Martha's Dry Cleaner Savannah, Chatham County, Georgia February 17, 2016 Terracon Project No. ES117125



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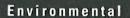
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Date:

Terracon Consultants, Inc.

2201 Rowland Avenue P (912) 629 4000 F (912) 629 4001 terracon.com/savannah

Savannah, Georgia 31404





Voluntary Remediation Program Compliance Status Report

Martha's Dry Cleaners 4608 Skidaway Road Savannah, Chatham County, Georgia EPD HSI No. 10764

> February 17, 2016 Terracon Project No. ES117125

Prepared for:

Bible Baptist Church Savannah, Georgia

Prepared by:

Terracon Consultants, Inc. Savannah, Georgia

terracon.com



Environmental Facilities Geotechnical Materials



February 17, 2016

Georgia Department of Natural Resources Environmental Protection Division Response and Remediation Program 2 Martin Luther King, Jr. Drive, SE Suite 1462 Atlanta, Georgia 30334-9000

Attn: Ms. Robin Futch, P.G., PMP

Re: Voluntary Remediation Program Compliance Status Report

Martha's Dry Cleaners EPD HSI No. 10764 4608 Skidaway Road

Savannah, Chatham County, Georgia Terracon Project No. ES117125

Dear Ms. Futch:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Voluntary Remediation Program Compliance Status Report (CSR) for the Martha's Dry Cleaners Site, HSI No. 10764, 4608 Skidaway Road, Savannah Chatham County, Georgia on behalf of Bible Baptist Church. Assessment and corrective action has been conducted on the site to bring it into compliance with the VRP, and subsequently, removal from the HSI.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, please contact us at your earliest convenience.

Sincerely,

Terracon Consultants, Inc.

Stewart A. Dixon, P.G. Senior Project Geologist

Enclosures

cc: 1 - Client (PDF)

William S. Anderson, III, P.E. Senior Principal / Office Manager

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REGISTERED PROFESSIONAL CERTIFICATION

"I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et seq.). I am a professional engineer/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances.

Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have attached a monthly summary of hours invoiced and description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division.

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name:

Signature:

Date: 17 FE6 7016

Georgia Stamp

CERTIFICATION OF COMPLIANCE STATEMENT

I certify under penalty of law that this report and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate that information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gather the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, included the possibility of fine and imprisonment for knowing violations.

Based on my review of the findings of this report with respect to the risk reduction standards of the Rules for Hazardous Site Response, Rule 391-3-19-.07, I have determined that the soil at this site/property is in compliance with Type 1 risk reduction standards and the groundwater at the site is in compliance with the Type 1 risk reduction standards with an executed Uniform Environmental Covenant in place for the property.

Signature

Trasdar Hors Hubb

Typed / Printed Name

SENIOR Proder

Title

02-18-16

Date

COMPLIANCE STATUS REPORT

MARTHA'S DRY CLEANER
HSI Site No. 10764
4608 Skidaway Road
Savannah, Chatham County, Georgia

Terracon Project No. ES147018 February 12, 2016

1.0 INTRODUCTION

This Voluntary Remediation Program (VRP) Compliance Status Report (CSR) is being submitted on behalf of Bible Baptist Church, Inc. (Bible Baptist Church) for the former Martha's Dry Cleaner site (HSI No 10764) located at 4608 Skidaway Road, Savannah, Georgia (property) as shown in Figure 1. The subject property is an approximately 1.5-acre parcel of land, previously identified on the Chatham County Tax Assessor's website as Tax Parcel ID 2-0120-01-001C, which is currently a portion of Tax Parcel ID 2-0120-01-004 and makes up the campus of Bible Baptist Church. Bible Baptist Church, Inc. acquired the subject property in October 2004. The Chatham County tax map and warranty deed information are provided in Appendix A. A copy of the Executed Uniform Environmental Covenant is provided in Appendix B.

Bible Baptist submitted a Voluntary Investigation and Remedial Plan (VIRP) Application to the Georgia Environmental Protection Division (EPD) in October 2011. The EPD approved the application and accepted Bible Baptist Church as a participant in the Georgia VRP in a letter dated February 17, 2012.

Based on conversations between Terracon Consultants, Inc. (Terracon) and EPD in May 2015, the EPD agreed that the submission of the Environmental Covenant mechanism, a revised BIOCHLOR model, and a CSR would be appropriate to achieve site closure. As such, this CSR serves to document Bible Baptist Church's compliance with Type 1 Risk Reduction Standards (RRS) for soil and Type 1 RRS for groundwater with an Executed Uniform Environmental Covenant in place for the site. This CSR submission therefor requests delisting the property from the Georgia Hazardous Site Inventory (HIS).

2.0 BACKGROUND

The former Martha's Dry Cleaner site (HSI No 10764) is located at 4608 Skidaway Road, Savannah, Georgia (property) as shown in Figure 1. The property is bound to the north by a church building and parking lot owned by Bible Baptist Church. The property is bound to the

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east by LaRoche Avenue and Savannah State University, which is located beyond LaRoche Avenue. The property is bound to the south by the Bible Baptist Church campus and a residential property owned by Thomas and Gretchen Alnutt. The property is bound to the west by Skidaway Road and residential properties. The property is located in an area of mixed land use with mostly residential, commercial, and retail properties.

According to the Corrective Plan Addendum dated September 22, 2006, issued by S&ME, historically, the property was developed and operated from 1986 to 2000 as a small shopping center that included Martha's Dry Cleaner which rented the space until July 31, 2000. A number of environmental assessments had been conducted on the property between 1996 and 2008, which revealed the presence of PCE and TCE as contaminants of concern in soil and groundwater. The property was listed on the Hazardous Site Inventory on May 2003 as site number 10764.

The following previous assessments and remediation efforts have been conducted at the subject site:

- Phase II Subsurface Investigation, prepared by Allied Environmental Consultants, Inc., dated July 2, 1996
- Phase II Environmental Site Assessment, prepared by LAW Engineering, dated April 29, 2002
- Memorandum from Michael Medlock of Georgia Environmental Protection Division (EPD) on HSI Listing Recommendation for Martha's Dry Cleaner dated May 5, 2003.
- Soil Delineation Report, prepared by EMC, Inc., dated March 15, 2005.
- Corrective Action Plan, prepared by S&ME. Inc., dated December 2005.
- Corrective Action Plan Addendum, prepared by S&ME, Inc., dated September 22, 2006.
- Remediation Activities Report, prepared by WPC, dated November 14, 2008
- Administrative Order No. EPD-HSR-559 issued by the Georgia EPD to Discount Auto Parts, LLC and cc to Bible Baptist Church, Inc., dated July 8, 2011.
- Voluntary Remediation Plan Application, dated October 27, 2011, prepared on behalf of Bible Baptist Church by Terracon.
- 2012 Voluntary Investigation and Remediation Plan Field Activities Summary, dated September 10, 2012, prepared on behalf of Bible Baptist Church by Terracon.
- Voluntary Investigation and Remediation Plan and Application comment response letter, dated February 20, 2014, prepared on behalf of Bible Baptist Church by Terracon.
- Semi-Annual Status Report, dated February 20, 2014, prepared on behalf of Bible Baptist Church by Terracon.

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 Annual Status Report, dated February 27, 2015, prepared on behalf of Bible Baptist Church by Terracon.

The following paragraphs summarize the previous work completed at the subject site.

On March 31, 2003, Mr. J. Cary Lester of Discount Auto Parts issued a release notification for concentrations of PCE in soil and groundwater that exceeded the reportable quantities. PCE contamination at the property is believed to be related to the dry cleaning operations at the former Martha's Dry Cleaner located on the property. On May 5, 2003, Mr. Michael Medlock of the Georgia EPD issued a memorandum recommending HSI listing for Martha's Dry Cleaner. On May 30, 2003, Mr. Harold F. Reheis of the Georgia EPD issued a letter stating that property was listed on the HSI.

EMC Engineering (EMC) conducted an assessment to delineate the soil on the property. The results of this assessment were presented in a report dated March 15, 2005 for Bible Baptist Church. EMC delineated the PCE contaminated soil at the site with respect to the Georgia EPD Type 1 Risk Reduction Standard for PCE (0.5 mg/kg). EMC determined that the horizontal extent of PCE contamination was approximately 0.4 acres.

S&ME conducted additional soil and groundwater assessment in October 2005. The results of this assessment were presented in a report dated December, 2005. Five (5) soil borings were advanced using direct-push Geoprobe™ technology. Groundwater samples were collected from these soil boring locations and analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) Metals. S&ME recommended that additional soil and groundwater investigation were to be conducted to determine if metal contaminants were present in the soil and groundwater at the property.

S&ME collected groundwater samples from seventeen (17) groundwater monitoring wells on May 22 and 23, 2006. The sampling event showed that seven (7) volatile organic compounds (PCE, TCE, toluene, cis-1,2-DCE, trans-1,2-DCE, 1,1,2-trichlorethane, and xylenes) were detected in the groundwater samples. Soil samples were also collected from four (4) soil boring locations. The only VOC compound detected in the soil was acetone, which was known as a common laboratory contaminant. The four soil samples were also analyzed for RCRA metals. Arsenic, barium, chromium, lead, mercury, and silver were detected in the soil samples collected. Type 3 and 4 Risk Reduction Standards (RRSs) were calculated for all regulated constituents detected in groundwater and soil samples collected. The results of this assessment identified PCE and TCE as the primary contaminants of concern at the subject site. In addition, the assessment also recommended that the soils exceeding the established RRSs be delineated. Results of S&ME's assessment were provided to the Georgia EPD.

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According to the Remediation Activities Report dated November 14, 2008, prepared by WPC, soil delineation and removal activities were performed at the subject property on June 18, 2008 until July 2, 2008. A total of 1,764.5 tons of contaminated soil was removed from the property and were disposed of at a permitted Subtitle D landfill. During the soil excavation activities, three (3) continuous air monitoring stations were set up to sample for contaminant vapors emanating from the soil excavation. The report concluded that the confirmation soil sampling showed that the soils located on the subject property had been effectively remediated to levels below the Type 1 risk reduction standards (RRSs). The results of these investigations were provided to the Georgia EPD. The Georgia EPD issued a letter dated April 20, 2010 concurring that the on-site soils met the residential Type 1 RRSs cleanup standards.

On October 2011, a Voluntary Investigation and Remediation Plan (VIRP) and Application was submitted to the Georgia EPD for the site. The site was accepted into the Voluntary Remediation Program (VRP) by the Georgia EPD based on the VIRP acceptance letter dated February 17, 2012. EPD granted the property owner a one (1) year extension to fulfill the requirements detailed in their February 17, 2012 letter. Because of the one (1) year extension, Terracon submitted a summary letter dated September 10, 2012 to Georgia EPD that included the most recent groundwater sampling data and a site plan with the location of the newly installed groundwater monitoring well (MW-24).

Terracon Consultants, Inc. (Terracon) submitted a Voluntary Remediation Program Semi-Annual Status Report to the Georgia EPD on February 20, 2014. This report documented field work conducted at the site from August 2012 through January 2014. A site-wide groundwater sampling event was conducted on January 27, 2014 through January 29, 2014. The groundwater samples were analyzed for carbon disulfide, trans-1,2-DCE, cis-1,2-DCE, TCE, 1,1,2-trichloroethane, and PCE. The groundwater samples were also analyzed for natural attenuation parameters in order to determine the rate of biotransformation at the site and to ensure that monitored natural attenuation (MNA) was a viable option for remediation at the site.

Laboratory analysis of the groundwater samples indicated that all VOC concentrations were either below the reporting limit of 1 μ g/L or below the approved Type 1 RRS of 5 μ g/L, with the exceptions of PCE concentrations in MW-21-S and MW-24. Although above the Type 1 RRS, PCE concentrations were shown to be stable or decreasing. The natural attenuation parameter results indicated limited evidence of anaerobic biodegradation (reductive dechlorination) of the chlorinated organics at the site.

A revised BIOCHLOR fate and transport model utilizing site specific parameters was included in the 2014 Voluntary Remediation Program Semi-Annual Status Report. The objective of this model was to understand the fate and transport of the groundwater plume in the absence of a source, since the source area soils have been previously remediated. This model was also used to determine whether MNA was a valid method of corrective action. The revised BIOCHLOR model indicated that PCE concentrations at the Type 1 RRS of 5 μ g/L will travel

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300 to 320 feet (approximately 56 feet beyond the property boundary) downgradient from the source area in the next 20 years.

Comments from the Georgia EPD in reference the above-mentioned report were submitted to Bible Baptist Church, Inc. (BBC) in a letter dated March 21, 2014. A brief summary of this comment letter is presented below:

- BBC may switch to annual sampling and reporting for wells MW-19, MW-21-S, and MW-24 beginning in January 2015. Collection of MNA parameters during subsequent sampling events will be no longer required.
- Vertical delineation has been satisfied by the installation and sampling of MW-21D.
 Horizontal delineation is complete except for the area of MW-24, which is slightly above the PCE Type 1 RRS. BBC may defer delineation to evaluate future monitoring results.
- A Uniform Environmental Covenant (UEC) to restrict the use of groundwater on the affected parcel will be required as part of the final site remedy.

In a letter dated January 27, 2015, the Georgia EPD stated that the UEC submitted for the former Martha's Dry Cleaners site had been approved and the fully executed original was enclosed with the letter. In accordance with O.C.G.A. 44-16-8, the executed UEC was filed with the Superior Court of Chatham County and recorded in the clerk's deed records on February 12, 2015. A copy of the executed UEC is included in Appendix B.

The February 2015 groundwater monitoring event was conducted in accordance with the Georgia EPD letter dated March 21, 2014 and the provisions outlined in the executed UEC. The entire monitoring well network was gauged for depth to water data pursuant to the development of a potentiometric surface map. Groundwater samples were collected from monitoring wells MW-19, MW-21-S, and MW-24 and submitted to the laboratory for analysis.

The laboratory analytical data indicated the presence of PCE in the groundwater samples collected from MW-19, MW-21-S, and MW-24. PCE concentrations exceeded the Type 1 RRS in MW-21-S (163 μ g/L) and MW-24 (5.27 μ g/L). No other constituents were detected at concentrations in excess of the Type 1 RRS.

PCE concentrations exceed the Type 1 RRS in two (2) wells (MW-21-S and MW-24). The PCE concentrations in MW-21-S and MW-24 have steadily decreased since the September 2011 monitoring event. Since the January 2014 monitoring event, the PCE concentration in MW-21-S has reduced from 188 μ g/L to 163 μ g/L (13.3% decrease). The PCE concentration in MW-24 has reduced from 6.82 μ g/L to 5.27 μ g/L (22.7% decrease). No other constituents were detected at concentrations in excess of the Type 1 RRS.

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The fate and transport model revised utilizing the February 2015 data and comments provided by the Georgia EPD. Based on the model results, PCE concentrations in excess of the Type 1 RRS should not impact off-site residential properties across Skidaway Road.

3.0 PROPERTY SETTING

Protection and remediation of groundwater resources require an understanding of processes that affect fate and transport of contaminant in the subsurface environment. This understanding ultimately allows the development of efficient remediation of the property. The complex factors that control the movement of contaminants in groundwater would require an understanding of the property setting.

3.1 Physical Setting

The site topography is relatively flat with the exception of two dry retention ponds located on the eastern portion of the property. The property is bound to the north by a church building and parking lot owned by Bible Baptist Church. The property is bound to the east by LaRoche Avenue and Savannah State University, which is located beyond LaRoche Avenue. The property is bound to the south by the Bible Baptist Church campus and a residential property owned by Thomas and Gretchen Alnutt. The property is bound to the west by Skidaway Road and residential properties. The property is located in an area of mixed land use with mostly residential, commercial, and retail properties.

3.2 Site Specific Geology

The Bible Baptist Church campus lies in the Coastal Plain Province of Georgia, an area underlain by a wedge of unconsolidated sediments beginning at the fall line and thickening to the southeast. The Coastal Plain is relatively level topographically and is highly dissected by streams. The area is underlain by a sequence of Cretaceous and younger sedimentary rocks resting on a basement of much older igneous, metamorphic and/or sedimentary rocks.

The borings completed at the property identified the shallow subsurface material as very stiff sand to clayey sand to an approximate elevation of 10 feet underlain by silty sands to an approximate elevation of -20 feet. The shallow geologic cross section is presented in Figures 4 and 5.

3.3 Site Specific Hydrology

The below subsections contain a summary of geomorphic, stratigraphic, and hydrogeologic information pertaining to a 25 mile radius of the subject site. Geologic data for this area are

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based on numerous published reports, on observations made during our field investigation, and discussions with other researchers familiar with the geology and hydrogeology of the area.

3.3.1 Stratigraphy

The stratigraphy of the Coastal Plain of Georgia and Chatham County has been described by numerous authors (e.g., Herrick, 1961; Herrick and Vorhis, 1963; Counts and Donsky, 1963; Furlow, 1969; Chowns and Williams, 1983; Clarke et al., 1990; Weems and Edwards, 2001; Williams and Gill, 2010; and Clarke et al., 2011) and is summarized in the following paragraphs. The area stratigraphic units are discussed in ascending order, from the deepest Paleocene units to the surficial Holocene deposits. Cretaceous and pre-Cretaceous rock units are typically found at depths of several thousand feet below ground surface in the area, and therefore only a general description of the lithologic character is included.

3.3.1.1 Cretaceous and pre-Cretaceous Stratigraphy

Pre-Cretaceous strata underlying the area are considered "basement" rocks. These "basement" rocks consist of igneous intrusive rocks and low-grade metamorphic rocks of Paleozoic age, and sedimentary rocks and volcanic rocks of Triassic to Early Jurassic Age (Chowns and Williams, 1983). Upper Cretaceous sediments consist of inter-bedded sands and clayey silts at depths of 1,600 feet below ground surface (Herrick, 1961).

3.3.1.2 Paleocene Stratigraphy

Paleocene units in the area mark the beginning of a regional transgression of the sea that lasted through the late Eocene (Clarke et al., 1990). Paleocene units unconformably overlie strata of Late Cretaceous age. The Clayton Formation and the Cedar Keys Formation make up the Paleocene units in the area. The upper portion of the Clayton Formation is a hard, sandy glauconitic, fossiliferous limestone, while the remaining portion of the formation consists of glauconitic sand, argillaceous sand, and small amounts of medium-to-dark gray clay (Clarke et al., 1990). The Cedar Keys Formation is a Paleocene carbonate-evaporite facies. The Cedar Keys Formation consists of thick beds of anhydrite and dolomite (Clarke et al., 1990).

3.3.1.3 Eocene Stratigraphy

The early Eocene Oldsmar Formation unconformably overlies the Paleocene Clayton Formation (Clarke et al., 1990). Glauconitic limestone and dolomite are characteristic lithologies of the Oldsmar Formation (Miller, 1986; Clarke et al., 1990). The Oldsmar Formation may also contain an upper layer of sand in some areas (Clarke et al., 1990).

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The middle Eocene Avon Park Formation unconformably overlies the Oldsmar formation (Miller, 1986; Clarke et al., 1990). The Avon Park, a glauconitic dolomite and limestone, has a thickness in the range of 700 to 500 feet in the Chatham County area.

The Ocala Limestone is a massive, fossiliferous limestone. Fossils identified in the Ocala include bryozoan remains, foraminiferal tests, and mollusk shells (Furlow, 1969; Miller, 1986; Clarke et al., 1990). The Ocala Limestone unconformably overlies the dolomite and limestone of the Avon Park Formation (Furlow, 1989; Krause and Randolph, 1989; and Clarke et al., 1990). The thickness of the Ocala is more than 200 feet thick, and in some areas exceeds 400 feet (Clarke et al., 1990).

3.3.1.4 Oligocene Stratigraphy

Buff-colored, porous fossiliferous (foraminiferal tests, micrite, and non-particulate ubiquitous phosphate) limestone describe the sediments of Oligocene age (Clarke et al., 1990). Huddleston (1988) named these sediments the Lazaretto Creek Formation and the Tiger Leap Formation. Weems and Edwards (2001) refined the descriptions of the two formations. The Lazaretto Creek Formation includes the lower Oligocene sediments in the study area and the Tiger Leap Formation includes the upper Oligocene sediments marked by an increase in phosphate. The abundance of miliolid foraminifera in the Oligocene sediments is used to differentiate the unit from the underlying Ocala Limestone, and the absence of particulate phosphate is used to differentiate the overlying Miocene carbonate sediments.

3.3.1.5 Miocene Stratigraphy

There are three units of Miocene age in Chatham County. These units have been described lithologically and by geophysical markers by several authors (Furlow, 1969; Huddleston, 1988; Clarke et al., 1990; Weems and Lewis, 2001). The three (3) layers are lithologically similar and are only differentiated based on stratigraphic position, geophysical characteristics, and limited paleontologic evidence (Clarke et al., 1990).

The lowermost Miocene unit in the Chatham County area was designated as Unit C by Clarke and others (1990). Unit C is correlative to the Parachucla Formation of Huddleston (1988) and the Tampa Limestone Equivalent of Furlow (1969). Typically, only the lower portion of Unit C is found in the area, which is generally a sandy, phosphatic dolomite or limestone (Clarke et al., 1990). The middle clay and upper sandy layers have been removed by erosion (Clarke et al., 1990).

The middle Miocene unit has been designated as Miocene Unit B (Miller, 1986, and Clarke et al., 1990). Unit B is correlative to the Hawthorn Formation of Counts and Donsky (1963) and Miller (1986); the Marks Head Formation of Woolsey (1977) and Huddlestun (1988). The Marks Head Formation name has been used for this study after the work of Weems and Edwards

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(2001). The basal carbonate layer on Unit B typically consists of olive-green dolomite and limestone that contains very fine to coarse quartz sand, shiny brown to black phosphatic sand, and contains some fossils, typically mollusk molds and shark teeth. (Furlow, 1969; Clarke et al., 1990). Distinguishing the basal layer of Unit B from Unit C is difficult because both Unit C and Unit B are lithologically similar, therefore requiring paleontological evidence and/or borehole geophysical logs (Clarke et al., 1990). The two (2) basal units are juxtaposed because the middle and upper clastic layers of Unit C have been eroded away (Clarke et al., 1990). The middle layer of Unit B typically consists of olive-green phosphatic silty clay and clayey silt and grades upward to the upper sandy layer (Furlow, 1969; and Clarke et al., 1990). The upper sandy unit of Unit B typically consists of poorly sorted, very fine to coarse sand and locally a thin very dense dolomite layer (Furlow, 1969; and Clarke et al., 1990). Unit B (Hawthorn Formation) ranges in thickness from 20 to 55 feet thick (Furlow, 1969).

Miocene Unit A overlies Unit B and is included in the Hawthorn Formation of Counts and Donsky (1963) and Miller (1986), and correlates with the Coosawhatchie Formation of Woolsey (1977) and Huddleston (1988). The name Coosawhatchie Formation is adopted for this study based on the work of Weems and Edwards (2001). The Coosawhatchie Formation contains two (2) members. The basal layer, which is the Tybee Phosphorite Member, consists of a sandy phosphatic limestone and dolomite with some fossils (Clarke et al., 1990). In Chatham County, clay is the matrix material surrounding most of the phosphate grains instead of dolomite (Clarke et al., 1990). The sand in the basal unit generally consists of very fine to coarse quartz and brown to black phosphate. The middle clay layer consists of fossiliferous clay and silt laminae and the upper sand unit consists of a very fine to coarse, poorly sorted sand (Clarke et al., 1990). The upper portion of this unit is equivalent to the Berryville Clay Member. Unit A is about 20 feet thick in the Savannah Area.

3.3.1.6 Pliocene, Pleistocene, and Holocene Stratigraphy

Sediments of Pliocene age are generally accepted as absent in Chatham County, with Pleistocene sediments unconformably overlying Miocene sediments (Herrick, 1965; Furlow, 1969; and Clarke et al., 1990). Pleistocene sediments typically consist of arkosic sand and gravel with discontinuous clay beds. Basal Pleistocene sediments contain reworked olive-green clay from the underlying Miocene units (Furlow, 1969). Lignitic and fossiliferous clay and micaceous sandy sediment ranging in thickness from 10 to 60 feet are typical of Pleistocene sediments. The Penholoway Formation is the principal surficial Pleistocene deposit in Chatham County (Weems and Edwards, 2001. The Penholoway is one of many remnants of former shoreline complexes through the area, which were the result of numerous transgressions and regressions of the sea, the result of extensive glaciations in North American during the Pleistocene Epoch.

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3.3.2 Local Hydrogeology

Hydrologic units in Chatham County, Georgia include (in descending order), the surficial aquifer system, consisting of the water-table zone, upper confined zone, and lower confined zone (Clarke, 2003); the Brunswick aquifer system, consisting of the upper Brunswick and lower Brunswick aquifers (Clarke et al., 1990); and the Upper Floridan aquifer (Miller, 1986).

At the subject site, the surficial aquifer system is present from land surface to 120 feet below land surface (BLS) (Edwards and Weems, 2001). For this study, the surficial aquifer is undifferentiated; however the surficial aquifer is typically informally divided into a water-table zone, an upper confined zone, and a lower confined zone. These water-bearing zones are separated by clay confining units. The "water-table" zone is the zone that is intersected by onsite groundwater monitoring wells. The confined zones are present below 40 feet BLS and consist mostly of fine to coarse sand, interbedded with clay and silt. The thickness of the upper confined zone is approximately 80 feet. The confining unit underlying the surficial aquifer system is identified on natural-gamma radiation logs by the A-marker horizon, which is present just above the upper Brunswick aquifer (Clarke et al., 1990).

The undifferentiated Miocene aquifer extends from 160 to 215 feet bls and consists of poorly sorted, fine to coarse, slightly phosphatic and dolomitic, quartz sand and micritic limestone with partially cemented, mostly fine to medium grained, sandy limestone. The bottom of the aquifer was determined by the location of the C-marker horizon, which coincides with the top of the Upper Floridan aguifer (Clarke et al., 1990).

The principal source for all drinking water uses in the coastal area of Georgia is the Floridan aquifer system. The Floridan aquifer system is composed of carbonate rocks of varying permeability (Clarke et al., 1990; Clark et al., 2011). There are several water-bearing zones within the Floridan aquifer system that are separated by layers of relatively dense limestone and dolostone that act as semi confining units (Krause and Randolph, 1989; Clarke et al., 1990; Williams and Gill, 2010).

The Chatham County area, the two shallowest water bearing zones of the five that comprise Floridan aquifer system are part of the upper Floridan aquifer (McCollum and Counts, 1964; Krause and Randolph, 1989; Clark et al., 1990; Williams and Gill, 2010). The upper Floridan aquifer is overlain by a confining unit consisting of layers of silty clay and dense phosphatic Oligocene dolomite identified by a distinct response on gamma-ray logs (Clarke et al., 1990). Clarke and others (1990) identified the base of the confining unit as the C-marker horizon. The C-marker is approximately the top of the upper Floridan aquifer in the project area and is present at a depth of 235 feet (Clarke et al., 1990). The C-marker horizon is present near the top of the Suwannee Limestone in the study area; while the D-marker horizon is present at the top of the Ocala Limestone at a depth of 300 feet in the study area.

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4.0 REGULATED SUBSTANCES

Results of past soil and groundwater assessment activities indicated the presence of substances regulated under the Hazardous Site Response Act (HSRA) in soil and groundwater at the property. The regulated substances identified in groundwater at the property include: carbon disulfide (CAS No. 75-15-0), 1,1,2-trichloroethane (CAS No. 79-00-5), trichloroethene (CAS No. 79-01-6), trans-1,2-dichloroethene (CAS No. 156-60-5), cis-1,2-dichloroethene (CAS No. 156-59-2), and tetrachloroethene (PCE) (CAS No. 127-18-4).

5.0 VIRP ASSESSMENT ACTIVITIES

Assessment and/or remediation activities have been conducted from 2006 through 2015. The data collected during these investigations and the hydrogeology and receptor surveys have been summarized in various submittals to the HSRA program and include the documents referenced in Section 2.

5.1 Soil Data

The soil contamination at the site was documented in the March 2005 EMC Engineering (EMC) assessment of the subject site. The results of this assessment were presented in a report dated March 15, 2005 for Bible Baptist Church. EMC delineated the PCE contaminated soil at the site with respect to the Georgia EPD Type 1 Risk Reduction Standard for PCE (0.5 mg/kg). EMC determined that the horizontal extent of PCE contamination was approximately 0.4 acres.

Additional assessment was conducted by S&ME October 2005. The results of this assessment were presented in a report dated December, 2005. Five (5) soil borings were advanced using direct-push Geoprobe™ technology. Groundwater samples were collected from these soil boring locations and analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) Metals. S&ME recommended that additional soil and groundwater investigation were to be conducted to determine if metal contaminants were present in the soil and groundwater at the property.

The impacted soils were been delineated and remediated in 2006 to 2008. The remaining soils located on the subject property have levels below the Type 1 RRSs for the constituents of concern. According to the Remediation Activities Report dated November 14, 2008, prepared by WPC, soil delineation and removal activities were performed at the subject property on June 18, 2008 until July 2, 2008. A total of 1,764.5 tons of contaminated soil was removed from the property and were disposed of at a permitted Subtitle D landfill. During the soil excavation activities, three (3) continuous air monitoring stations were set up to sample for contaminant vapors emanating from the soil excavation. The report concluded that the confirmation soil

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sampling showed that the soils located on the subject property had been effectively remediated to levels below the Type 1 risk reduction standards (RRSs). The results of these investigations were provided to the Georgia EPD. The Georgia EPD issued a letter dated April 20, 2010 concurring that the on-site soils met the residential Type 1 RRSs cleanup standards.

5.2 VIRP Groundwater Data

Terracon Consultants, Inc. (Terracon) submitted a Voluntary Remediation Program Semi-Annual Status Report to the Georgia EPD on February 20, 2014. This report documented field work conducted at the site from August 2012 through January 2014. A site-wide groundwater sampling event was conducted on January 27, 2014 through January 29, 2014. The groundwater samples were analyzed for carbon disulfide, trans-1,2-DCE, cis-1,2-DCE, TCE, 1,1,2-trichloroethane, and PCE. The groundwater samples were also analyzed for natural attenuation parameters in order to determine the rate of biotransformation at the site and to ensure that monitored natural attenuation (MNA) was a viable option for remediation at the site.

Laboratory analysis of the groundwater samples indicated that all VOC concentrations were either below the reporting limit of 1 μ g/L or below the approved Type 1 RRS of 5 μ g/L, with the exceptions of PCE concentrations in MW-21-S and MW-24. Although above the Type 1 RRS, PCE concentrations were shown to be stable or decreasing. The natural attenuation parameter results indicated limited evidence of anaerobic biodegradation (reductive dechlorination) of the chlorinated organics at the site.

The February 2015 groundwater monitoring event was conducted in accordance with the Georgia EPD letter dated March 21, 2014 and the provisions outlined in the executed UEC. The entire monitoring well network was gauged for depth to water data pursuant to the development of a potentiometric surface map. Groundwater samples were collected from monitoring wells MW-19, MW-21-S, and MW-24 and submitted to the laboratory for analysis. The potentiometric surface maps for the January 2014 and February 2015 monitoring events are included as Figures 3 and 4, respectively.

PCE concentrations exceed the Type 1 RRS in MW-21-S (163 μ g/L) and slightly exceed Type 1 RRS in MW-24 (5.27 μ g/L). The PCE concentrations in MW-21-S and MW-24 have steadily decreased since the September 2011 monitoring event. Since the January 2014 monitoring event, the PCE concentration in MW-21-S has reduced from 188 μ g/L to 163 μ g/L (13.3% decrease). The PCE concentration in MW-24 has reduced from 6.82 μ g/L to 5.27 μ g/L (22.7% decrease). No other constituents were detected at concentrations in excess of the Type 1 RRS. The groundwater quality maps for the January 2014 and February 2015 monitoring events are included as Figures 5 and 6, respectively. Laboratory results are included in Appendix C.



6.0 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

6.1 Surface Water Pathway

Typical surface water bodies that could be impacted include streams, rivers, lakes, canals, wetland areas, and detention/retention ponds. There are no streams, rivers, ponds, canals, wetland areas that are connected to the property and therefore have not been impacted. There are two storm water retention ponds located on the subject site. Both areas are dry with the exception during heavy rain events. Since the site is partially paved with asphalt and concrete and the contaminated soil has been removed, storm water flowing to the retention ponds will not come in contact with contamination. Therefore there is no potential exposure to regulated constituents in the surface water and the pathway is considered incomplete.

6.2 Groundwater Usage

The subject property is zoned commercial. Nearby property uses along Skidaway Road and LaRoche Avenue consist of various structures that include retail, commercial, and residential properties. The Savannah State University campus is located beyond LaRoche Avenue. Unauthorized access to the property is controlled through an enclosure provided by a fence surrounding the property.

In accordance with the Groundwater Pollution Susceptibility Map of Georgia, the subject site is located in an "Average or Higher Groundwater Pollution susceptibility Area". A groundwater site inventory performed by the USGS and a site reconnaissance have established the location of withdrawal points for public drinking water wells within a 2-mile radius and private drinking water wells within a 0.5-mile radius of the site. Twenty (20) public drinking water wells and no private drinking water wells were identified within the defined radii.

The 20 public drinking water supply wells were presented in Figure 8 of the VIRP application documentation, dated October 27, 2011. The current groundwater flow direction is to the southwest. Therefore, the closest down gradient point of exposure (City of Savannah Well #2) is located approximately 2,880 feet southwest of the point of demonstration well (MW-24).

As discussed in Section 3.3.2 above, the property is located in a hydrogeologic setting where the groundwater consists of the unconfined surficial aquifer, underlain by the upper confining unit and the upper Floridan aquifer. Drinking water wells in the coastal area are not hydraulically connected to the on-site surficial aquifer and as such the impacts to groundwater on the property do not constitute a potential groundwater receptor for human consumption and is therefore considered an incomplete pathway.

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There are no wells onsite for either potable, industrial or irrigation purposes. Properties near the subject site are connected to municipal water supplies for potable water. A water bill from the City of Savannah demonstrating that the site is supplied with municipal water was included in Appendix C of the October 2011 VIRP. Based on the groundwater flow direction to the southwest, no drinking water wells exist in the down gradient direction that are connected to the surficial aquifer.

In addition to the human consumption pathway, commercial, industrial, and/or residential workers will not come in contact with the impacted groundwater, because of the prohibition against the use or extraction of groundwater beneath the subject property for drinking water or for any other use as evidence by the Executed Uniform Environmental Covenant for subject property, dated January 27, 2015. Therefore the exposure pathway of any worker is considered incomplete.

6.3 Potential Vapor Intrusion Pathway

The contaminated soil has been removed from the property and the groundwater is not contaminated in the area of any buildings located on-site, which would potentially result with contamination within the building through vapor intrusion. The direction of groundwater flow is in a direction opposite of the existing building located on-site. Bible Baptist has no activities planned or expected to take place within the plume area that would result in a vapor intrusion pathway into a future new building. Therefore, there is no potential exposure to regulated constituents by way of vapor intrusion and the pathway is considered incomplete. However, should development plans change the Executed Uniform Environmental Covenant for subject property, dated January 27, 2015 requires that an assessment of the potential for vapor intrusion be performed if development or potential development of enclosed structures occurs at the site.



6.4 Risk Reduction Standards and Comparison to Analytical Results

6.5 Risk Reduction Standards

6.5.1 Soil Criteria

Additional soils assessment was implemented during the VIRP implementation. No residual detections of COCs in soils were identified above the laboratory detection limits and the Type 1 RRS during VIRP implementation activities. As such, soils are in compliance with Type 1 RRS.

6.5.2 Groundwater Criteria

The groundwater criteria shall be the Type 1 RRS. The concentrations for all the COCs evaluated as part of the VIRP process are shown in Table 1. The laboratory analytical data indicated the presence of PCE in the groundwater samples collected from MW-19 (1.29 μ g/L), MW-21-S (163 μ g/L), and MW-24 (5.27 μ g/L). Monitoring well MW-21-S also contained a detectable concentration of TCE (1.29 μ g/L). None of the other constituents were detected at concentrations in excess of the laboratory reporting limits.

PCE concentrations exceed the Type 1 RRS in MW-21-S (163 μ g/L) and slightly exceed Type 1 RRS in MW-24 (5.27 μ g/L). The PCE concentrations in MW-21-S and MW-24 have steadily decreased since the September 2011 monitoring event. Since the January 2014 monitoring event, the PCE concentration in MW-21-S has reduced from 188 μ g/L to 163 μ g/L (13.3% decrease). The PCE concentration in MW-24 has reduced from 6.82 μ g/L to 5.27 μ g/L (22.7% decrease). No other constituents were detected at concentrations in excess of the Type 1 RRS.

7.0 VRP CORRECTIVE ACTIONS

7.1 Engineering Controls

7.1.1 Soil Removal

The impacted soils were been delineated and remediated in 2006 to 2008. The remaining soils located on the subject property have levels below the Type 1 RRSs for the constituents of concern. According to the Remediation Activities Report dated November 14, 2008, prepared by WPC, soil delineation and removal activities were performed at the subject property on June 18, 2008 until July 2, 2008. A total of 1,764.5 tons of contaminated soil was removed from the property and were disposed of at a permitted Subtitle D landfill. The report concluded that the confirmation soil sampling showed that the soils located on the subject property had been effectively remediated to levels below the Type 1 risk reduction standards (RRSs). The results

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of these investigations were provided to the Georgia EPD. The Georgia EPD issued a letter dated April 20, 2010 concurring that the on-site soils met the residential Type 1 RRSs cleanup standards.

7.2 Institutional Controls

Institutional controls through the use of an UEC has been used to ensure continued compliance with Type 1 RRS for soil and Type 1 RRS for groundwater and to ensure that there is no potential future risk due to consumption of groundwater, Bible Baptist Church submitted a Uniform Environmental Covenant (UEC) to the Georgia EPD in December 2014. The UEC was approved and executed by the Georgia EPD in January 2015 based on the EPD letter, dated January 27, 2015. Upon receipt of the fully executed UEC, Bible Baptist filed the covenant with the clerk of the Superior Court of Chatham County and the covenant was recorded in the clerk's deed records pursuant to O.C.G.A 44-16-8. A copy of the UEC is included in Appendix C.

The UEC includes the following Activity and/or Use Limitation(s):

- The Owner of the Property must give thirty (30) days' advance written notice to EPD of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of Corrective Action. The Owner of the Property must also give thirty (30) days' advance written notice to EPD of the Owner's intent to change the use of the Property, apply for building permit(s), or propose major site work that would affect the Property. The notification shall include a certification that that requirements of the UEC were adhered to.
- Each instrument conveying an interest in the Property subject to the UEC shall contain a
 notice of the Activity and Use Limitations set forth in the UEC and shall cross-reference
 the Deed Book and Page number of the recording location of the UEC in the Chatham
 County deed records.
- The Owner will inspect the property and applicable property instruments at least annually to ensure compliance with the UEC. Annually, by no later than March 1st following the effective date of the UEC, the Owner shall complete and submit to EPD the Annual Property Evaluation Form. The report should include photographs of the property and will document maintenance and inspection activities and whether or not the activity and use limitations in the UEC are being abided by.
- Should the development or potential development of enclosed structure(s) occur at the
 property the Owner shall assess the potential for vapor intrusion with tools/methods
 approved by the Georgia EPD. If the vapor intrusion assessment indicates that the
 potential risk is above the current Georgia EPD regulatory guidance/thresholds, a vapor

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mitigation system or barrier shall be installed and maintained in any enclosed structures built on the affected area.

- The use or extraction of groundwater beneath the Property for drinking water or for any other use shall be prohibited until HSRA regulated substances are treated to below the applicable RRS for groundwater. Any extracted groundwater from construction or utility work dewatering activities should be managed and disposed of in accordance with applicable rules and regulations. Should any dewatering of groundwater for construction or utility work purpose be necessary, a sanitary sewer system discharge permit should be acquired from the appropriate agency (City of Savannah and/or Chatham County). The extracted water should be pretreated to the City of Savannah and/or Chatham County requirements prior to discharge into the sanitary sewer system. Extracted groundwater should not be discharged into the storm water system or surface waters. All management of extracted groundwater should be done in accordance with all applicable local, state, and federal rules and regulations. All construction and dewatering workers that may be exposed to groundwater must have appropriate HAZWOPER training and the work must be conducted in accordance with a Health and Safety plan prepared by a qualified professional.
- Groundwater monitoring maybe required for up to two (2) years or a lesser period if approved by EPD unless the Director determines that further monitoring is necessary to protect human health and the environment at wells MW-19, MW-21S, and MW-24. The results are to be submitted by March 1st of each year.

8.0 GROUNDWATER FATE AND TRANSPORT MODELING

The BIOCHLOR fate and transport model submitted with the VIRP (October 2011) was revised in 2014 based on both the Georgia EPD review comments received in a letter dated February 17, 2012 and the collection of additional groundwater and on-site soil quality data. The objective in using the BIOCHLOR model was to understand the fate and transport of the groundwater plume in the absence of a source, since the source area soils have been previously remediated and to help determine whether Monitored Natural Attenuation is a valid method of corrective action. The BIOCHLOR model has been further revised based on the February 2015 monitoring data and comments provided by the Georgia EPD.

The following sections provide a summary of the revised model parameters, assumptions, and the BIOCHLOR modeling procedures. Results and conclusions are presented at the end of this section. Documentation of calculations and calibration model results is contained in Appendix D (Calibration), Appendix E (Sensitivity Analysis results), and Appendix F (Simulated Concentrations).



8.1 Model Parameters and Assumptions

A summary of the preliminary contaminant transport calculations necessary for fulfilling the data input requirements of the BIOCHLOR model is presented in Table 8.1. Actual aquifer specific data collected from the site was used to calculate the majority of the parameters discussed in the following sections.

