		ug/kg	210	65.	1
2,4-Dichlorophenol	ND		ug/kg	190	70.	1
2,4-Dimethylphenol	ND		ug/kg	210	64.	1
2-Nitrophenol	ND		ug/kg	460	67.	1
4-Nitrophenol	ND		ug/kg	300	70.	1
2,4-Dinitrophenol	ND		ug/kg	1000	290	1
4,6-Dinitro-o-cresol	ND		ug/kg	560	79.	1
Pentachlorophenol	ND		ug/kg	170	46.	1
Phenol	ND		ug/kg	210	64.	1
2-Methylphenol	ND		ug/kg	210	69.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	310	70.	1
2,4,5-Trichlorophenol	ND		ug/kg	210	70.	1
Carbazole	ND		ug/kg	210	46.	1
Benzaldehyde	ND		ug/kg	280	87.	1
Caprolactam	ND		ug/kg	210	59.	1
Atrazine	ND		ug/kg	170	49.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	210	36.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03 Date Collected: 10/20/15 10:30

Client ID: SB-2 (20-25) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		25-120
Phenol-d6	79		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	81		30-120
2,4,6-Tribromophenol	93		10-136
4-Terphenyl-d14	78		18-120

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-04
Client ID: SB-3 (10-13)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 10/25/15 21:22
Analyst: KR
Percent Solids: 73%

Date Collected: 10/20/15 12:00
Date Received: 10/20/15
Field Prep: Not Specified
Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	180	46.	1
Hexachlorobenzene	ND		ug/kg	140	42.	1
Bis(2-chloroethyl)ether	ND		ug/kg	200	63.	1
2-Chloronaphthalene	ND		ug/kg	220	73.	1
3,3'-Dichlorobenzidine	ND		ug/kg	220	60.	1
2,4-Dinitrotoluene	ND		ug/kg	220	49.	1
2,6-Dinitrotoluene	ND		ug/kg	220	58.	1
Fluoranthene	ND		ug/kg	140	41.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	220	68.	1
4-Bromophenyl phenyl ether	ND		ug/kg	220	52.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	270	79.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	240	68.	1
Hexachlorobutadiene	ND		ug/kg	220	64.	1
Hexachlorocyclopentadiene	ND		ug/kg	640	140	1
Hexachloroethane	ND		ug/kg	180	41.	1
Isophorone	ND		ug/kg	200	60.	1
Naphthalene	ND		ug/kg	220	75.	1
Nitrobenzene	ND		ug/kg	200	54.	1
NDPA/DPA	ND		ug/kg	180	47.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	220	67.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	220	59.	1
Butyl benzyl phthalate	ND		ug/kg	220	44.	1
Di-n-butylphthalate	ND		ug/kg	220	43.	1
Di-n-octylphthalate	ND		ug/kg	220	55.	1
Diethyl phthalate	ND		ug/kg	220	48.	1
Dimethyl phthalate	ND		ug/kg	220	57.	1
Benzo(a)anthracene	ND		ug/kg	140	44.	1
Benzo(a)pyrene	ND		ug/kg	180	55.	1
Benzo(b)fluoranthene	ND		ug/kg	140	45.	1
Benzo(k)fluoranthene	ND		ug/kg	140	43.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-04 Date Collected: 10/20/15 12:00

Client ID: SB-3 (10-13) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Chrysene	ND		ug/kg	140	44.	1
Acenaphthylene	ND		ug/kg	180	42.	1
Anthracene	ND		ug/kg	140	37.	1
Benzo(ghi)perylene	ND		ug/kg	180	47.	1
Fluorene	ND		ug/kg	220	64.	1
Phenanthrene	ND		ug/kg	140	44.	1
Dibenzo(a,h)anthracene	ND		ug/kg	140	44.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	180	50.	1
Pyrene	ND		ug/kg	140	44.	1
Biphenyl	ND		ug/kg	510	74.	1
4-Chloroaniline	ND		ug/kg	220	59.	1
2-Nitroaniline	ND		ug/kg	220	64.	1
3-Nitroaniline	ND		ug/kg	220	62.	1
4-Nitroaniline	ND		ug/kg	220	61.	1
Dibenzofuran	ND		ug/kg	220	75.	1
2-Methylnaphthalene	ND		ug/kg	270	72.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	220	70.	1
Acetophenone	ND		ug/kg	220	70.	1
2,4,6-Trichlorophenol	ND		ug/kg	140	42.	1
p-Chloro-m-cresol	ND		ug/kg	220	65.	1
2-Chlorophenol	ND		ug/kg	220	68.	1
2,4-Dichlorophenol	ND		ug/kg	200	73.	1
2,4-Dimethylphenol	ND		ug/kg	220	67.	1
2-Nitrophenol	ND		ug/kg	490	70.	1
4-Nitrophenol	ND		ug/kg	320	73.	1
2,4-Dinitrophenol	ND		ug/kg	1100	310	1
4,6-Dinitro-o-cresol	ND		ug/kg	580	82.	1
Pentachlorophenol	ND		ug/kg	180	48.	1
Phenol	ND		ug/kg	220	67.	1
2-Methylphenol	ND		ug/kg	220	72.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	320	74.	1
2,4,5-Trichlorophenol	ND		ug/kg	220	73.	1
Carbazole	ND		ug/kg	220	48.	1
Benzaldehyde	ND		ug/kg	300	91.	1
Caprolactam	ND		ug/kg	220	62.	1
Atrazine	ND		ug/kg	180	51.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	220	38.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-04 Date Collected: 10/20/15 12:00

Client ID: SB-3 (10-13) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	79		25-120
Phenol-d6	79		10-120
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	81		30-120
2,4,6-Tribromophenol	93		10-136
4-Terphenyl-d14	82		18-120

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-05
Client ID: SB-4 (10-15)
Sample Location: GUILDERLAND, NY
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 10/25/15 21:49
Analyst: KR
Percent Solids: 77%

Date Collected: 10/20/15 14:00
Date Received: 10/20/15
Field Prep: Not Specified
Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	170	44.	1
Hexachlorobenzene	ND		ug/kg	130	40.	1
Bis(2-chloroethyl)ether	ND		ug/kg	190	60.	1
2-Chloronaphthalene	ND		ug/kg	210	70.	1
3,3'-Dichlorobenzidine	ND		ug/kg	210	57.	1
2,4-Dinitrotoluene	ND		ug/kg	210	46.	1
2,6-Dinitrotoluene	ND		ug/kg	210	55.	1
Fluoranthene	ND		ug/kg	130	39.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	210	65.	1
4-Bromophenyl phenyl ether	ND		ug/kg	210	49.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	260	76.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	230	65.	1
Hexachlorobutadiene	ND		ug/kg	210	60.	1
Hexachlorocyclopentadiene	ND		ug/kg	610	140	1
Hexachloroethane	ND		ug/kg	170	39.	1
Isophorone	ND		ug/kg	190	57.	1
Naphthalene	ND		ug/kg	210	71.	1
Nitrobenzene	ND		ug/kg	190	51.	1
NDPA/DPA	ND		ug/kg	170	45.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	210	64.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	210	56.	1
Butyl benzyl phthalate	ND		ug/kg	210	42.	1
Di-n-butylphthalate	ND		ug/kg	210	41.	1
Di-n-octylphthalate	ND		ug/kg	210	53.	1
Diethyl phthalate	ND		ug/kg	210	45.	1
Dimethyl phthalate	ND		ug/kg	210	54.	1
Benzo(a)anthracene	ND		ug/kg	130	42.	1
Benzo(a)pyrene	ND		ug/kg	170	52.	1
Benzo(b)fluoranthene	ND		ug/kg	130	43.	1
Benzo(k)fluoranthene	ND		ug/kg	130	41.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-05 Date Collected: 10/20/15 14:00

Client ID: SB-4 (10-15) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Chrysene	ND		ug/kg	130	42.	1
Acenaphthylene	ND		ug/kg	170	40.	1
Anthracene	ND		ug/kg	130	36.	1
Benzo(ghi)perylene	ND		ug/kg	170	45.	1
Fluorene	ND		ug/kg	210	62.	1
Phenanthrene	ND		ug/kg	130	42.	1
Dibenzo(a,h)anthracene	ND		ug/kg	130	42.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	170	48.	1
Pyrene	ND		ug/kg	130	42.	1
Biphenyl	ND		ug/kg	490	71.	1
4-Chloroaniline	ND		ug/kg	210	57.	1
2-Nitroaniline	ND		ug/kg	210	60.	1
3-Nitroaniline	ND		ug/kg	210	59.	1
4-Nitroaniline	ND		ug/kg	210	58.	1
Dibenzofuran	ND		ug/kg	210	72.	1
2-Methylnaphthalene	ND		ug/kg	260	69.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	210	66.	1
Acetophenone	ND		ug/kg	210	66.	1
2,4,6-Trichlorophenol	ND		ug/kg	130	40.	1
p-Chloro-m-cresol	ND		ug/kg	210	62.	1
2-Chlorophenol	ND		ug/kg	210	65.	1
2,4-Dichlorophenol	ND		ug/kg	190	70.	1
2,4-Dimethylphenol	ND		ug/kg	210	64.	1
2-Nitrophenol	ND		ug/kg	460	67.	1
4-Nitrophenol	ND		ug/kg	300	70.	1
2,4-Dinitrophenol	ND		ug/kg	1000	290	1
4,6-Dinitro-o-cresol	ND		ug/kg	560	79.	1
Pentachlorophenol	ND		ug/kg	170	46.	1
Phenol	ND		ug/kg	210	64.	1
2-Methylphenol	ND		ug/kg	210	69.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	310	70.	1
2,4,5-Trichlorophenol	ND		ug/kg	210	70.	1
Carbazole	ND		ug/kg	210	46.	1
Benzaldehyde	ND		ug/kg	280	87.	1
Caprolactam	ND		ug/kg	210	59.	1
Atrazine	ND		ug/kg	170	49.	1
2,3,4,6-Tetrachlorophenol	ND		ug/kg	210	36.	1

Project Name: C. BOHL, INC.-2312 WESTERN AVE **Lab Number:** L1526710

Project Number: CHARLES BOHL, INC. **Report Date:** 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-05 Date Collected: 10/20/15 14:00

Client ID: SB-4 (10-15) Date Received: 10/20/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	83		25-120
Phenol-d6	84		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	84		30-120
2,4,6-Tribromophenol	97		10-136
4-Terphenyl-d14	85		18-120

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/25/15 14:19
Analyst: KR

Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02-05 Batch: WG833312-1					
Acenaphthene	ND		ug/kg	130	33.
Hexachlorobenzene	ND		ug/kg	97	30.
Bis(2-chloroethyl)ether	ND		ug/kg	150	46.
2-Chloronaphthalene	ND		ug/kg	160	53.
3,3'-Dichlorobenzidine	ND		ug/kg	160	43.
2,4-Dinitrotoluene	ND		ug/kg	160	35.
2,6-Dinitrotoluene	ND		ug/kg	160	42.
Fluoranthene	ND		ug/kg	97	30.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	49.
4-Bromophenyl phenyl ether	ND		ug/kg	160	37.
Bis(2-chloroisopropyl)ether	ND		ug/kg	190	57.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	49.
Hexachlorobutadiene	ND		ug/kg	160	46.
Hexachlorocyclopentadiene	ND		ug/kg	460	100
Hexachloroethane	ND		ug/kg	130	30.
Isophorone	ND		ug/kg	150	43.
Naphthalene	ND		ug/kg	160	54.
Nitrobenzene	ND		ug/kg	150	39.
NDPA/DPA	ND		ug/kg	130	34.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	48.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	42.
Butyl benzyl phthalate	ND		ug/kg	160	32.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	40.
Diethyl phthalate	ND		ug/kg	160	34.
Dimethyl phthalate	ND		ug/kg	160	41.
Benzo(a)anthracene	ND		ug/kg	97	32.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	97	33.

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/25/15 14:19
Analyst: KR

Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02-05 Batch: WG833312-1					
Benzo(k)fluoranthene	ND		ug/kg	97	31.
Chrysene	ND		ug/kg	97	32.
Acenaphthylene	ND		ug/kg	130	30.
Anthracene	ND		ug/kg	97	27.
Benzo(ghi)perylene	ND		ug/kg	130	34.
Fluorene	ND		ug/kg	160	46.
Phenanthrene	ND		ug/kg	97	32.
Dibenzo(a,h)anthracene	ND		ug/kg	97	31.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	36.
Pyrene	ND		ug/kg	97	32.
Biphenyl	ND		ug/kg	370	54.
4-Chloroaniline	ND		ug/kg	160	43.
2-Nitroaniline	ND		ug/kg	160	46.
3-Nitroaniline	ND		ug/kg	160	45.
4-Nitroaniline	ND		ug/kg	160	44.
Dibenzofuran	ND		ug/kg	160	54.
2-Methylnaphthalene	ND		ug/kg	190	52.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	50.
Acetophenone	ND		ug/kg	160	50.
2,4,6-Trichlorophenol	ND		ug/kg	97	31.
p-Chloro-m-cresol	ND		ug/kg	160	47.
2-Chlorophenol	ND		ug/kg	160	49.
2,4-Dichlorophenol	ND		ug/kg	150	53.
2,4-Dimethylphenol	ND		ug/kg	160	48.
2-Nitrophenol	ND		ug/kg	350	51.
4-Nitrophenol	ND		ug/kg	230	53.
2,4-Dinitrophenol	ND		ug/kg	780	220
4,6-Dinitro-o-cresol	ND		ug/kg	420	59.
Pentachlorophenol	ND		ug/kg	130	35.

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/25/15 14:19
Analyst: KR

Extraction Method: EPA 3546
Extraction Date: 10/22/15 15:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02-05 Batch: WG833312-1					
Phenol	ND		ug/kg	160	48.
2-Methylphenol	ND		ug/kg	160	52.
3-Methylphenol/4-Methylphenol	ND		ug/kg	230	53.
2,4,5-Trichlorophenol	ND		ug/kg	160	53.
Carbazole	ND		ug/kg	160	35.
Benzaldehyde	ND		ug/kg	210	66.
Caprolactam	ND		ug/kg	160	45.
Atrazine	ND		ug/kg	130	37.
2,3,4,6-Tetrachlorophenol	ND		ug/kg	160	28.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	78		25-120
Phenol-d6	78		10-120
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	79		30-120
2,4,6-Tribromophenol	93		10-136
4-Terphenyl-d14	90		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG833312-2 WG833312-3								
Acenaphthene	85		84		31-137	1		50
Benzidine	**70**	Q	43		10-66	48		50
n-Nitrosodimethylamine	75		73		22-100	3		50
1,2,4-Trichlorobenzene	82		82		38-107	0		50
Hexachlorobenzene	86		82		40-140	5		50
Bis(2-chloroethyl)ether	80		76		40-140	5		50
2-Chloronaphthalene	85		83		40-140	2		50
1,2-Dichlorobenzene	80		78		40-140	3		50
1,3-Dichlorobenzene	78		76		40-140	3		50
1,4-Dichlorobenzene	78		77		28-104	1		50
3,3'-Dichlorobenzidine	72		63		40-140	13		50
2,4-Dinitrotoluene	**106**	Q	**104**	Q	28-89	2		50
2,6-Dinitrotoluene	99		96		40-140	3		50
Fluoranthene	91		87		40-140	4		50
4-Chlorophenyl phenyl ether	88		84		40-140	5		50
4-Bromophenyl phenyl ether	86		85		40-140	1		50
Azobenzene	86		83		40-140	4		50
Bis(2-chloroisopropyl)ether	79		76		40-140	4		50
Bis(2-chloroethoxy)methane	81		77		40-117	5		50
Hexachlorobutadiene	84		81		40-140	4		50
Hexachlorocyclopentadiene	105		104		40-140	1		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG833312-2 WG833312-3								
Hexachloroethane	79		78		40-140	1		50
Isophorone	81		79		40-140	3		50
Naphthalene	83		81		40-140	2		50
Nitrobenzene	87		86		40-140	1		50
NitrosoDiPhenylAmine(NDPA)/DPA	88		85		36-157	3		50
n-Nitrosodi-n-propylamine	80		79		32-121	1		50
Bis(2-Ethylhexyl)phthalate	94		89		40-140	5		50
Butyl benzyl phthalate	98		93		40-140	5		50
Di-n-butylphthalate	92		88		40-140	4		50
Di-n-octylphthalate	100		95		40-140	5		50
Diethyl phthalate	88		84		40-140	5		50
Dimethyl phthalate	89		84		40-140	6		50
Benzo(a)anthracene	89		85		40-140	5		50
Benzo(a)pyrene	88		85		40-140	3		50
Benzo(b)fluoranthene	88		82		40-140	7		50
Benzo(k)fluoranthene	85		84		40-140	1		50
Chrysene	85		83		40-140	2		50
Acenaphthylene	87		83		40-140	5		50
Anthracene	94		89		40-140	5		50
Benzo(ghi)perylene	88		84		40-140	5		50
Fluorene	89		85		40-140	5		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG833312-2 WG833312-3								
Phenanthrene	88		84		40-140	5		50
Dibenzo(a,h)anthracene	86		84		40-140	2		50
Indeno(1,2,3-cd)Pyrene	89		86		40-140	3		50
Pyrene	91		86		35-142	6		50
Biphenyl	96		93		54-104	3		50
Aniline	63		55		40-140	14		50
4-Chloroaniline	78		69		40-140	12		50
2-Nitroaniline	101		97		47-134	4		50
3-Nitroaniline	88		77		26-129	13		50
4-Nitroaniline	96		91		41-125	5		50
Dibenzofuran	87		85		40-140	2		50
2-Methylnaphthalene	86		83		40-140	4		50
1,2,4,5-Tetrachlorobenzene	93		89		40-117	4		50
Acetophenone	92		89		14-144	3		50
2,4,6-Trichlorophenol	96		95		30-130	1		50
P-Chloro-M-Cresol	91		88		26-103	3		50
2-Chlorophenol	83		82		25-102	1		50
2,4-Dichlorophenol	92		90		30-130	2		50
2,4-Dimethylphenol	97		90		30-130	7		50
2-Nitrophenol	96		94		30-130	2		50
4-Nitrophenol	107		104		11-114	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG833312-2 WG833312-3								
2,4-Dinitrophenol	72		85		4-130	17		50
4,6-Dinitro-o-cresol	95		94		10-130	1		50
Pentachlorophenol	80		79		17-109	1		50
Phenol	84		80		26-90	5		50
2-Methylphenol	86		83		30-130.	4		50
3-Methylphenol/4-Methylphenol	86		82		30-130	5		50
2,4,5-Trichlorophenol	88		86		30-130	2		50
Benzoic Acid	29		45		10-66	43		50
Benzyl Alcohol	86		82		40-140	5		50
Carbazole	90		87		54-128	3		50
Benzaldehyde	85		83		40-140	2		50
Caprolactam	103		98		15-130	5		50
Atrazine	103		99		40-140	4		50
2,3,4,6-Tetrachlorophenol	88		87		40-140	1		50
Pyridine	67		68		10-93	1		50
Parathion, ethyl	125		119		40-140	5		50
1-Methylnaphthalene	84		81		26-130	4		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE

Project Number: CHARLES BOHL, INC.

Lab Number: L1526710

Report Date: 10/27/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-05 Batch: WG833312-2 WG833312-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	81		79		25-120
Phenol-d6	81		79		10-120
Nitrobenzene-d5	82		81		23-120
2-Fluorobiphenyl	82		79		30-120
2,4,6-Tribromophenol	92		89		10-136
4-Terphenyl-d14	84		80		18-120

INORGANICS
&
MISCELLANEOUS

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-02
Client ID: SB-1 (35-40)
Sample Location: GUILDERLAND, NY
Matrix: Soil

Date Collected: 10/20/15 09:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.5		%	0.100	NA	1	-	10/21/15 12:24	30,2540G	RI

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-03
Client ID: SB-2 (20-25)
Sample Location: GUILDERLAND, NY
Matrix: Soil

Date Collected: 10/20/15 10:30
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.0		%	0.100	NA	1	-	10/21/15 12:24	30,2540G	RI

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-04
Client ID: SB-3 (10-13)
Sample Location: GUILDERLAND, NY
Matrix: Soil

Date Collected: 10/20/15 12:00
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.0		%	0.100	NA	1	-	10/21/15 12:24	30,2540G	RI

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

SAMPLE RESULTS

Lab ID: L1526710-05
Client ID: SB-4 (10-15)
Sample Location: GUILDERLAND, NY
Matrix: Soil

Date Collected: 10/20/15 14:00
Date Received: 10/20/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.7		%	0.100	NA	1	-	10/21/15 12:24	30,2540G	RI

Lab Duplicate Analysis
Batch Quality Control

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, IN

Lab Number: L1526710
Report Date: 10/27/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02-05 QC Batch ID: WG832802-1 QC Sample: L1526678-01 Client ID: DUP Sample						
Solids, Total	80.0	79.6	%	1		20

Project Name: C. BOHL, INC.-2312 WESTERN AVE
Project Number: CHARLES BOHL, INC.