Table 8.1: BIOCHLOR Model Input Parameters

Data Type	Parameter	Value	Source of Data	
	Hydraulic Conductivity (K)	3.3x10-3 cm/sec	Slug test results	
Hydrogeology	Hydraulic Gradient (i)	0.006 ft/ft	September 2011 static water level data	
	Effective Porosity	0.10	BIOCHLOR User's Manual v1.0	
Dispersion	Longitudinal Dispersivity	13.971 ft	Calculated based on 300 ft plume length in BIOCHLOR using the equation from (Xu and Eckstein, 1995; Al-Suwaiyan, 1996)	
Dispersion	Transverse Dispersivity	0.10	0.1 x longitudinal dispersivity (Gelhar et al., 1992)	
	Vertical Dispersivity	0.00	Assume vertical dispersivity is zero	
	Individual Retardation Factors	PCE - 3.07 TCE - 2.33 DCE - 1.87 VC - 1.65 ETH - 7.59	Calculated from R=1+K _{oc} *f _{oc} *(ρ _b /n)	
	Common Retardation Factor	2.33	Median Value	
A .l ti	Aquifer Matrix Bulk Density	1.5 kg/L	Estimated	
Adsorption	foc	0.00145	On-site total organic carbon soil sample results.	
	Koc	PCE - 94.94 L/kg TCE - 60.7 L/kg DCE - 39.6 L/kg VC - 21.73 L/Kg ETH - 302 L/kg	koc USEPA Region 3 Regional Screening Level Tables, dated November 2013. The Koc value used for ethene was the default value from the BIOCHLOR User's Manual v1.0.	
Biotransformation	Biotransformation Rate Coefficient (1/yr)		Based on calibration to field data using a simulation time of 16 years. Started with literature values and then adjusted model to fit field data	
Diotransionnation	PCE> TCE	1.20		
	Model Area Length	500 Feet	Based on area of affected groundwater	
General	Model Area Width	400 Feet		
	Simulation Time	16 years	From 1996 (first release) to 2012	
	Source Thickness	13 feet	Based on geologic logs and monitoring data	
Course Date	Source Width	10 feet	A source width of 10 feet was selected given the extensive volume of excavated soil and recent laboratory analytical data.	
Source Data	Source Concentrations	PCE - 5.2 mg/L (1996)	An exact release date for the Martha's Dry Cleaner facility is not known. Terracon extrapolated backwards from the source decay rate (k _s) plot, resulting in a source concentration of 5.2 mg/L.	
Actual Data	Distance from Source	See Table 8.2.1 in text		
Outsut	Centerline Concentration	on See Figures in Appendix D and F		
Output	Array Concentration See Figures in Appendix D and F			



8.1.1 Seepage Velocity

The velocity of groundwater movement through the surficial aquifer, or seepage velocity, was calculated using the following equation from Fetter (2001):

$$v_{x} = -\frac{Ki}{\eta}$$

Where

v_x is the seepage velocity (ft/yr)

K is the hydraulic conductivity (ft/yr)

i is the hydraulic gradient (ft/ft)

η is the effective porosity (dimensionless)

The hydraulic conductivity data was presented in the VIRP indicated that the average site hydraulic conductivity is 2.8x10⁻³ cm/sec or 7.82 ft/day, which was used in the original BIOCHLOR model presented in the VIRP (October 28, 2011). However, to be conservative the highest hydraulic conductivity value measured on-site of 3.3x10⁻³ cm/sec or 9.27 ft/day was used for the revised BIOCHLOR model.

Based on the groundwater elevation data collected during the September 2011 monitoring event, the hydraulic gradient (i) was calculated at 0.006 ft/ft. An effective porosity (η) of 0.1 was selected based on values found in the BIOCHLOR User's Manual v1.0. As such, the seepage velocity was calculated at 204.9 ft/yr.

8.1.2 Dispersivity

Dispersivity values used in the model were based on guidance found in the BIOCHLOR User's Manual v1.0 based on the length of the plume from the field data. The plume length for the subject site was estimated to be 300 feet based on the February 2015 groundwater sampling data. The Longitudinal dispersivity (α_x) was calculated in BIOCHLOR using the equation from (Xu and Eckstein, 1995; Al-Suwaiyan, 1996) as follows:

$$\alpha_x = 3.28 * 0.82 * \left[log_{10} \left(\frac{L_p}{3.28} \right) \right]^{2.446}$$

Where

L_p is the plume length (ft)

Based on high reliability points from Gelhar et al (1992), transverse dispersivity (α_y) is calculated below:

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$$\alpha_{\gamma} = 0.1\alpha_{\chi}$$

Vertical dispersivity (α_z) is generally approximated at $1x10^{-99}$ feet, based on conservative estimates.

8.1.3 Retardation Factor

Concentration of dissolved contaminates can be reduced by adsorption to the aquifer media thereby retarding the flow of this contaminant through the subsurface. The retardation factor is the ratio of the groundwater seepage velocity to the rate that organic chemicals migrate in the groundwater. The adsorption to the aquifer media and resultant retardation of contaminant transport is controlled by the soil bulk density, effective porosity, organic carbon-water partition coefficient (K_{oc}), distribution coefficient, and fraction of organic carbon (f_{oc}) on uncontaminated soil.

As directed by the Georgia EPD in their letter, dated February 17, 2012 the following values and/or sources were used to for following input parameters:

Soil bulk density – 1.5 kg/L

K_{oc}

Tetrachloroethene
94.94 L/kg
Trichloroethene
Dichloroethene (1,2-cis and 1,2-trans)
Vinyl Chloride
21.73 L/kg

The k_{oc} values were taken from the U.S. Environmental Protection Agency (USEPA) Region 3 Regional Screening Level Tables, dated November 2013. The K_{oc} value used for ethene was the default value from the BIOCHLOR User's Manual v1.0.

8.1.4 Fraction of Organic Carbon

Three (3) total organic carbon (TOC) samples were collected from the surficial aquifer matrix on January 27, 2014. The laboratory analytical results confirmed the TOC samples were collected from an uncontaminated region of the site's surficial aquifer matrix. The samples contained TOC concentrations as follows: SS-1 - 2,200 mg/kg, SS-2 - 679 mg/kg, and a laboratory J-Flagged TOC estimated value for SS-3 of 295 mg/kg. Because the samples were collected within close proximity to each other and at the same relative depth, the J-Flagged estimated concentration 295 mg/kg was determined to be an outlier The TOC concentrations from SS-1 and SS-2 were averaged to represent the site resulting in a $f_{\rm OC}$ of 0.00145.

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8.1.5 Source Data Input Parameters

As previously indicated, dry cleaning operations occurred at the site from 1986 through 2000. PCE was detected in soil and groundwater during an investigation in 2002. During investigations conducted by S&ME in May 2006, PCE was detected at a concentration of 870 μ g/L in the vicinity of source area monitoring well MW-21S. In 2008, 1,764.5 tons of contaminated media were removed from the source area. Confirmation soil sampling indicated that PCE concentrations in excess of the Type 1 RRS had been removed. The first groundwater monitoring event post-remediation was conducted in 2011. A groundwater sample collected in 2011 from source area well MW-21-S exhibited a PCE concentration of 270 μ g/L.

The source area was modeled as a decaying single planar source, because the groundwater monitoring data since 2011 has showed evidence of a decaying source concentration and based on the past source soil remediation activities conducted at the site in the vicinity of MW-21-S. The source decay constant was calculated using the guidance in BIOCHLOR User's Manual Addendum v2.2 (March 2002). The source decay rate constant was calculated by plotting temporal aqueous concentrations in the source area well (MW-21-S) on a semi-log plot and determining the slope (concentration plot included in Appendix E). Because Excel will calculate a slope in units of 1/days, the calculated slope value was converted to units of 1/years as required by BIOCHLOR 2.2, which results in a $k_{\rm s}$ of 0.1825/years.

An exact release date for the Martha's Dry Cleaner facility is not known. As such, Terracon assumed a release date of 1996 – 10 years following the beginning of dry cleaning operations. In order to determine an estimated source concentration, Terracon extrapolated backwards from the source decay rate plot discussed above, resulting in a source concentration of 5.2 mg/L.

A source width of 10 feet was selected given the extensive volume of excavated soil and recent laboratory analytical data. Using the historic shallowest depth to groundwater of approximately 7 feet below grade and the deepest screened interval depth of 20 feet below grade, a source vertical thickness (Z) of 13 feet was selected. A plume length of 300 feet was calculated based on the distance between MW-21-S and MW-24 along the potentiometric surface.

8.1.6 Natural Attenuation Screening Protocol

The Natural Attenuation Screening Protocol is a tool within the BIOCHLOR model that can aid in determining the likelihood of anaerobic biodegradation of chlorinated organics and the applicability of a 1st order decay coefficient. Natural attenuation data from the 2012, 2014, and 2015 sampling events indicates limited evidence for anaerobic biodegradation (score of 12). A copy of the Natural Attenuation Screening Protocol worksheet is included in Appendix G.



8.2 BIOCHLOR Model Simulations

8.2.1 Model Calibration

The parameters described above, along with the groundwater analytical data from the 2006 (10 years following release) through 2015 (19 years following release) sampling events were input to the BIOCHLOR model. Although there is limited evidence of anaerobic degradation of the contaminant plume, the sequential 1st order decay curve was found to best represent site conditions. The no degradation (plug flow) model grossly over-estimated downgradient concentrations and the adjustment of site hydrogeologic conditions was deemed inappropriate. Adjusting the PCE half-life to 0.58 years resulted in model calibration.

Table 8.2.1: Summary of BIOCHLOR Calibration Results

	Distance		V Aft	Tetrachlo	roethene	
Well Number	from Source (feet)	Calendar Year	Years After Release (Years)	Field Concentration (mg/L)	Model Concentration (mg/L)	Percent Error
	0	2011	15	0.270	0.3366	-19.79%
MW-21-S		2012	16	0.253	0.2805	-9.80%
10100-21-3		2014	18	0.188	0.195	-3.59%
		2015	19	0.163	0.162	0.62%
	255	2012	16	0.00782	0.017	-54.00%
MW-24		2014	18	0.00682	0.012	-43.17%
		2015	19	0.00527	0.010	-47.30%

The model was found to predict source area (MW-21S) concentrations within an acceptable level of accuracy. The model over-predicted concentrations within downgradient well MW-24 in each of the years used for calibration. The model calibration input and centerline results are contained in Appendix D.

8.2.2 Sensitivity Analysis

Sensitivity analysis was conducted to illustrate the response of the BIOCHLOR model to changes in the input parameters. Sensitivity analysis was conducted for the common retardation factor and the first order decay coefficient. Input and output information from the BIOCHLOR sensitivity analysis are contained in Appendix G.

The calibrated BIOCHLOR model utilized a common retardation factor of 2.33. Sensitivity analysis was conducted by running the model with half of the retardation factor value (1.17) and twice of this value (4.66). The predicted concentrations indicated that the 1st order decay model is moderately



sensitive to changes in the common retardation factor. The centerline concentrations of PCE at 255 feet downgradient from the source are shown in Table 8.2.2-A on the next page for each simulation.

Table 8.2.2-A: Sensitivity Analysis Results - Retardation Factor

	Concentrations				
Constituent	(mg/L)				
Constituent	2X Baseline	Baseline	0.5X Baseline		
	(R = 4.66)	(R = 2.33)	(R = 1.17)		
PCE	0.016	0.010	0.008		

The calibrated BIOCHLOR model also utilized a half-life of 0.58 years, which is the lowest acceptable value for PCE. As such, sensitivity analysis was conducted by multiplying this value by 2 (1.16 years) and 5 (2.90 years). The predicted concentrations indicated that the 1st order decay model was very sensitive to changes in the half-life value. The centerline concentrations of PCE at 255 feet downgradient from the source are shown in Table 8.2.2-B on the next page for each simulation.

Table 8.2.2-B: Sensitivity Analysis Results - Rate Factor

	Concentrations				
Constituent	(mg/L)				
Constituent	2X Half-life	Baseline	5X Baseline		
	(1.16 years)	(0.58 years)	(2.90 years)		
PCE	0.020	0.010	0.030		

8.2.3 BIOCHLOR Model Results

The BIOCHLOR model was used to simulate PCE concentrations 20 years (2016), 25 years (2021), 30 years (2026), 35 years (2031), and 40 years (2036) after the assumed release date of 1996. The results of the BIOCHLOR model simulations are presented in Table 8.2.3 on the following page. As previously indicated the 1st order decay BIOCHLOR model over-predicts concentrations within well MW-24 and is thus a conservative estimate of downgradient concentrations. The model indicates that by 2021 (25 years following the assumed release date), PCE concentrations in excess of the MCL (5 μ g/L) do not extend off-site. The model predicts that PCE in the source area (MW-21S) is reduced to concentrations below the MCL within approximately 20 years (i.e. 2036; within 40 years following the release).

Based on the model results and the 2015 laboratory results from MW-24, PCE concentrations in excess of the Type 1 RRS should not extend off the subject property and impact the off-site residential properties across Skidaway Road.

Martha's Dry Cleaner ■ Savannah, Chatham County, Georgia February 12, 2016 ■ Terracon Project No. ES117125



Table 8.2.3: BIOCHLOR Model Simulation PCE Concentration Summary

Distance from Source	Calendar Years After Release		Tetrachloroethene	
Distance from Source (feet)	Calendar Year	(Years)	Model Predicted Concentration (mg/L)	
	2006	10	0.8383	
	2011	15	0.3366	
	2012	16	0.2805	
	2014	18	0.195	
0	2015	19	0.162	
0	2016	20	0.135	
	2021	25	0.0543	
	2026	30	0.0218	
	2031	35	0.0087	
	2036	40	0.0035	
	2012	16	0.017	
	2014	18	0.012	
	2015	19	0.010	
255	2016	20	0.008	
255	2021	25	0.003	
	2026	30	0.001	
	2031	35	0.001	
	2036	40	<0.001	

9.0 SUMMARY OF COMPLIANCE STATUS

This Voluntary Remediation Program Compliance Status Report for the former Martha's Dry Cleaner site (HSI No 10764) is located at 4608 Skidaway Road, Savannah, Georgia, is submitted on behalf of Bible Baptist Church, Inc., the responsible party under the VRP.

During the course of addressing the release of dry cleaner constituents under the HSRA Program and VRP, Bible Baptist Church removed a total of 1,764.5 tons of contaminated soil was removed from the property and were disposed of at a permitted Subtitle D landfill in 2008. During the soil excavation activities, three (3) continuous air monitoring stations were set up to sample for contaminant vapors emanating from the soil excavation. Confirmation soil sampling showed that the soils located on the subject property had been effectively remediated to levels below the Type 1 risk reduction standards (RRSs). The results of these investigations were provided to the Georgia EPD. The Georgia EPD issued a letter dated April 20, 2010 concurring that the on-site soils met the residential Type 1 RRSs cleanup standards.

As part of the assessment of the release under the VRP, the horizontal and vertical extent of the groundwater has been completed under the VRP. The most recent set of groundwater data collected in February 2015 and is depicted on Figure 6. The plume extends west/southwest from the source area in the vicinity of MW-21S to the property boundary at MW-24. Groundwater concentrations of PCE in the source area in February 2015

Martha's Dry Cleaner ■ Savannah, Chatham County, Georgia February 12, 2016 ■ Terracon Project No. ES117125



Vertical delineation has been satisfied by the installation and sampling of MW-21D. Horizontal delineation is complete except for the area of MW-24 (5.27 μ g/L), which is slightly above the PCE Type 1 RRS. A Uniform Environmental Covenant (UEC) to restrict the use of groundwater on the affected parcel will be required as part of the final site remedy.

In a letter dated January 27, 2015, the Georgia EPD stated that the UEC submitted for the former Martha's Dry Cleaners site had been approved and the fully executed original was enclosed with the letter. In accordance with O.C.G.A. 44-16-8, the executed UEC was filed with the Superior Court of Chatham County and recorded in the clerk's deed records on February 12, 2015.

The fate and transport model revised utilizing the February 2015 data and comments provided by the Georgia EPD. The model predicts that PCE in the source area (MW-21S) is reduced to concentrations below the MCL within approximately 20 years (i.e. 2036; within 40 years following the release). Based on the model results, PCE concentrations in excess of the Type 1 RRS should not extend off-site and impact residential properties across Skidaway Road.

Given the executed UEC, the trend of decreasing PCE concentrations, and the results of fate and transport modeling, Terracon recommends that the Martha's Dry Cleaner facility (EPD HSI No. 10764) be removed from the HSI. Please refer to Appendix H for details concerning the hours worked and the costs associated with the property in 2015.



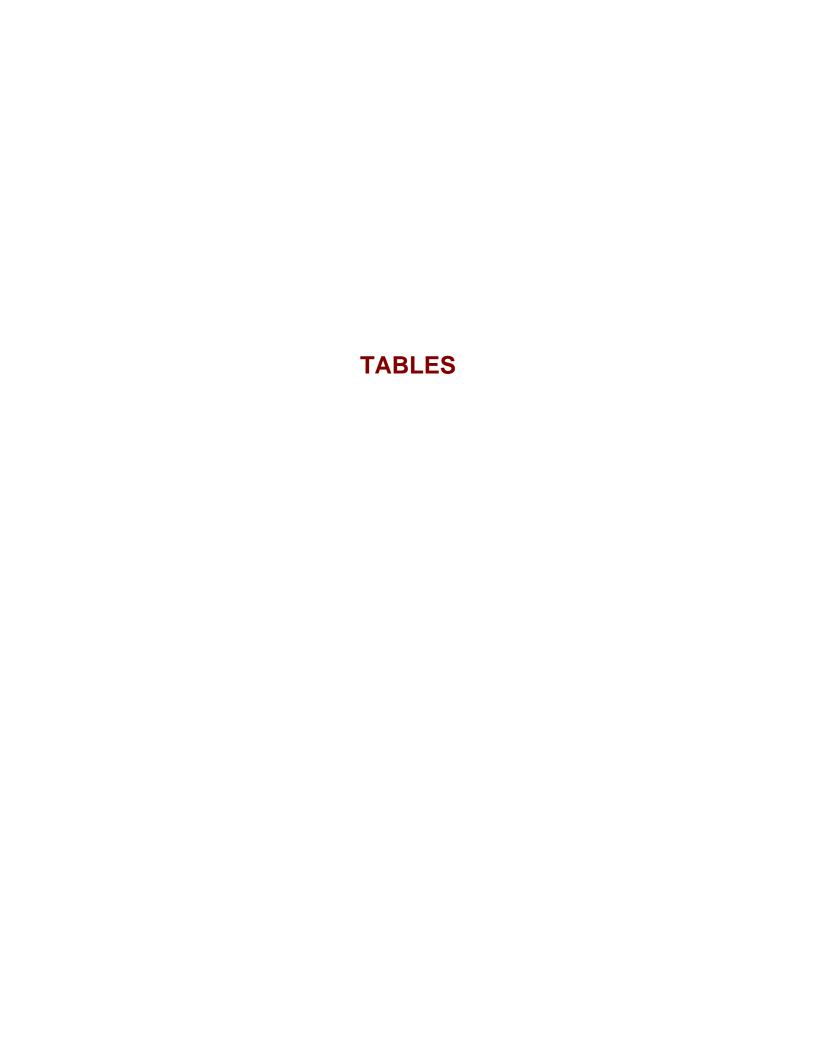
10.0 SELECTED REFERENCES

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Martha's Dry Cleaner ■ Savannah, Chatham County, Georgia February 12, 2016 ■ Terracon Project No. ES117125



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Martha's Dry Cleaner

4608 Skidaway Road Savannah, Chatham County, Georgia HSI Site No. 10764

Table 1: SUMMARY OF WATER LEVEL DATA

Well Number	Date Measured	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
	18-Oct-2011	99.45	9.20	90.25
MW-19	1-Aug-2012		10.56	88.89
10100-19	27-Jan-2014	99.40	8.15	91.30
	6-Feb-2015		6.49	92.96
	18-Oct-2011		7.67	91.41
MW-20	1-Aug-2012	99.08	8.59	90.49
10100-20	27-Jan-2014	99.06	7.62	91.46
	6-Feb-2015		5.80	93.28
	18-Oct-2011		9.28	90.72
MW-21-S	1-Aug-2012	100.00	10.65	89.35
10100-21-5	27-Jan-2014	100.00	8.56	91.44
	6-Feb-2015		6.88	93.12
	18-Oct-2011	100.13	12.67	87.46
MW-21-D	1-Aug-2012		13.82	86.31
IVIVV-2 I-D	27-Jan-2014		11.60	88.53
	6-Feb-2015		9.97	90.16
	18-Oct-2011	98.90	7.31	91.59
MW-22	1-Aug-2012		8.63	90.27
10100-22	27-Jan-2014		7.32	91.58
	6-Feb-2015		5.53	93.37
	18-Oct-2011		8.96	90.15
MW-23	1-Aug-2012	99.11	10.43	88.68
IVIVV-23	27-Jan-2014	99.11	7.93	91.18
	6-Feb-2015		6.15	92.96
	1-Aug-2012		11.94	88.31
MW-24	27-Jan-2014	100.25	9.27	90.98
	6-Feb-2015		7.56	92.69

Prepared by	R. Luke Bragg	Date	2/23/15	
Reviewed by	Stewart A. Dixon, P.G.	Date	2/23/15	

NOTES:

On-site benchmark of 100.00 feet

Martha's Dry Cleaner

4608 Skidaway Road Savannah, Chatham County, Georgia HSI Site No. 10764

Table 2 - SUMMARY OF GROUNDWATER TESTING DATA

Well Number	Date Sampled	Carbon disulfide μg/L	trans-1,2-Dichloroethene µg/L	cis-1,2-Dichloroethene μg/L	Trichloroethene μg/L	1,1,2-Trichloroethane μg/L	Tetrachloroethene μg/L	Vinyl Chloride μg/L
MW-19	9/23/2011	<1.0	<1.0	10.2	1.86	<1.0	16.6	NT
	8/1/2012	<1.0	<1.0	1.96	<1.0	<1.0	3.39	NT
10100-19	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	1.46	NT
	2/6/2015	NT	<1.0	<1.0	<1.0	<1.0	1.29	<1.0
	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
MW-20	7/31/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	9/23/2011	<2.0	<2.0	7.96	4.28	<2.0	270	NT
MW-21-S	8/1/2012	<2.0	<2.0	7.56	6.35	<2.0	253	NT
IVIVV-21-5	1/27/2014	<1.0	<1.0	<1.0	1.51	<1.0	188	NT
	2/6/2015	NT	<1.0	<1.0	1.29	<1.0	163	<1.0
D-MW-21-S*	9/23/2011	<2.0	<2.0	9.08	5	<2.0	324	NT
	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	10.5	NT
MW-21-D	8/1/2012	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NT
	1/27/2014	3.57	<1.0	<1.0	<1.0	<1.0	1.57	NT
	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
MW-22	8/1/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
DUP 1 (MW-22)*	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
MW-23	8/1/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NT
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	2.29	NT
	8/1/2012	<1.0	<1.0	1.87	1.55	<1.0	7.82	NT
MW-24	1/27/2014	<1.0	<1.0	6.2	1.24	<1.0	6.82	NT
	2/6/2015	NT	<1.0	<1.0	<1.0	<1.0	5.27	<1.0
DUP-1 (MW-24)*	8/1/2012	<1.0	<1.0	1.65	1.36	<1.0	6.61	NT
Applicable Standard**		4,000	100.00	70	5	5	5	2

NOTES: < = Parameter not detected above the associated reporting limit

BOLD = Concentration is above the Type I Risk Reduction Standard for the Site

* = Duplicate sample

** = Georgia EPD HSRA Appendix III

NT = Parameter Not Tested

Prepared by: Reviewed by:

R. Luke Bragg Stewart A. Dixon, P.G.

Date: 02/23/2015 Date: 02/23/2015

Martha's Dry Cleaner

4608 Skidaway Road Savannah, Chatham County, Georgia HSI Site No. 10764

Table 3 - SUMMARY OF NATURAL ATTENUATION PARAMETERS ANALYTICAL DATA

Well Number	Date Sampled	Alkalinity mg/L	Carbon Dioxide mg/L	Chloride mg/L	Nitrate (Nitrate as N) mg/L	Nitrite (Nitrite as N) mg/L	Sulfate mg/L	Sulfide mg/L	Ethane µg/L	Ethene μg/L	Methane μg/L	Dissolved Oxygen mg/L	Iron II mg/L	ORP ±mV
MW-19	8/1/2012	<20	232	3.52	<0.5	<0.02	3.39	0.800 J	<0.02	3.39	64	0.51	0.24	144.7
	1/27/2014	<20	<20	13	<0.5	<0.02	19.3	<1.1	<1.0	<1.0	2.2	1.43	0.06	-29.0
	2/6/2015	NT	NT	NT	NT	NT	NT	NT	<2.0	<1.0	NT	0.93	NT	-42.1
MW-20	7/31/2012	<20	173	2.61	<0.5	<0.02	<2.5	4.00	<2.0	<1.0	40	0.51	0.11	171.5
	1/27/2014	<20	111	3.08	0.543	<0.02	<5.00	<1.1	<1.1	<1.0	0.76	1.02	0.09	-64.6
MW-21-S 1/27/2	8/1/2012	35.6	333	15.0	<0.5	<0.02	16.2	<2.0	<2.0	<1.0	11	0.54	0.14	-20.3
	1/27/2014	26.8	338	13.7	0.695	<0.02	30.5	<1.1	<1.1	<1.0	0.88	1.20	0.09	-59.1
	2/6/2015	NT	NT	NT	NT	NT	NT	NT	<2.0	<1.0	NT	2.84	NT	-41
MW-21-D	8/1/2012	25.1	178	3.53	<0.5	<0.02	<2.5	2.40	<2.0	<1.0	1,300	0.09	0.49	-116.1
	1/27/2014	23.4	296	3.58	<0.5	<0.02	<5.00	<1.1	<1.1	<1.0	320	0.17	0.54	-64.8
MW-22	8/1/2012	21.2	137	6.63	2.11	<0.02	7.00	0.600 J	<2.0	<1.0	51	0.4	0.36	64.1
10100-22	1/27/2014	27.6	215	3.87	<0.5	<0.02	7.65	<1.1	<1.1	<1.0	0.59	0.26	0.06	-73.5
MW-23	8/1/2012	<20	318	10.7	<0.5	<0.02	140	0.600 J	<2.0	<1.0	6	0.17	1.35	93.8
MW-23	1/27/2014	<20	231	10.7	<0.5	<0.02	118	<1.1	<1.1	<1.0	0.63	0.21	0.41	-66.9
MW-24	8/1/2012	22.9	151	7.39	<0.5	<0.02	16	<2.0	<2.0	<1.0	29	2.22	0.17	121.1
	1/27/2014	<20	231	22.9	<0.5	<0.02	45.5	1.2	<1.1	<1.0	6.3	1.00	0.09	-60.5
	2/6/2015	NT	NT	NT	NT	NT	NT	NT	<2.0	<1.0	NT	0.37	NT	-59.1

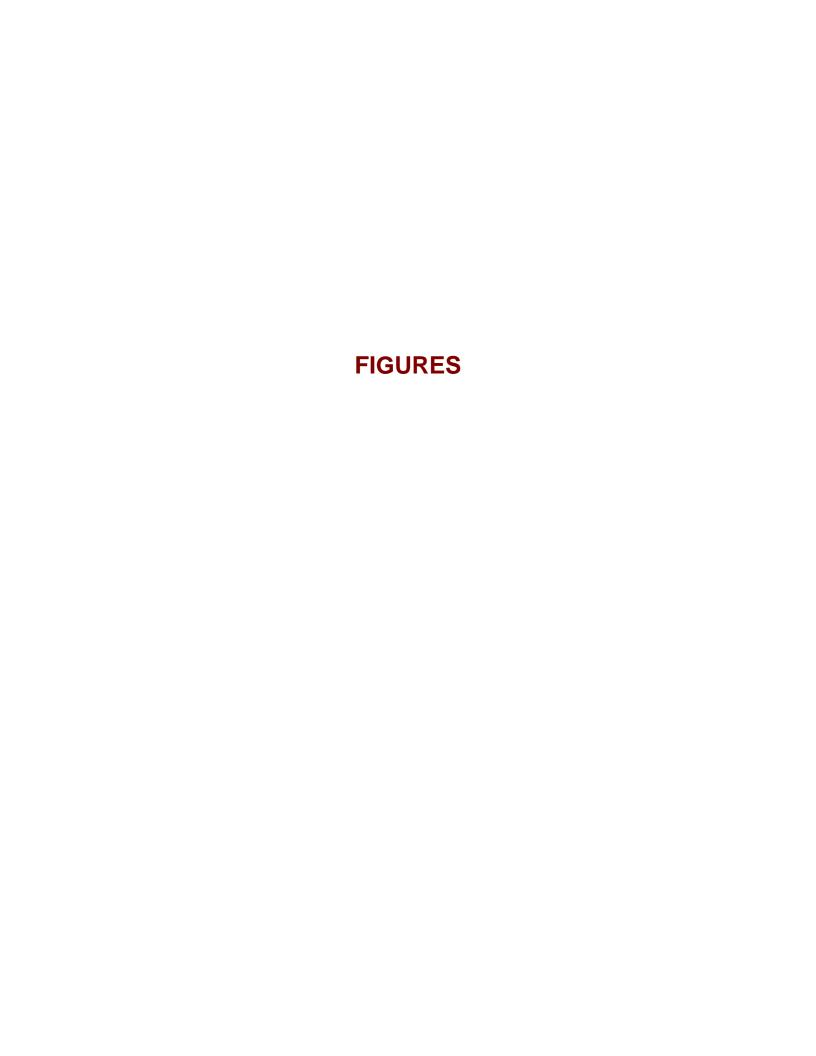
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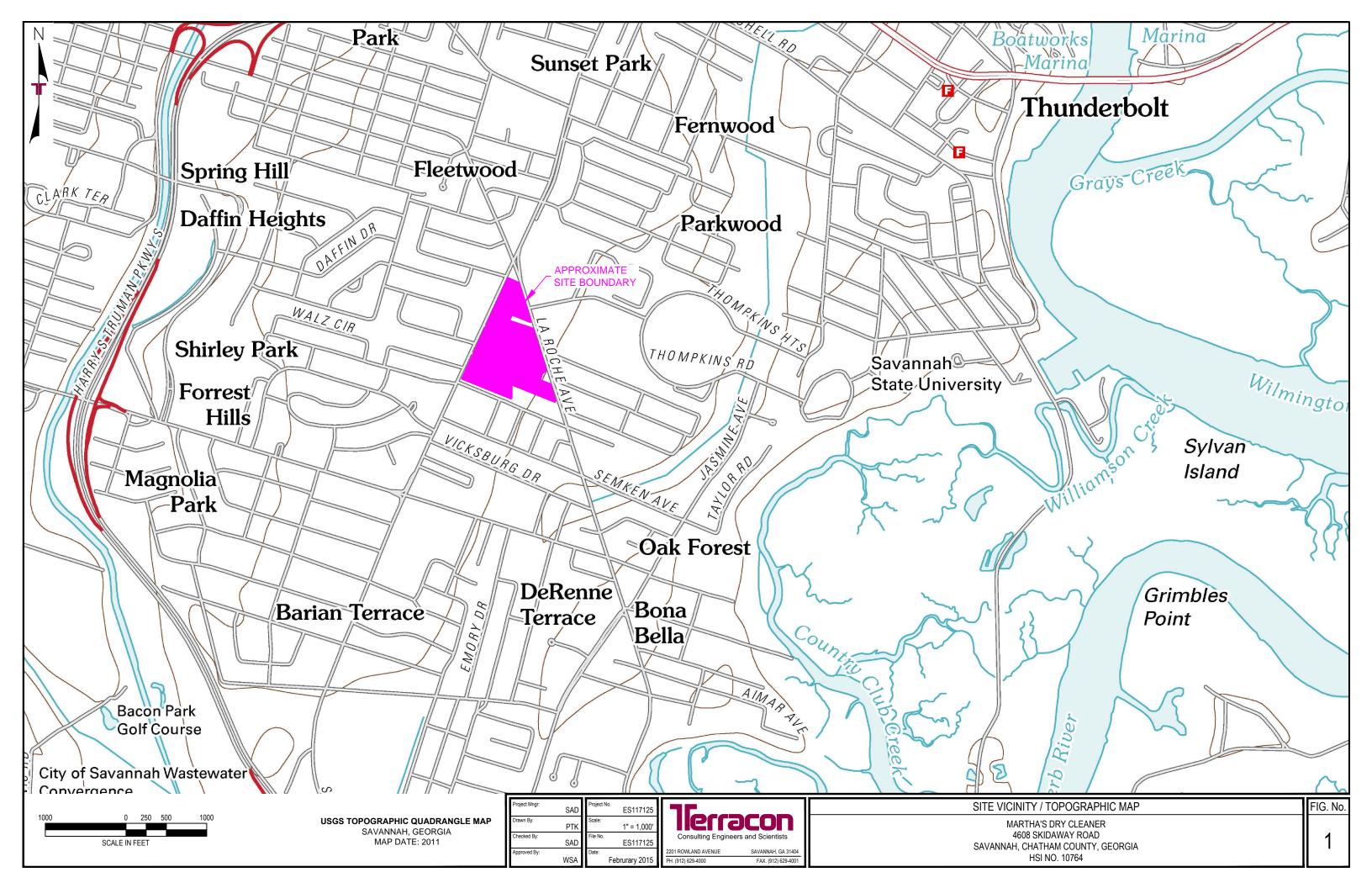
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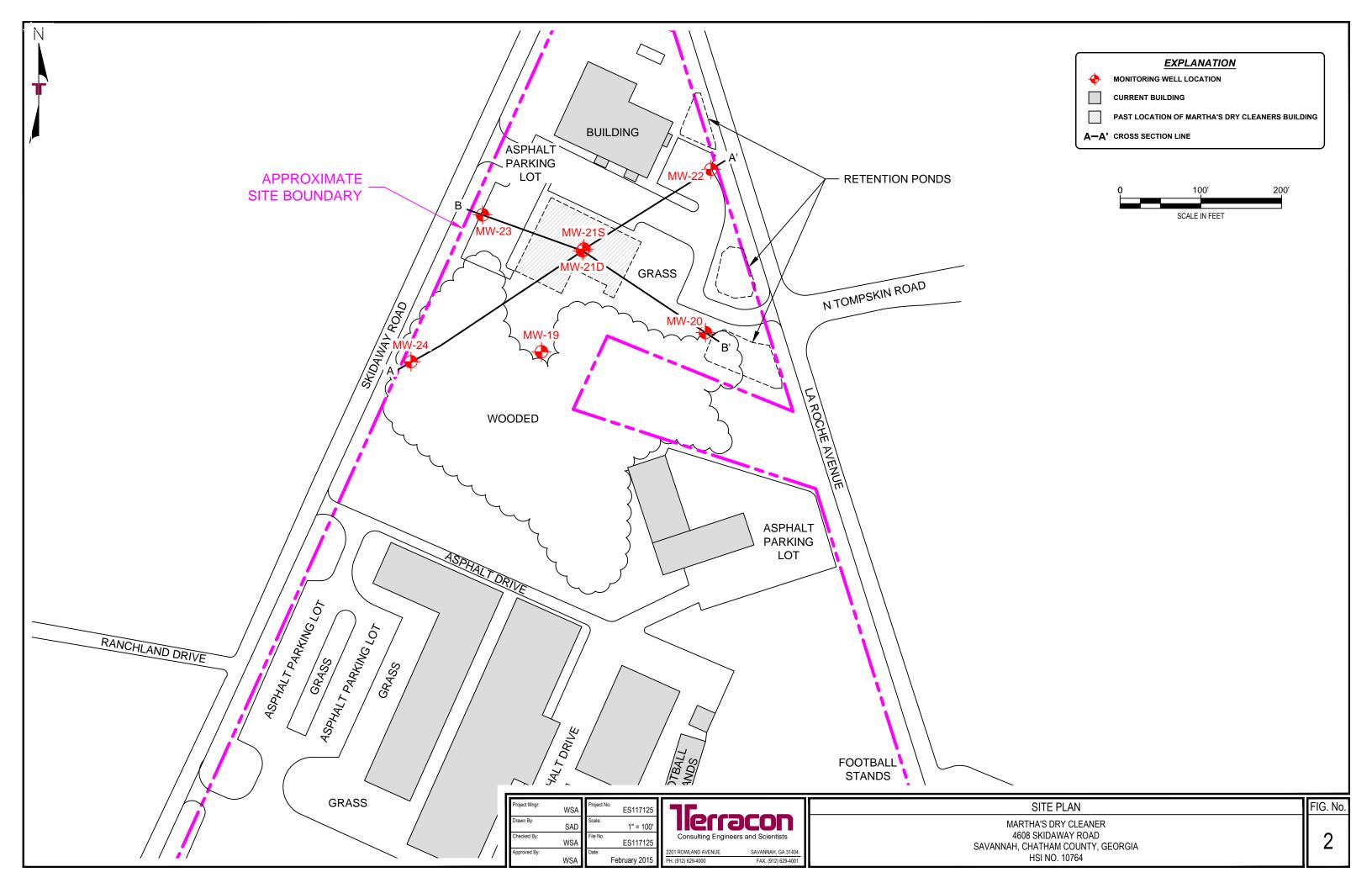
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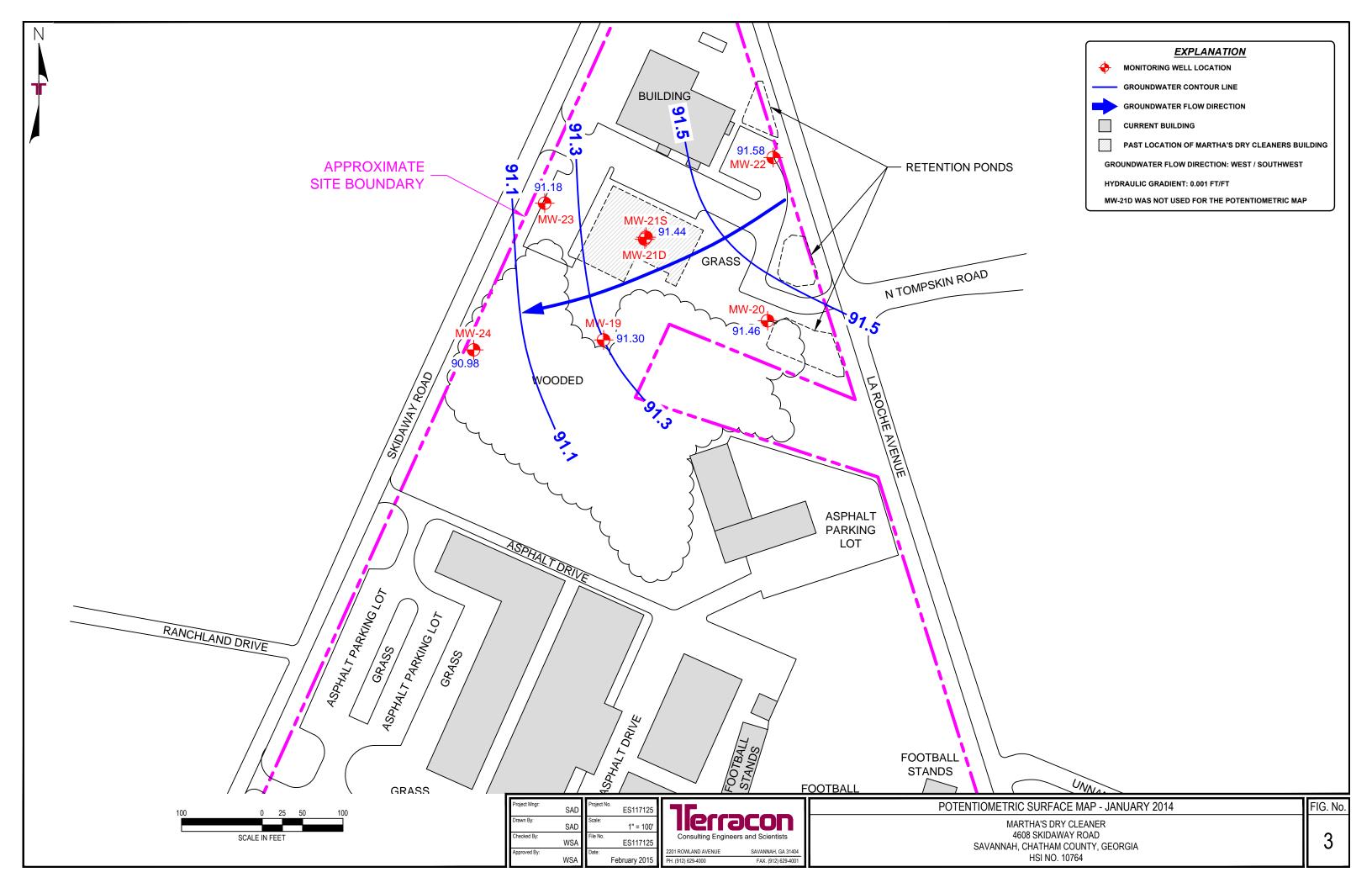
 Prepared by:
 R. Luke Bragg
 Date: 02/23/2015