Lab Number: L1526710
Report Date: 10/27/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1526710-01A	Vial Large Septa unpreserved (4o	A	N/A	5.6	Y	Absent	HOLD-8260(14)
L1526710-01A9	Vial MeOH preserved split	A	N/A	5.6	Y	Absent	HOLD-8260(14)
L1526710-01B	Glass 250ml/8oz unpreserved	A	N/A	5.6	Y	Absent	HOLD-8270(14),HOLD-8082()
L1526710-02A	Vial Large Septa unpreserved (4o	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-02A9	Vial MeOH preserved split	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-02B	Glass 250ml/8oz unpreserved	A	N/A	5.6	Y	Absent	NYTCL-8270(14),TS(7)
L1526710-03A	Vial Large Septa unpreserved (4o	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-03A9	Vial MeOH preserved split	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-03B	Glass 250ml/8oz unpreserved	A	N/A	5.6	Y	Absent	NYTCL-8270(14),TS(7)
L1526710-04A	Vial Large Septa unpreserved (4o	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-04A9	Vial MeOH preserved split	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-04B	Glass 250ml/8oz unpreserved	A	N/A	5.6	Y	Absent	NYTCL-8270(14),TS(7)
L1526710-05A	Vial Large Septa unpreserved (4o	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-05A9	Vial MeOH preserved split	A	N/A	5.6	Y	Absent	NYTCL-8260(14)
L1526710-05B	Glass 250ml/8oz unpreserved	A	N/A	5.6	Y	Absent	NYTCL-8270(14),TS(7)

*Values in parentheses indicate holding time in days

Project Name:	C. BOHL, INC.-2312 WESTERN AVE	**Lab Number:**	L1526710
Project Number:	CHARLES BOHL, INC.	**Report Date:**	10/27/15

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: DU Report with 'J' Qualifiers

Project Name:	C. BOHL, INC.-2312 WESTERN AVE	**Lab Number:**	L1526710
Project Number:	CHARLES BOHL, INC.	**Report Date:**	10/27/15

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	C. BOHL, INC.-2312 WESTERN AVE	**Lab Number:**	L1526710
Project Number:	CHARLES BOHL, INC.	**Report Date:**	10/27/15

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide) (soil), Methyl methacrylate (soil), Azobenzene.
EPA 8270D: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA 2540D: TSS
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/21/15

ALPHA Job #: L1526710

Client Information

Client: PS Property Solutions, Inc.
Address:
Phone:
Fax:
Email:
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: C. Buhl, Inc. - 2312 Western Ave.
Project Location: Guilderland, NY
Project #: Same
Project Manager: P. SHANNON
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS 8260 (FULL)	8270 (FULL)	PCBs (Aroclor)	TOTAL # BOTTLES	Sample Specific Comments
26710-01	Drain-1	10/20/15	0830	S	PS	X	X	X		DRAIN-1 HOLD
02	SB-1 (35-40)	10/20/15	0930	S	PS	X	X			8 oz jar for SB-1 only
03	SB-2 (20-25)	10/20/15	1030	S	PS	X	X			
04	SB-3 (10-13)	10/20/15	1200	S	PS	X	X			
05	SB-4 (10-15)	10/20/15	1400	S	PS	X	X			SB-4, if possible additional analysis

SAMPLE HANDLING

Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Container Type	4oz	8oz
Preservative	—	—

Relinquished By:	Date/Time	Received By:	Date/Time
	10/20/15 4:15	Robert Blaine AAL	10-20-15 4:15
	10/20/15 2200		10-20-15 2200
	10/21/15 0045		10/21/15 0045

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L1528307
Client:	PS Property Solutions, Inc. 10 Catherine Street Hudson Falls, NY 12839
ATTN:	Paul Shannon
Phone:	(518) 223-0458
Project Name:	2312 WESTERN AVE.
Project Number:	GUILDERLAND, NY
Report Date:	11/11/15

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1528307-01	MW-1	WATER	GUILDERLAND, NY	11/02/15 11:30	11/02/15
L1528307-02	MW-2	WATER	GUILDERLAND, NY	11/02/15 11:45	11/02/15
L1528307-03	MW-3	WATER	GUILDERLAND, NY	11/02/15 12:00	11/02/15
L1528307-04	MW-4	WATER	GUILDERLAND, NY	11/02/15 12:15	11/02/15

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	2312 WESTERN AVE.	**Lab Number:**	L1528307
Project Number:	GUILDERLAND, NY	**Report Date:**	11/11/15

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

At the client's request, the analysis of Semivolatile Organics was performed on L1528307-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 11/11/15

ORGANICS

VOLATILES

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-01
Client ID: MW-1
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 16,524.2
Analytical Date: 11/04/15 23:38
Analyst: MM

Date Collected: 11/02/15 11:30
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	0.50	0.15	1
1,1-Dichloroethane	ND		ug/l	0.50	0.09	1
Chloroform	ND		ug/l	0.50	0.05	1
Carbon tetrachloride	ND		ug/l	0.50	0.10	1
1,2-Dichloropropane	ND		ug/l	0.50	0.09	1
Dibromochloromethane	ND		ug/l	0.50	0.08	1
1,1,2-Trichloroethane	ND		ug/l	0.50	0.12	1
Tetrachloroethene	ND		ug/l	0.50	0.09	1
Chlorobenzene	ND		ug/l	0.50	0.08	1
Trichlorofluoromethane	ND		ug/l	0.50	0.11	1
1,2-Dichloroethane	ND		ug/l	0.50	0.08	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.08	1
Bromodichloromethane	ND		ug/l	0.50	0.05	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.09	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.10	1
Bromoform	ND		ug/l	0.50	0.09	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.09	1
Benzene	ND		ug/l	0.50	0.09	1
Toluene	ND		ug/l	0.50	0.12	1
Ethylbenzene	ND		ug/l	0.50	0.06	1
p/m-Xylene	ND		ug/l	0.50	0.12	1
Chloromethane	ND		ug/l	0.50	0.15	1
Bromomethane	ND		ug/l	0.50	0.13	1
Vinyl chloride	ND		ug/l	0.50	0.08	1
Chloroethane	ND		ug/l	0.50	0.12	1
1,1-Dichloroethene	ND		ug/l	0.50	0.06	1
trans-1,2-Dichloroethene	ND		ug/l	0.50	0.09	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.11	1
Trichloroethene	ND		ug/l	0.50	0.09	1
1,2-Dichlorobenzene	ND		ug/l	0.50	0.07	1

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-01 Date Collected: 11/02/15 11:30

Client ID: MW-1 Date Received: 11/02/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	0.50	0.05	1
1,4-Dichlorobenzene	ND		ug/l	0.50	0.05	1
Styrene	ND		ug/l	0.50	0.06	1
o-Xylene	ND		ug/l	0.50	0.09	1
1,1-Dichloropropene	ND		ug/l	0.50	0.11	1
2,2-Dichloropropane	ND		ug/l	0.50	0.11	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.09	1
1,2,3-Trichloropropane	ND		ug/l	0.50	0.11	1
Bromochloromethane	ND		ug/l	0.50	0.10	1
n-Butylbenzene	ND		ug/l	0.50	0.06	1
Dichlorodifluoromethane	ND		ug/l	0.50	0.10	1
Hexachlorobutadiene	ND		ug/l	0.50	0.11	1
Isopropylbenzene	ND		ug/l	0.50	0.08	1
p-Isopropyltoluene	ND		ug/l	0.50	0.07	1
Naphthalene	ND		ug/l	0.50	0.06	1
n-Propylbenzene	ND		ug/l	0.50	0.08	1
sec-Butylbenzene	ND		ug/l	0.50	0.06	1
tert-Butylbenzene	ND		ug/l	0.50	0.09	1
1,2,3-Trichlorobenzene	ND		ug/l	0.50	0.06	1
1,2,4-Trichlorobenzene	ND		ug/l	0.50	0.07	1
1,2,4-Trimethylbenzene	ND		ug/l	0.50	0.08	1
1,3,5-Trimethylbenzene	ND		ug/l	0.50	0.10	1
Bromobenzene	ND		ug/l	0.50	0.09	1
o-Chlorotoluene	ND		ug/l	0.50	0.10	1
p-Chlorotoluene	ND		ug/l	0.50	0.08	1
Dibromomethane	ND		ug/l	0.50	0.09	1
1,2-Dibromoethane	ND		ug/l	0.50	0.06	1
1,2-Dibromo-3-chloropropane	ND		ug/l	0.50	0.16	1
1,3-Dichloropropane	ND		ug/l	0.50	0.11	1
Methyl tert butyl ether	ND		ug/l	0.50	0.06	1
Xylenes, Total[1]	ND		ug/l	0.50	0.09	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	105		80-120
4-Bromofluorobenzene	97		80-120

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02
Client ID: MW-2
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 16,524.2
Analytical Date: 11/05/15 00:51
Analyst: MM

Date Collected: 11/02/15 11:45
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	0.50	0.15	1
1,1-Dichloroethane	ND		ug/l	0.50	0.09	1
Chloroform	0.19	J	ug/l	0.50	0.05	1
Carbon tetrachloride	ND		ug/l	0.50	0.10	1
1,2-Dichloropropane	ND		ug/l	0.50	0.09	1
Dibromochloromethane	ND		ug/l	0.50	0.08	1
1,1,2-Trichloroethane	ND		ug/l	0.50	0.12	1
Tetrachloroethene	8600	E	ug/l	0.50	0.09	1
Chlorobenzene	0.30	J	ug/l	0.50	0.08	1
Trichlorofluoromethane	ND		ug/l	0.50	0.11	1
1,2-Dichloroethane	ND		ug/l	0.50	0.08	1
1,1,1-Trichloroethane	0.35	J	ug/l	0.50	0.08	1
Bromodichloromethane	ND		ug/l	0.50	0.05	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.09	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.10	1
Bromoform	ND		ug/l	0.50	0.09	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.09	1
Benzene	ND		ug/l	0.50	0.09	1
Toluene	0.39	J	ug/l	0.50	0.12	1
Ethylbenzene	0.06	J	ug/l	0.50	0.06	1
p/m-Xylene	0.14	J	ug/l	0.50	0.12	1
Chloromethane	ND		ug/l	0.50	0.15	1
Bromomethane	ND		ug/l	0.50	0.13	1
Vinyl chloride	120	E	ug/l	0.50	0.08	1
Chloroethane	ND		ug/l	0.50	0.12	1
1,1-Dichloroethene	7.0		ug/l	0.50	0.06	1
trans-1,2-Dichloroethene	26		ug/l	0.50	0.09	1
cis-1,2-Dichloroethene	1500	E	ug/l	0.50	0.11	1
Trichloroethene	3500	E	ug/l	0.50	0.09	1
1,2-Dichlorobenzene	ND		ug/l	0.50	0.07	1

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02 Date Collected: 11/02/15 11:45