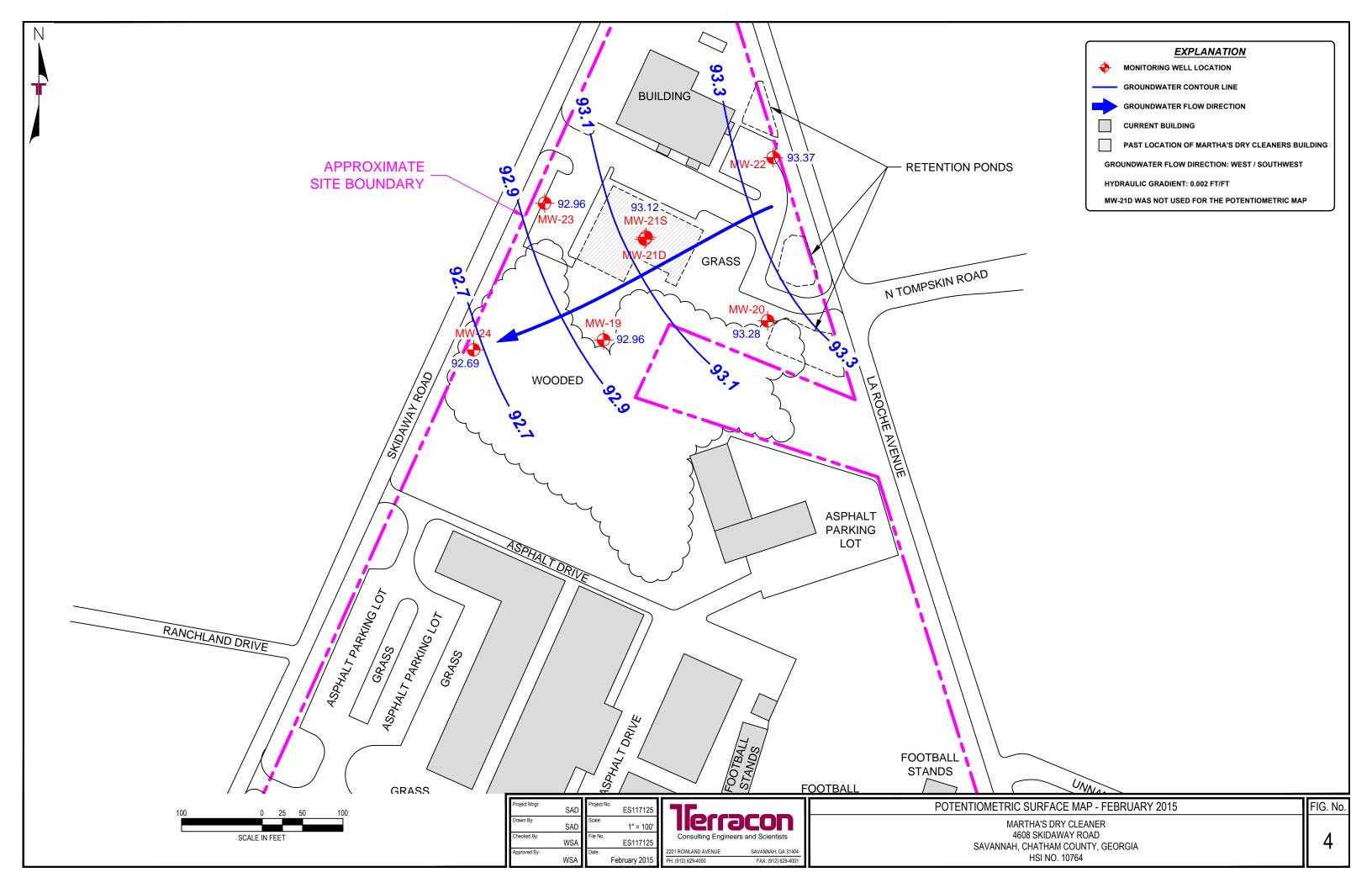
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 Stewart A. Dixon, P.G.
 Date: 02/23/2015

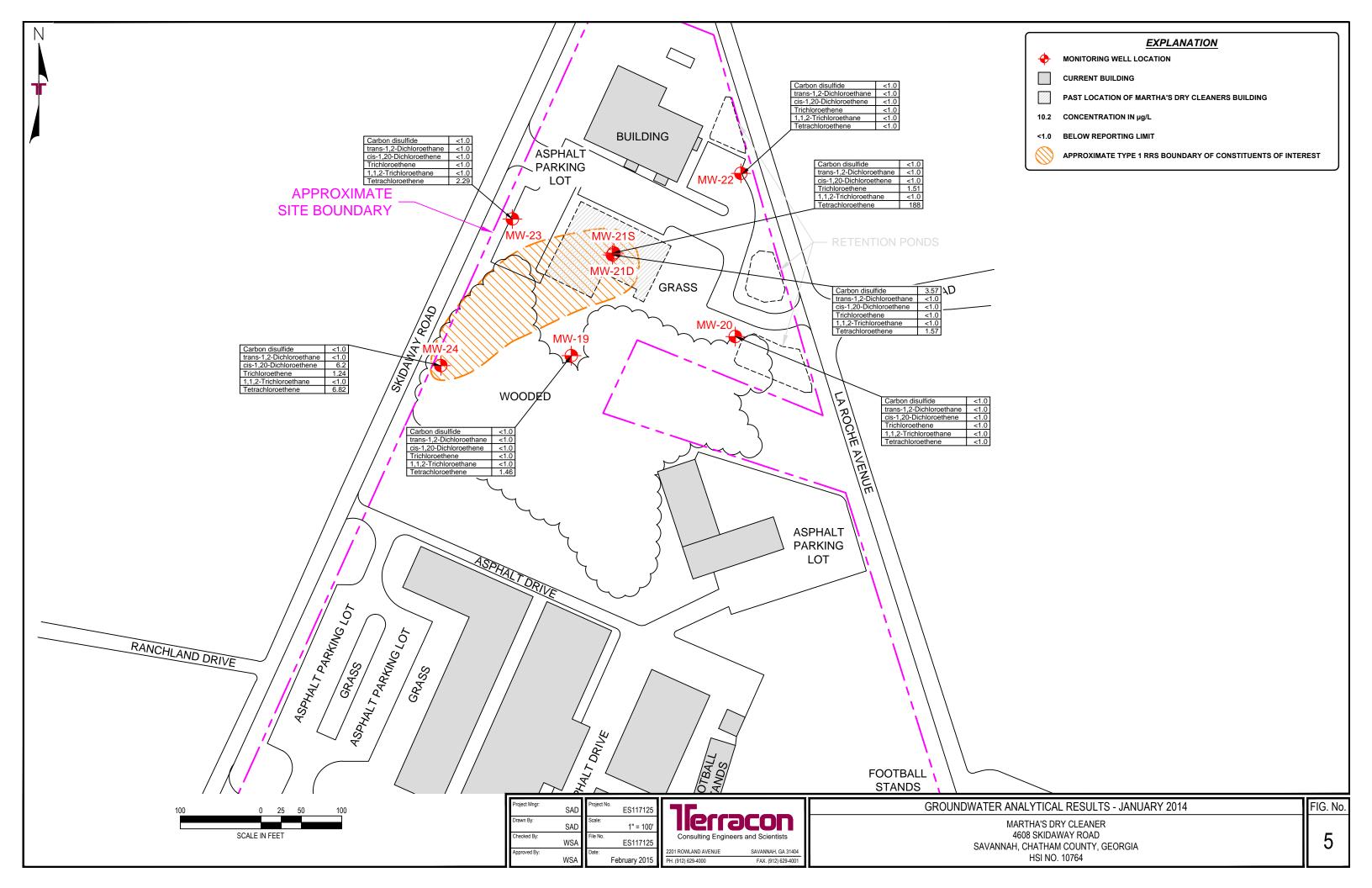


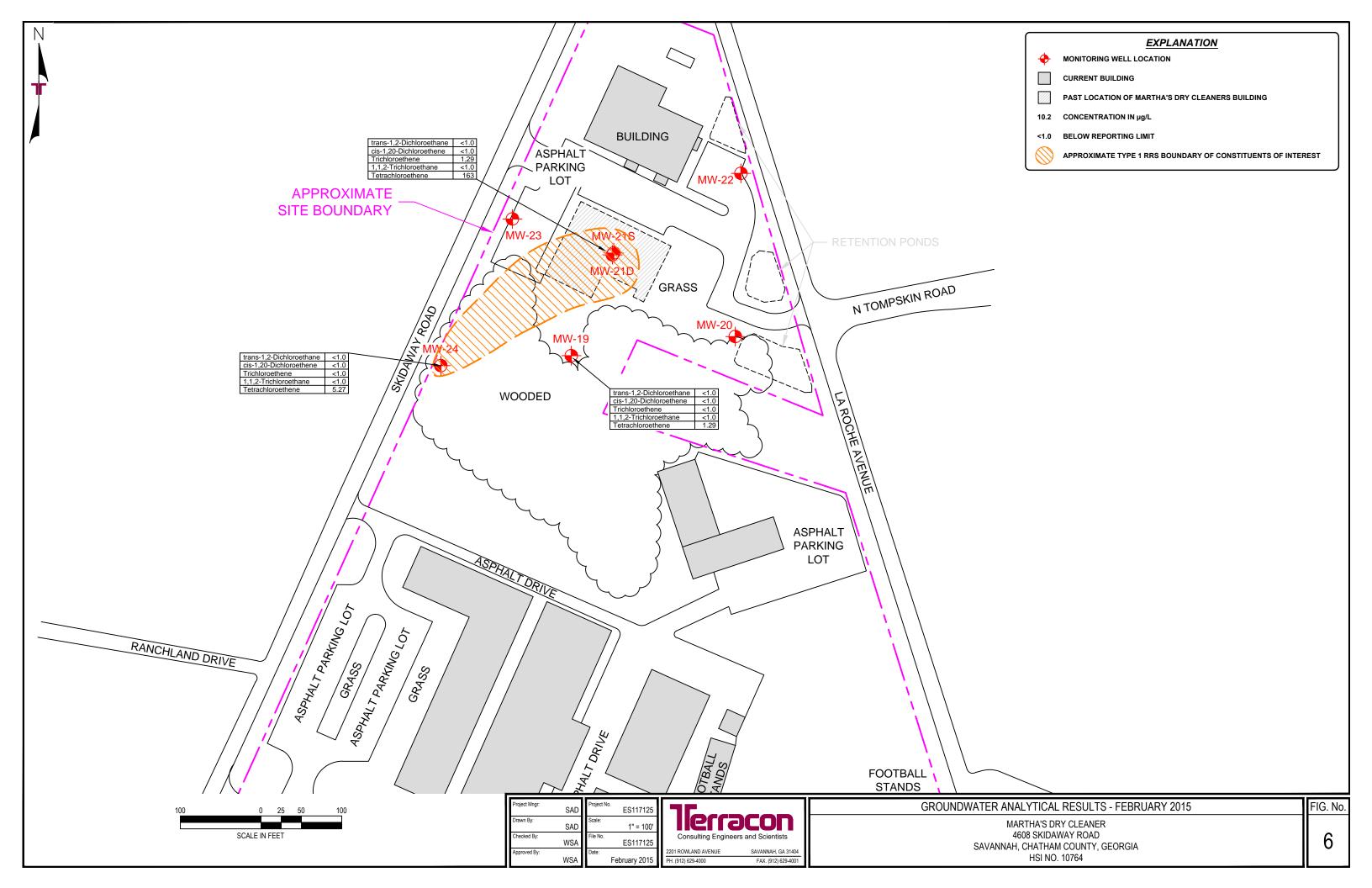


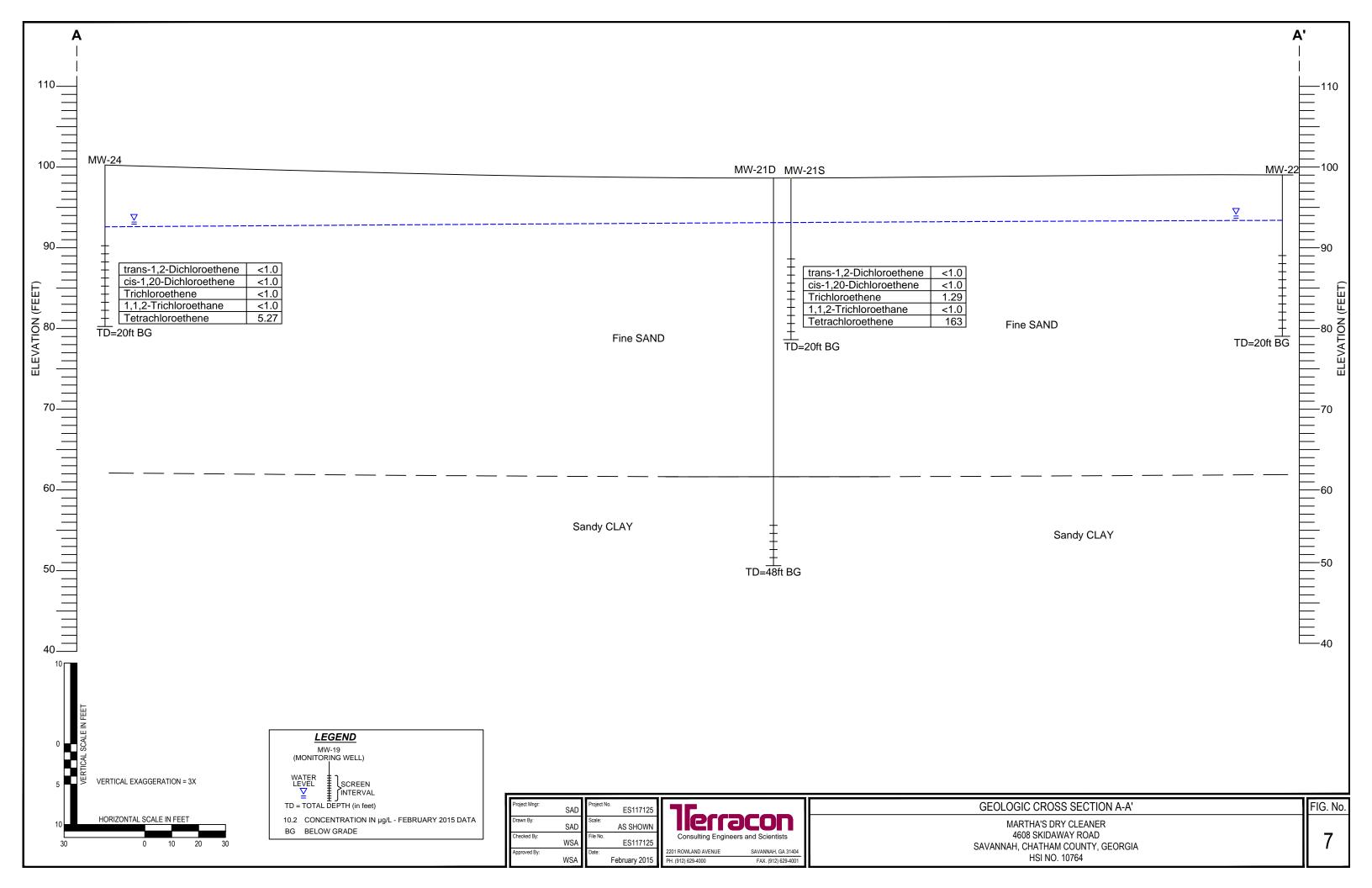


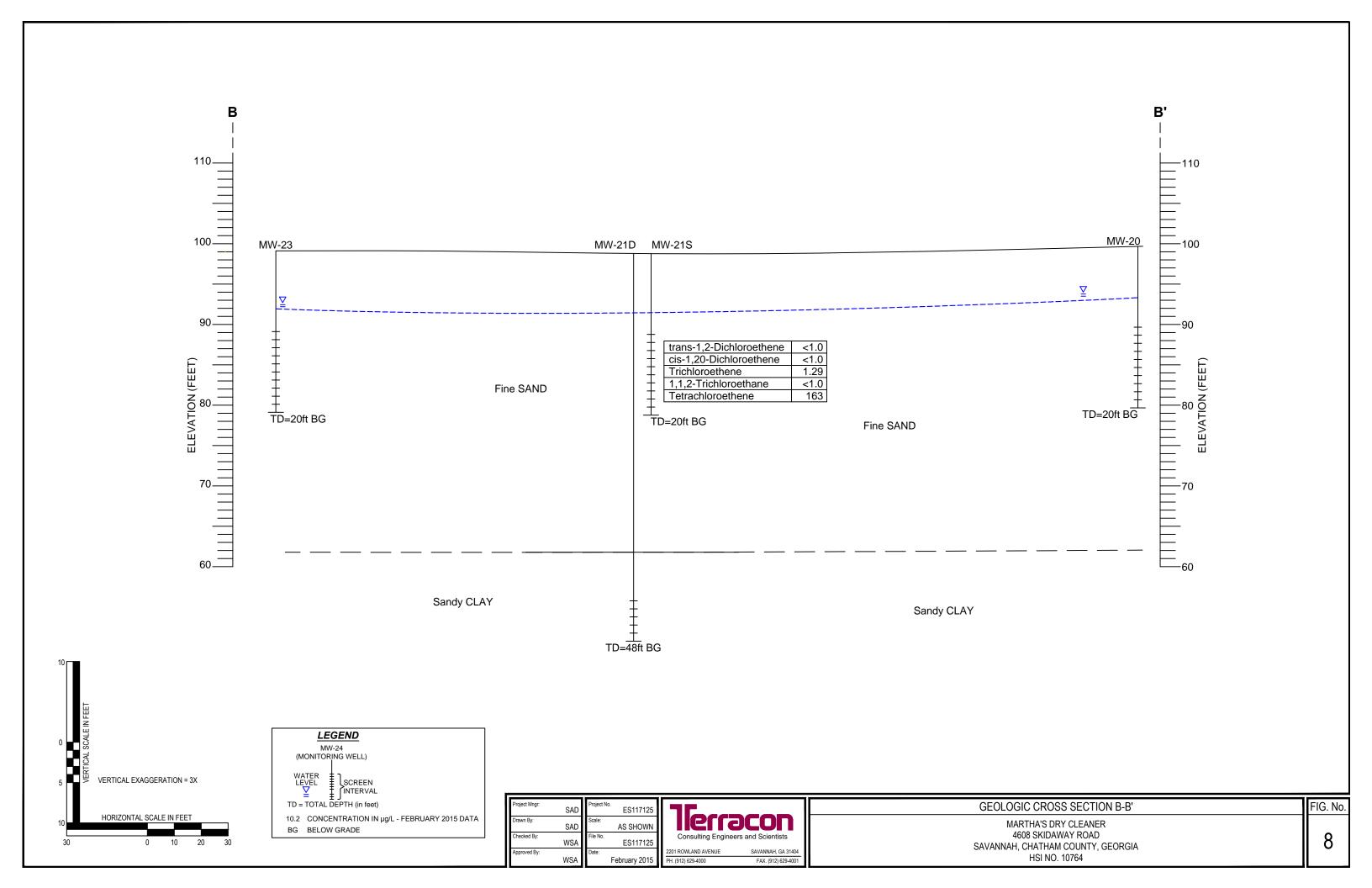












APPENDIX A
WARRANTY DEED WITH LEGAL DESCRIPTION AND TAX PLAT MAP

Clock#: 589807 FILED FOR RECORD

10/18/2004 04:34pm

PAID: 14.00

Susan D. Prouse, Clerk Superior Court of Chatham County Chatham County, Georgia

Real Estate Transfer Tax

PAID \$*450_00

For Clerk of Superior Court

RETURN TO: Charles Donnie Gatch, P.C. Attorney at Law P.O. Box 14415 Savannah, GA 31416-1415

STATE OF GEORGIA

COUNTY OF CHATHAM

LIMITED WARRANTY DEED

THIS INDENTURE, made this 14 day of October, 2004, between

DISCOUNT AUTO PARTS, INC., a Florida Corporation, as Party of the First Part, and BIBLE BAPTIST CHURCH, INC., a Georgia Corporation, as Party of the Second Part.

WITNESSETH:

That the said Party of the First Part, for and in consideration of the sum of Ten and no/100 (\$10.00) Dollars in hand paid, the receipt and sufficiency of which is hereby acknowledged, and before the sealing and delivery of these presents, has granted, bargained, sold and conveyed and by these presents does grant, bargain, sell and convey unto the said Party of the Second Part, its' successors, representatives and assigns, the following described tract or parcel of land lying and being in Savannah, Chatham County, Georgia described as follows:

277 A

162

All that certain lot, tract or parcel of land situate, lying and being in the City of Savannah, Cook Ward, Chatham County, Georgia, and being the southern portion of the southwest portion of LOT NUMBER EIGHT OF THE PLACENTIA TRACT, as shown in total on the plat recorded in Plat Record Book Q, Page 196, in the Office of the Clerk of the Superior Court of Chatham County, Georgia, and also being known as Lot 2 of the S.W. Placentia Tract 8 Subdivision, being shown on that certain minor subdivision map of S.W. Placentia Tract 8 Subdivision recorded in the Office of the Clerk of the Superior Court of Chatham County, Georgia in Subdivision Map Book 3-S, Page 63 (PIN 2-0120-01-001C/land only).

TOGETHER with all improvements thereon (PIN 2-0120-01-001L/improvements only). SUBJECT to all valid restrictive covenants, easements and rights-of-way of record.

SUBJECT TO: 1) The use of the property for the primary purpose of the sale of automobile parts and accessories, including, but not limited to, tires, batteries and wheels for a period of twenty (20) years following the date of recordation is prohibited; and 2) The property is sold and/or assigned to Grantee and Grantee hereby acknowledges and accepts the property in its' "AS IS" condition, including, but not limited to, the environmental condition of the property.

TO HAVE AND TO HOLD the said bargained premises, together with all and singular the rights, members and appurtenances thereof, to the same being, belonging or in anywise appertaining, to the only proper use, benefit and behoof of the said Party of the Second Part, its' successors, representatives and assigns forever, IN FEE SIMPLE.

And Party of the First Part will warrant and forever defend the right and title to that tract or parcel of land unto Party of the Second Part against the claims of all persons owning, holding or claiming by, through or under the said Party of the First Part.

IN WITNESS WHEREOF, the said Party of the First Part, by and through its' duly authorized corporate officer, has hereunto affixed its' name and seal the day and year above written.

DISCOUNT AUTO PARTS, INC.

By:

Jimmie L. Wade, President

Attest:

Eric M. Margolin, Vice President/

Secretary

[Corporate Seal]

ji jimi

Notary Public

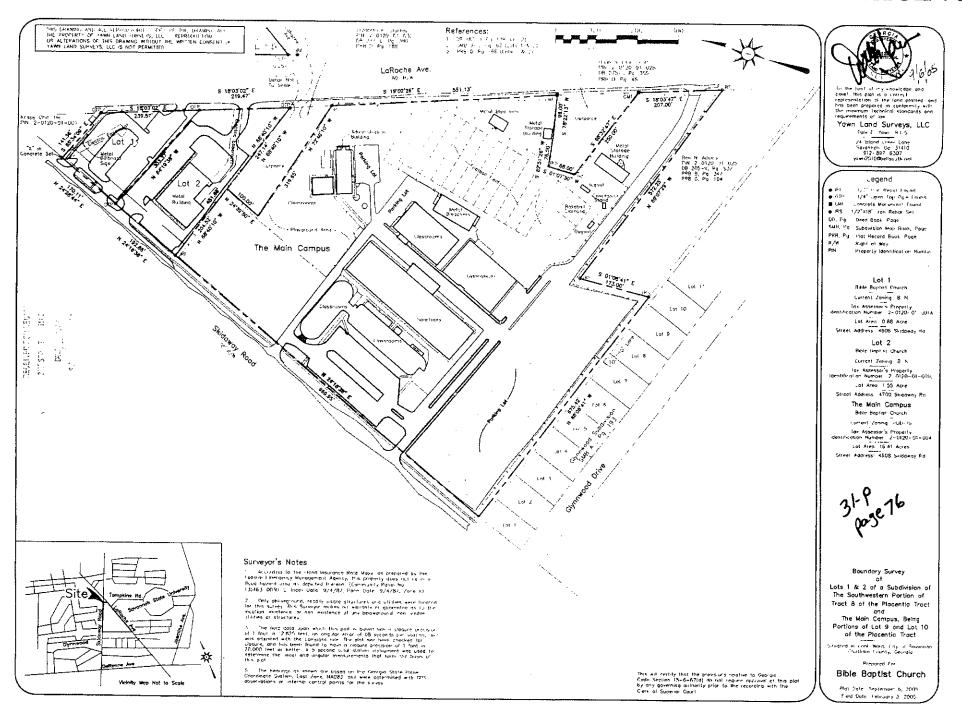
Signed, sealed and delivered

in the presence of:

My Commission Expires October 31, 2007

NOTARY

PLAT BOOK 31P PAGE 76



APPENDIX B

EXECUTED UNIFORM ENVIRONMENTAL COVENANT

Georgia Department of Natural Resources

Environmental Protection Division

JAN 27 2015

Noc 1D: 028616840014 Type: AFF Recorded: 02/12/2015 at 02:56:08 PM Fee Amt: \$38.00 Page 1 of 14 Chatham, Ga. Clerk Superior Court Daniel Massey Clerk Superior Court

2 Martin Luther King, Jr. Dr., Suite 1456, Atlanta, Georgia 30334 Judson H. Turner, Director Phone (404) 656-4713

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Bible Baptist Church, Inc. c/o Ms. Monique Grier 4700 Skidaway Road Savannah, Georgia 31404

Re:

Executed Uniform Environmental Covenant Martha's Dry Cleaners, HSI Site No. 10764

4608 Skidaway Road, Savannah, Chatham County

Tax Parcel: 2-0120-01-004

Dear Ms. Grier:

The Georgia Environmental Protection Division (EPD) has approved the Uniform Environmental Covenant (UEC) submitted for the former Martha's Dry Cleaners site. The fully executed original is enclosed. Within thirty (30) days of receipt, this covenant is to be filed with the clerk of the Superior Court of Chatham County and recorded in the clerk's deed records pursuant to O.C.G.A. 44-16-8.

Within thirty (30) days of recording, please submit a file-stamped copy of the covenant to EPD. The submittal should include a certification that the parties named in Item 10 of the covenant have also been sent a file-stamped copy. If you have any questions, please contact Robin Futch, PG, PMP of the Response and Remediation Program at (404) 657-8686.

Sincerely,

Judson H. Turner

Director

Encl: Fully executed UEC - Parcel ID No. 2-0120-01-004

File: HSI# 10764

Jan St.

The state of the s

Georgia Department of Natural Resources

Environmental Protection Division

2 Martin Luther King, Jr. Dr., Suite 1456, Atlanta, Georgia 30334 Judson H. Turner, Director Phone (404) 656-4713

CERTIFIED MAIL RETURN RECEIPT REQUESTED

JAN 27 2015

Bible Baptist Church, Inc. c/o Ms. Monique Grier 4700 Skidaway Road Savannah, Georgia 31404

Re:

Executed Uniform Environmental Covenant Martha's Dry Cleaners, HSI Site No. 10764

4608 Skidaway Road, Savannah, Chatham County

Tax Parcel: 2-0120-01-004

Dear Ms. Grier:

The Georgia Environmental Protection Division (EPD) has approved the Uniform Environmental Covenant (UEC) submitted for the former Martha's Dry Cleaners site. The fully executed original is enclosed. Within thirty (30) days of receipt, this covenant is to be filed with the clerk of the Superior Court of Chatham County and recorded in the clerk's deed records pursuant to O.C.G.A. 44-16-8.

Within thirty (30) days of recording, please submit a file-stamped copy of the covenant to EPD. The submittal should include a certification that the parties named in Item 10 of the covenant have also been sent a file-stamped copy. If you have any questions, please contact Robin Futch, PG, PMP of the Response and Remediation Program at (404) 657-8686.

Sincerely,

Judson H. Turner

Director

Encl: Fully executed UEC - Parcel ID No. 2-0120-01-004

File: HSI# 10764

Georgia Department of Natural Resources Land Protection Branch Response and Remediation Program 2 Martin Luther King Jr. Dr., SE E-1054 Atlanta, Georgia 30334



Supplied the supplied to the s

Georgia Environmental Protection Division Response and Remediation Program 2 Martin Luther King, Jr. Drive, SE Suite 1054 East Atlanta, Georgia 30334 CROSS-REFERENCE: Deed Book: 277R

Page: 0165

Environmental Covenant

This instrument is an Environmental Covenant executed pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1, et seq. This Environmental Covenant subjects the Property identified below to the activity and/or use limitations specified herein below. The effective date of this Environmental Covenant shall be the date upon which a fully executed original of this Environmental Covenant has been recorded in the deed records maintained by the Clerk of the Superior Court of Chatham County, Georgia in accordance with O.C.G.A. § 44-16-8(a).

Fee Owner of Property/Grantor:

Bible Baptist Church, Inc. (BBC)

c/o Mr. Alan Tanner 4700 Skidaway Road Savannah, Georgia 31404

Grantee/Holder:

Bible Baptist Church, Inc.

c/o Mr. Alan Tanner 4700 Skidaway Road Savannah, Georgia 31404

Grantee/Entity with

State of Georgia

express power to enforce:

Department of Natural Resources

Environmental Protection Division ("EPD")

2 Martin Luther King Jr. Drive, SE

Suite 1456 East Tower Atlanta, Georgia 30334

Parties with interest in the Property:

Chatham County Public Works

Georgia Power Atlanta Gas Light

AT&T Comcast

City of Savannah Utility Services

Property:

The property subject to this Environmental Covenant (hereinafter "Property") consists of one (1) parcel of land, consisting of approximately 18.82 acres and located in Land Lot 2 of the S.W. Placentia Tract 8 Subdivision of the City of Savannah, Cook Ward, Chatham County, Georgia. A complete legal description of the Property and Permitted Exceptions is attached hereto as Exhibit A and a map of the area is attached hereto as Exhibit B.

Tax Parcel Number:

Tax Parcel: 2-0120-01-004

Name and Location of Administrative Records:

The corrective action at the Property that is the subject of this Environmental Covenant is described in the following document[s]:

- Voluntary Investigation and Remediation Plan and Application dated October 27, 2011
- First VRP Semiannual Progress Report, dated February 20, 2014

These documents are available at the following locations:

Georgia Environmental Protection Division Response and Remediation Program 2 Martin Luther King Jr. Drive, SE, Suite 1054 East Tower Atlanta, Georgia 30334 M-F 8:00 AM to 4:30 PM excluding state holidays

Bible Baptist Church, Inc. 4700 Skidaway Road Savannah, Georgia 31404

Description of Contamination and Corrective Action:

This Property has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents or hazardous substances regulated under state law. Contact the property owner or the Georgia Environmental Protection Division for further information concerning this Property. This notice is provided in compliance with the Georgia Hazardous Site Response Act.

This Environmental Covenant is made pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1 et seq. by Grantor against the Property and in favor of BBC as Grantee/Holder and EPD as Grantee/Entity with express power to enforce the covenants set forth herein, and burdens and runs with the Property and is binding on the Grantor, the Grantees, and their respective successors and assigns. This Environmental Covenant is required because of the presence of volatile organic compounds ("VOCs") on the Property, including tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene. These VOCs are "regulated substances" as defined under the Georgia Hazardous Site Response Act, O.C.G.A. § 12-8-90 et

seq., and the rules promulgated thereunder (hereinafter "HSRA" and "Rules", respectively). The Corrective Action consists of institutional controls (limitation on use of groundwater and vapor intrusion evaluation) to protect human health and the environment. Accordingly, this Environmental Covenant imposes such limitations upon the use of the Property.

Grantor hereby declares that the uses to which the Property may be put shall be restricted as expressly set forth below under "Activity and/or Use Limitations," and such covenant shall run with the land and be binding upon Grantor, its successors and assigns in title to the land; further, Grantor hereby grants to BBC and EPD the express right and power to enforce said Activity and/or Use Limitations, together with such other rights as are expressly set forth herein in favor of such parties. EPD shall have full right of enforcement of the rights conveyed under this Environmental Covenant pursuant to HSRA, O.C.G.A. § 12-8-90 et seq., and the rules promulgated thereunder. Failure to timely enforce compliance with this Environmental Covenant or the Activity and/or Use Limitations contained herein by any person or entity shall not bar subsequent enforcement by such person or entity and shall not be deemed a waiver of the person's or entity's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict EPD from exercising any authority under applicable law.

Grantor makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declaration: (i) shall constitute covenants to run with the land, pursuant to O.C.G.A. § 44-16-5(a); (ii) is perpetual, unless modified or terminated pursuant to the terms of this Environmental Covenant and pursuant to O.C.G.A. § 44-16-9; and (iii) shall be binding on all parties and all persons claiming under or through Grantor, including all current and future owners of any portion of or interest in the Property (hereinafter "Owner"). Should a transfer or sale of the Property or any interest therein occur before such time as this Environmental Covenant has been amended or revoked, then this Environmental Covenant shall be binding on the transferee(s) or purchaser(s).

This Environmental Covenant shall inure to the benefit of BBC, EPD, and their respective successors and assigns and shall be enforceable by the Director of EPD ("Director") or his agents or assigns, as well as BBC or its successors and assigns, and other party(ies) as provided for in O.C.G.A. § 44-16-11 in a court of competent jurisdiction.

Activity and/or Use Limitation(s)

- 1. <u>Registry.</u> Pursuant to O.C.G.A. § 44-16-12, this Environmental Covenant and any amendment or termination thereof may be contained in EPD's registry for environmental covenants.
- 2. Notice. The Owner of the Property must give thirty (30) days' advance written notice to EPD of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Corrective Action. The Owner of the Property must also give thirty (30) days' advance written notice to EPD of the Owner's intent to change the use of the Property, apply for building permit(s), or propose any major site work that would affect the Property. The notification shall include a certification that the requirements of this Environmental Covenant were adhered to.

- 3. <u>Notice of Limitation in Future Conveyances.</u> Each instrument hereafter conveying an interest in the Property subject to this Environmental Covenant shall contain a notice of the Activity and Use Limitations set forth in this Environmental Covenant and shall cross-reference the Deed Book and Page number of the recording location of this Environmental Covenant.
- 4. <u>Periodic Reporting.</u> The Owner shall inspect the property and applicable property instruments at *least annually* to ensure compliance with this document. Annually, by no later than March 1st following the effective date of this Environmental Covenant, the Owner shall complete and submit to EPD the Annual Property Evaluation Form attached to this document as Exhibit C. This report should include photographs of the property and will document maintenance and inspection activities and whether or not the activity and use limitations in this Environmental Covenant are being abided by.
- 5. Activity and Use Limitation(s). Should the development or potential development of enclosed structure(s) occur the holder of this UEC shall assess the potential for vapor intrusion with tools/methods approved by the Georgia EPD. Should it be concluded through these tools/methods that the potential risk is above then current Georgia EPD regulatory guidance/thresholds, a vapor mitigation system or barrier shall be installed and maintained in any enclosed structures built on the affected area shown in Exhibit B.
- 6. Groundwater Limitation. The use or extraction of groundwater beneath the Property for drinking water or for any other use shall be prohibited until HSRA regulated substances are treated to below the applicable RRS for groundwater. Any extracted groundwater from construction or utility work dewatering activities should be managed and disposed of in accordance with applicable rules and regulations. Should any dewatering of groundwater for construction or utility work purposes be necessary, a sanitary sewer system discharge permit should be acquired from Chatham County. The extracted water should be pretreated to Chatham County requirements prior to discharge into the sanitary sewer system. Extracted groundwater should not be discharged into the storm water system or surface waters. All management of impacted groundwater should be done in accordance with all applicable local, state and federal rules and regulations governing the management of such material. Prior to conducting construction or subsurface utility work that may result in exposure to groundwater, a worker must have appropriate HAZWOPER training per OSHA's Hazardous Waste Operations and Emergency Response Standard 29 CFR 1910.120, and perform the work in accordance with a Health and Safety Plan prepared by a qualified safety professional. All management of impacted soil or groundwater performed in the execution of work should be done in accordance with this section.
- 7. <u>Groundwater Monitoring.</u> The Owner shall sample and analyze the following wells annually: MW-19, MW-21S, and MW-24 for up to two (2) years or a lesser period if approved by EPD unless the Director determines that further monitoring is necessary to protect human health and the environment. Test results shall be submitted to EPD on March 1st of each year.
- 8. <u>Right of Access.</u> In addition to any rights already possessed by EPD and/or BBC, the Owner shall allow authorized representatives of EPD and BBC the right to enter the Property at reasonable times for the purpose of determining compliance with this Environmental Covenant.
- 9. Recording of Environmental Covenant and Proof of Notification. Within thirty (30) days after the date of the Director's signature, the Owner shall file this Environmental Covenant with the Clerk of the Chatham County Superior Court, and send a file stamped copy of this Environmental Covenant to EPD within thirty (30) days after recording (subject to Owner's receipt of such copy from the Clerk within such time period). Within that time period, the Owner shall also send a file-stamped copy to each of the following: (1) each person holding a recorded interest in the Property subject to the covenant, (2) each person in possession of the real

property subject to the covenant, (3) each municipality, county, consolidated government, or other unit of local government in which real property subject to the covenant is located, and (4) each owner in fee simple whose property abuts the property subject to the Environmental Covenant.

- 10. <u>Termination or Modification</u>. The Environmental Covenant shall remain in full force and effect in accordance with O.C.G.A. § 44-5-60, unless and until the Director determines that the Property is in compliance with the Type 1, 2, 3, or 4 Risk Reduction Standards, as defined in Rules Section 391-3-19-.07, whereupon this Environmental Covenant may be amended or revoked in accordance with Section 391-3-19-08(7) of the Rules and O.C.G.A. § 44-16-1 *et seq*. This Environmental Covenant may also be modified upon approval of the Director.
- 11. <u>Severability</u>. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.
- 12. No Property Interest Created in EPD. This Environmental Covenant does not in any way create any interest in favor of EPD in the Property that is subject to the Environmental Covenant, it being acknowledged and agreed that EPD's interest is limited to that of a third party with right of enforcement. Furthermore, the act of approving this Environmental Covenant does not in any way create any interest in favor of EPD in the Property in accordance with O.C.G.A. § 44-16-3(b).

Representations and Warranties.

Grantor hereby represents and warrants to the other signatories hereto:

- a) That the Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;
- b) That the Grantor is the sole owner of the Property and holds fee simple title which is free, clear and unencumbered except as set forth on <u>Exhibit A</u>, attached hereto and incorporated herein by reference;
- c) That to Grantor's knowledge, the Grantor has identified all other parties that hold any interest (e.g., encumbrance) in the Property and notified such parties of the Grantor's intention to enter into this Environmental Covenant;
- d) That to Grantor's knowledge, this Environmental Covenant will not materially violate, contravene, or constitute a material default under any other agreement, document or instrument to which Grantor is a party, by which Grantor may be bound or affected;
- e) That the Grantor has served each of the people or entities referenced in numbered Activity and/or Use Limitation (9) above with a true and complete copy of this Environmental Covenant in accordance with O.C.G.A. § 44-16-4(d).
- f) That to Grantor's knowledge, this Environmental Covenant will not materially violate or contravene any zoning law or other law regulating use of the Property; and
- g) That to Grantor's knowledge, this Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by a recorded instrument that has priority over this Environmental Covenant.

Notices.

Any document or communication required to be sent pursuant to the terms of this Environmental Covenant shall be sent to the following persons:

Georgia Environmental Protection Division Branch Chief Land Protection Branch 2 Martin Luther King Jr. Drive SE Suite 1054 East Tower Atlanta, Georgia 30334

Bible Baptist Church, Inc. (BBC) c/o Ms Monique Grier 4700 Skidaway Road Savannah, Georgia 31404

Grantor has caused this Environmental Covenant to be executed pursuant to The Georgia Uniform Environmental Covenants Act on the $\frac{\partial \mathcal{L}^{rd}}{\partial x^{rd}}$ day of $\frac{\partial \mathcal{L}^{rd}}{\partial x^{rd}}$, 2014.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR BEGINNING ON FOLLOWING PAGE]

[CORPORATE ACKNOWLEDGMENT]

COUNTY OF Chatham	
personally appeared before me, acknowledged corporation that executed the within and fore	going instrument, and signed said instrument by tion, for the uses and purposes therein mentioned,
WENDA LYNN MAXEY Notary Public, Bulloch County, Georgia My commission expires August 4, 2017	Notary Public in and for the State of Georgia, residing at Buccoch. My appointment expires (2004, 2017)
STATE OF Charles (R)	EPRESENTATIVE ACKNOWLEDGEMENT]
HOINT [type of authorities]	that he/she signed this instrument on oath stated ais instrument, and acknowledged it as the prity] of 12/15/2015/fluch Instrument of untary act and deed of such party for the uses and
WENDA LYNN MAXEY Notary Public, Bulloch County, Georgia My commission expires August 4, 2017	Notary Public in and for the State of Georgia, residing at Bucoch. My appointment expires Qua. 4, 2017

BIBLE BAPTIST CHURCH, INC.

Monigue AGriun - Bisiness ad [Name of Signatory] [Title]	m Algert
Dated: 12/22/2014	e*
WITNESS: By: Name: Marilyn Braid Dated: 12-22-14	
BIBLE BAPTIST CHURCH, INC.	WENDA LYNN MAXEY Nobey Public, Eriloch County, Georgia My commission expires August 4, 2017
[Name of Porson Acknowledging Receipt] [Title]	Im/Quent
Dated: 12/22/2014	
WITNESS: By: Name: Marilyn Brand Dated: 12-22-14	
STATE OF GEORGIA ENVIRONMENTAL PROTECTION DIVISION	
Judson H. Jan	Notary Public, Bořech Covnity, Goorgia Ny commission explines August 4, 2017
Name: Judson H. Turner Title: Director	
Dated: January 22, 2015	

[REPRESENTATIVE ACKNOWLEDGEMENT]

COUNTY OF FUNDS	
COUNTY OF FW TON	
- 14 M	
On this 22 day of garage personally appeared before me, acknowledged that	t he/she signed this instrument, on oath stated that
he/she was authorized to execute this	instrument, and acknowledged it as the
[type of authority]	of <u>EPD</u> [name of party being
	ed of such party for the uses and purposes mentioned
in the instrument.	
STAL SALLORING	Notary Public in and for the State of Georgia, residing at My appointment expires 1/22/17.