Client ID: MW-2 Date Received: 11/02/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	0.50	0.05	1
1,4-Dichlorobenzene	ND		ug/l	0.50	0.05	1
Styrene	ND		ug/l	0.50	0.06	1
o-Xylene	0.46	J	ug/l	0.50	0.09	1
1,1-Dichloropropene	ND		ug/l	0.50	0.11	1
2,2-Dichloropropane	ND		ug/l	0.50	0.11	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.09	1
1,2,3-Trichloropropane	ND		ug/l	0.50	0.11	1
Bromochloromethane	ND		ug/l	0.50	0.10	1
n-Butylbenzene	ND		ug/l	0.50	0.06	1
Dichlorodifluoromethane	ND		ug/l	0.50	0.10	1
Hexachlorobutadiene	ND		ug/l	0.50	0.11	1
Isopropylbenzene	0.48	J	ug/l	0.50	0.08	1
p-Isopropyltoluene	ND		ug/l	0.50	0.07	1
Naphthalene	0.13	J	ug/l	0.50	0.06	1
n-Propylbenzene	0.14	J	ug/l	0.50	0.08	1
sec-Butylbenzene	ND		ug/l	0.50	0.06	1
tert-Butylbenzene	ND		ug/l	0.50	0.09	1
1,2,3-Trichlorobenzene	ND		ug/l	0.50	0.06	1
1,2,4-Trichlorobenzene	ND		ug/l	0.50	0.07	1
1,2,4-Trimethylbenzene	0.89		ug/l	0.50	0.08	1
1,3,5-Trimethylbenzene	0.38	J	ug/l	0.50	0.10	1
Bromobenzene	ND		ug/l	0.50	0.09	1
o-Chlorotoluene	ND		ug/l	0.50	0.10	1
p-Chlorotoluene	ND		ug/l	0.50	0.08	1
Dibromomethane	ND		ug/l	0.50	0.09	1
1,2-Dibromoethane	ND		ug/l	0.50	0.06	1
1,2-Dibromo-3-chloropropane	ND		ug/l	0.50	0.16	1
1,3-Dichloropropane	ND		ug/l	0.50	0.11	1
Methyl tert butyl ether	ND		ug/l	0.50	0.06	1
Xylenes, Total[1]	0.60	J	ug/l	0.50	0.09	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	100		80-120
4-Bromofluorobenzene	95		80-120

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02 D
Client ID: MW-2
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 16,524.2
Analytical Date: 11/11/15 11:29
Analyst: MM

Date Collected: 11/02/15 11:45
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	19000		ug/l	500	93.	1000
Vinyl chloride	ND		ug/l	500	77.	1000
cis-1,2-Dichloroethene	1700		ug/l	500	110	1000
Trichloroethene	4700		ug/l	500	85.	1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	103		80-120
4-Bromofluorobenzene	94		80-120

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-03 D
Client ID: MW-3
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 16,524.2
Analytical Date: 11/11/15 12:06
Analyst: MM

Date Collected: 11/02/15 12:00
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2500	740	5000
1,1-Dichloroethane	ND		ug/l	2500	470	5000
Chloroform	ND		ug/l	2500	250	5000
Carbon tetrachloride	ND		ug/l	2500	500	5000
1,2-Dichloropropane	ND		ug/l	2500	430	5000
Dibromochloromethane	ND		ug/l	2500	410	5000
1,1,2-Trichloroethane	ND		ug/l	2500	620	5000
Tetrachloroethene	65000		ug/l	2500	460	5000
Chlorobenzene	ND		ug/l	2500	380	5000
Trichlorofluoromethane	ND		ug/l	2500	540	5000
1,2-Dichloroethane	ND		ug/l	2500	420	5000
1,1,1-Trichloroethane	ND		ug/l	2500	410	5000
Bromodichloromethane	ND		ug/l	2500	260	5000
trans-1,3-Dichloropropene	ND		ug/l	2500	420	5000
cis-1,3-Dichloropropene	ND		ug/l	2500	510	5000
Bromoform	ND		ug/l	2500	440	5000
1,1,2,2-Tetrachloroethane	ND		ug/l	2500	430	5000
Benzene	ND		ug/l	2500	430	5000
Toluene	ND		ug/l	2500	580	5000
Ethylbenzene	ND		ug/l	2500	270	5000
p/m-Xylene	ND		ug/l	2500	580	5000
Chloromethane	ND		ug/l	2500	770	5000
Bromomethane	ND		ug/l	2500	630	5000
Vinyl chloride	4000		ug/l	2500	390	5000
Chloroethane	ND		ug/l	2500	610	5000
1,1-Dichloroethene	ND		ug/l	2500	300	5000
trans-1,2-Dichloroethene	ND		ug/l	2500	430	5000
cis-1,2-Dichloroethene	110000		ug/l	2500	570	5000
Trichloroethene	25000		ug/l	2500	430	5000
1,2-Dichlorobenzene	ND		ug/l	2500	340	5000

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-03 D
Client ID: MW-3
Sample Location: GUILDERLAND, NY

Date Collected: 11/02/15 12:00
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	ND		ug/l	2500	240	5000
1,4-Dichlorobenzene	ND		ug/l	2500	260	5000
Styrene	ND		ug/l	2500	280	5000
o-Xylene	ND		ug/l	2500	460	5000
1,1-Dichloropropene	ND		ug/l	2500	560	5000
2,2-Dichloropropane	ND		ug/l	2500	540	5000
1,1,1,2-Tetrachloroethane	ND		ug/l	2500	430	5000
1,2,3-Trichloropropane	ND		ug/l	2500	560	5000
Bromochloromethane	ND		ug/l	2500	520	5000
n-Butylbenzene	ND		ug/l	2500	290	5000
Dichlorodifluoromethane	ND		ug/l	2500	500	5000
Hexachlorobutadiene	ND		ug/l	2500	550	5000
Isopropylbenzene	ND		ug/l	2500	400	5000
p-Isopropyltoluene	ND		ug/l	2500	370	5000
Naphthalene	ND		ug/l	2500	280	5000
n-Propylbenzene	ND		ug/l	2500	380	5000
sec-Butylbenzene	ND		ug/l	2500	280	5000
tert-Butylbenzene	ND		ug/l	2500	450	5000
1,2,3-Trichlorobenzene	ND		ug/l	2500	320	5000
1,2,4-Trichlorobenzene	ND		ug/l	2500	340	5000
1,2,4-Trimethylbenzene	ND		ug/l	2500	410	5000
1,3,5-Trimethylbenzene	ND		ug/l	2500	520	5000
Bromobenzene	ND		ug/l	2500	430	5000
o-Chlorotoluene	ND		ug/l	2500	530	5000
p-Chlorotoluene	ND		ug/l	2500	400	5000
Dibromomethane	ND		ug/l	2500	440	5000
1,2-Dibromoethane	ND		ug/l	2500	320	5000
1,2-Dibromo-3-chloropropane	ND		ug/l	2500	780	5000
1,3-Dichloropropane	ND		ug/l	2500	550	5000
Methyl tert butyl ether	ND		ug/l	2500	300	5000
Xylenes, Total[1]	ND		ug/l	2500	460	5000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	106		80-120
4-Bromofluorobenzene	94		80-120

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-04
Client ID: MW-4
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 16,524.2
Analytical Date: 11/05/15 02:40
Analyst: MM

Date Collected: 11/02/15 12:15
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	0.50	0.15	1
1,1-Dichloroethane	ND		ug/l	0.50	0.09	1
Chloroform	0.23	J	ug/l	0.50	0.05	1
Carbon tetrachloride	ND		ug/l	0.50	0.10	1
1,2-Dichloropropane	ND		ug/l	0.50	0.09	1
Dibromochloromethane	ND		ug/l	0.50	0.08	1
1,1,2-Trichloroethane	ND		ug/l	0.50	0.12	1
Tetrachloroethene	10000	E	ug/l	0.50	0.09	1
Chlorobenzene	0.72		ug/l	0.50	0.08	1
Trichlorofluoromethane	ND		ug/l	0.50	0.11	1
1,2-Dichloroethane	ND		ug/l	0.50	0.08	1
1,1,1-Trichloroethane	0.94		ug/l	0.50	0.08	1
Bromodichloromethane	ND		ug/l	0.50	0.05	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.09	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.10	1
Bromoform	ND		ug/l	0.50	0.09	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.09	1
Benzene	0.23	J	ug/l	0.50	0.09	1
Toluene	0.91		ug/l	0.50	0.12	1
Ethylbenzene	0.34	J	ug/l	0.50	0.06	1
p/m-Xylene	0.83		ug/l	0.50	0.12	1
Chloromethane	ND		ug/l	0.50	0.15	1
Bromomethane	ND		ug/l	0.50	0.13	1
Vinyl chloride	180	E	ug/l	0.50	0.08	1
Chloroethane	ND		ug/l	0.50	0.12	1
1,1-Dichloroethene	8.8		ug/l	0.50	0.06	1
trans-1,2-Dichloroethene	20		ug/l	0.50	0.09	1
cis-1,2-Dichloroethene	2200	E	ug/l	0.50	0.11	1
Trichloroethene	2900	E	ug/l	0.50	0.09	1
1,2-Dichlorobenzene	0.30	J	ug/l	0.50	0.07	1

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-04 Date Collected: 11/02/15 12:15

Client ID: MW-4 Date Received: 11/02/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,3-Dichlorobenzene	0.07	J	ug/l	0.50	0.05	1
1,4-Dichlorobenzene	0.38	J	ug/l	0.50	0.05	1
Styrene	ND		ug/l	0.50	0.06	1
o-Xylene	1.2		ug/l	0.50	0.09	1
1,1-Dichloropropene	ND		ug/l	0.50	0.11	1
2,2-Dichloropropane	ND		ug/l	0.50	0.11	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.09	1
1,2,3-Trichloropropane	ND		ug/l	0.50	0.11	1
Bromochloromethane	ND		ug/l	0.50	0.10	1
n-Butylbenzene	0.43	J	ug/l	0.50	0.06	1
Dichlorodifluoromethane	ND		ug/l	0.50	0.10	1
Hexachlorobutadiene	0.16	J	ug/l	0.50	0.11	1
Isopropylbenzene	2.6		ug/l	0.50	0.08	1
p-Isopropyltoluene	0.28	J	ug/l	0.50	0.07	1
Naphthalene	1.9		ug/l	0.50	0.06	1
n-Propylbenzene	0.98		ug/l	0.50	0.08	1
sec-Butylbenzene	1.2		ug/l	0.50	0.06	1
tert-Butylbenzene	0.76		ug/l	0.50	0.09	1
1,2,3-Trichlorobenzene	0.14	J	ug/l	0.50	0.06	1
1,2,4-Trichlorobenzene	0.14	J	ug/l	0.50	0.07	1
1,2,4-Trimethylbenzene	5.5		ug/l	0.50	0.08	1
1,3,5-Trimethylbenzene	2.0		ug/l	0.50	0.10	1
Bromobenzene	ND		ug/l	0.50	0.09	1
o-Chlorotoluene	ND		ug/l	0.50	0.10	1
p-Chlorotoluene	ND		ug/l	0.50	0.08	1
Dibromomethane	ND		ug/l	0.50	0.09	1
1,2-Dibromoethane	ND		ug/l	0.50	0.06	1
1,2-Dibromo-3-chloropropane	ND		ug/l	0.50	0.16	1
1,3-Dichloropropane	ND		ug/l	0.50	0.11	1
Methyl tert butyl ether	ND		ug/l	0.50	0.06	1
Xylenes, Total[1]	2.0		ug/l	0.50	0.09	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	101		80-120
4-Bromofluorobenzene	114		80-120

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-04 D
Client ID: MW-4
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 16,524.2
Analytical Date: 11/11/15 12:42
Analyst: MM

Date Collected: 11/02/15 12:15
Date Received: 11/02/15
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	36000		ug/l	2000	370	4000
Vinyl chloride	ND		ug/l	2000	310	4000
cis-1,2-Dichloroethene	2900		ug/l	2000	460	4000
Trichloroethene	3200		ug/l	2000	340	4000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	106		80-120
4-Bromofluorobenzene	97		80-120