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Judan H. Times 1

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Exhibit A

Legal Description of Property

Legal Description Bible Baptist Church

All that tract or parcel of land, lying and being in Cook Ward, City of Savannah, Chatham County, Georgia, being portions of Lots 8, 9, and 10 of the Placentia Tract, and being more particularly described as follows:

Commence at the intersection of the northeasterly right of way line of Glynwood Drive and the southeasterly right of way line of Skidaway Road; said point being the southwesterly corner of Lot 1, Glynwood Subdivision, as recorded in Subdivision Map Book A, page 193 of the records of the Clerk of Superior Court for Chatham County; thence proceed along the southeasterly right of way line of Skidaway Road N 21°51'19" E a distance of 130.29 feet to a point; said point being the POINT OF BEGINNING; thence continue with said right of way N 24°16'38" E a distance of 969.95 feet to an iron rebar, thence N 24°16'38" E a distance of 192.86 feet to an open top pipe; thence N 24°28'44" E a distance of 170.11 feet to an "X" in concrete; thence leave the southeasterly right of way line of Skidaway Road and run S 65°34'09" E a distance of 141.36 feet to an open top pipe on the westerly right of way line of LaRoche Avenue; thence with the westerly right of way line of LaRoche Avenue thence S 18°03'02" E a distance of 239.57 feet to an open top pipe; thence S 18°03'02" E a distance of 219.47 feet to an open top pipe; thence leave the westerly right of way line of Laroche Avenue and run the following courses and distances; N 68°40'10" W a distance of 247.14 feet to a point; thence S 24°39'50" W a distance of 100.00 feet to a point; thence S 72°40'10" E a distance of 319.65 feet to an iron rebar on the westerly right of way line of Laroche Avenue; thence along the westerly right of way of LaRoche Avenue S 19°02'26" E a distance of 551.13 feet to a concrete monument; thence leave the westerly right of way line of Laroche Avenue and run the following courses and distances: S 78°22'13" W a distance of 96.00 feet to a point; thence S 82°51'26" W a distance of 76.50 feet to an iron rebar; thence S 01°07'30" W a distance of 68.00 feet to an iron rebar; thence S 68°32'47" E a distance of 250.00 feet to a concrete monument on the westerly right of way line of LaRoche Avenue; thence along the westerly right of way line of LaRoche Avenue S 18°03'47" E a distance of 207.00 feet to an iron rebar; thence N 69°07'29" W a distance of 572.25 feet to an iron rebar; thence S 01°08'41" E a distance of 173.00 feet to an iron rebar; thence N 68°08'41" W a distance of 675.42 feet to the POINT OF BEGINNING; said tract or parcel of land having an area of 820,606 square feet, or 18.84 acres, more or less.

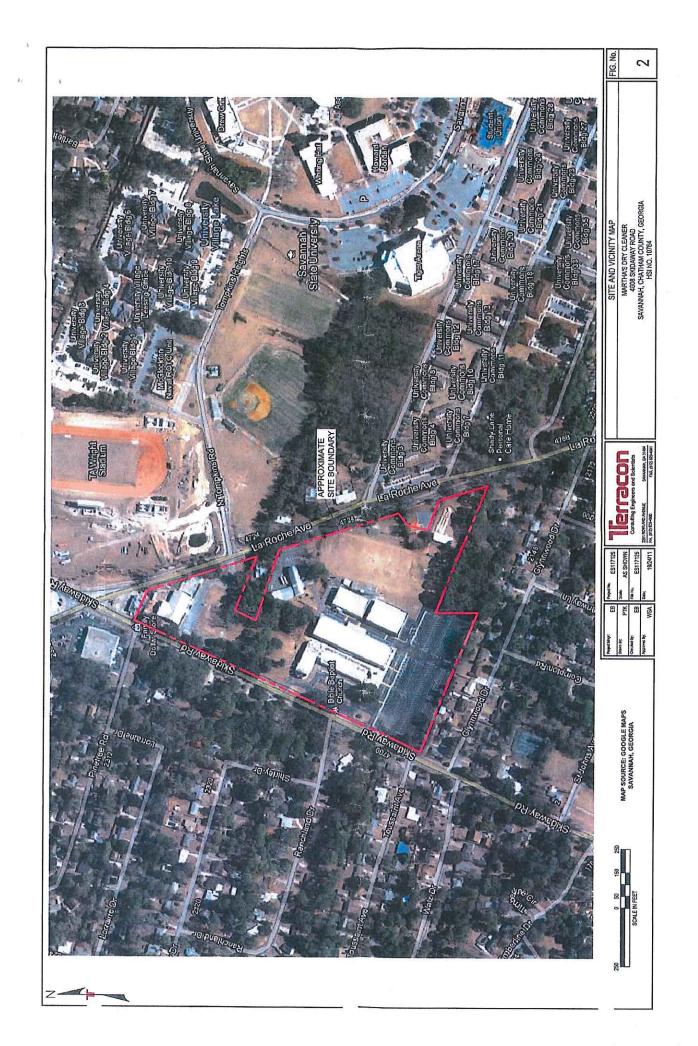


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Exhibit B

Map Showing Location of Property





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APPENDIX C

GROUNDWATER LABORATORY ANALYTICAL DATA

Ref No: G 439101065



LABORATORY ANALYSIS REPORT

Job ID: 15020901

Avery Laboratories & Environmental Services, LLC

■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Project ID:

Martha Dry Cleaners

Report To: Client Name: Terracon Attn: Stewart Dixon

Client Address: 2201 Rowland Ave. P.O.#.:

City, State, Zip: Savannah, GA, 31404

Dear Stewart Dixon

The following test results meet all NELAP requirements for analytes for which certification is available. Any deviations from these quality systems will be noted in this case narrative. All analyses performed by Avery Laboratories & Environmental Services, LLC unless noted. Parameters not perfromed by Avery Laboratories will be listed on the Sample Summary section of the report.

For questions regarding this report, contact Robert Paul Grimm at (912)944-3748.

Sincerely,



This Laboratory is NELAP accredited.

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

Date: 02/20/2015 14:04 Primary Accreditation State and Number: Florida E87941



CLIENT SAMPLE RESULTS

Job ID: 15020901

Avery Laboratories & Environmental Services, LLC

■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stewart Dixon

Project ID: Marthas Dry Cleaners Date: 02/20/2015

Job ID:15020901Sample Matrix:AqueousClient Sample ID:MW-19Date Collected:02/06/2015Job Sample ID:15020901.01Time Collected:16:42

Other Information:

Test Method	Parameter	Result	Units	DF	RL	Q	Date/Time Analyzed	Analyst
SW-846 8260B	1,1,2-Trichloroethane	BRL	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	Tetrachloroethylene	1.29	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	Trichloroethylene	BRL	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	Vinyl Chloride	BRL	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	1,1-Dichloroethylene	BRL	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	cis-1,2-Dichloroethylene	BRL	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	trans-1,2-Dichloroethylene	BRL	ug/L	1	1		02/16/2015 17:44	RPG
SW-846 8260B	Dibromofluoromethane(surr)	114	%	1	72.2-136		02/16/2015 17:44	RPG
SW-846 8260B	p-Bromofluorobenzene(surr)	118	%	1	79.2-137		02/16/2015 17:44	RPG
SW-846 8260B	Toluene-d8(surr)	120	%	1	84-136		02/16/2015 17:44	RPG



CLIENT SAMPLE RESULTS

Job ID: 15020901

Avery Laboratories & Environmental Services, LLC

■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stewart Dixon

Project ID: Marthas Dry Cleaners Date: 02/20/2015

Job ID:15020901Sample Matrix:AqueousClient Sample ID:MW-21SDate Collected:02/06/2015Job Sample ID:15020901.02Time Collected:12:33

Other Information:

Test Method	Parameter	Result	Units	DF	RL	Q	Date/Time Analyzed	Analyst
SW-846 8260B	1,1,2-Trichloroethane	BRL	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	Tetrachloroethylene	163	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	Trichloroethylene	1.29	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	Vinyl Chloride	BRL	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	1,1-Dichloroethylene	BRL	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	cis-1,2-Dichloroethylene	BRL	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	trans-1,2-Dichloroethylene	BRL	ug/L	1	1		02/16/2015 18:10	RPG
SW-846 8260B	Dibromofluoromethane(surr)	119	%	1	72.2-136		02/16/2015 18:10	RPG
SW-846 8260B	p-Bromofluorobenzene(surr)	107	%	1	79.2-137		02/16/2015 18:10	RPG
SW-846 8260B	Toluene-d8(surr)	117	%	1	84-136		02/16/2015 18:10	RPG



CLIENT SAMPLE RESULTS

Job ID: 15020901

Avery Laboratories & Environmental Services, LLC

■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stewart Dixon

Project ID: Marthas Dry Cleaners Date: 02/20/2015

Job ID:15020901Sample Matrix:AqueousClient Sample ID:MW-24Date Collected:02/06/2015Job Sample ID:15020901.03Time Collected:14:40

Other Information:

Test Method	Parameter	Result	Units	DF	RL	Q	Date/Time Analyzed	Analyst
SW-846 8260B	1,1,2-Trichloroethane	BRL	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	Tetrachloroethylene	5.27	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	Trichloroethylene	BRL	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	Vinyl Chloride	BRL	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	1,1-Dichloroethylene	BRL	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	cis-1,2-Dichloroethylene	BRL	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	trans-1,2-Dichloroethylene	BRL	ug/L	1	1		02/17/2015 13:08	RPG
SW-846 8260B	Dibromofluoromethane(surr)	121	%	1	72.2-136		02/17/2015 13:08	RPG
SW-846 8260B	p-Bromofluorobenzene(surr)	105	%	1	79.2-137		02/17/2015 13:08	RPG
SW-846 8260B	Toluene-d8(surr)	119	%	1	84-136		02/17/2015 13:08	RPG



QUALITY CONTROL DATA

Job ID: 15020901



■ 2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Volatile Organic Compounds Method: SW-846 8260B Reporting Units: ug/L

Samples in this QC Batch: 15020901,01,02,03

Sample Preparation PB15021706 SW5030b PGrimm

QC Type: Me	thod Blank							
	Parameter	CAS	Result	Units	DF	RL	MDL	Qual
Method Blank	1,1,2-Trichloroethane	79-00-5	BRL	ug/L	1	1.0		
Method Blank	1,1-Dichloroethylene	75-35-4	BRL	ug/L	1	1.0		
Method Blank	cis-1,2-Dichloroethylene	156-59-2	BRL	ug/L	1	1.0		
Method Blank	Tetrachloroethylene	127-18-4	BRL	ug/L	1	1.0		
Method Blank	trans-1,2-Dichloroethylene	156-60-5	BRL	ug/L	1	1.0		
Method Blank	Trichloroethylene	79-01-6	BRL	ug/L	1	1.0		
Method Blank	Vinyl Chloride	75-01-4	BRL	ug/L	1	1.0		
Method Blank	Dibromofluoromethane (Surr)	1868-53-7	57.8		1			
Method Blank	Toluene-d8 (Surr)	2037-26-5	60.9		1			
Method Blank	p-Bromofluorobenzene (Surr)	460-00-4	58.3		1			

QC Type: LCS/LCSD										
	LCS Spk		LCS %	LCSD Spk	LCSD			RPD	% Rec	
Parameter	Amt	LCS Result	Rec	Amt	Result	LCS % Rec	RPD	CtrlLimit	CtrlLimit	Qual
1,1,2-Trichloroethane	50	53.6	107.0	50	51.9	104.0	3.20	30	83.6-124	
1,1-Dichloroethylene	50	48.8	97.6	50	46.7	93.4	4.40	30	56.5-137	
cis-1,2-Dichloroethylene	50	48	96.0	50	45.1	90.2	6.20	30	63-127	
Tetrachloroethylene	50	50	100.0	50	51.1	102.0	2.20	30	74.2-124	
trans-1,2-Dichloroethylene	50	50.5	101.0	50	48.6	97.2	3.80	30	64.4-126	
Trichloroethylene	50	48.3	96.6	50	48.1	96.2	0.40	30	77.4-121	
Vinyl Chloride	50	50.3	101.0	50	49.1	98.2	2.40	30	47.1-140	
Dibromofluoromethane (Surr)	50	61	122.0	50	57.6	115.0			72.2-136	
Toluene-d8 (Surr)	50	58.3	117.0	50	59.2	118.0			84-136	
p-Bromofluorobenzene (Surr)	50	60.7	121.0	50	61.7	123.0			79.2-137	

QC Ty	pe: MS/MSD												
	QC Sample ID	Parameter	Sample Result	MS Spk Amt	MS Result	MS % Rec	MS Spk Amt	MSD Result	MSD % Rec	RPD	RPD CtrlLimit	% Rec CtrlLimit	Qual
MS	15021002.01	1,1,2-Trichloroethane	0	50	54.1	108.0	50	52.8	106.0		30	83.6-124	
MS	15021002.01	1,1-Dichloroethylene	0	50	48.4	96.8	50	45.7	91.4		30	56.5-137	
MS	15021002.01	cis-1,2-Dichloroethylene	0	50	48.4	96.8	50	44.8	89.6		30	63-127	
MS	15021002.01	Tetrachloroethylene	0	50	51.7	103.0	50	50.5	101.0		30	74.2-124	
MS	15021002.01	trans-1,2-Dichloroethylene	0	50	52.4	105.0	50	47.8	95.6		30	64.4-126	
MS	15021002.01	Trichloroethylene	0	50	48.5	97.0	50	48.6	97.2		30	77.4-121	
MS	15021002.01	Vinyl Chloride	BRL	50	47.5	95.0	50	45.6	91.2	4.10	30	47.1-140	
MS	15021002.01	Dibromofluoromethane (Surr)		50	62.1	124.0	50	59.3	119.0			72.2-136	



QUALITY CONTROL DATA

Job ID: 15020901



■ 2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Volatile Organic Compounds Method: SW-846 8260B Reporting Units: ug/L

Samples in this QC Batch: 15020901,01,02,03

QC Ty	pe: MS/MSD												
			Sample	MS Spk	MS	MS %	MS Spk	MSD	MSD %		RPD	% Rec	
	QC Sample ID	Parameter	Result	Amt	Result	Rec	Amt	Result	Rec	RPD	CtrlLimit	CtrlLimit	Qual
MS	15021002.01	Toluene-d8 (Surr)		50	58.6	117.0	50	59.5	119.0			84-136	
MS	15021002.01	p-Bromofluorobenzene (Surr)		50	65	130.0	50	61.9	124.0			79.2-137	

Refer to the Definition page for terms.

Date: 02/20/2015 14:04 Page 7 of 13



CASE NARRATIVE

Job ID: 15020901



■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon

Project ID: Martha Dry Cleaners

Date Received: 02/06/2015
Collected By: JHC

There were no analytical problems encountered. All results and quality control were within the laboratory's established limits.

Released By: PGrimm

Title: Technical Director



TERM AND QUALIFIER DEFINITION

Job ID: 15020901



■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

General Term Definition

Conc. Concentration

DF Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content

ND Non Detect - Not Detected at or above adjusted reporting limit

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

RL adjusted Reporting Limit (QL – Quantification Limit)

MDL adjusted Method Detection Limit (LOD – Limit of Detection)

Regulatory Limit RegLimit Milligrams per Liter mg/l Milligrams per Kilogram mg/kg Parts per Million ppm Micrograms per Liter μg/L Micrograms per Gram μg/g ppb Parts per Billion Grains per Gallon gr/gal SU Standard Units CCU Cobalt Color Units

NTU Nephelometric Turbidity Units µS/cm Microsiemens per cm at 25C

P/A Presence/Absence
CFU Colony Forming Units
MPN Most Probable Number

RB Reagent Blank MB Method Blank

LCS Laboratory Control Sample

LCSD Laboratory Control Sample Duplicate

LFM Laboratory Fortified Matrix (MS – Matrix Spike)

LFMD Laboratory Fortified Matrix Duplicate (MSD – Matrix Spike Duplicate)

DUP Sample Duplicate

RPD Relative Percent Difference %Rec Percent Recovery

TNTC Too numerous to count

NC Not Calculable
SG Silica Gel - Clean-Up
BRL Below Reporting Limit
BDL Below Detection Limit

Qualifier Definition

J1 Estimated value-The reported value failed the established quality control criteria for accuracy and /or precision.



SAMPLE SUMMARY

Job ID: 15020901

Avery Laboratories & Environmental Services, LLC

■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■Tel: (912) 944-3748 ■Fax: (912) 234-9294 ■

Client Project ID:

Martha Dry Cleaners

Report To: Client Name: Terracon Attn: Stewart Dixon

Client Address: 2201 Rowland Ave. P.O.#.:

City, State, Zip: Savannah, GA, 31404

The laboratory has analyzed the following samples:

Client Sample ID Matrix Sample ID Date Received **Date Collected** Collected by MW-19 Aqueous 15020901.01 2/6/2015 17:08 2/6/2015 16:42 JHC MW-21S Aqueous 15020901.02 2/6/2015 17:08 2/6/2015 12:33 JHC MW-24 Aqueous 15020901.03 2/6/2015 17:08 2/6/2015 14:40 JHC



SAMPLE PREPARATION INFORMATION

Job ID: 15020901

Avery Laboratories & Environmental Services, LLC

■ 2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon			Attn: Stewa	art Dixon
Project Name:	Martha Dry Cleaners			Date: 02/20)/2015
Sample ID	Test	Prep Method	Date Prepared	Analyst	Prep Batch ID
15020901.01	VOC	SW5030b	02/16/2015 09:45	PGrimm	PB15021706
15020901.02	VOC	SW5030b	02/16/2015 09:45	PGrimm	PB15021706
15020901.03	VOC	SW5030b	02/16/2015 09:45	PGrimm	PB15021706



SAMPLE CONDITION CHECKLIST

Avery Laboratories & Environmental Services, LLC

Job ID: 15020901

Client Name : Terracon		Contact :	Stewart Dixon
Client Address: 2201 Rowland Ave.		Contact Phone :	912 629-4000
JobID : 15020901	Date Received: 02/06/2015	Time Received :	05:08 PM
Temperature: 4.0	Sample pH:		
ThermometerID: 15953	pHPaperID:		_

Co	omments : Include actions taken to resolve discrepancies/problem:

	Check Points	Yes	No	N/A
1	Bottle count on C-O-C matches bottle found.	~		
2	C-O-C signed and dated.	· ·		
3	Cooler seal present and signed.	V		
4	If requested, sample(s) received with signed sample custody seal			~
5	Sample amount is sufficient for analyses requested	· ·		
6	Sample containers arrived in tact. (if no, comment)	· ·		
7	Sample ID lables Match C-O-C ID's	·		
8	Sample received at 6°C or Less	·		
9	Sample(s) in a cooler.	·		
10	Sample(s) were received at the proper pH.	·		
11	Sample(s) were received in appropriate contatiner. (If no, comment)	·		
12	Samples accepted.	·		
13	Samples received within holding time for analysis requested	~		
14	Zero headspace in liquid VOA vials	~		

CheckIn By: Elizabeth Grimm CheckIn Date: 02/09/2015



COMMERCIAL LABORATORY STIPULATION

Georgia Rules for Commercial Environmental Laboratory Accreditation Chapter 391-3-26

Job ID: 15020901



■2720 Gregory St. Unit 200 ■ Savannah, Georgia 31404 ■ Tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Laboratory: Avery Laboratories and Environmental Services, LLC

Accreditor: NELAC: State of Florida, Department of Health, Bureau of Laboratories

Accreditation ID: E87941

NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER

- PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE

Scope: ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS,

SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS -

VOLATILE ORGANICS

Effective Date: July 1, 2014 **Expiration Date:** July 1, 2015

As per the Georgia EPD Rules and Regulations for Commercial Laboratories, Avery Laboratories and Environmental Services - Savannah is accredited by the Florida Department of Health under the National Environmental Laboratory Approval Program (NELAP). If you have any further questions regarding accreditation status for Avery Laboratories and Environmental Services, please contact: Paul Grimm.

Avery Laboratories and Environmental Services, LLC 101B Estus Drive Savannah, GA 31404 Phone: (912) 944-3748

Fax: (912) 234-9294

Date: 02/20/2015 14:04 Primary Lab Certification # NELAP: FL-E87941

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



February 13, 2015

Robert Paul Grimm Avery Laboratories & Environmental Services, LLC 101 B Estus Dr. Savannah GA 31404

TEL: (912) 944-3748 FAX: (912) 234-9294

RE: Martha's Dry Cleaners

Dear Robert Paul Grimm: Order No: 1502886

Analytical Environmental Services, Inc. received 3 samples on 2/10/2015 3:45:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/14-06/30/15.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Nicole Jessup

Project Manager

Mich 2. Jessup

502886

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Customs	Client Information	Page 1							****		Subcontra	ct Labor	atory												
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	Sample Identification	Date	Time	Matrix	# of Container	s																Rei	marks		
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Matrix Type:	A = Air W = Water S= Solid	N = N'		<u> </u>	<u></u>		12.55 50.00					\perp							\perp						
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Instructions or Speci	ial Requirements:					i i	resc	ervati	ve: '	1= No	ne 2	= H2	2504	3 =	HN03	4=	HCL	5 ≒	MeO	H 6:	= NAHSC	4 7 = W	ater 8	= Other	
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Client: Avery Laboratories & Environmental Services, LLC Client Sample ID: MW-19

Project Name: Martha's Dry Cleaners **Collection Date:** 2/6/2015 4:42:00 PM

Lab ID: 1502886-001 **Matrix:** Aqueous

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
GC Analysis of Gaseous Samples	SOP-RSK 175			(RSK17	5)			
Ethane	BRL		2	9	ug/L	202980	1	02/10/2015 18:50	JM
Ethylene	BRL		1	7	ug/L	202980	1	02/10/2015 18:50	JM

Date:

13-Feb-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Not detected at MDL

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

NC Not confirmed

E Estimated value above quantitation range

S Spike Recovery outside limits due to matrix

J Estimated value detected below Reporting Limit

> Greater than Result value < Less than Result value

Narr See case narrative

Client: Avery Laboratories & Environmental Services, LLC Client Sample ID: MW-21S

Project Name: Martha's Dry Cleaners Collection Date: 2/6/2015 12:33:00 PM

Lab ID: 1502886-002 Matrix: Aqueous

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
GC Analysis of Gaseous Samples	SOP-RSK 175			(1	RSK17	5)			
Ethane	BRL		2	9	ug/L	202980	1	02/10/2015 18:13	JM
Ethylene	BRL		1	7	ug/L	202980	1	02/10/2015 18:13	JM

Date:

13-Feb-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Not detected at MDL

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

NC Not confirmed

E Estimated value above quantitation range

S Spike Recovery outside limits due to matrix

J Estimated value detected below Reporting Limit

> Greater than Result value

< Less than Result value
Narr See case narrative

4 of 8

Client: Avery Laboratories & Environmental Services, LLC Client Sample ID: MW-24

Project Name: Martha's Dry Cleaners **Collection Date:** 2/6/2015 2:40:00 PM

Lab ID: 1502886-003 Matrix: Aqueous

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
GC Analysis of Gaseous Samples	SOP-RSK 175			(RSK17	5)			
Ethane	BRL		2	9	ug/L	202980	1	02/10/2015 18:18	JM
Ethylene	BRL		1	7	ug/L	202980	1	02/10/2015 18:18	JM

Date:

13-Feb-15

Qualifiers:

* Value exceeds maximum contaminant level

BRL Not detected at MDL

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

NC Not confirmed

E Estimated value above quantitation range

S Spike Recovery outside limits due to matrix

J Estimated value detected below Reporting Limit

> Greater than Result value

< Less than Result value

Narr See case narrative

Sample/Cooler Receipt Checklist

Client Avery Wh		Work Order	r Number	1502886
J	e/10/15			
Carrier name: FedExUPS Courier Client U	S Mail Other	r	_	
Shipping container/cooler in good condition?	Yes	No	Not Present	
Custody seals intact on shipping container/cooler?	Yes	No	Not Present /	
Custody seals intact on sample bottles?	Yes	No	Not Present	
Container/Temp Blank temperature in compliance? (0°≤6°C)	* Yes	No		
Cooler #1 Cooler #2 Cooler #3	Cooler #4	Coo	oler#5 C	`ooler #6
Chain of custody present?	Yes _	No		
Chain of custody signed when relinquished and received?	Yes _	No		
Chain of custody agrees with sample labels?	Yes _	No	•	
Samples in proper container/bottle?	Yes	No		
Sample containers intact?	Yes	No		
Sufficient sample volume for indicated test?	Yes _	No		
All samples received within holding time?	Yes	No		
Was TAT marked on the COC?	Yes _	No		
Proceed with Standard TAT as per project history?	Yes	No _	Not Applicable	
Water - VOA vials have zero headspace? No VOA vials su	abmitted	Yes _	No _	
Water - pH acceptable upon receipt?	Yes _	No _	Not Applicable	····
Adjusted?	Chec	cked by	<u>.</u>	
Sample Condition: Good Other(Explain)				
(For diffusive samples or ATHA lead) Is a known blank include	ded? Ves	λ	Jo	

See Case Narrative for resolution of the Non-Conformance.

\\Aes_server\l\Sample Receipt\\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

^{*} Samples do not have to comply with the given range for certain parameters.

Client:

Avery Laboratories & Environmental Services, LLC Martha's Dry Cleaners **Project Name:**

Workorder: 1502886

ANALYTICAL QC SUMMARY REPORT

Date:

13-Feb-15

BatchID: 202980

B Analyte detected in the associated method blank

R RPD outside limits due to matrix

Holding times for preparation or analysis exceeded

Sample ID: MB-202980	Client ID:				Uni	U				Run No: 285583
SampleType: MBLK	TestCode: GO	C Analysis of Gaseous	Samples SOP-F	RSK 175	Bat	chID: 202980	Ana	alysis Date: 02/1	0/2015	Seq No: 6059435
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qua
Ethane	BRL	9								
Ethylene	BRL	7								
Methane	BRL	4								
Sample ID: LCS-202980	Client ID:				Uni	its: ug/L	Prej	p Date: 02/1	0/2015	Run No: 285583
SampleType: LCS	TestCode: GO	C Analysis of Gaseous	Samples SOP-F	RSK 175	Bat	chID: 202980	Ana	alysis Date: 02/1	0/2015	Seq No: 6059436
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Ethane	138.2	9	200.0		69.1	41.2	115			
Ethylene	89.86	7	200.0		44.9	26.5	115			
Methane	144.2	4	200.0		72.1	45.1	115			
Sample ID: LCSD-202980	Client ID:				Uni	its: ug/L	Prej	p Date: 02/1	0/2015	Run No: 285583
SampleType: LCSD	TestCode: GO	C Analysis of Gaseous	Samples SOP-F	RSK 175	Bat	chID: 202980	Ana	alysis Date: 02/1	0/2015	Seq No: 6059437
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Ethane	139.6	9	200.0		69.8	41.2	115	138.2	1.05	20
Ethylene	90.66	7	200.0		45.3	26.5	115	89.86	0.887	20
Methane	144.9	4	200.0		72.5	45.1	115	144.2	0.482	20
Sample ID: 1502655-005BMS	Client ID:				Uni	its: ug/L	Pre	p Date: 02/1	0/2015	Run No: 285583
SampleType: MS	TestCode: GO	C Analysis of Gaseous	Samples SOP-F	RSK 175	Bat	chID: 202980	Ana	alysis Date: 02/1	0/2015	Seq No: 6059449
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Ethane	136.9	9	200.0		68.4	40.5	115			
Ethylene	90.22	7	200.0		45.1	25.1	115			
Methane	140.3	4	200.0		70.1	40.4	115			

Less than Result value

N Analyte not NELAC certified

E Estimated (value above quantitation range)

S Spike Recovery outside limits due to matrix

BRL

Greater than Result value

Estimated value detected below Reporting Limit

Below reporting limit

Rpt Lim Reporting Limit

Qualifiers:

Client: Avery Laboratories & Environmental Services, LLC

Project Name: Martha's Dry Cleaners

Workorder: 1502886

ANALYTICAL QC SUMMARY REPORT

Date:

13-Feb-15

BatchID: 202980

Sample ID: 1502655-005BMSD SampleType: MSD	Client ID: TestCode: GC A	nalysis of Gaseous	Samples SOP-R	SK 175	Uni Bate	ts: ug/L chID: 202980		Date: 02/ 2 lysis Date: 02/ 2	10/2015 10/2015	Run No: 285583 Seq No: 6059450
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
Ethane	131.1	9	200.0		65.5	40.5	115	136.9	4.34	20
Ethylene	86.45	7	200.0		43.2	25.1	115	90.22	4.28	20
Methane	134.4	4	200.0		67.2	40.4	115	140.3	4.29	20

Qualifiers: > Greater than Result value

BRL Below reporting limit

J Estimated value detected below Reporting Limit

Rpt Lim Reporting Limit

< Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

S Spike Recovery outside limits due to matrix

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-98243-1

Client Project/Site: Martha's Dry Cleaners

For:

Avery Laboratories & Env. Services LLC PO BOX 5340 Savannah, Georgia 31414

Attn: Mr. Paul Grimm

Bernon Kinken

Authorized for release by: 2/10/2014 9:26:14 PM

Bernard Kirkland, Manager of Project Management

(912)354-7858 e.3238

bernard.kirkland@testamericainc.com

LINKS

Review your project results through

Total Access

Have a Question?



Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Avery Laboratories & Env. Services LLC Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

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Case Narrative

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Job ID: 680-98243-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Avery Laboratories & Env. Services LLC

Project: Martha's Dry Cleaners

Report Number: 680-98243-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 01/31/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.0 C.

DISSOLVED GASES

Samples MW-19 (680-98243-1), MW-24 (680-98243-2), MW-23 (680-98243-3), MW-21D (680-98243-4), MW-21S (680-98243-5), MW-22 (680-98243-6), MW-20 (680-98243-7), Dup-1 (680-98243-8) and Field Blank (680-98243-9) were analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 02/10/2014.

The field blank associated with analytical batch 314606 has a detection for methane above the method detection limit. Re-analysis was conducted, confirming the detection; the data have been reported.

No difficulties were encountered during the dissolved gases analysis.

All quality control parameters were within the acceptance limits.

SULFIDE

Samples MW-19 (680-98243-1), MW-24 (680-98243-2), MW-23 (680-98243-3), MW-21D (680-98243-4), MW-21S (680-98243-5), MW-22 (680-98243-6), MW-20 (680-98243-7), Dup-1 (680-98243-8) and Field Blank (680-98243-9) were analyzed for sulfide in accordance with EPA Method 376.1. The samples were analyzed on 02/03/2014.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP).

No difficulties were encountered during the sulfide analysis.

All quality control parameters were within the acceptance limits.

TestAmerica Savannah 2/10/2014

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Sample Summary

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-98243-1	MW-19	Water	01/27/14 15:20	01/31/14 15:10
680-98243-2	MW-24	Water	01/27/14 16:40	01/31/14 15:10
680-98243-3	MW-23	Water	01/27/14 17:40	01/31/14 15:10
680-98243-4	MW-21D	Water	01/28/14 15:55	01/31/14 15:10
680-98243-5	MW-21S	Water	01/28/14 17:00	01/31/14 15:10
680-98243-6	MW-22	Water	01/29/14 14:40	01/31/14 15:10
680-98243-7	MW-20	Water	01/29/14 16:00	01/31/14 15:10
680-98243-8	Dup-1	Water	01/29/14 14:45	01/31/14 15:10
680-98243-9	Field Blank	Water	01/29/14 16:40	01/31/14 15:10

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Method Summary

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	TAL SAV
376.1	Sulfide	MCAWW	TAL SAV

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Trev. 0, 0/11/04, OOLI /Tresculon Le

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

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Definitions/Glossary

Client: Avery Laboratories & Env. Services LLC

Method Detection Limit

Minimum Level (Dioxin)

Practical Quantitation Limit

Toxicity Equivalent Factor (Dioxin)

Toxicity Equivalent Quotient (Dioxin)

Not detected at the reporting limit (or MDL or EDL if shown)

Relative Percent Difference, a measure of the relative difference between two points

Reporting Limit or Requested Limit (Radiochemistry)

Not Calculated

Quality Control

Relative error ratio

Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

MDL

ML

NC

ND

PQL

QC RER

RL

RPD TEF

TEQ

These commonly used abbreviations may or may not be present in this report.
Listed under the "D" column to designate that the result is reported on a dry weight basis
Percent Recovery
Contains no Free Liquid
Duplicate error ratio (normalized absolute difference)
Dilution Factor
Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
Decision level concentration
Minimum detectable activity
Estimated Detection Limit
Minimum detectable concentration

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Matrix: Water

Matrix: Water

Matrix: Water

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

Client Sample ID: MW-19 Lab Sample ID: 680-98243-1

Date Collected: 01/27/14 15:20 Matrix: Water

Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved	Gases (GC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	2.2		0.58	0.29	ug/L			02/10/14 14:24	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 14:24	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 14:24	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac

Sulfide as H2S 1.1 1.1 U 1.1 mg/L 02/03/14 13:22

Client Sample ID: MW-24 Lab Sample ID: 680-98243-2

Date Collected: 01/27/14 16:40

Date Received: 01/31/14 15:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	6.3		0.58	0.29	ug/L			02/10/14 14:37	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 14:37	1
Ethane —	1.1	U	1.1	0.55	ug/L			02/10/14 14:37	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.2		1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-23 Lab Sample ID: 680-98243-3

Date Collected: 01/27/14 17:40

Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved	Gases (GC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.63		0.58	0.29	ug/L			02/10/14 14:49	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 14:49	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 14:49	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-21D Lab Sample ID: 680-98243-4

Date Collected: 01/28/14 15:55

Date Received: 01/31/14 15:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Methane	320		0.58	0.29	ug/L			02/10/14 15:02	
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:02	
Ethane -	1.1	U	1.1	0.55	ug/L			02/10/14 15:02	
- General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fa
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	

TestAmerica Savannah

Matrix: Water

Project/Site: Martha's Dry Cleaners

Client Sample ID: MW-21S Lab Sample ID: 680-98243-5

Date Collected: 01/28/14 17:00 Matrix: Water

Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolv	ved Gases (GC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.88		0.58	0.29	ug/L			02/10/14 15:15	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:15	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:15	1

 General Chemistry

 Analyte
 Result
 Qualifier
 RL
 RL
 Unit
 D
 Prepared
 Analyzed
 Dil Fac

 Sulfide as H2S
 1.1
 U
 1.1
 1.1
 mg/L
 02/03/14 13:22
 1

Client Sample ID: MW-22 Lab Sample ID: 680-98243-6

Date Collected: 01/29/14 14:40

Date Received: 01/31/14 15:10

Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
0.59		0.58	0.29	ug/L			02/10/14 15:28	1
1.0	U	1.0	0.50	ug/L			02/10/14 15:28	1
1.1	U	1.1	0.55	ug/L			02/10/14 15:28	1
	0.59 1.0	Result Qualifier 0.59	0.59 0.58 1.0 U 1.0	0.59 0.58 0.29 1.0 U 1.0 0.50	0.59 0.58 0.29 ug/L 1.0 U 1.0 0.50 ug/L	0.59 0.58 0.29 ug/L 1.0 U 1.0 0.50 ug/L	0.59 0.58 0.29 ug/L 1.0 U 1.0 0.50 ug/L	0.59 0.58 0.29 ug/L 02/10/14 15:28 1.0 U 1.0 0.50 ug/L 02/10/14 15:28

 Sulfide as H2S
 1.1
 U
 1.1
 1.1
 mg/L
 Description
 Prepared
 Analyzed
 Bill Pac

Client Sample ID: MW-20

Lab Sample ID: 680-98243-7

Date Collected: 01/29/14 16:00

Matrix: Water

Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Analyte	· ,	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.76		0.58	0.29	ug/L			02/10/14 15:41	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:41	1
Ethane -	1.1	U	1.1	0.55	ug/L			02/10/14 15:41	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: Dup-1 Lab Sample ID: 680-98243-8

Date Collected: 01/29/14 14:45 Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved	Gases (GC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.67		0.58	0.29	ug/L			02/10/14 15:53	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:53	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:53	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

TestAmerica Savannah

Matrix: Water

Client Sample Results

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

Client Sample ID: Field Blank

TestAmerica Job ID: 680-98243-1

Lab Sample ID: 680-98243-9

Matrix: Water

Date Collected: 01/29/14 16:40 Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved	Gases (GC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.50	J	0.58	0.29	ug/L			02/10/14 16:06	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 16:06	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 16:06	1
General Chemistry									
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

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Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 680-314606/7 **Matrix: Water**

Analysis Batch: 314606

Analyte

Methane

Ethylene

Ethane

Client Sample ID: Method Blank Prep Type: Total/NA

мв мв Result Qualifier RL Dil Fac MDL Unit D Prepared Analyzed 0.58 0.58 U 0.29 ug/L 02/10/14 11:30 1.0 U 1.0 0.50 ug/L 02/10/14 11:30 02/10/14 11:30 1.1 U 1.1 0.55 ug/L

Lab Sample ID: LCS 680-314606/3 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 314606

	Spike	LCS	LCS			%Rec.	
Analyte	Added	Result	Qualifier	Unit D	%Rec	Limits	
Methane	154	151		ug/L	98	75 - 125	
Ethylene	269	286		ug/L	106	75 - 125	
Ethane	288	298		ug/L	103	75 - 125	

Lab Sample ID: LCSD 680-314606/4 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 314606

Spike LCSD LCSD %Rec. RPD Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Methane 154 152 ug/L 99 75 - 125 30 Ethylene 269 286 75 - 125 ug/L 106 30 Ethane 288 300 ug/L 104 75 - 125 30

Method: 376.1 - Sulfide

Lab Sample ID: MB 680-313985/1

Matrix: Water

Analysis Batch: 313985

	MB	МВ								
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1	

Lab Sample ID: LCS 680-313985/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 313985

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Sulfide as H2S	10.0	11.0		ma/l	_	110	75 - 125	

Lab Sample ID: LCSD 680-313985/3 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 313985

Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier Analyte D Limits RPD Limit Unit %Rec Sulfide as H2S 10.0 11.1 mg/L 111 75 - 125

TestAmerica Savannah

Client Sample ID: Method Blank

Prep Type: Total/NA

2/10/2014

QC Association Summary

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

GC VOA

Analysis Batch: 314606

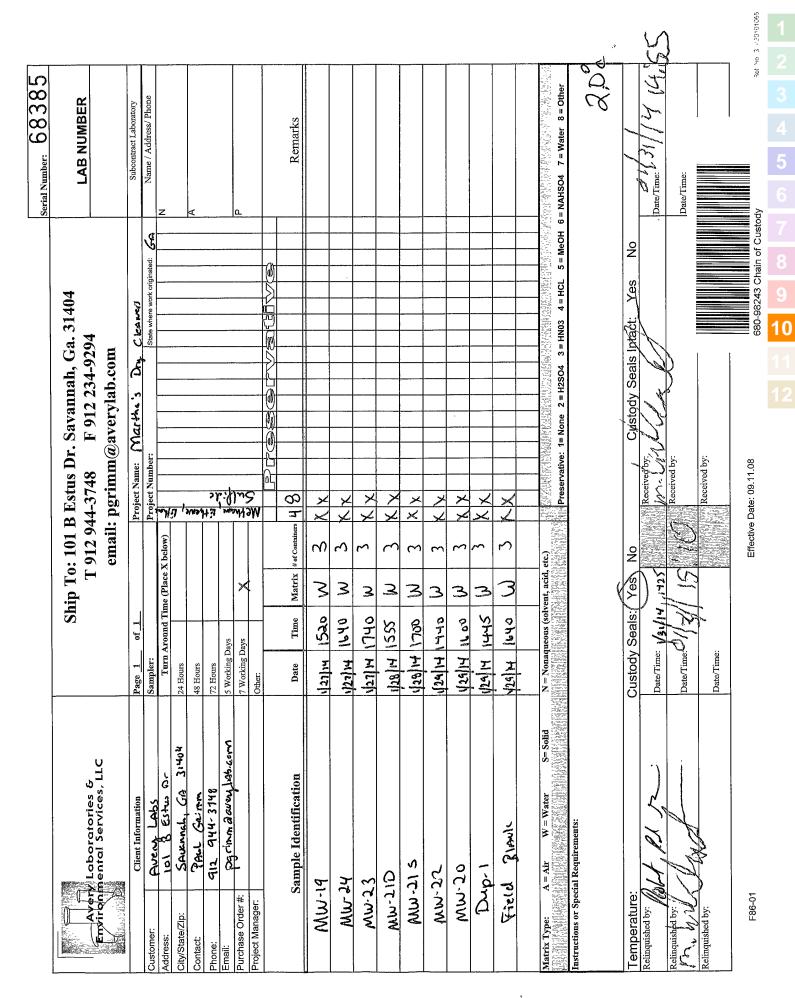
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-98243-1	MW-19	Total/NA	Water	RSK-175	_
680-98243-2	MW-24	Total/NA	Water	RSK-175	
680-98243-3	MW-23	Total/NA	Water	RSK-175	
680-98243-4	MW-21D	Total/NA	Water	RSK-175	
680-98243-5	MW-21S	Total/NA	Water	RSK-175	
680-98243-6	MW-22	Total/NA	Water	RSK-175	
680-98243-7	MW-20	Total/NA	Water	RSK-175	
680-98243-8	Dup-1	Total/NA	Water	RSK-175	
680-98243-9	Field Blank	Total/NA	Water	RSK-175	
LCS 680-314606/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-314606/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-314606/7	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 313985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-98243-1	MW-19	Total/NA	Water	376.1	
680-98243-2	MW-24	Total/NA	Water	376.1	
680-98243-3	MW-23	Total/NA	Water	376.1	
680-98243-4	MW-21D	Total/NA	Water	376.1	
680-98243-5	MW-21S	Total/NA	Water	376.1	
680-98243-6	MW-22	Total/NA	Water	376.1	
680-98243-7	MW-20	Total/NA	Water	376.1	
680-98243-8	Dup-1	Total/NA	Water	376.1	
680-98243-9	Field Blank	Total/NA	Water	376.1	
LCS 680-313985/2	Lab Control Sample	Total/NA	Water	376.1	
LCSD 680-313985/3	Lab Control Sample Dup	Total/NA	Water	376.1	
MB 680-313985/1	Method Blank	Total/NA	Water	376.1	

TestAmerica Savannah



Login Sample Receipt Checklist

Client: Avery Laboratories & Env. Services LLC Job Number: 680-98243-1

Login Number: 98243 List Source: TestAmerica Savannah

List Number: 1

Creator: Banda, Christy S

Creator. Banda, Offisty 3		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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2/10/2014

TestAmerica Job ID: 680-98243-1

Client: Avery Laboratories & Env. Services LLC

Project/Site: Martha's Dry Cleaners

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-15
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-14
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	06-30-14
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	04-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14
lowa	State Program	7	353	07-01-15
Kentucky (DW)	State Program	4	90084	12-31-14
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	LA100015	12-31-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-14
Vassachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	03-31-14
North Carolina DENR	State Program		269	12-31-14
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP		68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
	.	.	TN02961	06-30-14
Tennessee Texas	State Program NELAP	4 6	T104704185-08-TX	11-30-14
		O		
JSDA Virginia	Federal		SAV 3-04	04-07-14
Virginia Washington	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia DEP	State Program	3	94	06-30-14
West Virginia DHHR Wisconsin	State Program	3	9950C	12-31-13 *
	State Program	5	999819810	08-31-14

TestAmerica Savannah

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^{*} Expired certification is currently pending renewal and is considered valid.

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Date/Time:	Received by:			Date/Time:	Relinquished by:
Date/Time:	Keceived by:			Date/Time:	Keinquisned by:
Date/Time: 0 1/30/14 0913	Robert Ret re	<u> </u>	1/50/14 913	Date/Time:	Relinguished by: Clowell
	Custody Seals Intact: Yes No	es No	Seals: (Yes	Custody Seals:	Temperature: 2.75°C
					Instructions or Special Requirements:
= NAHSO4 7 = Water 8 = Other	Preservative: 1= None 2=H2SO4 3=HN03 4=HCL 5=MeOH 6=NAHSO4				
		acid, etc.)	N = Nonaqueous (solvent, acid, etc.)	N = Nonaqu	Matrix Type: A = Air W = Water S = Solid
	× × × × × × × × × × × × × × × × × × ×	2	1640	11/24/14	Field Blank
	× × × × × × × × × × × × × × × × × × ×	-	1445		DUP-)
	× × × × × × × × × × × × × × × × × × ×	2	1600	1)29/14	MW-20
	× × × × × × × × × × × × × × × × × × ×	3	1440	1/29/14	MW - 22
	× × × × × × × × × × × × × × × × × × ×	5	1700	1/28/14	NW -218
	× × × × × × × × × × × × × × × × × × ×	2	1555	h1(82(1	MW-21D
	× × × × × × × × × × × × × × × × × × ×	2	1740	1)27/14	Mw-23
	× × × × × × × × × × × × × × × × × × ×	9	1640	11/27/14	MW-24
	× × × × × × × × × × × × × × × × × × ×	3	1520 1	1/27/14	MW-19
Remarks	4444445	Matrix # of Containers	Time Mi	Date	Sample Identification
	Tree O		-	Other:	Project Manager: Stevenst Dixon
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	-1; hle chi		ys	5 Working Days	1
	2-Did Did Did Did Did Did Did Did Did Did			72 Hours	
A	. =			48 Hours	Contact: Stewart Dixon
	this source			24 Hours	City/State/Zip: Savannah, GA 31404
Z	Then then the the then the	Place X below)	Turn Around Time (Place X below)	Turn A	Address: 2201 Rowland Ave
Name / Address/ Phone	Project Number: £5 1) 7 25 State where work originated: 6 A			Sampler:	Customer: Terror con
Subcontract Laboratory	Project Name: Marthas Dry Cleaners		of <u>1</u>	Page 1	
14013007	email: pgrimm@averylab.com	email:			RP14
LAB NUMBER	B Estus Dr. Savannah, Ga. 31404)44-3748 F 912 234-9294	To: 101 T 912 9	Ship		02110 Contact



LABORATORY ANALYSIS REPORT

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Project ID: Martha Dry Cleaners

Report To: Client Name: Terracon Attn: Stuart Dixon

Client Address: 2201 Rowland Ave. P.O.#.: ES117125

City, State, Zip: Savannah, GA, 31404

Dear Stuart Dixon

The following test results meet all NELAC requirements for analytes for which certification is available. Any deviations from these quality systems will be noted in this case narrative. All analyses performed by Avery Laboratories & Environmental Services, LLC unless noted. Parameters not perfromed by Avery Laboratories will be listed on the Sample Summary section of the report.

For questions regarding this report, contact Robert Paul Grimm at (912)944-3748.

Sincerely,

Robert Paul Grimm
Discusses Signed by Robert Paul Grimm
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Discusses Signed By Robert Paul Grimm
Discusses Signed By Robert Paul Grimm
Laboratories, Oli-Robert Paul Grimm
Discusses Signed By Robert Paul Grimm
Discusses Signed

[Robert Paul Grimm] Technical Director



This Laboratory is NELAP accredited.

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID :14013007Sample Matrix:AqueousClient Sample ID:MW-19Date Collected:01/27/2014Job Sample ID:14013007.01Time Collected:15:20

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	19.3	mg/L	1	5.00			02/06/2014 09:33	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	BRL	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	13.0	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02		Н	01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:24	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 18:32	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Tetrachloroethylene	1.46	ug/L	1	1			02/03/2014 18:32	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 18:32	ВМ
	Dibromofluoromethane(surr)	112	%	1	63.4-152			02/03/2014 18:32	ВМ
	p-Bromofluorobenzene(surr)	116	%	1	78.7-145			02/03/2014 18:32	ВМ
	Toluene-d8(surr)	113	%	1	66.4-153			02/03/2014 18:32	ВМ



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID: 14013007 Sample Matrix: Aqueous
Client Sample ID: MW-24 Date Collected: 01/27/2014
Job Sample ID: 14013007.02 Time Collected: 16:40

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	45.5	mg/L	2.00	10			02/06/2014 10:29	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	231	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	22.9	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02		Н	01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:24	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 18:58	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 18:58	BM
	cis-1,2-Dichloroethylene	6.20	ug/L	1	1			02/03/2014 18:58	ВМ
	Tetrachloroethylene	6.82	ug/L	1	1			02/03/2014 18:58	ВМ
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:58	ВМ
	Trichloroethylene	1.24	ug/L	1	1			02/03/2014 18:58	ВМ
	Dibromofluoromethane(surr)	108	%	1	63.4-152			02/03/2014 18:58	ВМ
	p-Bromofluorobenzene(surr)	113	%	1	78.7-145			02/03/2014 18:58	ВМ
	Toluene-d8(surr)	109	%	1	66.4-153			02/03/2014 18:58	BM



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID: 14013007 Sample Matrix: Aqueous
Client Sample ID: MW-23 Date Collected: 01/27/2014
Job Sample ID: 14013007.03 Time Collected: 17:40

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	118	mg/L	5.00	25			02/06/2014 10:29	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	231	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	10.7	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02		Н	01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:24	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 19:24	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Tetrachloroethylene	2.29	ug/L	1	1			02/03/2014 19:24	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Dibromofluoromethane(surr)	107	%	1	63.4-152			02/03/2014 19:24	BM
	p-Bromofluorobenzene(surr)	112	%	1	78.7-145			02/03/2014 19:24	ВМ
	Toluene-d8(surr)	116	%	1	66.4-153			02/03/2014 19:24	ВМ



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID :14013007Sample Matrix:AqueousClient Sample ID:MW-21DDate Collected:01/28/2014Job Sample ID:14013007.04Time Collected:15:55

Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
Sulfate	BRL	mg/L	1	5.00			02/06/2014 12:19	JK
Alkalinity, as CaCO3	23.4	mg/L	1	20			02/03/2014 10:33	JK
Carbon Dioxide	296	mg/L	1	20			02/11/2014 11:04	RPG
Chloride	3.58	mg/L	1	2.00			02/07/2014 08:16	JK
Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:33	JK
Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:25	JK
Volatile Organic Compounds								
1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 19:50	BM
Carbon disulfide	3.47	ug/L	1	1			02/03/2014 19:50	BM
cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:50	ВМ
Tetrachloroethylene	1.57	ug/L	1	1			02/03/2014 19:50	ВМ
trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:50	ВМ
Trichloroethylene	BRL	ug/L	1	1			02/03/2014 19:50	ВМ
Dibromofluoromethane(surr)	109	%	1	63.4-152			02/03/2014 19:50	ВМ
p-Bromofluorobenzene(surr)	113	%	1	78.7-145			02/03/2014 19:50	ВМ
Toluene-d8(surr)	114	%	1	66.4-153			02/03/2014 19:50	ВМ
	Sulfate Alkalinity, as CaCO3 Carbon Dioxide Chloride Nitrite-N Nitrate-N Volatile Organic Compounds 1,1,2-Trichloroethane Carbon disulfide cis-1,2-Dichloroethylene Tetrachloroethylene trans-1,2-Dichloroethylene Trichloroethylene Dibromofluoromethane(surr) p-Bromofluorobenzene(surr)	Sulfate BRL Alkalinity, as CaCO3 23.4 Carbon Dioxide 296 Chloride 3.58 Nitrite-N BRL Volatile Organic Compounds 1,1,2-Trichloroethane BRL Carbon disulfide 3.47 cis-1,2-Dichloroethylene BRL Tetrachloroethylene 1.57 trans-1,2-Dichloroethylene BRL Trichloroethylene BRL Trichloroethylene BRL Dibromofluoromethane(surr) 109 p-Bromofluorobenzene(surr) 113	Sulfate BRL mg/L Alkalinity, as CaCO3 23.4 mg/L Carbon Dioxide 296 mg/L Chloride 3.58 mg/L Nitrite-N BRL mg/L Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L Carbon disulfide 3.47 ug/L cis-1,2-Dichloroethylene BRL ug/L Tetrachloroethylene 1.57 ug/L trans-1,2-Dichloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Dibromofluoromethane(surr) 109 % p-Bromofluorobenzene(surr) 113 %	Sulfate BRL mg/L 1 Alkalinity, as CaCO3 23.4 mg/L 1 Carbon Dioxide 296 mg/L 1 Chloride 3.58 mg/L 1 Nitrite-N BRL mg/L 1 Nitrate-N BRL mg/L 1 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 Carbon disulfide 3.47 ug/L 1 cis-1,2-Dichloroethylene BRL ug/L 1 Tetrachloroethylene 1.57 ug/L 1 trans-1,2-Dichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Dibromofluoromethane(surr) 109 % 1 p-Bromofluorobenzene(surr) 113 % 1	Sulfate BRL mg/L 1 5.00 Alkalinity, as CaCO3 23.4 mg/L 1 20 Carbon Dioxide 296 mg/L 1 20 Chloride 3.58 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.02 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide 3.47 ug/L 1 1 cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene 1.57 ug/L 1 1 trans-1,2-Dichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 109 % 1 63.4-152 p-Bromofluorobenzene(surr) 113 % 1 78.7-145	Sulfate BRL mg/L 1 5.00 Alkalinity, as CaCO3 23.4 mg/L 1 20 Carbon Dioxide 296 mg/L 1 20 Chloride 3.58 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.02 Volatile Organic Compounds I,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide 3.47 ug/L 1 1 Carbon disulfide 3.47 ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene 1.57 ug/L 1 1 trans-1,2-Dichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 109 % 1 63.4-152 p-Bromofluorobenzene(surr) 113 % 1 78.7-145	Sulfate BRL mg/L 1 5.00 Alkalinity, as CaCO3 23.4 mg/L 1 20 Carbon Dioxide 296 mg/L 1 20 Chloride 3.58 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.02 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide 3.47 ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 109 % 1 63.4-152 p-Bromofluorobenzene(surr) 113 % 1 78.7-145	Sulfate BRL mg/L 1 5.00 02/06/2014 12:19 Alkalinity, as CaCO3 23.4 mg/L 1 20 02/03/2014 10:33 Carbon Dioxide 296 mg/L 1 20 02/11/2014 11:04 Chloride Nitrite-N BRL mg/L 1 0.02 01/30/2014 15:33 Nitrate-N BRL mg/L 1 0.500 01/31/2014 15:25 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 02/03/2014 19:50 Carbon disulfide 3.47 ug/L 1 1 02/03/2014 19:50 cis-1,2-Dichloroethylene BRL ug/L 1 1 02/03/2014 19:50 Tetrachloroethylene BRL ug/L 1 1 02/03/2014 19:50 Trichloroethylene BRL ug/L 1 1 02/03/2014 19:50 Trichloroethylene BRL ug/L 1 1 02/03/2014 19:50 Trichloroethylene BRL ug/L 1 1 02/03/2014 19:50



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID :14013007Sample Matrix:AqueousClient Sample ID:MW-21SDate Collected:01/28/2014Job Sample ID:14013007.05Time Collected:17:00

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	30.5	mg/L	1	5.00			02/06/2014 10:29	JK
EPA 310.2									
	Alkalinity, as CaCO3	26.8	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	338	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	13.7	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	0.695	mg/L	1	0.500			01/31/2014 15:25	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/04/2014 20:12	BM
	Carbon disulfide	BRL	ug/L	1	1			02/04/2014 20:12	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/04/2014 20:12	ВМ
	Tetrachloroethylene	188	ug/L	1	1			02/04/2014 20:12	ВМ
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/04/2014 20:12	ВМ
	Trichloroethylene	1.51	ug/L	1	1			02/04/2014 20:12	ВМ
	Dibromofluoromethane(surr)	103	%	1	63.4-152			02/04/2014 20:12	ВМ
	p-Bromofluorobenzene(surr)	110	%	1	78.7-145			02/04/2014 20:12	ВМ
	Toluene-d8(surr)	115	%	1	66.4-153			02/04/2014 20:12	ВМ



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID: 14013007 Sample Matrix: Aqueous
Client Sample ID: MW-22 Date Collected: 01/29/2014
Job Sample ID: 14013007.06 Time Collected: 14:40

Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
Sulfate	7.65	mg/L	1	5.00			02/06/2014 09:35	JK
Alkalinity, as CaCO3	27.6	mg/L	1	20			02/03/2014 10:33	JK
Carbon Dioxide	215	mg/L	1	20			02/11/2014 11:04	RPG
Chloride	3.87	mg/L	1	2.00			02/07/2014 08:16	JK
Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:33	JK
Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:35	JK
Volatile Organic Compounds								
1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 20:16	ВМ
Carbon disulfide	BRL	ug/L	1	1			02/03/2014 20:16	BM
cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	ВМ
Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
Trichloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
Dibromofluoromethane(surr)	109	%	1	63.4-152			02/03/2014 20:16	BM
p-Bromofluorobenzene(surr)	112	%	1	78.7-145			02/03/2014 20:16	BM
Toluene-d8(surr)	117	%	1	66.4-153			02/03/2014 20:16	BM
	Sulfate Alkalinity, as CaCO3 Carbon Dioxide Chloride Nitrite-N Nitrate-N Volatile Organic Compounds 1,1,2-Trichloroethane Carbon disulfide cis-1,2-Dichloroethylene Tetrachloroethylene trans-1,2-Dichloroethylene Trichloroethylene Dibromofluoromethane(surr) p-Bromofluorobenzene(surr)	Sulfate 7.65 Alkalinity, as CaCO3 27.6 Carbon Dioxide 215 Chloride 3.87 Nitrite-N BRL Nitrate-N BRL Volatile Organic Compounds 1,1,2-Trichloroethane BRL Carbon disulfide BRL cis-1,2-Dichloroethylene BRL Tetrachloroethylene BRL trans-1,2-Dichloroethylene BRL Trichloroethylene BRL Dibromofluoromethane(surr) 109 p-Bromofluorobenzene(surr) 112	Sulfate 7.65 mg/L Alkalinity, as CaCO3 27.6 mg/L Carbon Dioxide 215 mg/L Chloride 3.87 mg/L Nitrite-N BRL mg/L Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L Carbon disulfide BRL ug/L Cis-1,2-Dichloroethylene BRL ug/L Tetrachloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Dibromofluoromethane(surr) 109 % p-Bromofluorobenzene(surr) 112 %	Sulfate 7.65 mg/L 1 Alkalinity, as CaCO3 27.6 mg/L 1 Carbon Dioxide 215 mg/L 1 Chloride 3.87 mg/L 1 Nitrite-N BRL mg/L 1 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 Carbon disulfide BRL ug/L 1 Tetrachloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 trans-1,2-Dichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Dibromofluoromethane(surr) 109 % 1 p-Bromofluorobenzene(surr) 112 % 1	Sulfate 7.65 mg/L 1 5.00 Alkalinity, as CaCO3 27.6 mg/L 1 20 Carbon Dioxide 215 mg/L 1 20 Chloride 3.87 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.500 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 109 % 1 63.4-152 p-Bromofluorobenzene(surr) 112 % 1 78.7-145	Sulfate 7.65 mg/L 1 5.00 Alkalinity, as CaCO3 27.6 mg/L 1 20 Carbon Dioxide 215 mg/L 1 20 Chloride 3.87 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.500 Volatile Organic Compounds 1 0.500 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 109 % 1 63.4-152 p-Bromofluorobenzene(surr) 112 % 1 78.7-145	Sulfate 7.65 mg/L 1 5.00 Alkalinity, as CaCO3 27.6 mg/L 1 20 Carbon Dioxide 215 mg/L 1 20 Chloride 3.87 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.02 Nitrate-N BRL mg/L 1 0.500 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 109 % 1 63.4-152 p-Bromofluorobenzene(surr) 112 % 1 78.7-145	Sulfate 7.65 mg/L 1 5.00 02/06/2014 09:35 Alkalinity, as CaCO3 27.6 mg/L 1 20 02/03/2014 10:33 Carbon Dioxide 215 mg/L 1 20 02/11/2014 11:04 Chloride BRL mg/L 1 0.02 01/30/2014 15:33 Nitrate-N BRL mg/L 1 0.500 01/31/2014 15:35 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 02/03/2014 20:16 Carbon disulfide BRL ug/L 1 1 02/03/2014 20:16 Cis-1,2-Dichloroethylene BRL ug/L 1 1 02/03/2014 20:16 Tetrachloroethylene BRL ug/L 1 1 02/03/2014 20:16 Trichloroethylene BRL ug/L 1 1 02/03/2014 20:16 Trichloroethylene BRL ug/L 1 1 02/03/2014 20:16 Trichloroethylene BRL ug/L 1 1 02/03/2014 20:16 Dibromofluoroben



JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID :14013007Sample Matrix:AqueousClient Sample ID:MW-20Date Collected:01/29/2014Job Sample ID:14013007.07Time Collected:16:00

Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
Sulfate	BRL	mg/L	1	5.00			02/06/2014 09:35	JK
Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:49	JK
Carbon Dioxide	111	mg/L	1	20			02/11/2014 11:04	RPG
Chloride	3.08	mg/L	1	2.00			02/07/2014 08:16	JK
Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:35	JK
Nitrate-N	0.543	mg/L	1	0.500			01/31/2014 15:35	JK
Volatile Organic Compounds								
1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 20:42	BM
Carbon disulfide	BRL	ug/L	1	1			02/03/2014 20:42	BM
cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	BM
Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	ВМ
trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	ВМ
Trichloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	ВМ
Dibromofluoromethane(surr)	106	%	1	63.4-152			02/03/2014 20:42	ВМ
p-Bromofluorobenzene(surr)	114	%	1	78.7-145			02/03/2014 20:42	ВМ
Toluene-d8(surr)	115	%	1	66.4-153			02/03/2014 20:42	ВМ
	Sulfate Alkalinity, as CaCO3 Carbon Dioxide Chloride Nitrite-N Nitrate-N Volatile Organic Compounds 1,1,2-Trichloroethane Carbon disulfide cis-1,2-Dichloroethylene Tetrachloroethylene trans-1,2-Dichloroethylene Trichloroethylene Dibromofluoromethane(surr) p-Bromofluorobenzene(surr)	Sulfate BRL Alkalinity, as CaCO3 BRL Carbon Dioxide 1111 Chloride 3.08 Nitrite-N BRL Nitrate-N 0.543 Volatile Organic Compounds 1,1,2-Trichloroethane BRL Carbon disulfide BRL cis-1,2-Dichloroethylene BRL Tetrachloroethylene BRL trans-1,2-Dichloroethylene BRL Trichloroethylene BRL Dibromofluoromethane(surr) 106 p-Bromofluorobenzene(surr) 114	Sulfate BRL mg/L Alkalinity, as CaCO3 BRL mg/L Carbon Dioxide 1111 mg/L Chloride 3.08 mg/L Nitrite-N BRL mg/L Nitrate-N 0.543 mg/L Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L Carbon disulfide BRL ug/L cis-1,2-Dichloroethylene BRL ug/L Tetrachloroethylene BRL ug/L trans-1,2-Dichloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Dibromofluoromethane(surr) 106 % p-Bromofluorobenzene(surr) 114 %	Sulfate BRL mg/L 1 Alkalinity, as CaCO3 BRL mg/L 1 Carbon Dioxide 111 mg/L 1 Chloride 3.08 mg/L 1 Nitrite-N BRL mg/L 1 Nitrate-N 0.543 mg/L 1 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 Carbon disulfide BRL ug/L 1 Tetrachloroethylene BRL ug/L 1 Tetrachloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Dibromofluoromethane(surr) 106 % 1 p-Bromofluorobenzene(surr) 114 % 1	Sulfate BRL mg/L 1 5.00 Alkalinity, as CaCO3 BRL mg/L 1 20 Carbon Dioxide 111 mg/L 1 20 Chloride 3.08 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.500 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 106 % 1 63.4-152 p-Bromofluorobenzene(surr) 114 % 1 78.7-145	Sulfate BRL mg/L 1 5.00 Alkalinity, as CaCO3 BRL mg/L 1 20 Carbon Dioxide 111 mg/L 1 20 Chloride 3.08 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.500 Volatile Organic Compounds 1 0.500 Volatile Organic Compounds 1 1 1 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 106 % 1 63.4-152 p-Bromofluorobenzene(surr) 114 % 1 78.7-145	Sulfate BRL mg/L 1 5.00 Alkalinity, as CaCO3 BRL mg/L 1 20 Carbon Dioxide 111 mg/L 1 20 Chloride 3.08 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.500 Volatile Organic Compounds 1 0.500 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 106 % 1 63.4-152 p-Bromofluorobenzene(surr) 114 % 1 78.7-145	Sulfate BRL mg/L 1 5.00 02/06/2014 09:35 Alkalinity, as CaCO3 BRL mg/L 1 20 02/03/2014 10:49 Carbon Dioxide 111 mg/L 1 20 02/11/2014 11:04 Chloride 3.08 mg/L 1 2.00 02/07/2014 08:16 Nitrite-N BRL mg/L 1 0.02 01/30/2014 15:35 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 02/03/2014 20:42 Carbon disulfide BRL ug/L 1 1 02/03/2014 20:42 Cis-1,2-Dichloroethylene BRL ug/L 1 1 02/03/2014 20:42 Tetrachloroethylene BRL ug/L 1 1 02/03/2014 20:42 Trichloroethylene BRL<



JobID: 14013007

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Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID :14013007Sample Matrix:AqueousClient Sample ID:DUP 1Date Collected:01/29/2014Job Sample ID:14013007.08Time Collected:14:45

Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
Sulfate	6.71	mg/L	1	5.00			02/06/2014 09:35	JK
Alkalinity, as CaCO3	21.6	mg/L	1	20			02/03/2014 10:49	JK
Carbon Dioxide	168	mg/L	1	20			02/11/2014 11:04	RPG
Chloride	3.97	mg/L	1	2.00			02/07/2014 08:16	JK
Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:35	JK
Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:35	JK
Volatile Organic Compounds								
1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 21:08	BM
Carbon disulfide	BRL	ug/L	1	1			02/03/2014 21:08	BM
cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	ВМ
Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	ВМ
trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	ВМ
Trichloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	ВМ
Dibromofluoromethane(surr)	105	%	1	63.4-152			02/03/2014 21:08	ВМ
p-Bromofluorobenzene(surr)	114	%	1	78.7-145			02/03/2014 21:08	ВМ
Toluene-d8(surr)	115	%	1	66.4-153			02/03/2014 21:08	ВМ
	Sulfate Alkalinity, as CaCO3 Carbon Dioxide Chloride Nitrite-N Nitrate-N Volatile Organic Compounds 1,1,2-Trichloroethane Carbon disulfide cis-1,2-Dichloroethylene Tetrachloroethylene trans-1,2-Dichloroethylene Trichloroethylene Dibromofluoromethane(surr) p-Bromofluorobenzene(surr)	Sulfate 6.71 Alkalinity, as CaCO3 21.6 Carbon Dioxide 168 Chloride 3.97 Nitrite-N BRL Volatile Organic Compounds 1,1,2-Trichloroethane BRL Carbon disulfide BRL cis-1,2-Dichloroethylene BRL Tetrachloroethylene BRL trans-1,2-Dichloroethylene BRL Trichloroethylene BRL Dibromofluoromethane(surr) 105 p-Bromofluorobenzene(surr) 114	Sulfate 6.71 mg/L Alkalinity, as CaCO3 21.6 mg/L Carbon Dioxide 168 mg/L Chloride 3.97 mg/L Nitrite-N BRL mg/L Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L Carbon disulfide BRL ug/L cis-1,2-Dichloroethylene BRL ug/L Tetrachloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Trichloroethylene BRL ug/L Dibromofluoromethane(surr) 105 % p-Bromofluorobenzene(surr) 114 %	Sulfate 6.71 mg/L 1 Alkalinity, as CaCO3 21.6 mg/L 1 Carbon Dioxide 168 mg/L 1 Chloride 3.97 mg/L 1 Nitrite-N BRL mg/L 1 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 Carbon disulfide BRL ug/L 1 Tetrachloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 trans-1,2-Dichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Trichloroethylene BRL ug/L 1 Dibromofluoromethane(surr) 105 % 1 p-Bromofluorobenzene(surr) 114 % 1	Sulfate 6.71 mg/L 1 5.00 Alkalinity, as CaCO3 21.6 mg/L 1 20 Carbon Dioxide 168 mg/L 1 20 Chloride 3.97 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.500 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 trans-1,2-Dichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 105 % 1 63.4-152 p-Bromofluorobenzene(surr) 114 % 1 78.7-145	Sulfate 6.71 mg/L 1 5.00 Alkalinity, as CaCO3 21.6 mg/L 1 20 Carbon Dioxide 168 mg/L 1 20 Chloride 3.97 mg/L 1 2.00 Nitrite-N BRL mg/L 1 0.02 Nitrate-N BRL mg/L 1 0.500 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 105 % 1 63.4-152 p-Bromofluorobenzene(surr) 114 % 1 78.7-145	Sulfate 6.71 mg/L 1 5.00 Alkalinity, as CaCO3 21.6 mg/L 1 20 Carbon Dioxide 168 mg/L 1 20 Chloride 3.97 mg/L 1 2.00 Nitritate-N BRL mg/L 1 0.02 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 Carbon disulfide BRL ug/L 1 1 Cis-1,2-Dichloroethylene BRL ug/L 1 1 Tetrachloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Trichloroethylene BRL ug/L 1 1 Dibromofluoromethane(surr) 105 % 1 63.4-152 p-Bromofluorobenzene(surr) 114 % 1 78.7-145	Sulfate 6.71 mg/L 1 5.00 02/06/2014 09:35 Alkalinity, as CaCO3 21.6 mg/L 1 20 02/03/2014 10:49 Carbon Dioxide 168 mg/L 1 20 02/11/2014 11:04 Chloride 3.97 mg/L 1 2.00 02/07/2014 08:16 Nitrite-N BRL mg/L 1 0.02 01/30/2014 15:35 Volatile Organic Compounds 1,1,2-Trichloroethane BRL ug/L 1 1 02/03/2014 21:08 Carbon disulfide BRL ug/L 1 1 02/03/2014 21:08 Cis-1,2-Dichloroethylene BRL ug/L 1 1 02/03/2014 21:08 Tetrachloroethylene BRL ug/L 1 1 02/03/2014 21:08 Trichloroethylene BRL ug/L 1 1 02/03/2014 21:08 Trichloroethylene BRL ug/L 1 1 02/03/2014 21:08 Dibromofluoromethane(surr) 105 % 1 63.4-152 02/03/2014 21:08 P-Bromofluorobenzene(s



JobID: 14013007

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Client Name: Terracon Attn: Stuart Dixon
Project Name: Martha Dry Cleaners Date: 02/11/2014

Job ID :14013007Sample Matrix:AqueousClient Sample ID:FIELD BLANKDate Collected:01/29/2014Job Sample ID:14013007.09Time Collected:16:40

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	BRL	mg/L	1	5.00			02/06/2014 12:04	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:49	JK
EPA 310.2									
	Carbon Dioxide	BRL	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	BRL	mg/L	1	2.00			02/07/2014 08:21	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:35	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:35	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 18:05	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	ВМ
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	ВМ
	Dibromofluoromethane(surr)	112	%	1	63.4-152			02/03/2014 18:05	ВМ
	p-Bromofluorobenzene(surr)	114	%	1	78.7-145			02/03/2014 18:05	ВМ
	Toluene-d8(surr)	113	%	1	66.4-153			02/03/2014 18:05	ВМ

JobID: 14013007





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Analysis: Method: SM4500-NO3 h Reporting Units: mg/L

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	Qual
Nitrate-N		BRL	mg/L	1	0.50	

QC Type:	LCS and LCSI)									
Dawamataw		LCS	LCS	LCS	LCSD	LCSD	LCSD	0/ DDD	RPD	%Recovery	01
Parameter		Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
Nitrate-N		2.5	2.735	109.40	2.5	2.699	107.96	1.32	20	80-120	

QC Type: MS a	QC Type: MS and MSD											
QC Sample ID:	14013007.06											
	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec		
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual	
Nitrate-N	BRL	2.5	2.637	93.60	2.5	2.662	94.60	1.06	20	80-120		

Refer to the Definition page for terms.

Date: 02/11/2014 13:00 Page 12 of 25

JobID: 14013007





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Analysis: Method: SM4500-NO2 b Reporting Units: mg/L

QC Batch ID : Qb14013117 Created Date : 01/31/2014 Created By : JKitchings

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	Qual
Nitrite-N		BRL	mg/L	1	0.020	

QC Type:	LCS and LCSE)									
		LCS	LCS	LCS	LCSD	LCSD	LCSD		RPD	%Recovery	
Parameter		Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
Nitrite-N		1.0	1.024	102.40	1.0	1.053	105.30	2.79	20	80-120	

QC Type: MS ar	QC Type: MS and MSD											
QC Sample ID:	14013007.06											
	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec		
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual	
Nitrite-N	BRL	1.0	1.056	105.60	1.0	1.074	107.40	1.69	20	80-120		

Refer to the Definition page for terms.

Date: 02/11/2014 13:00 Page 13 of 25

JobID: 14013007





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Analysis: Method: EPA 310.2 Reporting Units: mg/L

QC Batch ID: Qb14020305 Created Date: 02/03/2014 Created By: JKitchings

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	Qual
Alkalinity, as CaCO3		BRL	mg/L	1	20	

QC Type: LCS and LCSI)									
Dava washay	LCS	LCS	LCS	LCSD	LCSD	LCSD	0/ DDD	RPD	%Recovery	0
Parameter	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
Alkalinity, as CaCO3	50	49.3	98.51	50	49.0	97.99	0.52	20	80-120	

QC Type: MS and MSD	QC Type: MS and MSD QC Sample ID: 14013007.07												
QC Sample ID: 14013	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec			
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual		
Alkalinity, as CaCO3	BRL	50	56.6	97.85	50	55.2	95.18	2.76	20	80-120			

Refer to the Definition page for terms.

Date: 02/11/2014 13:00 Page 14 of 25

JobID: 14013007





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Analysis: Method: SM4500-CL e Reporting Units: mg/L

QC Batch ID: Qb14020701 Created Date: 02/07/2014 Created By: JKitchings

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	Qual
Chloride		BRL	mg/L	1	2.00	

QC Type:	LCS and LCSE)									
		LCS	LCS	LCS	LCSD	LCSD	LCSD	0/ 000	RPD	%Recovery	0 1
Parameter		Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
Chloride		25	25.681	102.72	25	26.085	104.34	1.56	20	80-120	

QC Type: MS a	QC Type: MS and MSD												
QC Sample ID:	14013007.01												
	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec			
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual		
Chloride	13.0	25	35.725	90.90	25	36.663	94.65	4.04	20	80-120			

Refer to the Definition page for terms.

Date: 02/11/2014 13:00 Page 15 of 25

JobID: 14013007





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Analysis: Method: ASTM D516-90 Reporting Units: mg/L

QC Batch ID: Qb14020702 Created Date: 02/07/2014 Created By: JKitchings

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	Qual
Sulfate		BRL	mg/L	1	5.0	

QC Type:	LCS and LCSI)									
		LCS	LCS	LCS	LCSD	LCSD	LCSD		RPD	%Recovery	
Parameter		Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
Sulfate		20	17.944	89.72	20	18.625	93.13	3.72	20	80-120	

QC Type: MS ar	QC Type: MS and MSD											
QC Sample ID:	14013007.04											
	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec		
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual	
Sulfate	7.65	20	17.803	80.11	20	17.415	78.17	2.45	20	80-120	31	

Refer to the Definition page for terms.

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JobID: 14013007





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Analysis: Volatile Organic Compounds Method: SW-846 8260B Reporting Units: ug/L

QC Batch ID: Qb14021009 Created Date: 02/10/2014 Created By: BMullis

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	Qual
1,1,2-Trichloroethane	79-00-5	BRL	ug/L	1	1.0	
Carbon disulfide	75-15-0	BRL	ug/L	1	1.0	
cis-1,2-Dichloroethylene	156-59-2	BRL	ug/L	1	1.0	
Tetrachloroethylene	127-18-4	BRL	ug/L	1	1.0	
trans-1,2-Dichloroethylene	156-60-5	BRL	ug/L	1	1.0	
Trichloroethylene	79-01-6	BRL	ug/L	1	1.0	
Dibromofluoromethane (Surr)	1868-53-7	54.3	%	1	63.4-152	
Toluene-d8 (Surr)	2037-26-5	56.8	%	1	66.4-153	
p-Bromofluorobenzene (Surr)	460-00-4	56.6	%	1	78.7-145	

QC Type: LCS and LCS	D									
	LCS	LCS	LCS	LCSD	LCSD	LCSD		RPD	%Recovery	
Parameter	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
1,1,2-Trichloroethane	50	45.2	90.40	50	54.8	109.60	19.2	30	79.4-119	
Carbon disulfide	50	56.2	112.40	50	46.5	93.00	18.9	30	57.1-177	
cis-1,2-Dichloroethylene	50	61.3	122.60	50	51.5	103.00	17.4	30	67.2-132	
Tetrachloroethylene	50	50.2	100.40	50	52.6	105.20	4.7	30	63.8-141	
trans-1,2-Dichloroethylene	50	54.5	109.00	50	49.6	99.20	9.4	30	63.7-119	
Trichloroethylene	50	59.1	118.20	50	47.4	94.80	22	30	60.9-128	
Dibromofluoromethane (Surr)	100	74.9	74.90	100	102	102.00			63.4-152	
Toluene-d8 (Surr)	100	90	90.00	100	98.9	98.90			66.4-153	
p-Bromofluorobenzene (Surr)	100	116	116.00	100	109	109.00			78.7-145	

QC Type: MS and MSD	C Type: MS and MSD											
QC Sample ID: 140130	QC Sample ID: 14013007.04											
Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual	
1,1,2-Trichloroethane		50	55	110.00	50	54	108.00	2	30	79.4-119		
Carbon disulfide		50	48.3	89.66	50	48.1	89.26	0.4	30	57.1-177		
cis-1,2-Dichloroethylene		50	45.6	91.20	50	45.9	91.80	0.7	30	67.2-132		
Tetrachloroethylene		50	56.3	109.46	50	54.1	105.06	4.1	30	63.8-141		
trans-1,2-Dichloroethylene		50	45.2	90.40	50	44.9	89.80	0.7	30	63.7-119		
Trichloroethylene		50	45.6	91.20	50	46.9	93.80	2.8	30	60.9-128		
Dibromofluoromethane (Surr)		100	101	101.00	100	102	102.00			63.4-152		
Toluene-d8 (Surr)		100	110	110.00	100	107	107.00			66.4-153		
p-Bromofluorobenzene (Surr)		100	111	111.00	100	112	112.00			78.7-145		

Date: 02/11/2014 13:00

JobID: 14013007





■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis : Volatile Organic Compounds Method : SW-846 8260B Reporting Units : ug/L

QC Batch ID: Qb14021009 Created Date: 02/10/2014 Created By: BMullis

Samples in This QC Batch: 14013007.01,02,03,04,05,06,07,08,09

Refer to the Definition page for terms.

Date: 02/11/2014 13:00 Page 18 of 25



TERM AND QUALIFIER DEFINITION

Avery Laboratories & Environmental Services, LLC

precision.

JobID: 14013007

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

	■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■
General Term	Definition
Conc.	Concentration
DF	Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content
ND	Non Detect - Not Detected at or above adjusted reporting limit
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
RL	adjusted Reporting Limit (QL – Quantification Limit)
MDL	adjusted Method Detection Limit (LOD – Limit of Detection)
RegLimit	Regulatory Limit
mg/l	Milligrams per Liter
mg/kg	Milligrams per Kilogram
ppm	Parts per Million
μg/L	Micrograms per Liter
µg/g	Micrograms per Gram
ppb	Parts per Billion
gr/gal	Grains per Gallon
SU	Standard Units
CCU	Cobalt Color Units
NTU	Nephelometric Turbidity Units
μS/cm	Microsiemens per cm at 25C
P/A	Presence/Absence
CFU	Colony Forming Units
MPN	Most Probable Number
RB	Reagent Blank
MB	Method Blank
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LFM	Laboratory Fortified Matrix (MS – Matrix Spike)
LFMD	Laboratory Fortified Matrix Duplicate (MSD – Matrix Spike Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
%Rec	Percent Recovery
TNTC	Too numerous to count
NC	Not Calculable
SG	Silica Gel - Clean-Up
BRL	Below Reporting Limit
BDL	Below Detection Limit
Qualifier Defini	
Н	The parameter was analyzed outside the method specified holding time.
J1	Estimated value-The reported value failed the established quality control criteria for accuracy and /or

Date: 02/11/2014 13:00 Primary Lab Certification # NELAP: FL-E87941



CASE NARRATIVE

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon

Project Name: Martha Dry Cleaners

Date Received: 01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014

Collected By: JC

Nitrite was analyzed outside the method holding requirements per client request.

Matrix Spikes

Method ASTM D516-90: The matrix spike/ matrix spike duplicate recoveries were outside the established laboratory control limits. The lab spike recoveries were inside acceptable limits, so the data was reported. The matrix spikes have been qualified accordingly.

Carbon Dioxide is not an analyte certified by The NELAC Institute (TNI).

Methane, Ethene, Ethane, and sulfide were subcontracted to Test America-Savannah. The data is on a separate report.