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 11/11/15 07:15
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-04 Batch: WG839643-2					
Methylene chloride	ND		ug/l	0.50	0.15
1,1-Dichloroethane	ND		ug/l	0.50	0.09
Chloroform	ND		ug/l	0.50	0.05
Carbon tetrachloride	ND		ug/l	0.50	0.10
1,2-Dichloropropane	ND		ug/l	0.50	0.09
Dibromochloromethane	ND		ug/l	0.50	0.08
1,1,2-Trichloroethane	ND		ug/l	0.50	0.12
Tetrachloroethene	0.26	J	ug/l	0.50	0.09
Chlorobenzene	ND		ug/l	0.50	0.08
Trichlorofluoromethane	ND		ug/l	0.50	0.11
1,2-Dichloroethane	ND		ug/l	0.50	0.08
1,1,1-Trichloroethane	ND		ug/l	0.50	0.08
Bromodichloromethane	ND		ug/l	0.50	0.05
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.09
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.10
Bromoform	ND		ug/l	0.50	0.09
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.09
Benzene	ND		ug/l	0.50	0.09
Toluene	ND		ug/l	0.50	0.12
Ethylbenzene	ND		ug/l	0.50	0.06
p/m-Xylene	ND		ug/l	0.50	0.12
Chloromethane	ND		ug/l	0.50	0.15
Bromomethane	ND		ug/l	0.50	0.13
Vinyl chloride	ND		ug/l	0.50	0.08
Chloroethane	ND		ug/l	0.50	0.12
1,1-Dichloroethene	ND		ug/l	0.50	0.06
trans-1,2-Dichloroethene	ND		ug/l	0.50	0.09
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.11
Trichloroethene	ND		ug/l	0.50	0.09

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 11/11/15 07:15
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-04 Batch: WG839643-2					
1,2-Dichlorobenzene	ND		ug/l	0.50	0.07
1,3-Dichlorobenzene	ND		ug/l	0.50	0.05
1,4-Dichlorobenzene	ND		ug/l	0.50	0.05
Styrene	ND		ug/l	0.50	0.06
o-Xylene	ND		ug/l	0.50	0.09
1,1-Dichloropropene	ND		ug/l	0.50	0.11
2,2-Dichloropropane	ND		ug/l	0.50	0.11
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.09
1,2,3-Trichloropropane	ND		ug/l	0.50	0.11
Bromochloromethane	ND		ug/l	0.50	0.10
n-Butylbenzene	ND		ug/l	0.50	0.06
Dichlorodifluoromethane	ND		ug/l	0.50	0.10
Hexachlorobutadiene	ND		ug/l	0.50	0.11
Isopropylbenzene	ND		ug/l	0.50	0.08
p-Isopropyltoluene	ND		ug/l	0.50	0.07
Naphthalene	ND		ug/l	0.50	0.06
n-Propylbenzene	ND		ug/l	0.50	0.08
sec-Butylbenzene	ND		ug/l	0.50	0.06
tert-Butylbenzene	ND		ug/l	0.50	0.09
1,2,3-Trichlorobenzene	ND		ug/l	0.50	0.06
1,2,4-Trichlorobenzene	ND		ug/l	0.50	0.07
1,2,4-Trimethylbenzene	ND		ug/l	0.50	0.08
1,3,5-Trimethylbenzene	ND		ug/l	0.50	0.10
Bromobenzene	ND		ug/l	0.50	0.09
o-Chlorotoluene	ND		ug/l	0.50	0.10
p-Chlorotoluene	ND		ug/l	0.50	0.08
Dibromomethane	ND		ug/l	0.50	0.09
1,2-Dibromoethane	ND		ug/l	0.50	0.06
1,2-Dibromo-3-chloropropane	ND		ug/l	0.50	0.16

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 11/11/15 07:15
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-04 Batch: WG839643-2					
1,3-Dichloropropane	ND		ug/l	0.50	0.11
Methyl tert butyl ether	ND		ug/l	0.50	0.06
Xylenes, Total[1]	ND		ug/l	0.50	0.09

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	99		80-120
4-Bromofluorobenzene	97		80-120

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 11/04/15 17:31
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG839643-6					
Methylene chloride	ND		ug/l	0.50	0.15
1,1-Dichloroethane	ND		ug/l	0.50	0.09
Chloroform	ND		ug/l	0.50	0.05
Carbon tetrachloride	ND		ug/l	0.50	0.10
1,2-Dichloropropane	ND		ug/l	0.50	0.09
Dibromochloromethane	ND		ug/l	0.50	0.08
1,1,2-Trichloroethane	ND		ug/l	0.50	0.12
Tetrachloroethene	ND		ug/l	0.50	0.09
Chlorobenzene	ND		ug/l	0.50	0.08
Trichlorofluoromethane	ND		ug/l	0.50	0.11
1,2-Dichloroethane	ND		ug/l	0.50	0.08
1,1,1-Trichloroethane	ND		ug/l	0.50	0.08
Bromodichloromethane	ND		ug/l	0.50	0.05
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.09
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.10
Bromoform	ND		ug/l	0.50	0.09
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.09
Benzene	ND		ug/l	0.50	0.09
Toluene	ND		ug/l	0.50	0.12
Ethylbenzene	ND		ug/l	0.50	0.06
p/m-Xylene	ND		ug/l	0.50	0.12
Chloromethane	ND		ug/l	0.50	0.15
Bromomethane	ND		ug/l	0.50	0.13
Vinyl chloride	ND		ug/l	0.50	0.08
Chloroethane	ND		ug/l	0.50	0.12
1,1-Dichloroethene	ND		ug/l	0.50	0.06
trans-1,2-Dichloroethene	ND		ug/l	0.50	0.09
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.11
Trichloroethene	ND		ug/l	0.50	0.09

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 11/04/15 17:31
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG839643-6					
1,2-Dichlorobenzene	ND		ug/l	0.50	0.07
1,3-Dichlorobenzene	ND		ug/l	0.50	0.05
1,4-Dichlorobenzene	ND		ug/l	0.50	0.05
Styrene	ND		ug/l	0.50	0.06
o-Xylene	ND		ug/l	0.50	0.09
1,1-Dichloropropene	ND		ug/l	0.50	0.11
2,2-Dichloropropane	ND		ug/l	0.50	0.11
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	0.09
1,2,3-Trichloropropane	ND		ug/l	0.50	0.11
Bromochloromethane	ND		ug/l	0.50	0.10
n-Butylbenzene	ND		ug/l	0.50	0.06
Dichlorodifluoromethane	ND		ug/l	0.50	0.10
Hexachlorobutadiene	ND		ug/l	0.50	0.11
Isopropylbenzene	ND		ug/l	0.50	0.08
p-Isopropyltoluene	ND		ug/l	0.50	0.07
Naphthalene	ND		ug/l	0.50	0.06
n-Propylbenzene	ND		ug/l	0.50	0.08
sec-Butylbenzene	ND		ug/l	0.50	0.06
tert-Butylbenzene	ND		ug/l	0.50	0.09
1,2,3-Trichlorobenzene	ND		ug/l	0.50	0.06
1,2,4-Trichlorobenzene	ND		ug/l	0.50	0.07
1,2,4-Trimethylbenzene	ND		ug/l	0.50	0.08
1,3,5-Trimethylbenzene	ND		ug/l	0.50	0.10
Bromobenzene	ND		ug/l	0.50	0.09
o-Chlorotoluene	ND		ug/l	0.50	0.10
p-Chlorotoluene	ND		ug/l	0.50	0.08
Dibromomethane	ND		ug/l	0.50	0.09
1,2-Dibromoethane	ND		ug/l	0.50	0.06
1,2-Dibromo-3-chloropropane	ND		ug/l	0.50	0.16

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 16,524.2
Analytical Date: 11/04/15 17:31
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG839643-6					
1,3-Dichloropropane	ND		ug/l	0.50	0.11
Methyl tert butyl ether	ND		ug/l	0.50	0.06
Xylenes, Total[1]	ND		ug/l	0.50	0.09

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	99		80-120
4-Bromofluorobenzene	100		80-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: 2312 WESTERN AVE.

Project Number: GUILDERLAND, NY

Lab Number: L1528307

Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG839643-1								
Methylene chloride	105		-		70-130	-		20
1,1-Dichloroethane	100		-		70-130	-		20
Chloroform	100		-		70-130	-		20
Carbon tetrachloride	92		-		70-130	-		20
1,2-Dichloropropane	105		-		70-130	-		20
Dibromochloromethane	81		-		70-130	-		20
1,1,2-Trichloroethane	101		-		70-130	-		20
Tetrachloroethene	95		-		70-130	-		20
Chlorobenzene	106		-		70-130	-		20
Trichlorofluoromethane	94		-		70-130	-		20
1,2-Dichloroethane	103		-		70-130	-		20
1,1,1-Trichloroethane	97		-		70-130	-		20
Bromodichloromethane	92		-		70-130	-		20
trans-1,3-Dichloropropene	91		-		70-130	-		20
cis-1,3-Dichloropropene	97		-		70-130	-		20
Bromoform	76		-		70-130	-		20
1,1,2,2-Tetrachloroethane	96		-		70-130	-		20
Benzene	105		-		70-130	-		20
Toluene	105		-		70-130	-		20
Ethylbenzene	106		-		70-130	-		20
p/m-Xylene	106		-		70-130	-		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG839643-1								
Chloromethane	96		-		70-130	-		20
Bromomethane	99		-		70-130	-		20
Vinyl chloride	96		-		70-130	-		20
Chloroethane	99		-		70-130	-		20
1,1-Dichloroethene	96		-		70-130	-		20
trans-1,2-Dichloroethene	101		-		70-130	-		20
cis-1,2-Dichloroethene	101		-		70-130	-		20
Trichloroethene	99		-		70-130	-		20
1,2-Dichlorobenzene	107		-		70-130	-		20
1,3-Dichlorobenzene	108		-		70-130	-		20
1,4-Dichlorobenzene	110		-		70-130	-		20
Styrene	105		-		70-130	-		20
o-Xylene	104		-		70-130	-		20
1,1-Dichloropropene	103		-		70-130	-		20
2,2-Dichloropropane	100		-		70-130	-		20
1,1,1,2-Tetrachloroethane	98		-		70-130	-		20
1,2,3-Trichloropropane	98		-		70-130	-		20
Bromochloromethane	98		-		70-130	-		20
n-Butylbenzene	107		-		70-130	-		20
Dichlorodifluoromethane	93		-		70-130	-		20
Hexachlorobutadiene	106		-		70-130	-		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG839643-1								
Isopropylbenzene	107		-		70-130	-		20
p-Isopropyltoluene	107		-		70-130	-		20
Naphthalene	98		-		70-130	-		20
n-Propylbenzene	105		-		70-130	-		20
sec-Butylbenzene	107		-		70-130	-		20
tert-Butylbenzene	107		-		70-130	-		20
1,2,3-Trichlorobenzene	106		-		70-130	-		20
1,2,4-Trichlorobenzene	108		-		70-130	-		20
1,2,4-Trimethylbenzene	105		-		70-130	-		20
1,3,5-Trimethylbenzene	106		-		70-130	-		20
Bromobenzene	108		-		70-130	-		20
o-Chlorotoluene	107		-		70-130	-		20
p-Chlorotoluene	108		-		70-130	-		20
Dibromomethane	96		-		70-130	-		20
1,2-Dibromoethane	98		-		70-130	-		20
1,2-Dibromo-3-chloropropane	77		-		70-130	-		20
1,3-Dichloropropane	102		-		70-130	-		20
Methyl tert butyl ether	96		-		70-130	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-04 Batch: WG839643-1								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichlorobenzene-d4	102				80-120
4-Bromofluorobenzene	99				80-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: 2312 WESTERN AVE.