Released By: Robert Paul Grimm

Title: Technical Director

Date: 02/11/2014 13:00 Primary Lab Certification # NELAP: FL-E87941 Page 20 of 25



SAMPLE SUMMARY

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Project ID: Martha Dry Cleaners

Report To: Client Name: Terracon Attn: Stuart Dixon

Client Address: 2201 Rowland Ave. P.O.#.: ES117125

City, State, Zip: Savannah, GA, 31404

The laboratory has analyzed the following samples:

Client Sample ID	Matrix	Sample ID	Date Received	Date Collected	Collected by
MW-19	Aqueous	14013007.01	01/30/2014	01/27/2014	JC
MW-24	Aqueous	14013007.02	01/30/2014	01/27/2014	JC
MW-23	Aqueous	14013007.03	01/30/2014	01/27/2014	JC
MW-21D	Aqueous	14013007.04	01/30/2014	01/28/2014	JC
MW-21S	Aqueous	14013007.05	01/30/2014	01/28/2014	JC
MW-22	Aqueous	14013007.06	01/30/2014	01/29/2014	JC
MW-20	Aqueous	14013007.07	01/30/2014	01/29/2014	JC
DUP 1	Aqueous	14013007.08	01/30/2014	01/29/2014	JC
FIELD BLANK	Aqueous	14013007.09	01/30/2014	01/29/2014	JC



SAMPLE PREPARATION INFORMATION

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon			Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners			Date:	02/11/2014
Sample ID	Test	Prep method	Date Prepared	Analyst	Prep Batch ID
14013007.01	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.01	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.01	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.01	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.01	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.01	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.01	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.02	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.02	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.02	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.02	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.02	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.02	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.02	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.03	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.03	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.03	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.03	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.03	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.03	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.03	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.04	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.04	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.04	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.04	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.04	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.04	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.04	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.05	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.05	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.05	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.05	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.05	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.05	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.05	VOC	SW5030b	02/04/2014 12:00 PM	BMullis	PB14021010



SAMPLE PREPARATION INFORMATION

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon			Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners			Date:	02/11/2014
Sample ID	Test	Prep method	Date Prepared	Analyst	Prep Batch ID
14013007.06	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.06	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.06	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.06	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.06	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.06	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.06	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.07	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.07	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.07	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.07	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.07	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.07	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.07	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.08	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.08	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.08	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.08	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.08	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.08	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.08	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.09	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.09	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.09	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.09	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.09	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.09	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.09	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010



SAMPLE CONDITION CHECKLIST

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name :	Terracon		Contact :	Stuart Dixon
Address :	2201 Rowland Ave.		Contact Phone :	912 629-4000
JobID : 140130	07	Date Received: 01/30/2014	Time Received :	9:13AM
Temperature :	2.75	Sample pH: OK	·	
ThermometerID	: 159553	pH Meter :		

Comments : Include actions taken to resolve discrepancies/Problem :	

	Check Points	Yes	No	N/A
1	Cooler seal present and signed.	~		
2	Sample(s) in a cooler.	~		
3	Sample received at 6°C or Less	~		
4	C-O-C signed and dated.	~		
5	Sample containers arrived in tact. (if no, comment)	~		
6	Sample(s) were received in appropriate contatiner. (If no, comment)	~		
7	Samples received within holding time for analysis requested	~		
8	Zero headspace in liquid VOA vials	~		
9	Sample(s) were received at the proper pH.	~		
10	Sample ID lables Match C-O-C ID's	~		
11	Bottle count on C-O-C matches bottle found.	~		
12	Sample amount is sufficient for analyses requested	~		
13	If requested, sample(s) received with signed sample custody seal			~
14	Samples accepted.	~		

Check In By : PGrimm Check in date : 01/30/2014 12:00 AM

Date: 02/11/2014 13:00 Primary Lab Certification # NELAP: FL-E87941



COMMERCIAL LABORATORY STIPULATION

Georgia Rules for Commercial Environmental Laboratory Accreditation Chapter 391-3-26

JobID: 14013007



Avery Labs, ■ 101B Estus Road

■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ www.greenwayeng.com ■

Laboratory: Avery Laboratories and Environmental Services, LLC

Accreditor: NELAC: State of Florida, Department of Health, Bureau of Laboratories

Accreditation ID: E87941

NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER -Scope:

> GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS -

VOLATILE ORGANICS

Effective Date: July 1, 2013 **Expiration Date:** July 1, 2014

As per the Georgia EPD Rules and Regulations for Commercial Laboratories, Avery Laboratories and Environmental Services – Savannah is accredited by the Florida Department of Health under the National Environmental Laboratory Approval Program (NELAP). If you have any further questions regarding accreditation status for Avery Laboratories and Environmental Services, please contact: Paul Grimm.

> Avery Laboratories and Environmental Services, LLC 101B Estus Drive Savannah, Georgia 31404

> > Phone: (912) 944-3748 FAX: (912) 234-9294

Date: 02/11/2014 13:00 Primary Lab Certification # NELAP: FL-E87941

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			Serial Number: 68384.
0	Ship To: 101	Ship To: 101 B Estus Dr. Savannah, Ga. 31404	(46/2811
Environmental Services, LLC	T 912 9	T 912 944-3748 F 912 234-9294 email: pgrimm@averylab.com	LAB NUMBER
Client Information	Page 1 of 1	Project Name: New Alba C Day Cleans	Subcontract Laboratory
Customer: Tenacon		r: State wher	Name / Address/ Phone
Address: 220; Rowland Auf	Ar		Z
City/State/Zip: Savannah, 64 31404	24 Hours		
Contact: Stewart Dix on	48 Hours		A
4- 629 (214)	72 Hours	7	
	5 Working Days	0: 0:	
	7 Working Days	1.	а.
Project Manager: Stewnort Dix GA	Other:		
Sample Identification	Date Time Matrix # of Containers		Remarks
1-55	H S S1:11 11/22/11	× × ×	
5.55	12:00	× × ×	
5-55	63.55	× × × × ×	
Matrix Type: A = Air W = Water S= Solid	N = Nonaqueous (solvent, acid, etc.)		
Instructions or Special Requirements:		Preservative: 1= None 2 = H2SO4 3 = HN03 4 = HCL 5 = MeOH 6:	6 = NAHSO4 7 = Water 8 = Other
Temperature: 2.5	Custody Seals: (Yes No	Custody Seals Intact: Yes No	
Relinquished by:	Date/Time: 1/28/4 13 U[Received by:	
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	

Effective Date: 09.11.08



LABORATORY ANALYSIS REPORT

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Project ID:Martha Dry Cleaners

Report To: Client Name: Terracon Attn: Stuart Dixon

Client Address: 2201 Rowland Ave. P.O.#.:

City, State, Zip: Savannah, GA, 31404

Dear Stuart Dixon

The following test results meet all NELAC requirements for analytes for which certification is available. Any deviations from these quality systems will be noted in this case narrative. All analyses performed by Avery Laboratories & Environmental Services, LLC unless noted. Parameters not perfromed by Avery Laboratories will be listed on the Sample Summary section of the report.

For questions regarding this report, contact Robert Paul Grimm at (912)944-3748.

Sincerely,

[Robert Paul Grimm] Technical Director



This Laboratory is NELAP accredited.

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

Date: 02/11/2014 16:22 Primary Lab Certification # NELAP: FL-E87941

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-1 Date Collected: 01/28/14 Time Collected: 11:15 Other Information:

14012811.01 Sample Matrix Soil % Moisture 25.0

Job Sample ID:

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
M2540b									
	Moisture	25	%	1				01/30/14 10:00	JK
W-846 8260B									
	1,1,1,2-Tetrachloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	ВМ
	1,1,1-Trichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1,2,2-Tetrachloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1,2-Trichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1-Dichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1-Dichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1-Dichloropropene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	ВМ
	1,2,3-trichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	ВМ
	1,2,3-Trichloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2,4-Trichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2,4-Trimethylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dibromo-3-chloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dibromoethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dichloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,3,5-Trimethylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,3-Dichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,4-Dichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	2,2-Dichloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	2-Chlorotoluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	2-Hexanone	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	4-Chlorotoluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	4-Isopropyltoluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Acetone	BRL	mg/kg dw	0.838	0.056			01/30/14 16:31	BM
	Benzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromochloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-1 Date Collected: 01/28/14 Time Collected: 11:15 Other Information:

14012811.01 Sample Matrix Soil % Moisture 25.0

Job Sample ID:

est Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
N-846 8260B									
	Bromodichloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromoform	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromomethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Carbon disulfide	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Carbon tetrachloride	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chloroform	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	cis-1,2-Dichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	cis-1,3-Dichloropropene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Dibromochloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Dibromomethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Dichlorodifluoromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Ethylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Hexachlorobutadiene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Isopropylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	MEK (2-Butanone)	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	Methylene chloride	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	MIBK (Methyl Isobutyl Ketone)	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	MTBE	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Naphthalene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	n-Butylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	n-Propylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	sec-Butylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Styrene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	t-butylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Tetrachloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Toluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	trans-1,2-Dichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	trans-1,3-Dichloropropene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

Dibromofluoromethane(surr)

p-Bromofluorobenzene(surr)

Toluene-d8(surr)

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-1 Job Sample ID: 14012811.01

Date Collected: 01/28/14 Sample Matrix Soil

Date Collected: 01/28/14 Sample Matrix Soil
Time Collected: 11:15 % Moisture 25.0
Other Information:

81

117

114

%

%

%

Test Method DF Rpt Limit Reg Limit Q Parameter/Test Description Result Units Date Time Analyst SW-846 8260B Trichloroethylene **BRL** mg/kg dw 0.838 0.00559 01/30/14 16:31 BM Trichlorofluoromethane BRL mg/kg dw 0.838 0.00559 01/30/14 16:31 BM Vinyl Chloride BRL 01/30/14 16:31 mg/kg dw 0.838 0.00559 BM BRL ВМ xylene-o mg/kg dw 0.838 0.00559 01/30/14 16:31 BRL xylenes (m&P) mg/kg dw 0.838 0.011 01/30/14 16:31 BM xylenes (total) BRL mg/kg dw 0.838 0.017 01/30/14 16:31 ВМ

0.838

0.838

0.838

62.1-137

47.0-155

64.0-143

01/30/14 16:31

01/30/14 16:31

01/30/14 16:31

BM

BM

ВМ

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-2
Date Collected: 01/28/14
Time Collected: 12:00

Other Information:

Sample Matrix Soil % Moisture 22.9

14012811.02

Job Sample ID:

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit Reg Limit Q	Date Time	Analyst
M2540b							
	Moisture	22.9	%	1		01/30/14 10:00	JK
W-846 8260B							
	1,1,1,2-Tetrachloroethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,1,1-Trichloroethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	1,1,2,2-Tetrachloroethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,1,2-Trichloroethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,1-Dichloroethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,1-Dichloroethylene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,1-Dichloropropene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2,3-trichlorobenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	1,2,3-Trichloropropane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2,4-Trichlorobenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2,4-Trimethylbenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2-Dibromo-3-chloropropane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2-Dibromoethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2-Dichlorobenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	1,2-Dichloroethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,2-Dichloropropane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	1,3,5-Trimethylbenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	1,3-Dichlorobenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	1,4-Dichlorobenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	2,2-Dichloropropane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	2-Chlorotoluene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	ВМ
	2-Hexanone	BRL	mg/kg dw	0.824	0.011	01/30/14 16:56	BM
	4-Chlorotoluene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	4-Isopropyltoluene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	Acetone	BRL	mg/kg dw	0.824	0.053	01/30/14 16:56	BM
	Benzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	Bromobenzene	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM
	Bromochloromethane	BRL	mg/kg dw	0.824	0.00534	01/30/14 16:56	BM

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-2
Date Collected: 01/28/14
Time Collected: 12:00
Other Information:

Sample Matrix Soil % Moisture 22.9

14012811.02

Job Sample ID:

Test Method Units DF Rpt Limit Reg Limit Q Parameter/Test Description Result Date Time Analyst SW-846 8260B Bromodichloromethane BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Bromoform BRL 0.00534 01/30/14 16:56 ВМ mg/kg dw 0.824 BRL Bromomethane BM mg/kg dw 0.824 0.00534 01/30/14 16:56 BRL Carbon disulfide mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Carbon tetrachloride **BRL** mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Chlorobenzene BRL 0.00534 ВМ mg/kg dw 0.824 01/30/14 16:56 Chloroethane **BRL** mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Chloroform **BRL** mg/kg dw 0.824 0.00534 BM 01/30/14 16:56 Chloromethane **BRL** mg/kg dw 0.824 BM 0.00534 01/30/14 16:56 BRL cis-1,2-Dichloroethylene mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL BM cis-1,3-Dichloropropene ma/ka dw 0.824 0.00534 01/30/14 16:56 Dibromochloromethane BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Dibromomethane BRL ВМ mg/kg dw 0.824 0.00534 01/30/14 16:56 BRL Dichlorodifluoromethane mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL Ethylbenzene mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Hexachlorobutadiene BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL Isopropylbenzene mg/kg dw 0.824 0.00534 01/30/14 16:56 BM MEK (2-Butanone) **BRL** mg/kg dw 0.824 0.011 01/30/14 16:56 BM BRL 0.00534 BM Methylene chloride mg/kg dw 0.824 01/30/14 16:56 **BRL** MIBK (Methyl Isobutyl Ketone) mg/kg dw 0.824 0.011 01/30/14 16:56 BM **MTBE BRL** mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Naphthalene **BRL** mg/kg dw 0.824 0.00534 01/30/14 16:56 BM n-Butylbenzene **BRL** mg/kg dw 0.824 0.00534 01/30/14 16:56 BM n-Propylbenzene **BRL** mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL sec-Butylbenzene BM mg/kg dw 0.824 0.00534 01/30/14 16:56 **BRL** Styrene mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL t-butylbenzene mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL BM Tetrachloroethylene mg/kg dw 0.824 0.00534 01/30/14 16:56 Toluene BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM BRL 01/30/14 16:56 trans-1,2-Dichloroethylene mg/kg dw 0.824 0.00534 BM BRL ВМ trans-1,3-Dichloropropene mg/kg dw 0.824 0.00534 01/30/14 16:56

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-2 Job Sample ID: 14012811.02

Date Collected: 01/28/14 Sample Matrix Soil
Time Collected: 12:00 % Moisture 22.9

Trichlorofluoromethane BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Vinyl Chloride BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylene-o BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylenes (m&P) BRL mg/kg dw 0.824 0.011 01/30/14 16:56 BM xylenes (total) BRL mg/kg dw 0.824 0.016 01/30/14 16:56 BM Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM	Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
Trichlorofluoromethane BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM Vinyl Chloride BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylene-o BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylenes (m&P) BRL mg/kg dw 0.824 0.011 01/30/14 16:56 BM xylenes (total) BRL mg/kg dw 0.824 0.016 01/30/14 16:56 BM Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM	SW-846 8260B									
Vinyl Chloride BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylene-o BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylenes (m&P) BRL mg/kg dw 0.824 0.011 01/30/14 16:56 BM xylenes (total) BRL mg/kg dw 0.824 0.016 01/30/14 16:56 BM Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM		Trichloroethylene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	ВМ
xylene-o BRL mg/kg dw 0.824 0.00534 01/30/14 16:56 BM xylenes (m&P) BRL mg/kg dw 0.824 0.011 01/30/14 16:56 BM xylenes (total) BRL mg/kg dw 0.824 0.016 01/30/14 16:56 BM Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM		Trichlorofluoromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
xylenes (m&P) BRL mg/kg dw 0.824 0.011 01/30/14 16:56 BM xylenes (total) BRL mg/kg dw 0.824 0.016 01/30/14 16:56 BM Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM		Vinyl Chloride	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
xylenes (total) BRL mg/kg dw 0.824 0.016 01/30/14 16:56 BM Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM		xylene-o	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
Dibromofluoromethane(surr) 80.5 % 0.824 62.1-137 01/30/14 16:56 BM p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM		xylenes (m&P)	BRL	mg/kg dw	0.824	0.011			01/30/14 16:56	BM
p-Bromofluorobenzene(surr) 120 % 0.824 47.0-155 01/30/14 16:56 BM		xylenes (total)	BRL	mg/kg dw	0.824	0.016			01/30/14 16:56	BM
		Dibromofluoromethane(surr)	80.5	%	0.824	62.1-137			01/30/14 16:56	BM
T. I.		p-Bromofluorobenzene(surr)	120	%	0.824	47.0-155			01/30/14 16:56	BM
Toluene-d8(surr) 115 % 0.824 64.0-143 01/30/14 16:56 BM		Toluene-d8(surr)	115	%	0.824	64.0-143			01/30/14 16:56	BM

RP14021105

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-3
Date Collected: 01/28/14
Time Collected: 13:05

Other Information:

Job Sample ID: 14012811.03 Sample Matrix Soil % Moisture 21.3

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SM2540b									
	Moisture	21.3	%	1				01/30/14 10:00	JK
SW-846 8260B									
	1,1,1,2-Tetrachloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1,1-Trichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1,2,2-Tetrachloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,1,2-Trichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1-Dichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1-Dichloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1-Dichloropropene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2,3-trichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2,3-Trichloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2,4-Trichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2,4-Trimethylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2-Dibromo-3-chloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2-Dibromoethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2-Dichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2-Dichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,2-Dichloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,3,5-Trimethylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,3-Dichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	1,4-Dichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	2,2-Dichloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	2-Chlorotoluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	2-Hexanone	BRL	mg/kg dw	0.813	0.01			01/30/14 17:47	ВМ
	4-Chlorotoluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	4-Isopropyltoluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	Acetone	BRL	mg/kg dw	0.813	0.052			01/30/14 17:47	ВМ
	Benzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	Bromobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	ВМ
	Bromochloromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM

RP14021105

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-3
Date Collected: 01/28/14
Time Collected: 13:05

Other Information:

Job Sample ID: 14012811.03 Sample Matrix Soil

% Moisture 21.3

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit Reg Limit Q	Date Time	Analyst
SW-846 8260B							
	Bromodichloromethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Bromoform	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Bromomethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Carbon disulfide	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Carbon tetrachloride	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Chlorobenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Chloroethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Chloroform	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Chloromethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	cis-1,2-Dichloroethylene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	cis-1,3-Dichloropropene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Dibromochloromethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Dibromomethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Dichlorodifluoromethane	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Ethylbenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Hexachlorobutadiene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Isopropylbenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	MEK (2-Butanone)	BRL	mg/kg dw	0.813	0.01	01/30/14 17:47	BM
	Methylene chloride	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	MIBK (Methyl Isobutyl Ketone)	BRL	mg/kg dw	0.813	0.01	01/30/14 17:47	BM
	MTBE	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Naphthalene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	n-Butylbenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	n-Propylbenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	sec-Butylbenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Styrene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	t-butylbenzene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Tetrachloroethylene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	Toluene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	trans-1,2-Dichloroethylene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM
	trans-1,3-Dichloropropene	BRL	mg/kg dw	0.813	0.00517	01/30/14 17:47	BM

RP14021105

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon Attn: Stuart Dixon
Project ID: Martha Dry Cleaners Date 02/11/2014

Client Sample ID: SS-3 Job Sample ID: 14012811.03

Date Collected: 01/28/14 Sample Matrix Soil 13:05 Sample Matrix Soil 21.3

Other Information:

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Trichloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Trichlorofluoromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Vinyl Chloride	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	xylene-o	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	xylenes (m&P)	BRL	mg/kg dw	0.813	0.01			01/30/14 17:47	BM
	xylenes (total)	BRL	mg/kg dw	0.813	0.015			01/30/14 17:47	BM
	Dibromofluoromethane(surr)	78	%	0.813	62.1-137			01/30/14 17:47	BM
	p-Bromofluorobenzene(surr)	117	%	0.813	47.0-155			01/30/14 17:47	BM
	Toluene-d8(surr)	110	%	0.813	64.0-143			01/30/14 17:47	BM

JobID: 14012811





■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Method: SW-846 8260B Reporting Units: mg/kg dw

QC Batch ID : Qb14013114 Created Date : 01/31/2014 Created By : PGrimm

Samples in This QC Batch: 14012811.01,02,03

Parameter	CAS #	Result	Units	D.F.	RptLimit	
1,1,1,2-Tetrachloroethane	630-20-6	BRL	mg/kg dw	1	0.0050	
1,1,1-Trichloroethane	71-55-6	BRL	mg/kg dw	1	0.0050	
1,1,2,2-Tetrachloroethane	79-34-5	BRL	mg/kg dw	1	0.0050	
1,1,2-Trichloroethane	79-00-5	BRL	mg/kg dw	1	0.0050	
1,1-Dichloroethane	75-34-3	BRL	mg/kg dw	1	0.0050	
1,1-Dichloroethylene	75-35-4	BRL	mg/kg dw	1	0.0050	
1,1-Dichloropropene	563-58-6	BRL	mg/kg dw	1	0.0050	
1,2,3-trichlorobenzene	87-61-6	BRL	mg/kg dw	1	0.0050	
1,2,3-Trichloropropane	96-18-4	BRL	mg/kg dw	1	0.0050	
1,2,4-Trichlorobenzene	120-82-1	BRL	mg/kg dw	1	0.0050	
1,2,4-Trimethylbenzene	95-63-6	BRL	mg/kg dw	1	0.0050	
1,2-Dibromo-3-	96-12-8	BRL	mg/kg dw	1	0.0050	
chloropropane						
1,2-Dibromoethane	106-93-4	BRL	mg/kg dw	1	0.0050	
1,2-Dichlorobenzene	95-50-1	BRL	mg/kg dw	1	0.0050	
1,2-Dichloroethane	107-06-2	BRL	mg/kg dw	1	0.0050	
1,2-Dichloropropane	78-87-5	BRL	mg/kg dw	1	0.0050	
1,3,5-Trimethylbenzene	108-67-8	BRL	mg/kg dw	1	0.0050	
1,3-Dichlorobenzene	541-73-1	BRL	mg/kg dw	1	0.0050	
1,4-Dichlorobenzene	106-46-7	BRL	mg/kg dw	1	0.0050	
2,2-Dichloropropane	594-20-7	BRL	mg/kg dw	1	0.0050	
2-Chlorotoluene	95-49-8	BRL	mg/kg dw	1	0.0050	
2-Hexanone	591-78-6	BRL	mg/kg dw	1	0.010	
1-Chlorotoluene	106-43-4	BRL	mg/kg dw	1	0.0050	
4-Isopropyltoluene	99-87-6	BRL	mg/kg dw	1	0.0050	
Acetone	67-64-1	BRL	mg/kg dw	1	0.050	
Benzene	71-43-2	BRL	mg/kg dw	1	0.0050	
Bromobenzene	108-86-1	BRL	mg/kg dw	1	0.0050	
Bromochloromethane	74-97-5	BRL	mg/kg dw	1	0.0050	
Bromodichloromethane	75-27-4	BRL	mg/kg dw	1	0.0050	
Bromoform	75-25-2	BRL	mg/kg dw	1	0.0050	
Bromomethane	74-83-9	BRL	mg/kg dw	1	0.0050	
Carbon disulfide	75-15-0	BRL	mg/kg dw	1	0.0050	
Carbon tetrachloride	56-23-5	BRL	mg/kg dw	1	0.0050	
Chlorobenzene	108-90-7	BRL	mg/kg dw	1	0.0050	
Chloroethane	75-00-3	BRL	mg/kg dw	1	0.0050	
Chloroform	67-66-3	BRL	mg/kg dw	1	0.0050	
Chloromethane	74-87-3	BRL	mg/kg dw	1	0.0050	
cis-1,2-Dichloroethylene	156-59-2	BRL	mg/kg dw	1	0.0050	
cis-1,3-Dichloropropene	10061-01-5	BRL	mg/kg dw	1	0.0050	
Dibromochloromethane	124-48-1	BRL	mg/kg dw	1	0.0050	
Dibromomethane	74-95-3	BRL	mg/kg dw	1	0.0050	

JobID: 14012811





■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Method: SW-846 8260B Reporting Units: mg/kg dw

QC Batch ID : Qb14013114 Created Date : 01/31/2014 Created By : PGrimm

Samples in This QC Batch: 14012811.01,02,03

OC Tymes Method Plants						
QC Type: Method Blank						
Parameter	CAS #	Result	Units	D.F.	RptLimit	
Dichlorodifluoromethane	75-71-8	BRL	mg/kg dw	1	0.0050	
Ethylbenzene	100-41-4	BRL	mg/kg dw	1	0.0050	
Hexachlorobutadiene	87-68-3	BRL	mg/kg dw	1	0.0050	
Isopropylbenzene	98-82-8	BRL	mg/kg dw	1	0.0050	
MEK (2-Butanone)	78-93-3	BRL	mg/kg dw	1	0.010	
Methylene chloride	75-09-2	0.00551	mg/kg dw	1	0.010	
MIBK (Methyl Isobutyl Ketone)	108-10-1	BRL	mg/kg dw	1	0.010	
MTBE	1634-04-4	BRL	mg/kg dw	1	0.0050	
Naphthalene	91-20-3	BRL	mg/kg dw	1	0.0050	
n-Butylbenzene	104-51-8	BRL	mg/kg dw	1	0.0050	
n-Propylbenzene	103-65-1	BRL	mg/kg dw	1	0.0050	
sec-Butylbenzene	135-98-8	BRL	mg/kg dw	1	0.0050	
Styrene	100-42-5	BRL	mg/kg dw	1	0.0050	
t-butylbenzene	98-06-6	BRL	mg/kg dw	1	0.0050	
Tetrachloroethylene	127-18-4	BRL	mg/kg dw	1	0.0050	
Toluene	108-88-3	BRL	mg/kg dw	1	0.0050	
trans-1,2-Dichloroethylene	156-60-5	BRL	mg/kg dw	1	0.0050	
trans-1,3-Dichloropropene	10061-02-6	BRL	mg/kg dw	1	0.0050	
Trichloroethylene	79-01-6	BRL	mg/kg dw	1	0.0050	
Trichlorofluoromethane	75-69-4	BRL	mg/kg dw	1	0.0050	
Vinyl Chloride	75-01-4	BRL	mg/kg dw	1	0.0050	
xylene-o	95-47-6	BRL	mg/kg dw	1	0.0050	
xylenes (m&P)	108-38-3&106-42-3	BRL	mg/kg dw	1	0.010	
xylenes (total)	1330-20-7	BRL	mg/kg dw	1	0.015	
Dibromofluoromethane (Surr)	1868-53-7	0.0420	%	1	62.1-137	
p-Bromofluorobenzene (Surr)	460-00-4	0.0580	%	1	47.0-155	
Toluene-d8 (Surr)	2037-26-5	0.0550	%	1	64.0-143	

QC Type: LCS and LCS	QC Type: LCS and LCSD														
Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual					
1,1,1,2-Tetrachloroethane	0.05	0.0580	116.00	0.05	0.0520	104.00	10.9	30	56.1-146						
1,1,1-Trichloroethane	0.05	0.0460	92.00	0.05	0.0450	90.00	2.19	30	69.4-139						
1,1,2,2-Tetrachloroethane	0.05	0.0550	110.00	0.05	0.0520	104.00	5.60	30	52.6-147						
1,1,2-Trichloroethane	0.05	0.0560	112.00	0.05	0.0550	110.00	1.80	30	67.7-138						
1,1-Dichloroethane	0.05	0.0450	90.00	0.05	0.0450	90.00	0.0000	30	66.9-136						
1,1-Dichloroethylene	0.05	0.0450	90.00	0.05	0.0440	88.00	2.24	30	52.5-139						
1,1-Dichloropropene	0.05	0.0510	102.00	0.05	0.0510	102.00	0.0000	30	64.1-137						
1,2,3-trichlorobenzene	0.05	0.0500	100.00	0.05	0.0480	96.00	4.08	30	64.2-129						

JobID: 14012811





■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Method: SW-846 8260B Reporting Units: mg/kg dw

QC Batch ID : Qb14013114 Created Date : 01/31/2014 Created By : PGrimm

Samples in This QC Batch: 14012811.01,02,03

	LCS	LCS	LCS	LCSD	LCSD	LCSD		RPD	%Recovery	
Parameter	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qua
1,2,3-Trichloropropane	0.05	0.0700	140.00	0.05	0.0650	130.00	7.40	30	55.0-150	
1,2,4-Trichlorobenzene	0.05	0.0500	100.00	0.05	0.0450	90.00	10.5	30	67.8-129	
1,2,4-Trimethylbenzene	0.05	0.0570	114.00	0.05	0.0510	102.00	11.1	30	61.4-145	
1,2-Dibromo-3-	0.05	0.0490	98.00	0.05	0.0480	96.00	2.06	30	25.0-147	
chloropropane										
1,2-Dibromoethane	0.05	0.0540	108.00	0.05	0.0550	110.00	1.83	30	65.0-138	
1,2-Dichlorobenzene	0.05	0.0570	114.00	0.05	0.0560	112.00	1.76	30	68.6-129	
1,2-Dichloroethane	0.05	0.0500	100.00	0.05	0.0490	98.00	2.02	30	71.4-133	
1,2-Dichloropropane	0.05	0.0620	124.00	0.05	0.0620	124.00	0.0000	30	65.9-151	
1,3,5-Trimethylbenzene	0.05	0.0560	112.00	0.05	0.0510	102.00	9.34	30	59.1-144	
1,3-Dichlorobenzene	0.05	0.0600	120.00	0.05	0.0550	110.00	8.69	30	64.9-138	
1,4-Dichlorobenzene	0.05	0.0600	120.00	0.05	0.0560	112.00	6.89	30	65.7-145	
2,2-Dichloropropane	0.05	0.0470	94.00	0.05	0.0460	92.00	2.15	30	72.5-137	
2-Chlorotoluene	0.05	0.0590	118.00	0.05	0.0550	110.00	7.01	30	45.8-147	
2-Hexanone	0.1	0.102	102.00	0.1	0.100	100.00	1.98	30	39.8-174	
4-Chlorotoluene	0.05	0.0620	124.00	0.05	0.0580	116.00	6.66	30	66.6-140	
4-Isopropyltoluene	0.05	0.0570	114.00	0.05	0.0530	106.00	7.27	30	64.6-150	
Acetone	0.1	0.0580	58.00	0.1	0.0550	55.00	5.30	30	46.5-142	
Benzene	0.05	0.0440	88.00	0.05	0.0430	86.00	2.29	30	60.5-139	
Bromobenzene	0.05	0.0600	120.00	0.05	0.0570	114.00	5.12	30	67.0-135	
Bromochloromethane	0.05	0.0470	94.00	0.05	0.0470	94.00	0.0000	30	57.4-142	
Bromodichloromethane	0.05	0.0560	112.00	0.05	0.0570	114.00	1.76	30	65.5-140	
Bromoform	0.05	0.0250	66.00	0.05	0.0420	84.00	24.0	30	26.0-148	
Bromomethane	0.05	0.0360	72.00	0.05	0.0360	72.00	0.0000	30	47.5-174	
Carbon disulfide	0.05	0.0390	78.00	0.05	0.0380	76.00	2.59	30	26.6-186	
Carbon tetrachloride	0.05	0.0460	92.00	0.05	0.0450	90.00	2.19	30	64.0-139	
Chlorobenzene	0.05	0.0550	110.00	0.05	0.0530	106.00	3.70	30	71.6-130	
Chloroethane	0.05	0.0490	98.00	0.05	0.0480	96.00	2.06	30	37.5-156	
Chloroform	0.05	0.0470	94.00	0.05	0.0470	94.00	0.0000	30	69.3-139	
Chloromethane	0.05	0.0520	104.00	0.05	0.0520	104.00	0.0000	30	57.3-125	
cis-1,2-Dichloroethylene	0.05	0.0320	88.00	0.05	0.0320	84.00	4.65	30	68.7-136	
cis-1,3-Dichloropropene	0.05	0.0600	120.00	0.05	0.0590	118.00	1.68	30	58.8-144	
Dibromochloromethane	0.05	0.0500	100.00	0.05	0.0500	100.00	0.0000	30	51.4-148	
Dibromomethane	0.05	0.0600	120.00	0.05	0.0590	118.00	1.68	30	68.0-144	
Dichlorodifluoromethane	0.05	0.0680	136.00	0.05	0.0590	134.00	1.48	30	58.8-147	
Ethylbenzene	0.05	0.0590	118.00	0.05	0.0540	108.00	8.84	30	71.6-135	
Euryppenzene Hexachlorobutadiene	0.05	0.0590	106.00	0.05	0.0540	94.00	12	30		
									59.6-142	
Isopropylbenzene	0.05	0.0580	116.00	0.05	0.0540	108.00	7.14	30	66.3-131	
MEK (2-Butanone)	0.1	0.0720	72.00	0.1	0.0710	71.00	1.39	30	45.8-147	
Methylene chloride	0.05	0.0590	118.00	0.05	0.0560	112.00	5.21	30	54.3-138	
MIBK (Methyl Isobutyl Ketone)	0.10	0.118	118.00	0.10	0.114	114.00	3.44	30	42.3-157	
MTBE	0.05	0.0440	88.00	0.05	0.0440	88.00	0.0000	30	53.0-133	

RP14021105

JobID: 14012811



■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Method: SW-846 8260B Reporting Units: mg/kg dw

QC Batch ID : Qb14013114 Created Date : 01/31/2014 Created By : PGrimm

Samples in This QC Batch: 14012811.01,02,03

QC Type: LCS and LCSD													
QC Type: LCS and LCS	ע												
	LCS	LCS	LCS	LCSD	LCSD	LCSD		RPD	%Recovery				
Parameter	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual			
Naphthalene	0.050	0.0480	96.00	0.050	0.0440	88.00	8.69	30	38.7-133				
n-Butylbenzene	0.05	0.0610	122.00	0.05	0.0560	112.00	8.54	30	58.7-150				
n-Propylbenzene	0.05	0.0620	124.00	0.05	0.0560	112.00	10.1	30	60.4-145				
sec-Butylbenzene	0.05	0.0600	120.00	0.05	0.0550	110.00	8.69	30	62.0-141				
Styrene	0.05	0.0570	114.00	0.05	0.0530	106.00	7.27	30	73.0-131				
t-butylbenzene	0.05	0.0580	116.00	0.05	0.0530	106.00	9.00	30	71.6-124				
Tetrachloroethylene	0.05	0.0540	108.00	0.05	0.0520	104.00	3.77	30	76.6-136				
Toluene	0.05	0.0550	110.00	0.05	0.0530	106.00	3.70	30	69.6-141				
trans-1,2-Dichloroethylene	0.05	0.0440	88.00	0.05	0.0430	86.00	2.29	30	61.1-134				
trans-1,3-Dichloropropene	0.05	0.0630	126.00	0.05	0.0620	124.00	1.6	30	54.4-149				
Trichloroethylene	0.05	0.0570	114.00	0.05	0.0560	112.00	1.76	30	65.8-141				
Trichlorofluoromethane	0.05	0.0530	106.00	0.05	0.0520	104.00	1.90	30	58.2-147				
Vinyl Chloride	0.05	0.0530	106.00	0.05	0.0530	106.00	0.0000	30	63.8-124				
xylene-o	0.05	0.0610	122.00	0.05	0.0560	112.00	8.54	30	67.5-131				
xylenes (m&P)	0.1	0.123	123.00	0.1	0.112	112.00	9.36	30	63.8-147				
xylenes (total)	0.15	0.184	122.67	0.15	0.169	112.67	8.49	30	63.8-147				
Dibromofluoromethane (Surr)	0.050	0.0420	84.00	0.050	0.0420	84.00			62.1-137				
p-Bromofluorobenzene (Surr)	0.050	0.0600	120.00	0.050	0.0590	118.00			47.0-155				
Toluene-d8 (Surr)	0.050	0.0550	110.00	0.050	0.0550	110.00			64.0-143				

QC Type: MS and MSD											
QC Sample ID: 140128	310.04										
	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec	
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual
1,1,1,2-Tetrachloroethane		0.043	0.0360	83.72						56.1-146	
1,1,1-Trichloroethane		0.043	0.0360	83.72						69.4-139	
1,1,2,2-Tetrachloroethane		0.043	0.0370	86.05						52.6-147	
1,1,2-Trichloroethane		0.043	0.0360	83.72						67.7-138	
1,1-Dichloroethane		0.043	0.0340	79.07						66.9-136	
1,1-Dichloroethylene		0.043	0.0350	81.40						52.5-139	
1,1-Dichloropropene		0.043	0.0400	93.02						64.1-137	
1,2,3-trichlorobenzene		0.043	0.0270	62.79						64.2-129	J1
1,2,3-Trichloropropane		0.043	0.0430	100.00						55.0-150	
1,2,4-Trichlorobenzene		0.043	0.0260	60.47						67.8-129	J1
1,2,4-Trimethylbenzene		0.043	0.0370	86.05						61.4-145	
1,2-Dibromo-3-											
chloropropane		0.043	0.0310	72.09						25.0-147	
1,2-Dibromoethane		0.043	0.0360	83.72						65.0-138	
1,2-Dichlorobenzene		0.043	0.0360	83.72						68.6-129	
1,2-Dichloroethane		0.043	0.0320	74.42						71.4-133	

JobID: 14012811





■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Method: SW-846 8260B Reporting Units: mg/kg dw

QC Batch ID : Qb14013114 Created Date : 01/31/2014 Created By : PGrimm

Samples in This QC Batch: 14012811.01,02,03

	Sample	MS	MS	MS	MSD	MSD	MSD		RPD	%Rec	
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qua
1,2-Dichloropropane		0.043	0.0460	106.98						65.9-151	
1,3,5-Trimethylbenzene		0.043	0.0380	88.37						59.1-144	
1,3-Dichlorobenzene		0.043	0.0380	88.37						64.9-138	
1,4-Dichlorobenzene		0.043	0.0360	83.72						65.7-145	
2,2-Dichloropropane		0.043	0.0360	83.72						72.5-137	
2-Chlorotoluene		0.043	0.0410	95.35						45.8-147	
2-Hexanone		0.086	0.0700	81.40						39.8-174	
4-Chlorotoluene		0.043	0.0410	95.35						66.6-140	
4-Isopropyltoluene		0.043	0.0390	90.70						64.6-150	
Acetone		0.086	0.0420	48.84						46.5-142	
Benzene		0.043	0.0310	72.09						60.5-139	
Bromobenzene		0.043	0.0390	90.70						67.0-135	
Bromochloromethane		0.043	0.0300	69.77						57.4-142	
Bromodichloromethane		0.043	0.0420	97.67						65.5-140	
Bromoform		0.043	0.0140	32.56						26.0-148	
Bromomethane		0.043	0.0260	60.47						47.5-174	
Carbon disulfide		0.043	0.0290	67.44						26.6-186	
Carbon tetrachloride		0.043	0.0340	79.07						64.0-139	
Chlorobenzene		0.043	0.0380	88.37						71.6-130	
Chloroethane		0.043	0.0360	83.72						37.5-156	
Chloroform		0.043	0.0330	76.74						69.3-139	
Chloromethane		0.043	0.0380	88.37						57.3-125	
cis-1,2-Dichloroethylene		0.043	0.0300	69.77						68.7-136	
cis-1,3-Dichloropropene		0.043	0.0400	93.02						58.8-144	
Dibromochloromethane		0.043	0.0320	74.42						51.4-148	
Dibromomethane		0.043	0.0400	93.02						68.0-144	
Dichlorodifluoromethane		0.043	0.0540	125.58						58.8-147	
Ethylbenzene		0.043	0.0410	95.35						71.6-135	
Hexachlorobutadiene		0.043	0.0340	79.07						59.6-142	
Isopropylbenzene		0.043	0.0420	97.67						66.3-131	
MEK (2-Butanone)		0.086	0.0480	55.81						45.8-147	
Methylene chloride		0.043	0.0320	74.42						54.3-138	
MIBK (Methyl Isobutyl											
Ketone)		0.086	0.0910	105.81				1		42.3-157	
MTBE		0.043	0.0270	62.79				1		53.0-133	
Naphthalene		0.043	0.0300	69.77				1		38.7-133	
n-Butylbenzene		0.043	0.0420	97.67				1		58.7-150	
n-Propylbenzene		0.043	0.0430	100.00						60.4-145	
sec-Butylbenzene		0.043	0.0420	97.67				1		62.0-141	
Styrene		0.043	0.0370	86.05				1		73.0-131	
t-butylbenzene		0.043	0.0400	93.02						71.6-124	

JobID: 14012811





■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Analysis: Method: SW-846 8260B Reporting Units: mg/kg dw

QC Batch ID : Qb14013114 Created Date : 01/31/2014 Created By : PGrimm

Samples in This QC Batch: 14012811.01,02,03

QC Type: MS and MSD	QC Type: MS and MSD											
QC Sample ID: 140128	10.04											
	Sample	MS	MS	MS	MSD	MSD	MSD	0/ 888	RPD	%Rec		
Parameter	Result	Spk Added	Result	% Rec	Spk Added	Result	% Rec	%RPD	CtrlLimit	CtrlLimit	Qual	
Tetrachloroethylene		0.043	0.0410	95.35						76.6-136		
Toluene		0.043	0.0410	95.35						69.6-141		
trans-1,2-Dichloroethylene		0.043	0.0320	74.42						61.1-134		
trans-1,3-Dichloropropene		0.043	0.0410	95.35						54.4-149		
Trichloroethylene		0.043	0.0440	102.33						65.8-141		
Trichlorofluoromethane		0.043	0.0410	95.35						58.2-147		
Vinyl Chloride		0.043	0.0410	95.35						63.8-124		
xylene-o		0.043	0.0410	95.35						67.5-131		
xylenes (m&P)		0.086	0.0870	101.16						63.8-147		
xylenes (total)		0.130	0.128	98.46						63.8-147		
Dibromofluoromethane												
(Surr)		0.043	0.0330	76.74						62.1-137		
p-Bromofluorobenzene (Surr)		0.043	0.0480	111.63						47.0-155		
Toluene-d8 (Surr)		0.043	0.0520	120.93						64.0-143		

Refer to the Definition page for terms.

Date: 02/11/2014 16:23 Page 17 of 22



SAMPLE PREPARATION INFORMATION

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon			Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners			Date:	02/11/2014
Sample ID	Test	Prep method	Date Prepared	Analyst	Prep Batch ID
14012811.01	Percent Solids	SM2540b	01/28/2014 02:00 PM	JKitchings	PB14013001
14012811.01	VOC-Terracon Soil	SW5035	01/30/2014 08:15 AM	BMullis	PB14013115
14012811.02	Percent Solids	SM2540b	01/28/2014 02:00 PM	JKitchings	PB14013001
14012811.02	VOC-Terracon Soil	SW5035	01/30/2014 08:15 AM	BMullis	PB14013115
14012811.03	Percent Solids	SM2540b	01/28/2014 02:00 PM	JKitchings	PB14013001
14012811.03	VOC-Terracon Soil	SW5035	01/30/2014 08:15 AM	BMullis	PB14013115



TERM AND QUALIFIER DEFINITION

JobID:

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

General Term Definition

Conc. Concentration

DF Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content

ND Non Detect - Not Detected at or above adjusted reporting limit

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

RL adjusted Reporting Limit (QL – Quantification Limit)
MDL adjusted Method Detection Limit (LOD – Limit of Detection)

RegLimit Regulatory Limit Milligrams per Liter mg/l Milligrams per Kilogram mg/kg Parts per Million ppm Micrograms per Liter μg/L μg/g Micrograms per Gram Parts per Billion ppb Grains per Gallon gr/gal SU Standard Units CCU Cobalt Color Units

NTU Nephelometric Turbidity Units µS/cm Microsiemens per cm at 25C

P/A Presence/Absence
CFU Colony Forming Units
MPN Most Probable Number

RB Reagent Blank MB Method Blank

LCS Laboratory Control Sample

LCSD Laboratory Control Sample Duplicate

LFM Laboratory Fortified Matrix (MS – Matrix Spike)

LFMD Laboratory Fortified Matrix Duplicate (MSD – Matrix Spike Duplicate)

DUP Sample Duplicate

RPD Relative Percent Difference

%Rec
 Percent Recovery
 TNTC
 Too numerous to count
 NC
 Not Calculable
 SG
 Silica Gel - Clean-Up
 BRL
 Below Reporting Limit
 BDL
 Below Detection Limit

Qualifier Definition

J1 Estimated value-The reported value failed the established quality control criteria for accuracy and /or

precision.