Project Number: GUILDERLAND, NY

Lab Number: L1528307

Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG839643-5								
Methylene chloride	101		-		70-130	-		20
1,1-Dichloroethane	100		-		70-130	-		20
Chloroform	97		-		70-130	-		20
Carbon tetrachloride	94		-		70-130	-		20
1,2-Dichloropropane	97		-		70-130	-		20
Dibromochloromethane	89		-		70-130	-		20
1,1,2-Trichloroethane	104		-		70-130	-		20
Tetrachloroethene	98		-		70-130	-		20
Chlorobenzene	94		-		70-130	-		20
Trichlorofluoromethane	100		-		70-130	-		20
1,2-Dichloroethane	103		-		70-130	-		20
1,1,1-Trichloroethane	97		-		70-130	-		20
Bromodichloromethane	92		-		70-130	-		20
trans-1,3-Dichloropropene	92		-		70-130	-		20
cis-1,3-Dichloropropene	91		-		70-130	-		20
Bromoform	79		-		70-130	-		20
1,1,2,2-Tetrachloroethane	104		-		70-130	-		20
Benzene	100		-		70-130	-		20
Toluene	99		-		70-130	-		20
Ethylbenzene	93		-		70-130	-		20
p/m-Xylene	92		-		70-130	-		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG839643-5								
Chloromethane	110		-		70-130	-		20
Bromomethane	91		-		70-130	-		20
Vinyl chloride	104		-		70-130	-		20
Chloroethane	100		-		70-130	-		20
1,1-Dichloroethene	101		-		70-130	-		20
trans-1,2-Dichloroethene	100		-		70-130	-		20
cis-1,2-Dichloroethene	97		-		70-130	-		20
Trichloroethene	100		-		70-130	-		20
1,2-Dichlorobenzene	95		-		70-130	-		20
1,3-Dichlorobenzene	93		-		70-130	-		20
1,4-Dichlorobenzene	96		-		70-130	-		20
Styrene	93		-		70-130	-		20
o-Xylene	94		-		70-130	-		20
1,1-Dichloropropene	94		-		70-130	-		20
2,2-Dichloropropane	95		-		70-130	-		20
1,1,1,2-Tetrachloroethane	90		-		70-130	-		20
1,2,3-Trichloropropane	110		-		70-130	-		20
Bromochloromethane	100		-		70-130	-		20
n-Butylbenzene	81		-		70-130	-		20
Dichlorodifluoromethane	115		-		70-130	-		20
Hexachlorobutadiene	91		-		70-130	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 2312 WESTERN AVE.

Project Number: GUILDERLAND, NY

Lab Number: L1528307

Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG839643-5								
Isopropylbenzene	89		-		70-130	-		20
p-Isopropyltoluene	85		-		70-130	-		20
Naphthalene	102		-		70-130	-		20
n-Propylbenzene	89		-		70-130	-		20
sec-Butylbenzene	89		-		70-130	-		20
tert-Butylbenzene	87		-		70-130	-		20
1,2,3-Trichlorobenzene	96		-		70-130	-		20
1,2,4-Trichlorobenzene	92		-		70-130	-		20
1,2,4-Trimethylbenzene	88		-		70-130	-		20
1,3,5-Trimethylbenzene	90		-		70-130	-		20
Bromobenzene	95		-		70-130	-		20
o-Chlorotoluene	96		-		70-130	-		20
p-Chlorotoluene	90		-		70-130	-		20
Dibromomethane	100		-		70-130	-		20
1,2-Dibromoethane	102		-		70-130	-		20
1,2-Dibromo-3-chloropropane	96		-		70-130	-		20
1,3-Dichloropropane	102		-		70-130	-		20
Methyl tert butyl ether	107		-		70-130	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: 2312 WESTERN AVE.

Project Number: GUILDERLAND, NY

Lab Number: L1528307

Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG839643-5								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichlorobenzene-d4	102				80-120
4-Bromofluorobenzene	98				80-120

Matrix Spike Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-4 QC Sample: L1528340-03 Client ID: MS Sample												
Methylene chloride	ND	4	4.6	114		-	-		70-130	-		20
1,1-Dichloroethane	ND	4	4.5	113		-	-		70-130	-		20
Chloroform	ND	4	4.5	113		-	-		70-130	-		20
Carbon tetrachloride	ND	4	4.5	114		-	-		70-130	-		20
1,2-Dichloropropane	ND	4	4.6	114		-	-		70-130	-		20
Dibromochloromethane	ND	4	3.6	91		-	-		70-130	-		20
1,1,2-Trichloroethane	ND	4	4.4	109		-	-		70-130	-		20
Tetrachloroethene	ND	4	4.3	108		-	-		70-130	-		20
Chlorobenzene	ND	4	4.6	114		-	-		70-130	-		20
Trichlorofluoromethane	ND	4	4.9	122		-	-		70-130	-		20
1,2-Dichloroethane	ND	4	4.4	111		-	-		70-130	-		20
1,1,1-Trichloroethane	ND	4	4.5	113		-	-		70-130	-		20
Bromodichloromethane	ND	4	4.1	104		-	-		70-130	-		20
trans-1,3-Dichloropropene	ND	4	3.7	92		-	-		70-130	-		20
cis-1,3-Dichloropropene	ND	4	4.2	104		-	-		70-130	-		20
Bromoform	ND	4	3.6	90		-	-		70-130	-		20
1,1,2,2-Tetrachloroethane	ND	4	3.9	99		-	-		70-130	-		20
Benzene	ND	4	4.6	114		-	-		70-130	-		20
Toluene	ND	4	4.5	113		-	-		70-130	-		20
Ethylbenzene	ND	4	4.5	113		-	-		70-130	-		20
p/m-Xylene	ND	8	8.9	111		-	-		70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-4 QC Sample: L1528340-03 Client ID: MS Sample												
Chloromethane	0.34J	4	4.5	113		-	-		70-130	-		20
Bromomethane	ND	4	4.4	109		-	-		70-130	-		20
Vinyl chloride	ND	4	4.5	113		-	-		70-130	-		20
Chloroethane	ND	4	4.7	118		-	-		70-130	-		20
1,1-Dichloroethene	ND	4	4.8	119		-	-		70-130	-		20
trans-1,2-Dichloroethene	ND	4	4.4	111		-	-		70-130	-		20
cis-1,2-Dichloroethene	1.1	4	5.5	109		-	-		70-130	-		20
Trichloroethene	ND	4	4.2	105		-	-		70-130	-		20
1,2-Dichlorobenzene	ND	4	4.6	114		-	-		70-130	-		20
1,3-Dichlorobenzene	ND	4	4.6	114		-	-		70-130	-		20
1,4-Dichlorobenzene	ND	4	4.6	115		-	-		70-130	-		20
Styrene	ND	4	4.0	99		-	-		70-130	-		20
o-Xylene	ND	4	4.4	111		-	-		70-130	-		20
1,1-Dichloropropene	ND	4	4.6	115		-	-		70-130	-		20
2,2-Dichloropropane	ND	4	4.3	107		-	-		70-130	-		20
1,1,1,2-Tetrachloroethane	ND	4	4.3	107		-	-		70-130	-		20
1,2,3-Trichloropropane	ND	4	4.2	105		-	-		70-130	-		20
Bromochloromethane	ND	4	4.3	108		-	-		70-130	-		20
n-Butylbenzene	ND	4	4.5	112		-	-		70-130	-		20
Dichlorodifluoromethane	ND	4	4.4	110		-	-		70-130	-		20
Hexachlorobutadiene	ND	4	4.7	119		-	-		70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-4 QC Sample: L1528340-03 Client ID: MS Sample												
Isopropylbenzene	ND	4	4.4	110		-	-		70-130	-		20
p-Isopropyltoluene	ND	4	4.2	106		-	-		70-130	-		20
Naphthalene	ND	4	3.9	97		-	-		70-130	-		20
n-Propylbenzene	ND	4	4.4	109		-	-		70-130	-		20
sec-Butylbenzene	ND	4	4.5	112		-	-		70-130	-		20
tert-Butylbenzene	ND	4	4.5	112		-	-		70-130	-		20
1,2,3-Trichlorobenzene	ND	4	4.2	105		-	-		70-130	-		20
1,2,4-Trichlorobenzene	ND	4	4.2	106		-	-		70-130	-		20
1,2,4-Trimethylbenzene	ND	4	4.1	103		-	-		70-130	-		20
1,3,5-Trimethylbenzene	ND	4	4.4	110		-	-		70-130	-		20
Bromobenzene	ND	4	4.6	115		-	-		70-130	-		20
o-Chlorotoluene	ND	4	4.5	113		-	-		70-130	-		20
p-Chlorotoluene	ND	4	4.6	114		-	-		70-130	-		20
Dibromomethane	ND	4	4.2	106		-	-		70-130	-		20
1,2-Dibromoethane	ND	4	4.2	105		-	-		70-130	-		20
1,2-Dibromo-3-chloropropane	ND	4	3.7	93		-	-		70-130	-		20
1,3-Dichloropropane	ND	4	4.4	109		-	-		70-130	-		20
Methyl tert butyl ether	ND	4	4.2	105		-	-		70-130	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-4 QC Sample: L1528340-03 Client ID: MS Sample												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	102				80-120
4-Bromofluorobenzene	96				80-120

Lab Duplicate Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-3 QC Sample: L1528340-03 Client ID: DUP Sample						
Methylene chloride	ND	ND	ug/l	NC		20
1,1-Dichloroethane	ND	ND	ug/l	NC		20
Chloroform	ND	ND	ug/l	NC		20
Carbon tetrachloride	ND	ND	ug/l	NC		20
1,2-Dichloropropane	ND	ND	ug/l	NC		20
Dibromochloromethane	ND	ND	ug/l	NC		20
1,1,2-Trichloroethane	ND	ND	ug/l	NC		20
Tetrachloroethene	ND	ND	ug/l	NC		20
Chlorobenzene	ND	ND	ug/l	NC		20
Trichlorofluoromethane	ND	ND	ug/l	NC		20
1,2-Dichloroethane	ND	ND	ug/l	NC		20
1,1,1-Trichloroethane	ND	ND	ug/l	NC		20
Bromodichloromethane	ND	ND	ug/l	NC		20
trans-1,3-Dichloropropene	ND	ND	ug/l	NC		20
cis-1,3-Dichloropropene	ND	ND	ug/l	NC		20
Bromoform	ND	ND	ug/l	NC		20
1,1,2,2-Tetrachloroethane	ND	ND	ug/l	NC		20
Benzene	ND	ND	ug/l	NC		20
Toluene	ND	ND	ug/l	NC		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-3 QC Sample: L1528340-03 Client ID: DUP Sample					
Ethylbenzene	ND	ND	ug/l	NC	20
p/m-Xylene	ND	ND	ug/l	NC	20
Chloromethane	0.34J	ND	ug/l	NC	20
Bromomethane	ND	ND	ug/l	NC	20
Vinyl chloride	ND	ND	ug/l	NC	20
Chloroethane	ND	ND	ug/l	NC	20
1,1-Dichloroethene	ND	ND	ug/l	NC	20
trans-1,2-Dichloroethene	ND	ND	ug/l	NC	20
cis-1,2-Dichloroethene	1.1	1.1	ug/l	0	20
Trichloroethene	ND	ND	ug/l	NC	20
1,2-Dichlorobenzene	ND	ND	ug/l	NC	20
1,3-Dichlorobenzene	ND	ND	ug/l	NC	20
1,4-Dichlorobenzene	ND	ND	ug/l	NC	20
Styrene	ND	ND	ug/l	NC	20
o-Xylene	ND	ND	ug/l	NC	20
1,1-Dichloropropene	ND	ND	ug/l	NC	20
2,2-Dichloropropane	ND	ND	ug/l	NC	20
1,1,1,2-Tetrachloroethane	ND	ND	ug/l	NC	20
1,2,3-Trichloropropane	ND	ND	ug/l	NC	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-3 QC Sample: L1528340-03 Client ID: DUP Sample					
Bromochloromethane	ND	ND	ug/l	NC	20
n-Butylbenzene	ND	ND	ug/l	NC	20
Dichlorodifluoromethane	ND	ND	ug/l	NC	20
Hexachlorobutadiene	ND	ND	ug/l	NC	20
Isopropylbenzene	ND	ND	ug/l	NC	20
p-Isopropyltoluene	ND	ND	ug/l	NC	20
Naphthalene	ND	ND	ug/l	NC	20
n-Propylbenzene	ND	ND	ug/l	NC	20
sec-Butylbenzene	ND	ND	ug/l	NC	20
tert-Butylbenzene	ND	ND	ug/l	NC	20
1,2,3-Trichlorobenzene	ND	ND	ug/l	NC	20
1,2,4-Trichlorobenzene	ND	ND	ug/l	NC	20
1,2,4-Trimethylbenzene	ND	ND	ug/l	NC	20
1,3,5-Trimethylbenzene	ND	ND	ug/l	NC	20
Bromobenzene	ND	ND	ug/l	NC	20
o-Chlorotoluene	ND	ND	ug/l	NC	20
p-Chlorotoluene	ND	ND	ug/l	NC	20
Dibromomethane	ND	ND	ug/l	NC	20
1,2-Dibromoethane	ND	ND	ug/l	NC	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG839643-3 QC Sample: L1528340-03 Client ID: DUP Sample					
1,2-Dibromo-3-chloropropane	ND	ND	ug/l	NC	20
1,3-Dichloropropane	ND	ND	ug/l	NC	20
Methyl tert butyl ether	ND	ND	ug/l	NC	20
Xylene (Total)[1]	ND	ND	ug/l	NC	20
Trihalomethanes, Total	ND	ND	ug/l	NC	20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichlorobenzene-d4	104		103		80-120
4-Bromofluorobenzene	94		92		80-120

SEMIVOLATILES

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02
Client ID: MW-2
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 11/06/15 03:58
Analyst: AL

Date Collected: 11/02/15 11:45
Date Received: 11/02/15
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 11/05/15 08:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.41	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	0.48	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.0	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.89	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.36	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.43	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.60	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.60	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.58	1
Isophorone	ND		ug/l	5.0	0.79	1
Nitrobenzene	ND		ug/l	2.0	0.40	1
NDPA/DPA	ND		ug/l	2.0	0.34	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.93	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.1	1
Di-n-butylphthalate	ND		ug/l	5.0	0.77	1
Di-n-octylphthalate	ND		ug/l	5.0	1.2	1
Diethyl phthalate	ND		ug/l	5.0	0.39	1
Dimethyl phthalate	ND		ug/l	5.0	0.33	1
Biphenyl	ND		ug/l	2.0	0.24	1
4-Chloroaniline	ND		ug/l	5.0	0.84	1
2-Nitroaniline	ND		ug/l	5.0	0.96	1
3-Nitroaniline	ND		ug/l	5.0	0.67	1
4-Nitroaniline	ND		ug/l	5.0	0.83	1
Dibenzofuran	ND		ug/l	2.0	0.22	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.36	1
Acetophenone	ND		ug/l	5.0	0.43	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.78	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.54	1
2-Chlorophenol	ND		ug/l	2.0	0.58	1

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02 Date Collected: 11/02/15 11:45

Client ID: MW-2 Date Received: 11/02/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4-Dichlorophenol	ND		ug/l	5.0	0.56	1
2,4-Dimethylphenol	ND		ug/l	5.0	0.58	1
2-Nitrophenol	ND		ug/l	10	1.0	1
4-Nitrophenol	ND		ug/l	10	1.1	1
2,4-Dinitrophenol	ND		ug/l	20	1.4	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.4	1
Phenol	ND		ug/l	5.0	0.27	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.72	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.75	1
Carbazole	ND		ug/l	2.0	0.37	1
Benzaldehyde	ND		ug/l	5.0	0.99	1
Caprolactam	ND		ug/l	10	0.39	1
Atrazine	ND		ug/l	10	0.79	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.59	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	39		21-120
Phenol-d6	27		10-120
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	58		15-120
2,4,6-Tribromophenol	59		10-120
4-Terphenyl-d14	50		41-149

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02
Client ID: MW-2
Sample Location: GUILDERLAND, NY
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 11/05/15 19:44
Analyst: KV

Date Collected: 11/02/15 11:45
Date Received: 11/02/15
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 11/05/15 08:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.20	0.04	1
2-Chloronaphthalene	ND		ug/l	0.20	0.04	1
Fluoranthene	ND		ug/l	0.20	0.04	1
Hexachlorobutadiene	ND		ug/l	0.50	0.04	1
Naphthalene	0.12	J	ug/l	0.20	0.04	1
Benzo(a)anthracene	ND		ug/l	0.20	0.02	1
Benzo(a)pyrene	ND		ug/l	0.20	0.04	1
Benzo(b)fluoranthene	ND		ug/l	0.20	0.02	1
Benzo(k)fluoranthene	ND		ug/l	0.20	0.04	1
Chrysene	ND		ug/l	0.20	0.04	1
Acenaphthylene	ND		ug/l	0.20	0.04	1
Anthracene	ND		ug/l	0.20	0.04	1
Benzo(ghi)perylene	ND		ug/l	0.20	0.04	1
Fluorene	ND		ug/l	0.20	0.04	1
Phenanthrene	ND		ug/l	0.20	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.20	0.04	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.20	0.04	1
Pyrene	ND		ug/l	0.20	0.04	1
2-Methylnaphthalene	ND		ug/l	0.20	0.05	1
Pentachlorophenol	ND		ug/l	0.80	0.22	1
Hexachlorobenzene	ND		ug/l	0.80	0.03	1
Hexachloroethane	0.34	J	ug/l	0.80	0.03	1

Project Name: 2312 WESTERN AVE. **Lab Number:** L1528307

Project Number: GUILDERLAND, NY **Report Date:** 11/11/15

SAMPLE RESULTS

Lab ID: L1528307-02 Date Collected: 11/02/15 11:45

Client ID: MW-2 Date Received: 11/02/15

Sample Location: GUILDERLAND, NY Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	32		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	87		15-120
2,4,6-Tribromophenol	**139**	Q	10-120
4-Terphenyl-d14	75		41-149

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 11/05/15 19:09
Analyst: AL

Extraction Method: EPA 3510C
Extraction Date: 11/05/15 08:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG837602-1					
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.41
3,3'-Dichlorobenzidine	ND		ug/l	5.0	0.48
2,4-Dinitrotoluene	ND		ug/l	5.0	1.0
2,6-Dinitrotoluene	ND		ug/l	5.0	0.89
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.36
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.43
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.60
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.60
Hexachlorocyclopentadiene	ND		ug/l	20	0.58
Isophorone	ND		ug/l	5.0	0.79
Nitrobenzene	ND		ug/l	2.0	0.40
NDPA/DPA	ND		ug/l	2.0	0.34
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	0.93
Butyl benzyl phthalate	ND		ug/l	5.0	1.1
Di-n-butylphthalate	ND		ug/l	5.0	0.77
Di-n-octylphthalate	ND		ug/l	5.0	1.2
Diethyl phthalate	ND		ug/l	5.0	0.39
Dimethyl phthalate	ND		ug/l	5.0	0.33
Biphenyl	ND		ug/l	2.0	0.24
4-Chloroaniline	ND		ug/l	5.0	0.84
2-Nitroaniline	ND		ug/l	5.0	0.96
3-Nitroaniline	ND		ug/l	5.0	0.67
4-Nitroaniline	ND		ug/l	5.0	0.83
Dibenzofuran	ND		ug/l	2.0	0.22
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.36
Acetophenone	ND		ug/l	5.0	0.43
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.78
p-Chloro-m-cresol	ND		ug/l	2.0	0.54

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 11/05/15 19:09
Analyst: AL

Extraction Method: EPA 3510C
Extraction Date: 11/05/15 08:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG837602-1					
2-Chlorophenol	ND		ug/l	2.0	0.58
2,4-Dichlorophenol	ND		ug/l	5.0	0.56
2,4-Dimethylphenol	ND		ug/l	5.0	0.58
2-Nitrophenol	ND		ug/l	10	1.0
4-Nitrophenol	ND		ug/l	10	1.1
2,4-Dinitrophenol	ND		ug/l	20	1.4
4,6-Dinitro-o-cresol	ND		ug/l	10	1.4
Phenol	ND		ug/l	5.0	0.27
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.72
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.75
Carbazole	ND		ug/l	2.0	0.37
Benzaldehyde	ND		ug/l	5.0	0.99
Caprolactam	ND		ug/l	10	0.39
Atrazine	ND		ug/l	10	0.79
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.59

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		21-120
Phenol-d6	26		10-120
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	64		15-120
2,4,6-Tribromophenol	66		10-120
4-Terphenyl-d14	64		41-149