CASE NARRATIVE

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name: Terracon

Project Name: Martha Dry Cleaners

Date Received: 01/28/2014,01/28/2014,01/28/2014

Collected By: JHC

Matrix Spikes

Method SW8260b: The matrix spike/ matrix spike duplicate recoveries were outside the established laboratory control limits for several analytes. The lab spike recoveries were inside acceptable limits, so the data was reported. The matrix spikes have been qualified accordingly.

Total Organic Carbon was subcontracted to AES. The data is on a separate report.

Released By: Robert Paul Grimm

Title: Technical Director

Date: 02/11/2014 16:21 Primary Lab Certification # NELAP: FL-E87941



SAMPLE SUMMARY

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Project ID:

Martha Dry Cleaners

Report To: Client Name: Terracon Attn: Stuart Dixon

Client Address: 2201 Rowland Ave. P.O.#.:

City, State, Zip: Savannah, GA, 31404

The laboratory has analyzed the following samples:

Client Sample ID	Matrix	Sample ID	Date Received	Date Collected	Collected by
SS-1	Soil	14012811.01	01/28/2014	01/28/2014	JHC
SS-2	Soil	14012811.02	01/28/2014	01/28/2014	JHC
SS-3	Soil	14012811.03	01/28/2014	01/28/2014	JHC



SAMPLE CONDITION CHECKLIST

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name :	Terracon		Contact :	Stuart Dixon			
Address :	2201 Rowland Ave.		Contact Phone :	912 629-4000			
JobID : 14012811		Date Received: 01/28/2014	Time Received :	1:41PM			
Temperature :	2.5	Sample pH:					
ThermometerID	: 15953	pH Meter :					

Comments : Include actions taken to resolve discrepancies/Problem :	

	Check Points	Yes	No	N/A
1	Cooler seal present and signed.	V		
2	Sample(s) in a cooler.	V		
3	Sample received at 6°C or Less	V		
4	C-O-C signed and dated.	V		
5	Sample containers arrived in tact. (if no, comment)	V		
6	Sample(s) were received in appropriate contatiner. (If no, comment)	V		
7	Samples received within holding time for analysis requested	V		
8	Zero headspace in liquid VOA vials			~
9	Sample(s) were received at the proper pH.	V		
10	All samples were logged or labeled.	V		
11	Sample ID lables Match C-O-C ID's	V		
12	Bottle count on C-O-C matches bottle found.	V		
13	Sample amount is sufficient for analyses requested	V		
14	If requested, sample(s) received with signed sample custody seal			~
15	Samples accepted.	V		

Check In By : EGrimm Check in date : 01/28/2014 12:00 AM

Date: 02/11/2014 16:23 Primary Lab Certification # NELAP: FL-E87941

ANALYTICAL ENVIRONMENTAL SERVICES, INC.



February 10, 2014

Robert Paul Grimm Avery Laboratories & Environmental Services, LLC 101 B Estus Dr. Savannah GA 31404

TEL: (912) 944-3748 FAX: (912) 234-9294

RE: Marthas Dry Cleaners

Dear Robert Paul Grimm: Order No: 1402270

Analytical Environmental Services, Inc. received 3 samples on 2/4/2014 12:40:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- -NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
- -AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Nicole Jessup

Project Manager

Mich 2. Jessup

Serial Number: 68384 [46] 28	Subcontract Laboratory	Name / Address/ Phone	√	A V S		Δ.	Remarks			Transfer of the state of the st						6 = NAHSO4 7 = Water 8 = Other		Date Time: ,—SS -14 B. 14	Date/Time:	1	12/2/ 6//4/	Ret No G
/අයායට Ship To: 101 B Estus Dr. Savannah, Ga. 31404 T 912 944-3748 F 912 234-9294 email: pgrimm@averylab.com	Monthas Day Cleaners	State where work originated: C.A.														Preservative: 1= None 2 = H2SO4 3 = HN03 4 = HCL 5 = MeOH 6	Custody Seals Intact: Yes No		d by:		Trach	8 0.
Ship To: 101 B Estus T 912 944-3748 email: pgrimu		Sample: The Kroject Number:	24 Hours		S Working Days	7 Worlding Days Other:	Date Time Matrix # of Containers	1/27/14 11:15 5 4 × ×	- 33.51 - X						N = Nonaqueous (solvent, acid, etc.)	Preserv	Custody Seals: (Yes No	Date Time: 1/28/14] 3 4.(Date/Time: $\eta \mathcal{L} \mathcal{L} \mathcal{L}_{IJ} $	Date/Time:		Effective Date: 09.11.08
Aven Laboratories & Environmental Services, LLC	Client Information	224: 02:12	Oth/State/Zip: Savennah, 64 3 j 40 y	Struck Dix	Email: Sabiyen & Tenacon Com	Project Manager: Stewoort Dix Co	Sample Identification	1-S.S	55.2	\$5:8	Addition and the control of the cont	Trans Trans Advisor - Advisor			Matrix Type: A = Air W = Water ; S= Solid	Instructions or Special Requirements:	Temperature: $\beta.5$	Relinquished by: \ (\alpha \in \lambda \)	Keinquisheroy: //	Relinquished by:	The state of the s	. F86-01

Client: Avery Laboratories & Environmental Services, LLC Client Sample ID: SS-1

Project Name: Marthas Dry Cleaners Collection Date: 1/27/2014 11:15:00 AM

Lab ID: 1402270-001 **Matrix:** Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					(SW9060) Modifie	d)		
Total Organic Carbon (TOC)	2220		102	500	mg/Kg-dry	186796	1	02/07/2014 12:40	GR

Date:

10-Feb-14

Qualifiers:

* Value exceeds maximum contaminant level

BRL Not detected at MDL

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

NC Not confirmed

E Estimated value above quantitation range

S Spike Recovery outside limits due to matrix

J Estimated value detected below Reporting Limit

> Greater than Result value

< Less than Result value

Narr See case narrative

Client: Avery Laboratories & Environmental Services, LLC Client Sample ID: SS-2

Project Name: Marthas Dry Cleaners Collection Date: 1/27/2014 12:00:00 PM

Lab ID: 1402270-002 **Matrix:** Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					(SW9060) Modifie	d)		
Total Organic Carbon (TOC)	679		102	500	mg/Kg-dry	186796	1	02/07/2014 13:39	GR

Date:

10-Feb-14

Qualifiers:

* Value exceeds maximum contaminant level

BRL Not detected at MDL

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

NC Not confirmed

E Estimated value above quantitation range

S Spike Recovery outside limits due to matrix

J Estimated value detected below Reporting Limit

> Greater than Result value

< Less than Result value

Narr See case narrative

Client: Avery Laboratories & Environmental Services, LLC Client Sample ID: SS-3

Project Name: Marthas Dry Cleaners Collection Date: 1/27/2014 1:05:00 PM

Lab ID: 1402270-003 **Matrix:** Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified				(SW9060) Modifie	d)		
Total Organic Carbon (TOC)	295	J	102	500	mg/Kg-dry	186796	1	02/07/2014 14:48	GR

Date:

10-Feb-14

Qualifiers:

* Value exceeds maximum contaminant level

BRL Not detected at MDL

H Holding times for preparation or analysis exceeded

N Analyte not NELAC certified

B Analyte detected in the associated method blank

NC Not confirmed

E Estimated value above quantitation range

S Spike Recovery outside limits due to matrix

J Estimated value detected below Reporting Limit

> Greater than Result value

< Less than Result value

Narr See case narrative

Sample/Cooler Receipt Checklist

Client Avery		Work Order Number	1402270
Checklist completed by Signature Date	214/14		
Carrier name: FedEx UPS Courier Client US	S Mail Other		
Shipping container/cooler in good condition?	Yes	No Not Present	
Custody seals intact on shipping container/cooler?	Yes	No Not Present	
Custody seals intact on sample bottles?	Yes	No Not Present	
Container/Temp Blank temperature in compliance? (4°C±2)*	Yes _	No	
Cooler #1 Cooler #2 Cooler #3	_ Cooler #4 _	Cooler#5	Cooler #6
Chain of custody present?	Yes _	No	
Chain of custody signed when relinquished and received?	Yes _	No	
Chain of custody agrees with sample labels?	Yes _	No	
Samples in proper container/bottle?	Yes 🗹	No	
Sample containers intact?	Yes	No	
Sufficient sample volume for indicated test?	Yes	No	
All samples received within holding time?	Yes	No	
Was TAT marked on the COC?	Yes	No	
Proceed with Standard TAT as per project history?	Yes	No Not Applicable	e
Water - VOA vials have zero headspace? No VOA vials so	ubmitted	Yes No	
Water - pH acceptable upon receipt?	Yes	No Not Applicable	le <u>/</u>
,		cked by	
Sample Condition: Good Other(Explain)			-
(For diffusive samples or AIHA lead) Is a known blank include	ded? Yes	No/	

See Case Narrative for resolution of the Non-Conformance.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

^{*} Samples do not have to comply with the given range for certain parameters.

Avery Laboratories & Environmental Services, LLC **Client:**

Marthas Dry Cleaners **Project Name:**

Workorder: 1402270

ANALYTICAL QC SUMMARY REPORT

Date:

10-Feb-14

BatchID: 186796

Sample ID: MB-186796	Client ID:				Uni		•	p Date:	02/05/2014	Run No: 260887
SampleType: MBLK	TestCode: To	tal Organic Carbon SV	V9060A Modifie	ed	Bat	chID: 186796	Ana	alysis Date:	02/07/2014	Seq No: 5483904
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Re	f Val %RPI	O RPD Limit Qua
Total Organic Carbon (TOC)	BRL	500								
Sample ID: LCS-186796	Client ID:				Uni	ts: mg/Kg-o	dry Pre	p Date:	02/05/2014	Run No: 260887
SampleType: LCS	TestCode: To	tal Organic Carbon SV	V9060A Modifie	ed	Bat	chID: 186796	Ana	alysis Date:	02/07/2014	Seq No: 5483907
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Re	f Val %RPI	O RPD Limit Qua
Total Organic Carbon (TOC)	2385	500	2610		91.4	70	130			
Sample ID: 1402270-001ADUP	Client ID: SS	-1			Uni	ts: mg/Kg-o	dry Pre	p Date:	02/05/2014	Run No: 260887
SampleType: DUP	TestCode: To	tal Organic Carbon SV	V9060A Modifie	ed	Bat	chID: 186796	Ana	alysis Date:	02/07/2014	Seq No: 5483951
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Re	f Val %RPI	O RPD Limit Qua
Total Organic Carbon (TOC)	2222	500						2224	0.090	0 50

Qualifiers: Greater than Result value

> BRL Below reporting limit

Rpt Lim Reporting Limit

Estimated value detected below Reporting Limit

S Spike Recovery outside limits due to matrix

Less than Result value

E Estimated (value above quantitation range)

N Analyte not NELAC certified

B Analyte detected in the associated method blank

H Holding times for preparation or analysis exceeded

R RPD outside limits due to matrix

APPENDIX D

BIOCHLOR MODEL DATA - CALIBRATION

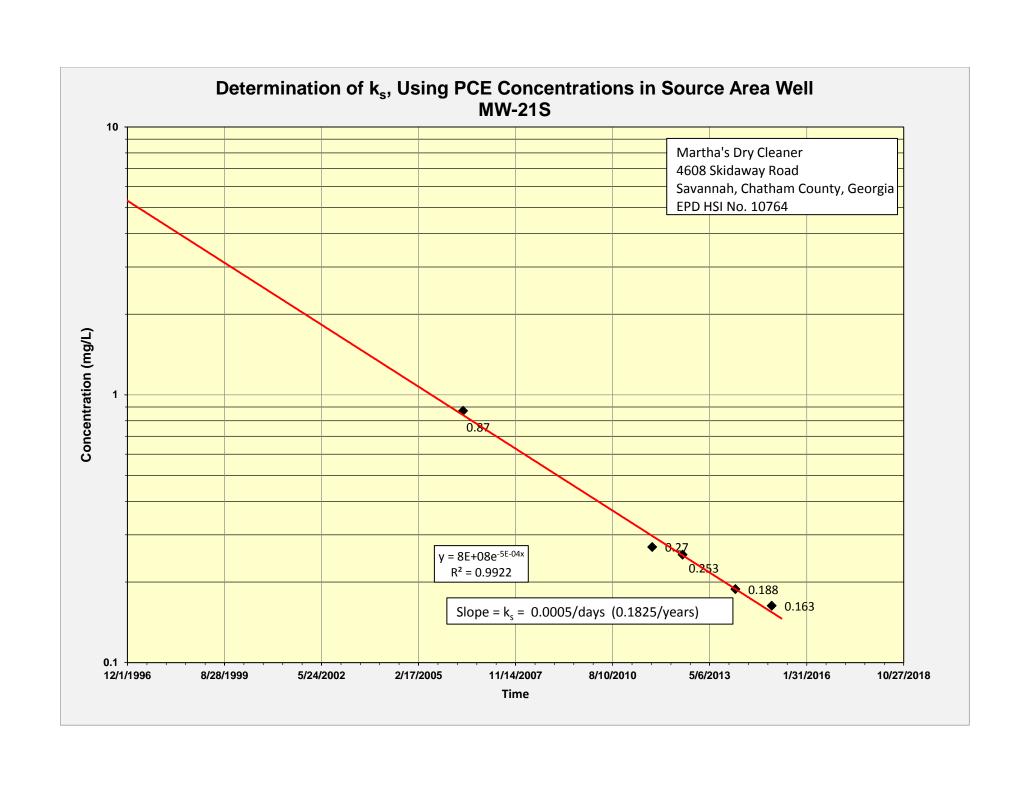


FIGURE D-1: CALIBRATION - 10 YEAR INPUT DATA

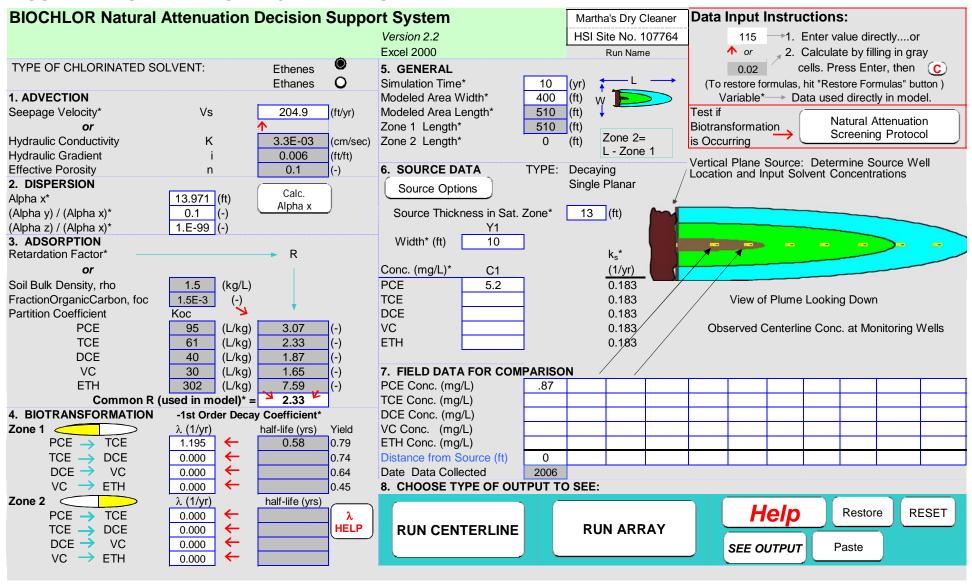


FIGURE D-2: CALIBRATION - 10 YEAR CENTERLINE DATA

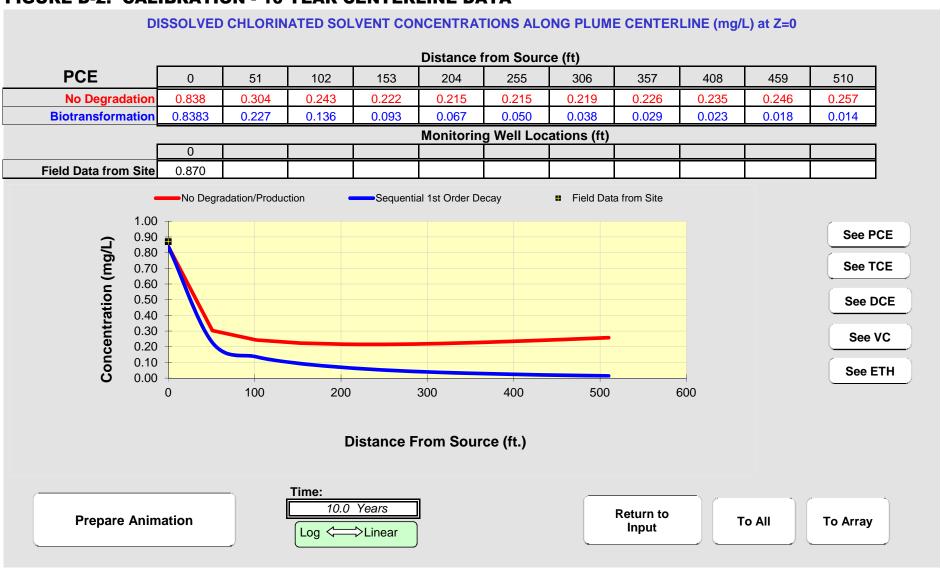
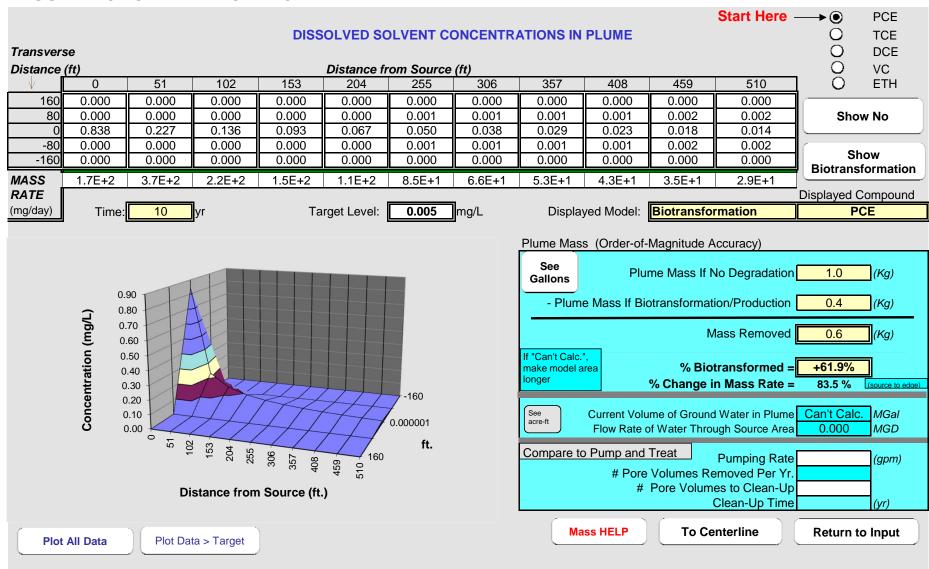


FIGURE D-3: CALIBRATION - 10 YEAR ARRAY DATA



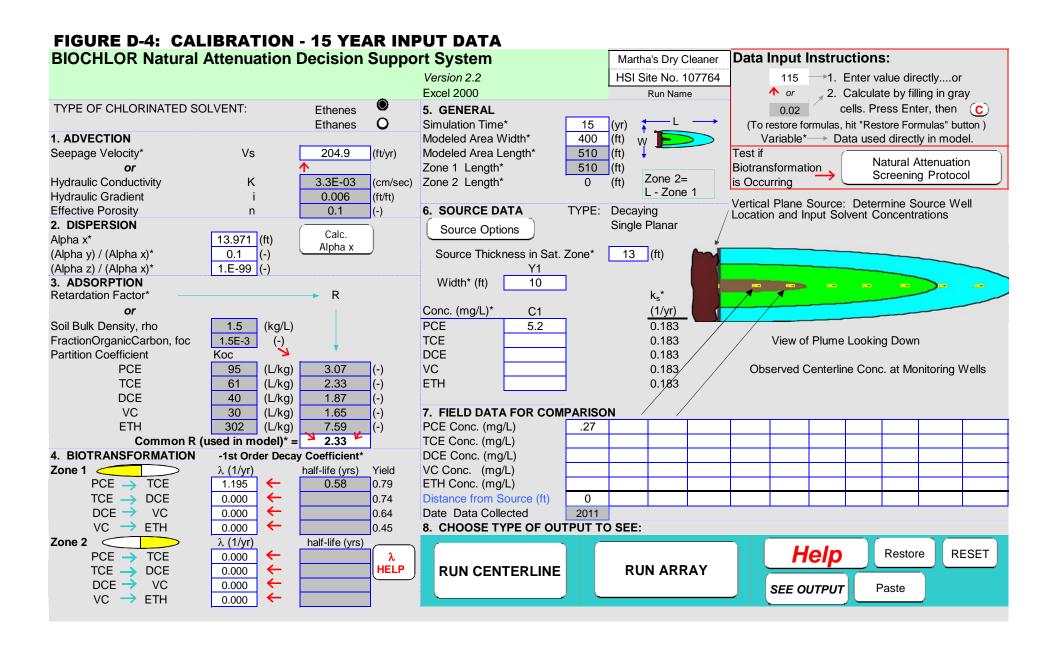


FIGURE D-5: CALIBRATION - 15 YEAR CENTERLINE DATA

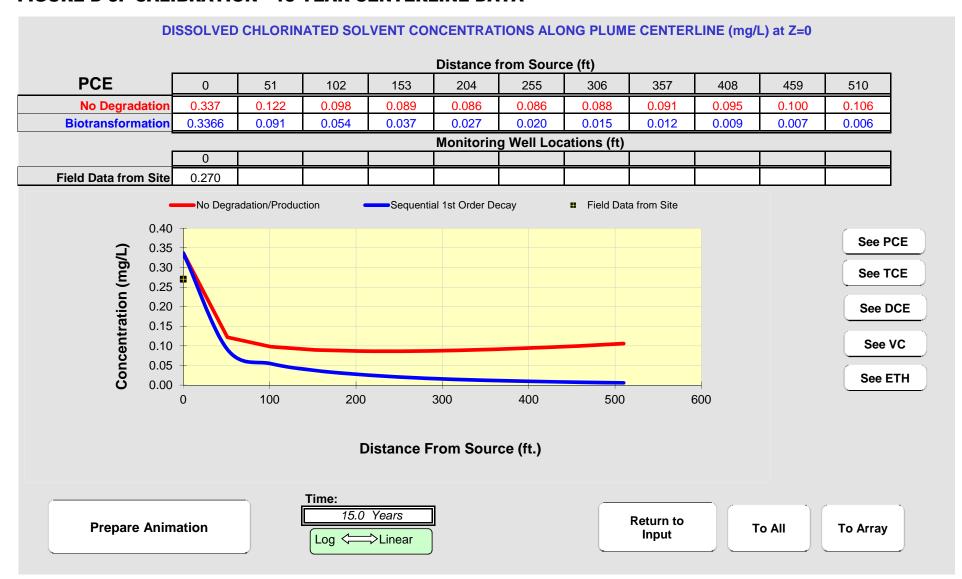


FIGURE D-6: CALIBRATION - 15 YEAR ARRAY DATA

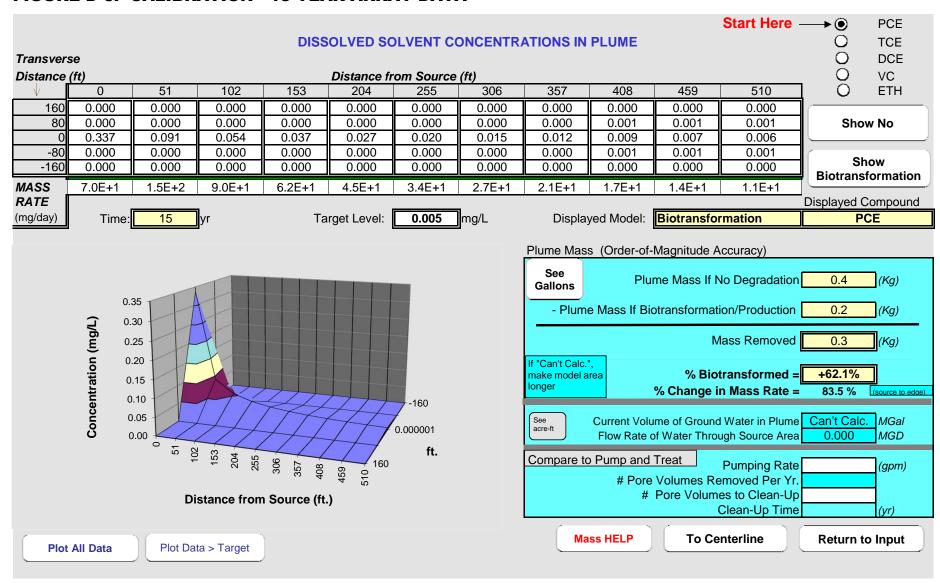


FIGURE D-7: CALIBRATION - 16 YEAR INPUT DATA **BIOCHLOR Natural Attenuation Decision Support System** Data Input Instructions: Martha's Dry Cleaner Version 2.2 HSI Site No. 107764 115 —1. Enter value directly....or Excel 2000 2. Calculate by filling in gray Run Name TYPE OF CHLORINATED SOLVENT: cells. Press Enter, then (C) 5. GENERAL **Ethenes** 0 Ethanes Simulation Time* 16 (yr) (To restore formulas, hit "Restore Formulas" button) 1. ADVECTION Variable* → Data used directly in model. Modeled Area Width* 400 (ft) Seepage Velocity* Vs 204.9 Modeled Area Length* 510 (ft) Test if (ft/yr) Natural Attenuation Biotransformation Zone 1 Length* 510 (ft) Screening Protocol Zone 2= Hydraulic Conductivity K 3.3E-03 Zone 2 Length* 0 is Occurring (cm/sec) (ft) I - Zone 1 Hydraulic Gradient 0.006 (ft/ft) Vertical Plane Source: Determine Source Well Effective Porosity 6. SOURCE DATA TYPE: Decaying n 0.1 Location and Input Solvent Concentrations 2. DISPERSION Single Planar Source Options Calc. 13.971 (ft) Alpha x* Alpha x Source Thickness in Sat. Zone* 13 (ft) (Alpha y) / (Alpha x)* 0.1 (-) (Alpha z) / (Alpha x)* 1.E-99 (-) Y1 3. ADSORPTION Width* (ft) 10 Retardation Factor* ks* Conc. (mg/L)* C1 (1/yr) PCE Soil Bulk Density, rho 1.5 (kg/L) 5.2 0.183 FractionOrganicCarbon, foc TCE 0.183 View of Plume Looking Down 1.5E-3 (-) DCE 0.183 Partition Coefficient Koc PCF VC 0.183/ Observed Centerline Conc. at Monitoring Wells 95 (L/kg) 3.07 TCE (L/kg) 0.183 61 2.33 ETH DCE 40 (L/kg) 1.87 VC 30 1.65 7. FIELD DATA FOR COMPARISON (L/kg) **ETH** 302 (L/kg) 7.59 PCE Conc. (mg/L) .253 .008 Common R (used in model)* = 2.33 TCE Conc. (mg/L) .007 .002 4. BIOTRANSFORMATION -1st Order Decay Coefficient* DCE Conc. (mg/L) .076 .002 VC Conc. (mg/L) Zone 1 λ (1/yr) half-life (yrs) Yield PCE → TCE ETH Conc. (mg/L) 1.195 0.58 0.79 255 TCE → DCE 0.000 0.74 Distance from Source (ft) 0 DCE → VC \leftarrow Date Data Collected 0.000 0.64 2012 8. CHOOSE TYPE OF OUTPUT TO SEE: VC → ETH 0.000 0.45 Zone 2 λ (1/yr) half-life (yrs) Help Restore RESET PCE → TCE 0.000 λ TCE → DCE HELP **RUN CENTERLINE RUN ARRAY** 0.000 \leftarrow DCE -> VC 0.000 SEE OUTPUT Paste VC → ETH 0.000

FIGURE D-8: CALIBRATION - 16 YEAR CENTERLINE DATA

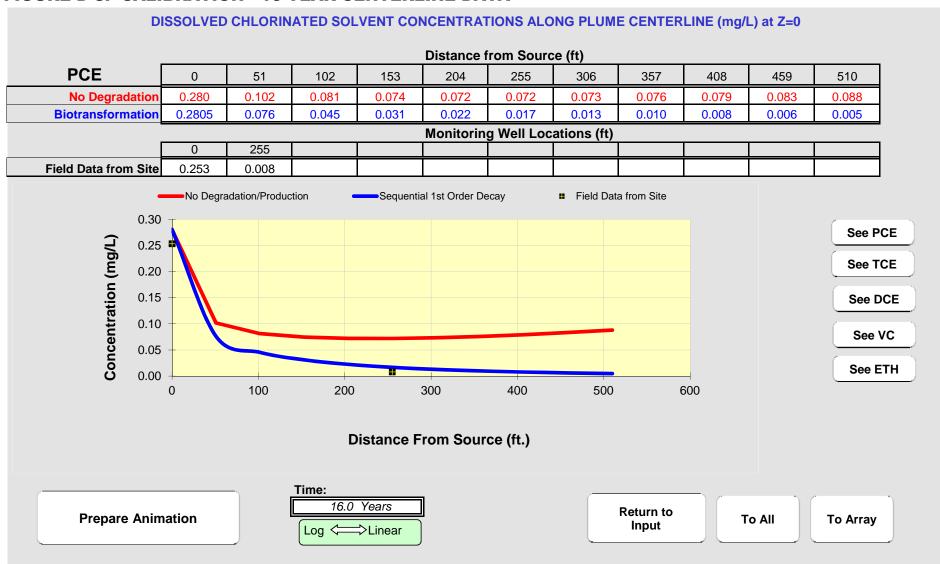


FIGURE D-9: CALIBRATION - 16 YEAR ARRAY DATA

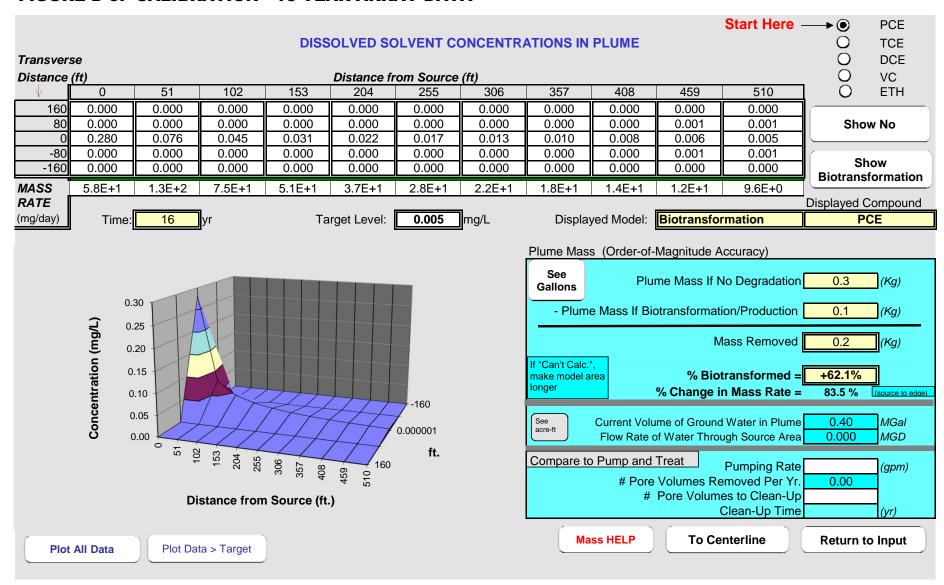


FIGURE D-10: CALIBRATION - 1, YEAR INPUT DATA

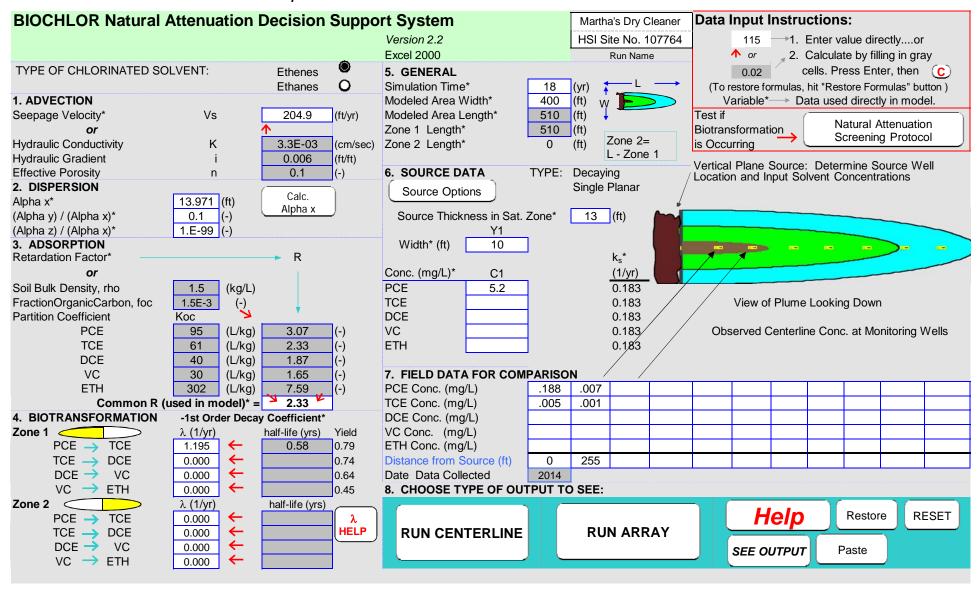


FIGURE D-11: CALIBRATION - 18 YEAR CENTERLINE DATA

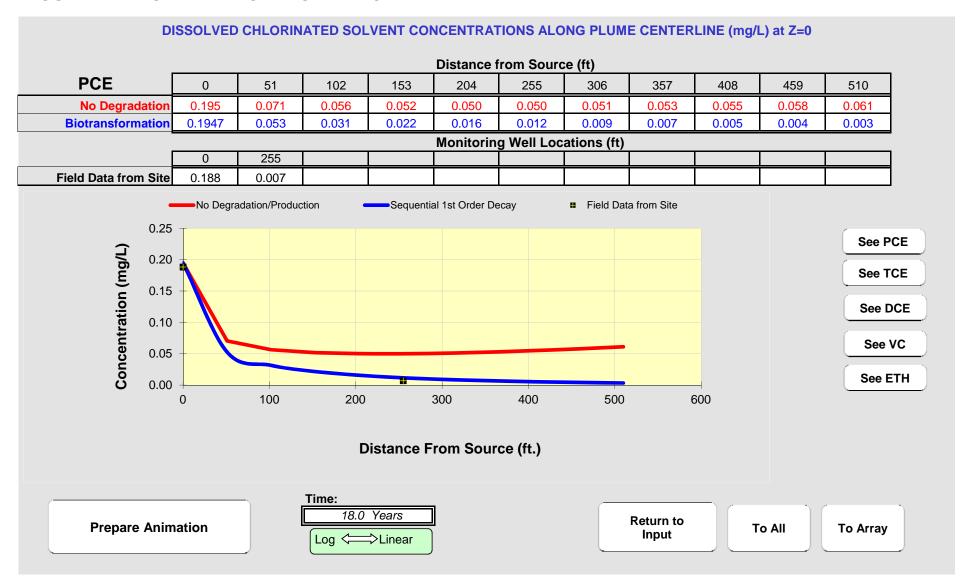


FIGURE D-12: CALIBRATION - 18 YEAR ARRAY DATA

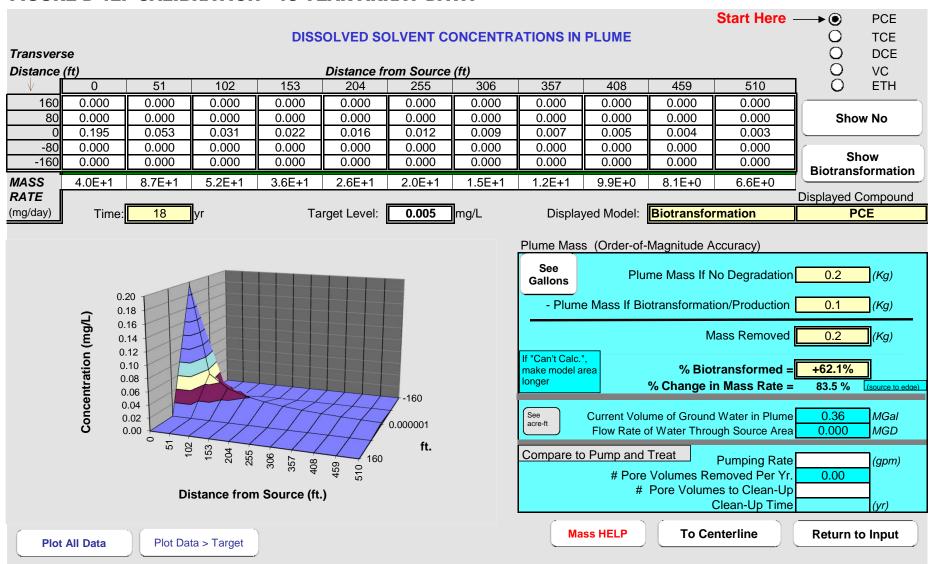


FIGURE D-13: CALIBRATION - 19 YEAR INPUT DATA

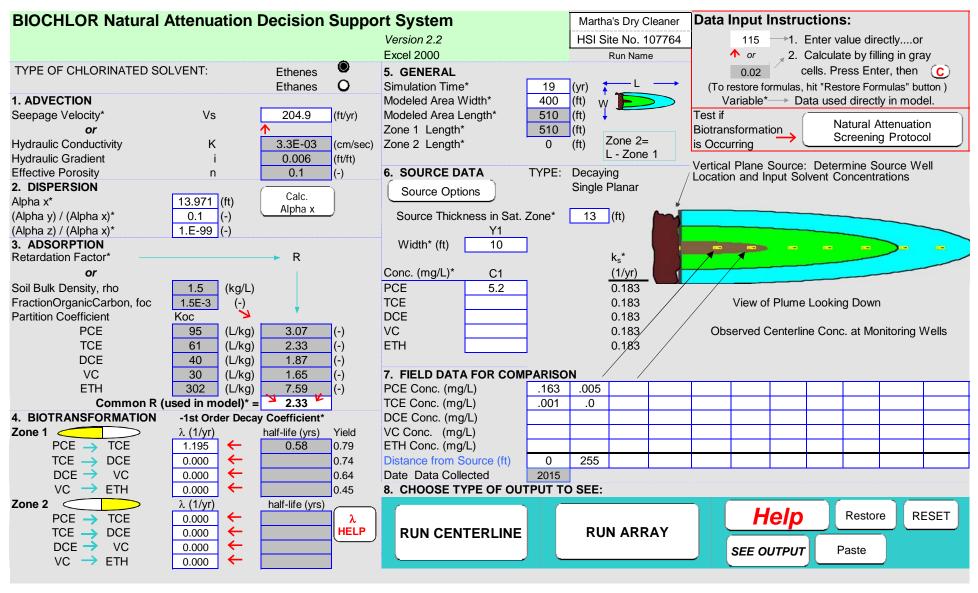


FIGURE D-14: CALIBRATION - 19 YEAR CENTERLINE DATA

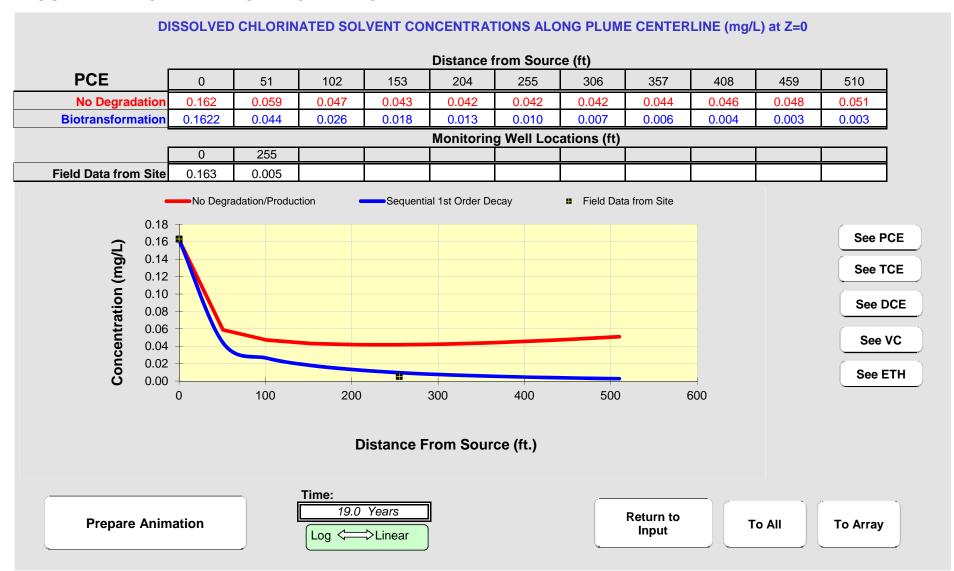
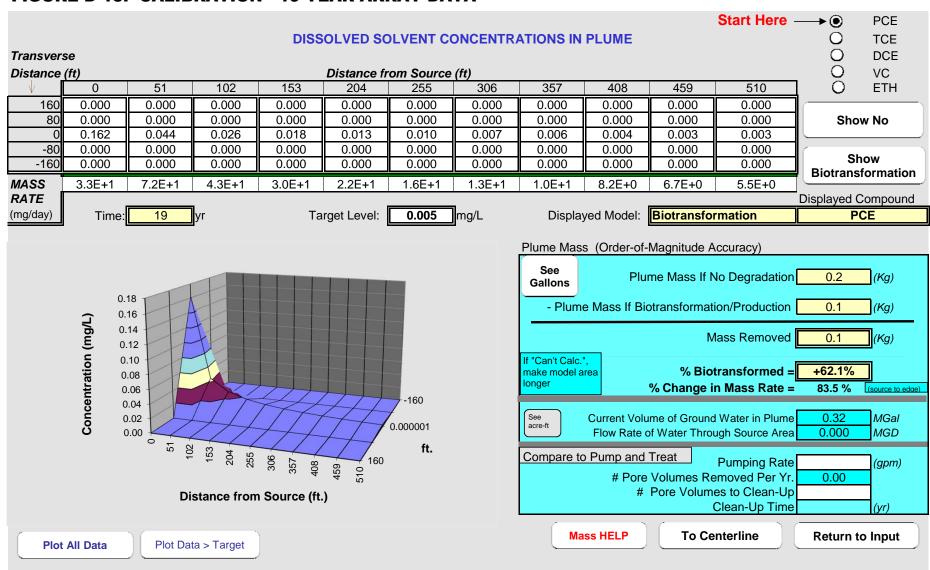