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 11/05/15 18:04
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 11/05/15 08:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG837603-1					
Acenaphthene	ND		ug/l	0.20	0.04
2-Chloronaphthalene	ND		ug/l	0.20	0.04
Fluoranthene	ND		ug/l	0.20	0.04
Hexachlorobutadiene	ND		ug/l	0.50	0.04
Naphthalene	ND		ug/l	0.20	0.04
Benzo(a)anthracene	ND		ug/l	0.20	0.02
Benzo(a)pyrene	ND		ug/l	0.20	0.04
Benzo(b)fluoranthene	ND		ug/l	0.20	0.02
Benzo(k)fluoranthene	ND		ug/l	0.20	0.04
Chrysene	ND		ug/l	0.20	0.04
Acenaphthylene	ND		ug/l	0.20	0.04
Anthracene	ND		ug/l	0.20	0.04
Benzo(ghi)perylene	ND		ug/l	0.20	0.04
Fluorene	ND		ug/l	0.20	0.04
Phenanthrene	ND		ug/l	0.20	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.20	0.04
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.20	0.04
Pyrene	ND		ug/l	0.20	0.04
2-Methylnaphthalene	ND		ug/l	0.20	0.05
Pentachlorophenol	ND		ug/l	0.80	0.22
Hexachlorobenzene	ND		ug/l	0.80	0.03
Hexachloroethane	ND		ug/l	0.80	0.03

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 11/05/15 18:04
Analyst: KV

Extraction Method: EPA 3510C
Extraction Date: 11/05/15 08:26

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG837603-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	49		21-120
Phenol-d6	33		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	91		15-120
2,4,6-Tribromophenol	**145**	Q	10-120
4-Terphenyl-d14	82		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG837602-2 WG837602-3								
Acenaphthene	55		64		37-111	15		30
1,2,4-Trichlorobenzene	41		50		39-98	20		30
Benzidine	**9**	Q	**2**	Q	10-66	**142**	Q	30
n-Nitrosodimethylamine	35		43		22-100	21		30
Hexachlorobenzene	59		76		40-140	25		30
Bis(2-chloroethyl)ether	58		70		40-140	19		30
2-Chloronaphthalene	53		64		40-140	19		30
1,2-Dichlorobenzene	41		48		40-140	16		30
1,3-Dichlorobenzene	40		47		40-140	16		30
1,4-Dichlorobenzene	40		47		36-97	16		30
3,3'-Dichlorobenzidine	57		76		40-140	29		30
2,4-Dinitrotoluene	63		81		24-96	25		30
2,6-Dinitrotoluene	64		84		40-140	27		30
Azobenzene	58		72		40-140	22		30
Fluoranthene	61		78		40-140	24		30
4-Chlorophenyl phenyl ether	56		70		40-140	22		30
4-Bromophenyl phenyl ether	59		77		40-140	26		30
Bis(2-chloroisopropyl)ether	55		65		40-140	17		30
Bis(2-chloroethoxy)methane	62		75		40-140	19		30
Hexachlorobutadiene	**37**	Q	44		40-140	17		30
Hexachlorocyclopentadiene	**32**	Q	41		40-140	25		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG837602-2 WG837602-3								
Hexachloroethane	**35**	Q	40		40-140	13		30
Isophorone	64		77		40-140	18		30
Naphthalene	47		57		40-140	19		30
Nitrobenzene	58		73		40-140	23		30
NitrosoDiPhenylAmine(NDPA)/DPA	59		75		40-140	24		30
n-Nitrosodi-n-propylamine	63		75		29-132	17		30
Bis(2-Ethylhexyl)phthalate	62		76		40-140	20		30
Butyl benzyl phthalate	64		81		40-140	23		30
Di-n-butylphthalate	62		78		40-140	23		30
Di-n-octylphthalate	64		80		40-140	22		30
Diethyl phthalate	62		78		40-140	23		30
Dimethyl phthalate	61		76		40-140	22		30
Benzo(a)anthracene	58		73		40-140	23		30
Benzo(a)pyrene	59		74		40-140	23		30
Benzo(b)fluoranthene	60		73		40-140	20		30
Benzo(k)fluoranthene	57		73		40-140	25		30
Chrysene	61		76		40-140	22		30
Acenaphthylene	59		73		45-123	21		30
Anthracene	58		74		40-140	24		30
Benzo(ghi)perylene	61		76		40-140	22		30
Fluorene	56		72		40-140	25		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG837602-2 WG837602-3								
Phenanthrene	58		73		40-140	23		30
Dibenzo(a,h)anthracene	61		76		40-140	22		30
Indeno(1,2,3-cd)Pyrene	60		76		40-140	24		30
Pyrene	59		75		26-127	24		30
Biphenyl	**53**	Q	62		54-104	16		30
Aniline	**34**	Q	**37**	Q	40-140	8		30
4-Chloroaniline	59		83		40-140	**34**	Q	30
2-Nitroaniline	65		84		52-143	26		30
3-Nitroaniline	58		76		25-145	27		30
4-Nitroaniline	64		82		51-143	25		30
Dibenzofuran	56		69		40-140	21		30
2-Methylnaphthalene	48		58		40-140	19		30
1,2,4,5-Tetrachlorobenzene	47		54		2-134	14		30
Acetophenone	65		79		39-129	19		30
2,4,6-Trichlorophenol	70		86		30-130	21		30
P-Chloro-M-Cresol	66		82		23-97	22		30
2-Chlorophenol	60		72		27-123	18		30
2,4-Dichlorophenol	66		82		30-130	22		30
2,4-Dimethylphenol	66		79		30-130	18		30
2-Nitrophenol	65		80		30-130	21		30
4-Nitrophenol	38		49		10-80	25		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG837602-2 WG837602-3								
2,4-Dinitrophenol	63		77		20-130	20		30
4,6-Dinitro-o-cresol	65		84		20-164	26		30
Pentachlorophenol	60		78		9-103	26		30
Phenol	29		35		12-110	19		30
2-Methylphenol	55		67		30-130	20		30
3-Methylphenol/4-Methylphenol	52		64		30-130	21		30
2,4,5-Trichlorophenol	67		86		30-130	25		30
Benzoic Acid	15		26		10-110	**54**	Q	30
Benzyl Alcohol	58		70		15-110	19		30
Carbazole	61		78		55-144	24		30
Pyridine	11		**4**	Q	10-66	**89**	Q	30
Benzaldehyde	70		84		40-140	18		30
Caprolactam	21		29		10-130	**32**	Q	30
Atrazine	68		85		40-140	22		30
2,3,4,6-Tetrachlorophenol	62		77		54-145	22		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: 2312 WESTERN AVE.

Project Number: GUILDERLAND, NY

Lab Number: L1528307

Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG837602-2 WG837602-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	40		48		21-120
Phenol-d6	29		34		10-120
Nitrobenzene-d5	64		76		23-120
2-Fluorobiphenyl	61		76		15-120
2,4,6-Tribromophenol	63		81		10-120
4-Terphenyl-d14	61		78		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG837603-2 WG837603-3								
Acenaphthene	86		64		37-111	29		40
2-Chloronaphthalene	101		73		40-140	32		40
Fluoranthene	106		79		40-140	29		40
Hexachlorobutadiene	118		81		40-140	37		40
Naphthalene	90		64		40-140	34		40
Benzo(a)anthracene	107		79		40-140	30		40
Benzo(a)pyrene	109		81		40-140	29		40
Benzo(b)fluoranthene	107		81		40-140	28		40
Benzo(k)fluoranthene	108		78		40-140	32		40
Chrysene	100		74		40-140	30		40
Acenaphthylene	105		77		40-140	31		40
Anthracene	97		72		40-140	30		40
Benzo(ghi)perylene	116		85		40-140	31		40
Fluorene	136		70		40-140	**64**	Q	40
Phenanthrene	93		70		40-140	28		40
Dibenzo(a,h)anthracene	118		86		40-140	31		40
Indeno(1,2,3-cd)Pyrene	117		86		40-140	31		40
Pyrene	104		78		26-127	29		40
2-Methylnaphthalene	97		70		40-140	32		40
Pentachlorophenol	**110**	Q	81		9-103	30		40
Hexachlorobenzene	**141**	Q	106		40-140	28		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG837603-2 WG837603-3								
Hexachloroethane	96		66		40-140	37		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	57		41		21-120
Phenol-d6	39		29		10-120
Nitrobenzene-d5	97		69		23-120
2-Fluorobiphenyl	98		73		15-120
2,4,6-Tribromophenol	**170**	Q	**122**	Q	10-120
4-Terphenyl-d14	89		66		41-149

Project Name: 2312 WESTERN AVE.
Project Number: GUILDERLAND, NY

Lab Number: L1528307
Report Date: 11/11/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1528307-01A	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-01B	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-01C	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-01D	Amber 1000ml unpreserved	A	8	4.8	Y	Absent	HOLD-8270(7)
L1528307-02A	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-02B	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-02C	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-02D	Amber 1000ml unpreserved	A	8	4.8	Y	Absent	NYTCL-8270(7),NYTCL-8270-SIM(7)
L1528307-03A	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-03B	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-03C	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-03D	Amber 1000ml unpreserved	A	8	4.8	Y	Absent	HOLD-8270(7)
L1528307-04A	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-04B	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-04C	Vial Ascorbic Acid/HCl preserved	A	N/A	4.8	Y	Absent	524.2(14)
L1528307-04D	Amber 1000ml unpreserved	A	8	4.8	Y	Absent	HOLD-8270(7)

*Values in parentheses indicate holding time in days

Project Name:	2312 WESTERN AVE.	**Lab Number:**	L1528307
Project Number:	GUILDERLAND, NY	**Report Date:**	11/11/15

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: DU Report with 'J' Qualifiers

Project Name:	2312 WESTERN AVE.	**Lab Number:**	L1528307
Project Number:	GUILDERLAND, NY	**Report Date:**	11/11/15

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	2312 WESTERN AVE.	**Lab Number:**	L1528307
Project Number:	GUILDERLAND, NY	**Report Date:**	11/11/15

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

16 Methods for the Determination of Organic Compounds in Drinking Water - Supplement II. EPA/600/R-92/129, August 1992.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 8260C: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; Iodomethane (methyl iodide) (soil); Methyl methacrylate (soil); Azobenzene.
EPA 8270D: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA 2540D: TSS
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

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FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 11/3/15

ALPHA Job #: L1528357

Client Information

Client: PS Property Solutions, Inc.
Address:
Phone:
Fax:
Email:

Project Information

Project Name: ~~Charles Cohn, Esq.~~ - 2312 Western Ave
Project Location: Guilderland, NY
Project #
(Use Project name as Project #) ☒
Project Manager: P. SHANNON
ALPHAQuote #:

Turn-Around Time

Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	EPA 524.2	8270 (Full)*							Total Bottle
28307-01	MW-1	11/2/15	1130	W	RS	X	X							
02	MW-2	11/2/15	1145	W	RS	X	X							
03	MW-3	11/2/15	1200	W	RS	X	X							
04	MW-4	11/2/15	1215	W	RS	X	X							

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

*HOLD 8270 FULL ANALYSIS

Container Type			NaOH	1L Amber									
Preservative			HCl	VOA									

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	11/2/15 1555	Robert Shannon/AAI	11-2-15 1455
Robert Shannon	11/2/15 2315	Jim Cole	11-2-15 2315
Jim Cole	11/3/15 0810	Robert Shannon	11/3/15 0810

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)