FIGURE D-15: CALIBRATION - 19 YEAR ARRAY DATA



APPENDIX E

BIOCHLOR MODEL DATA – SENSITIVITY ANALYSIS

FIGURE E-1: SENSITIVITY ANALYSIS - 2X HALF-LIFE INPUT DATA

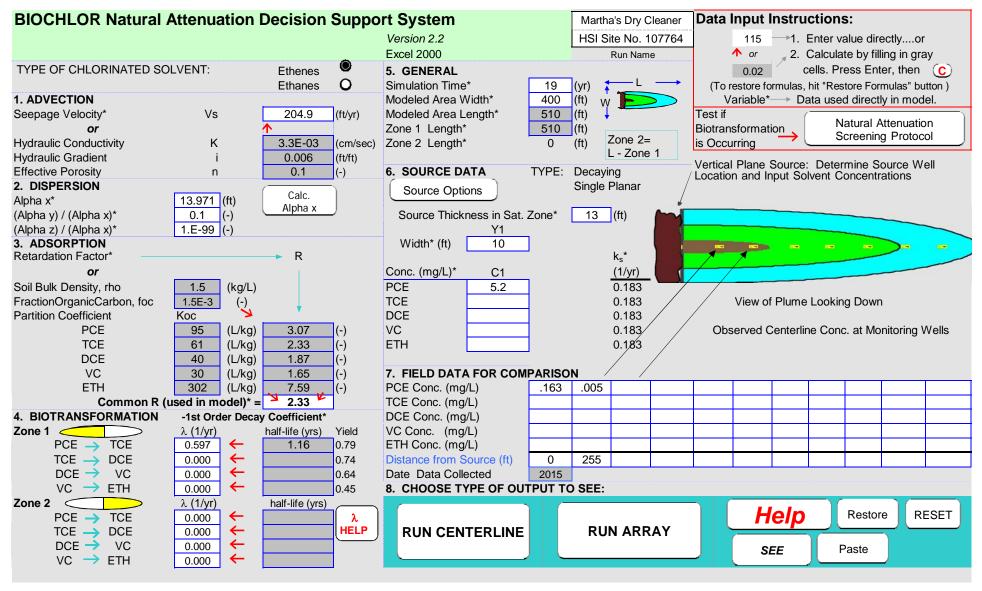


FIGURE E-2: SENSITIVITY ANALYSIS - 2X HALF-LIFE CENTERLINE DATA

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft) PCE 60 120 180 240 300 360 420 480 540 600 **No Degradation** 0.159 0.054 0.044 0.041 0.041 0.041 0.043 0.045 0.048 0.052 0.056 **Biotransformation** 0.1591 0.046 0.031 0.024 0.020 0.017 0.015 0.013 0.012 0.010 0.009 **Monitoring Well Locations (ft)** 255

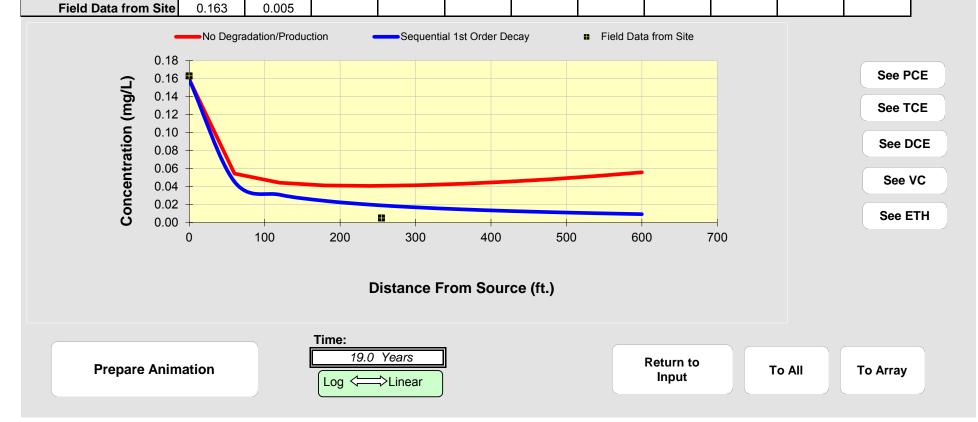


FIGURE E-3: SENSITIVITY ANALYSIS - 5X HALF-LIFE INPUT DATA

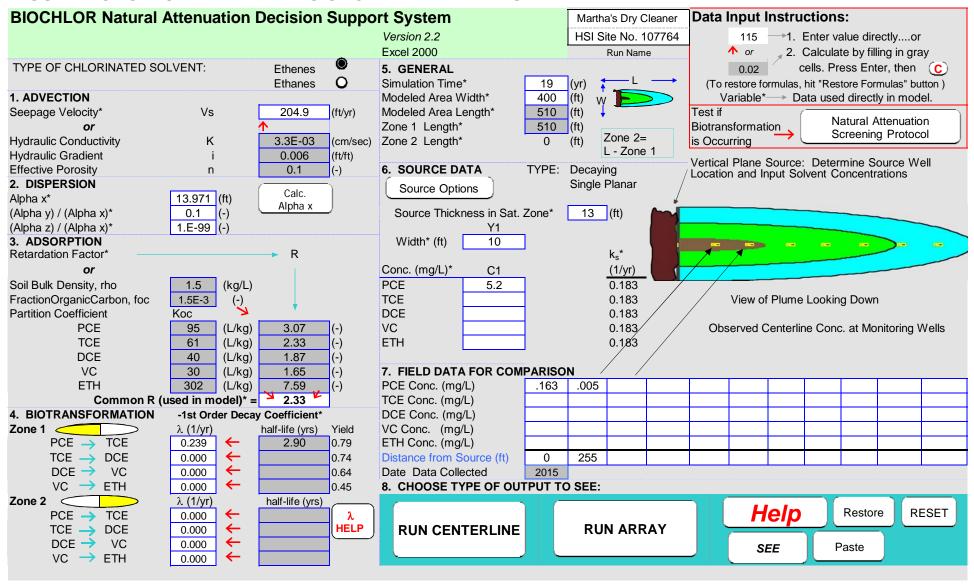


FIGURE E-4: SENSITIVITY ANALYSIS - 5X HALF-LIFE CENTERLINE DATA

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0 **Distance from Source (ft) PCE** 0 60 120 180 240 300 360 420 480 540 600 **No Degradation** 0.159 0.054 0.044 0.041 0.041 0.041 0.043 0.045 0.048 0.052 0.056 0.029 **Biotransformation** 0.1591 0.051 0.038 0.033 0.030 0.028 0.027 0.027 0.027 0.027 **Monitoring Well Locations (ft)** 255 Field Data from Site 0.163 0.005 No Degradation/Production Sequential 1st Order Decay Field Data from Site 0.18 See PCE 0.16 Concentration (mg/L) 0.14 See TCE 0.12 0.10 See DCE 0.08 0.06 See VC 0.04 0.02 See ETH 0.00 400 500 300 0 100 200 600 700 **Distance From Source (ft.)** Time: 19.0 Years Return to **Prepare Animation** To Array To All Input Log ⇐⇒Linear

FIGURE E-5: SENSITIVITY ANALYSIS - 0.5X RETARDATION FACTOR INPUT DATA

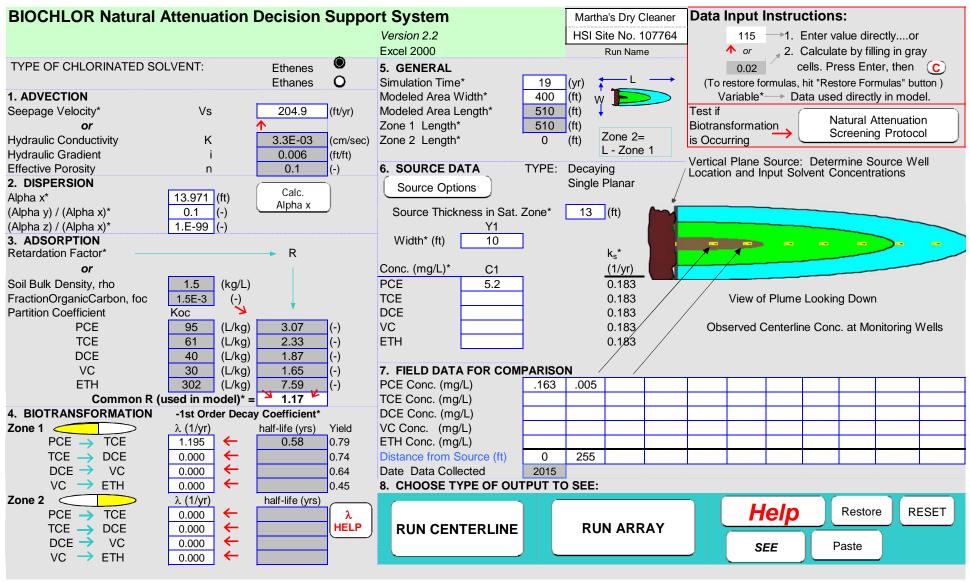


FIGURE E-6: SENSITIVITY ANALYSIS - 0.5X RETARDATION FACTOR CENTERLINE DATA

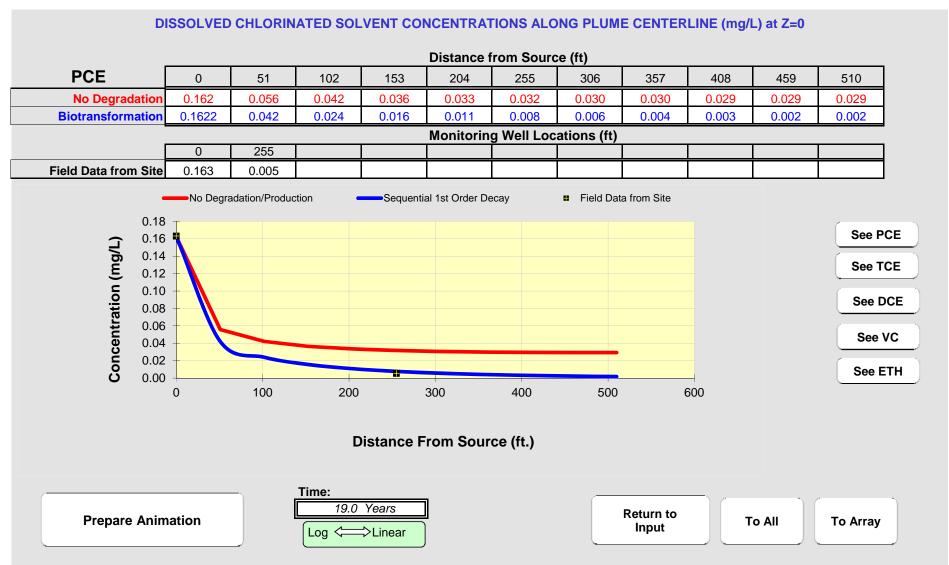


FIGURE E-7: SENSITIVITY ANALYSIS - 2X RETARDATION FACTOR INPUT DATA

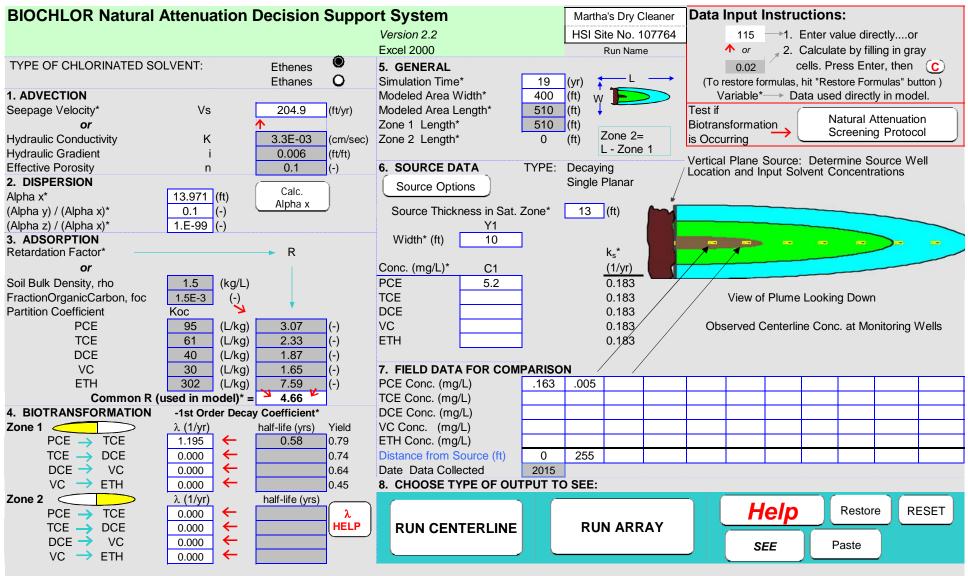
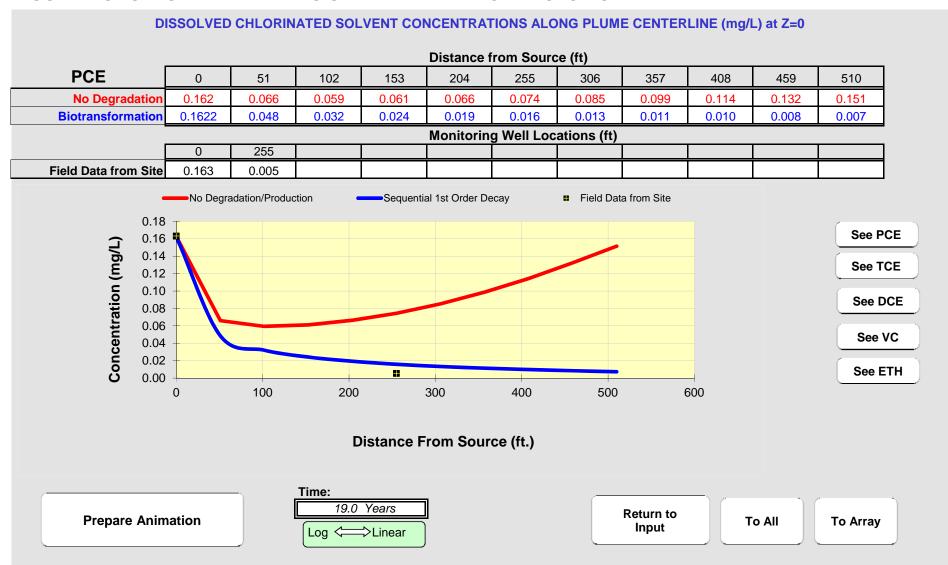


FIGURE E-8: SENSITIVITY ANALYSIS - 2X RETARDATION FACTOR CENTERLINE DATA



APPENDIX F BIOCHLOR MODEL DATA – PROJECTED CONCENTRATIONS

FIGURE F-1: 20 YEAR MODEL SIMULATION INPUT DATA

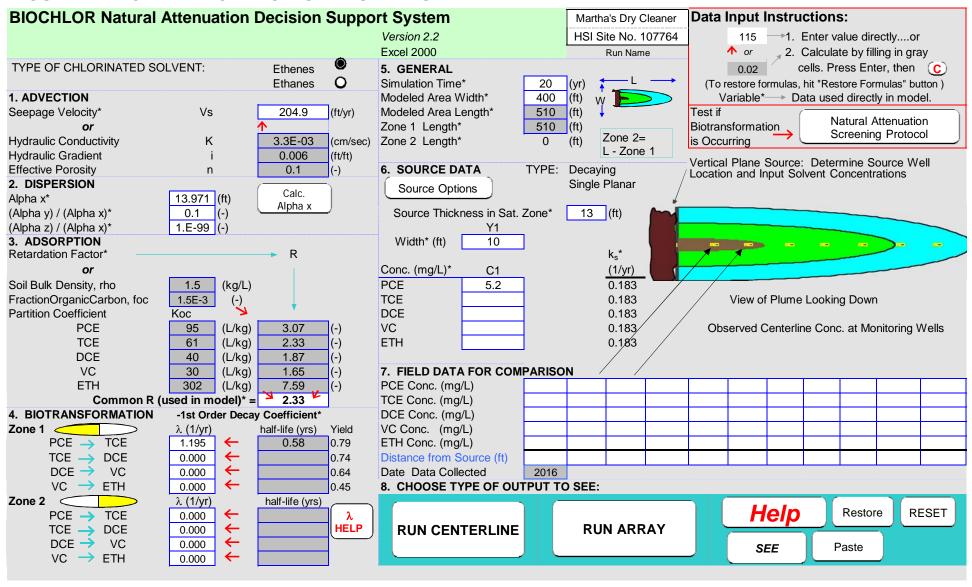


FIGURE F-2: 20 YEAR MODEL CENTERLINE DATA

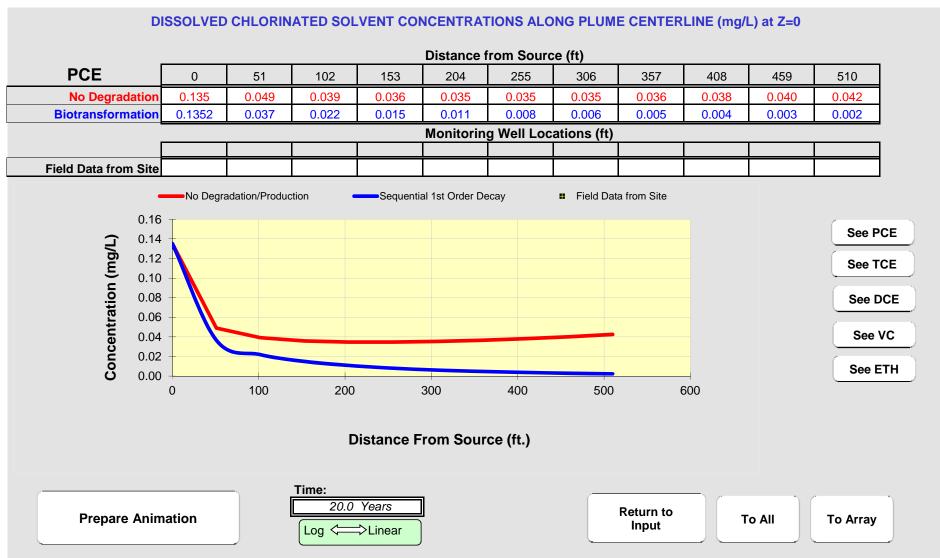


FIGURE F-3: 20 YEAR ARRAY DATA

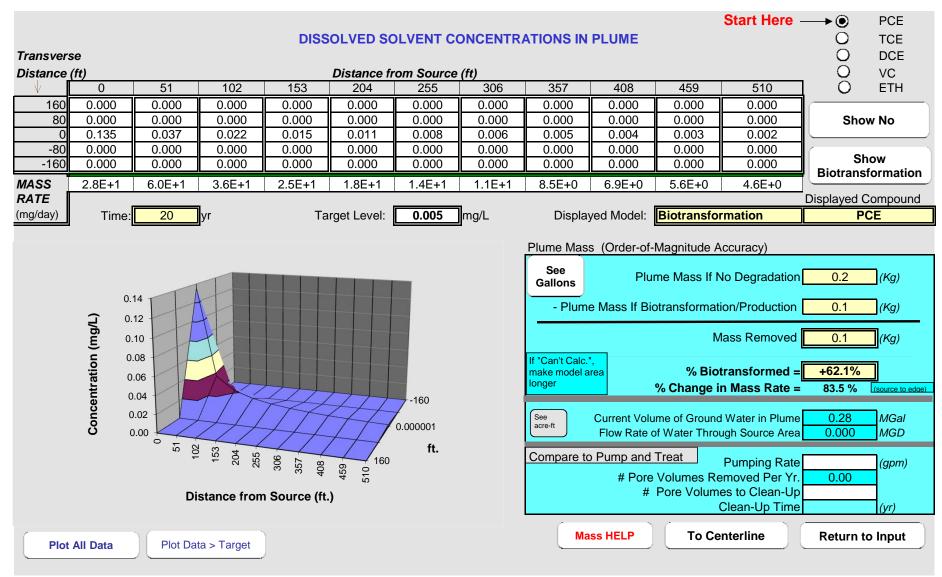


FIGURE F-4: 25 YEAR SIMULATION INPUT DATA

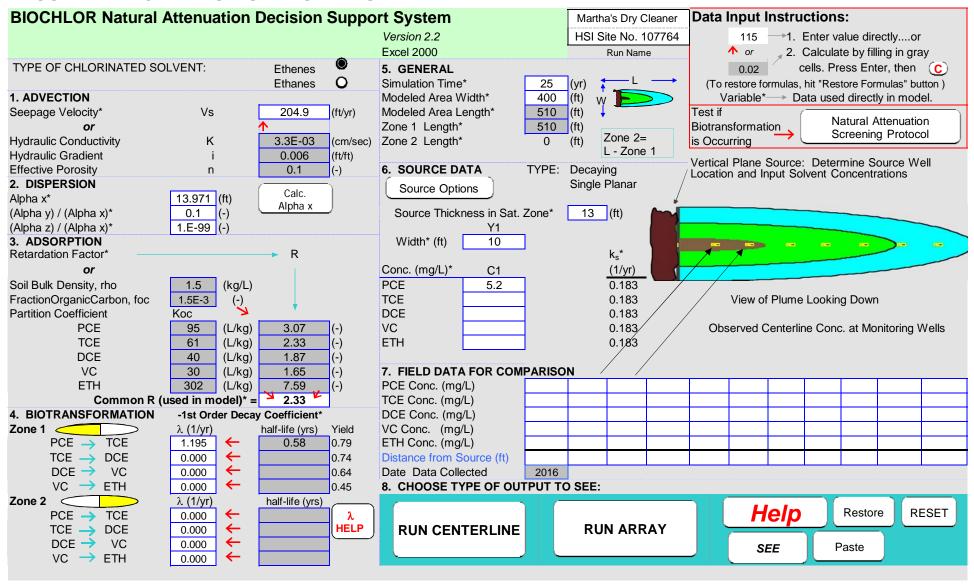


FIGURE F-5: 25 YEAR SIMULATION CENTERLINE DATA

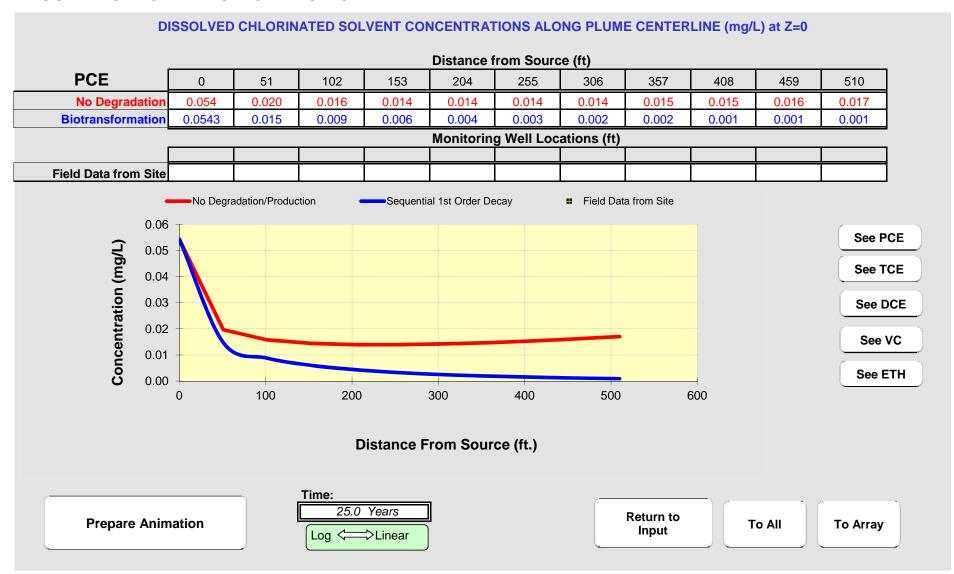


FIGURE F-6: 25 YEAR SIMULATION ARRAY DATA

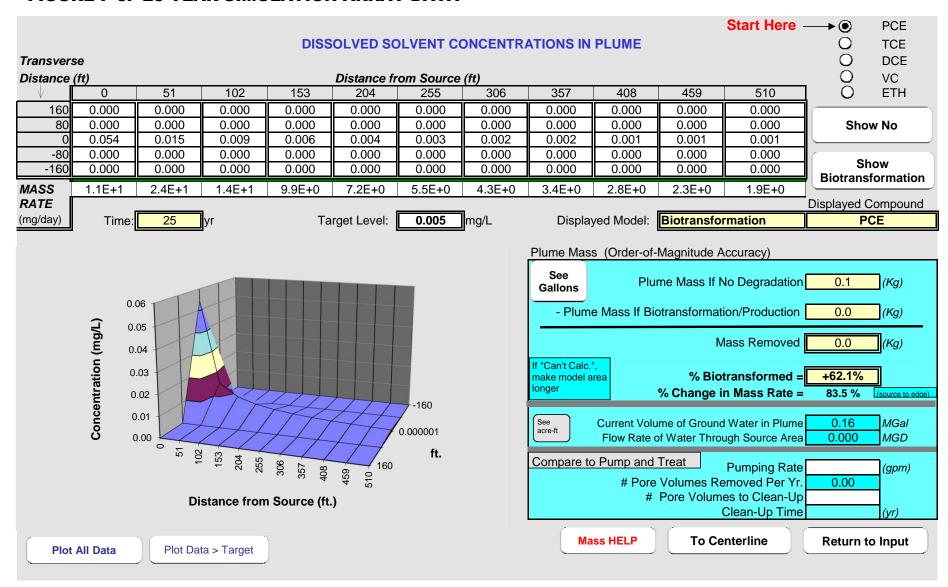


FIGURE F-7: 30 YEAR SIMULATION INPUT DATA

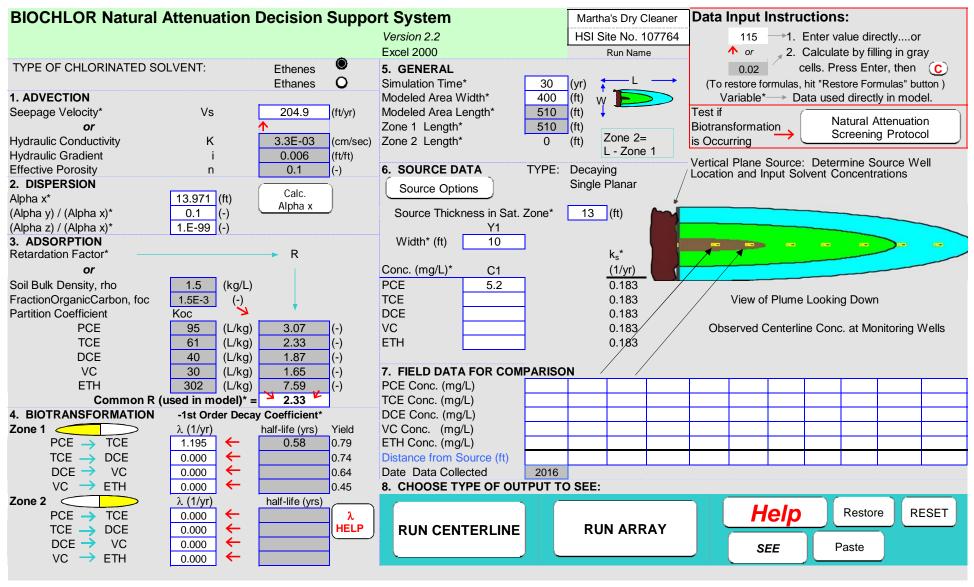


FIGURE F-8: 30 YEAR SIMULATION CENTERLINE DATA

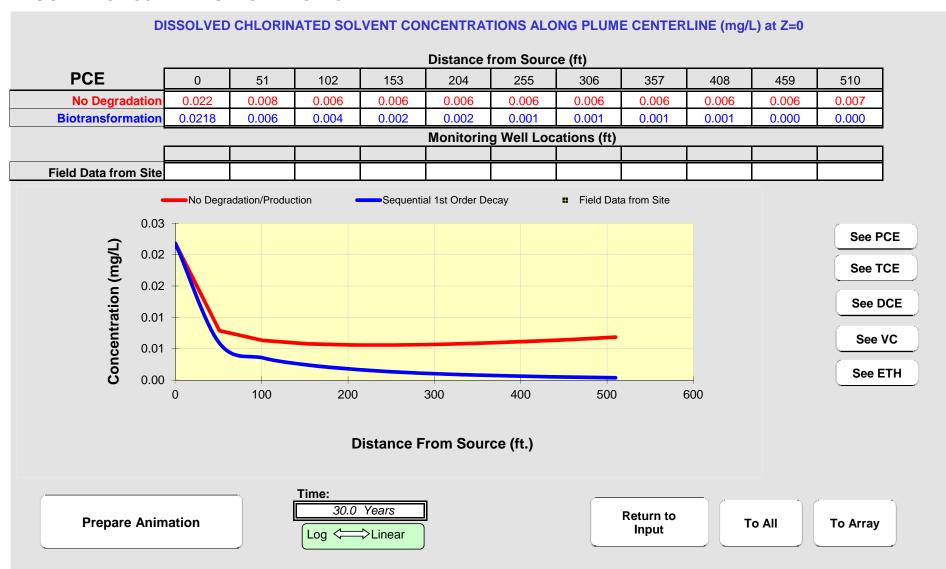


FIGURE F-9: 30 YEAR SIMULATION CENTERLINE DATA

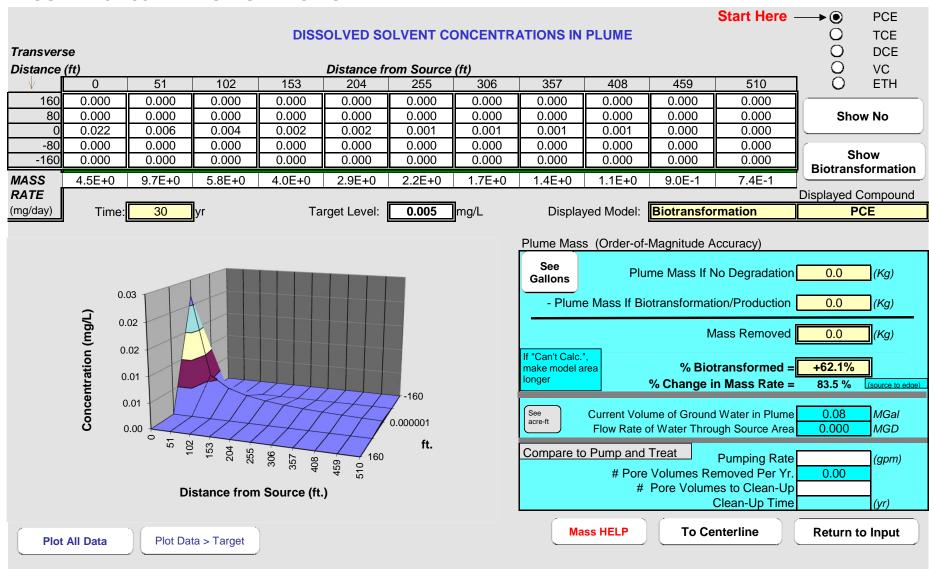


FIGURE F-10: 35 YEAR SIMULATION INPUT DATA

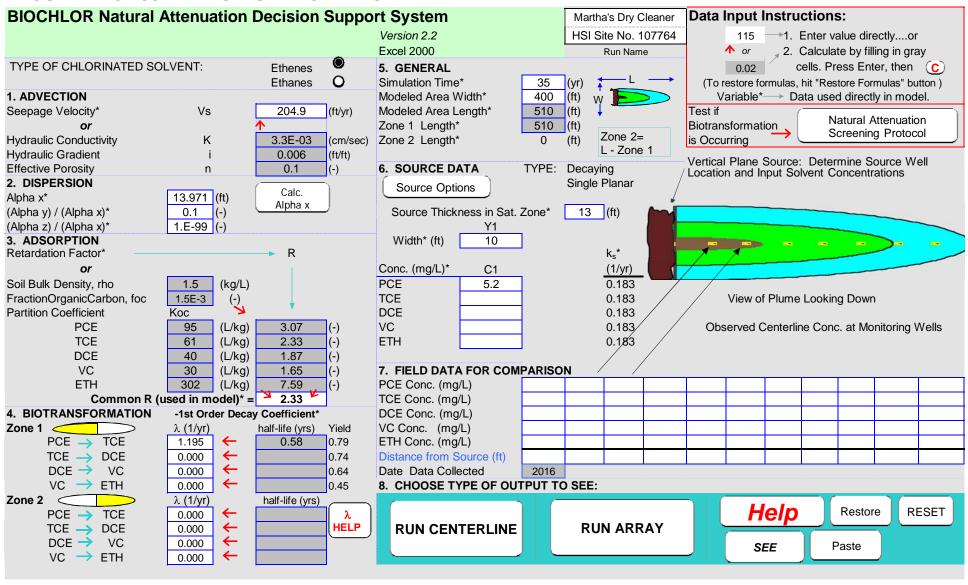


FIGURE F-11: 35 YEAR SIMULATION CENTERLINE DATA

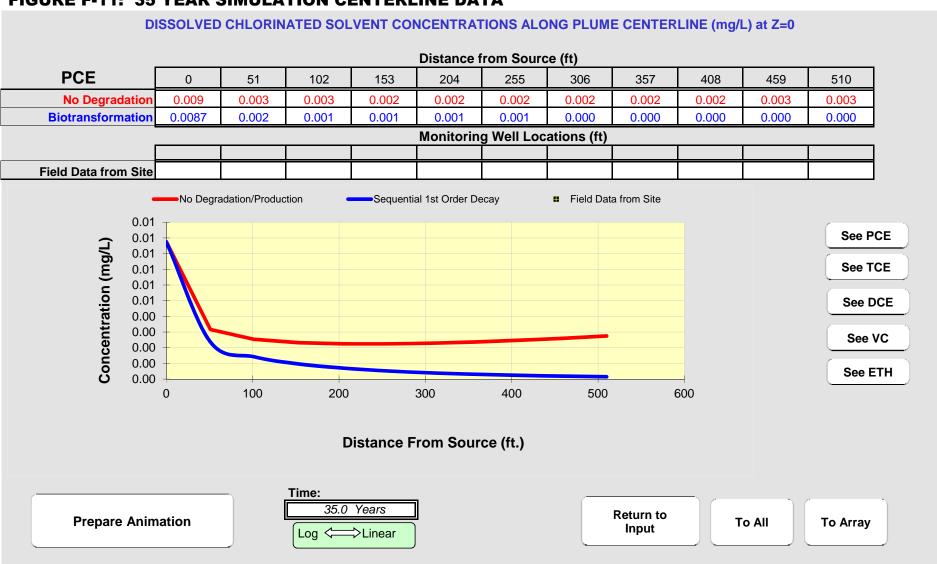


FIGURE F-12: 35 YEAR SIMULATION ARRAY DATA

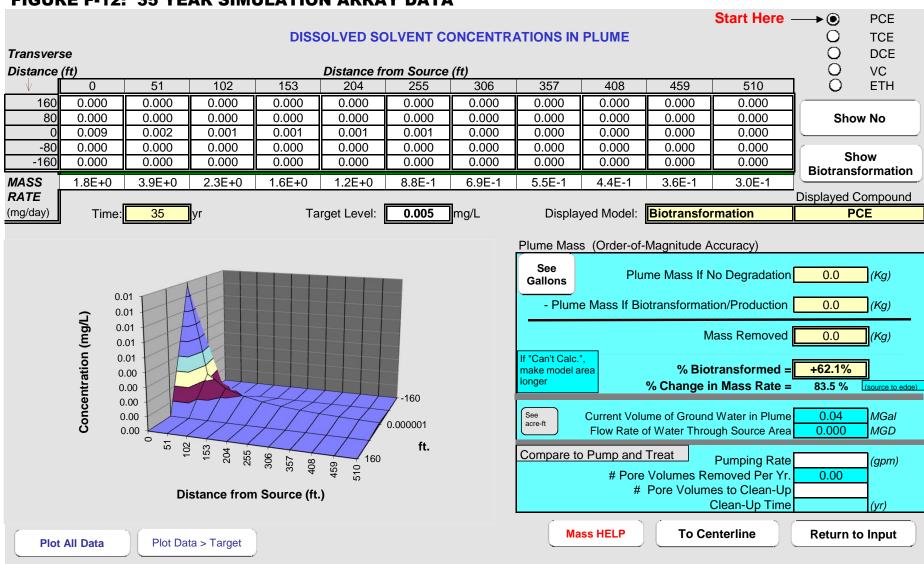


FIGURE F-13: 40 YEAR SIMULATION INPUT DATA

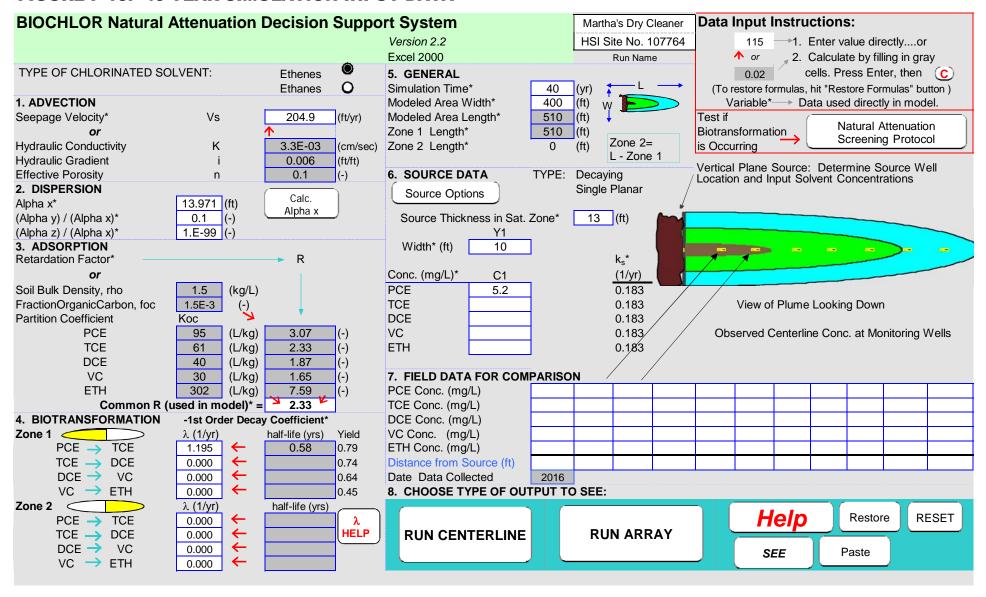


FIGURE F-14: 40 YEAR SIMULATION CENTERLINE DATA

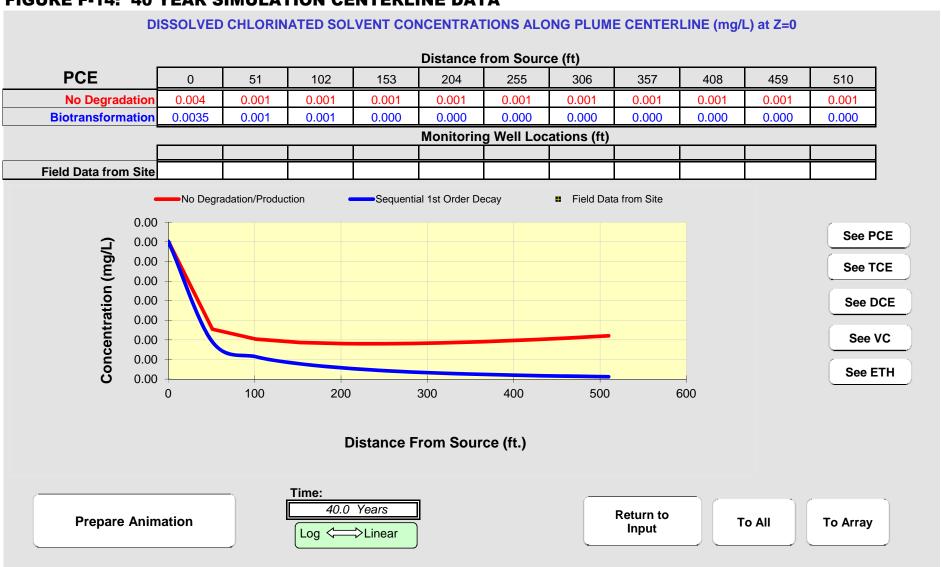
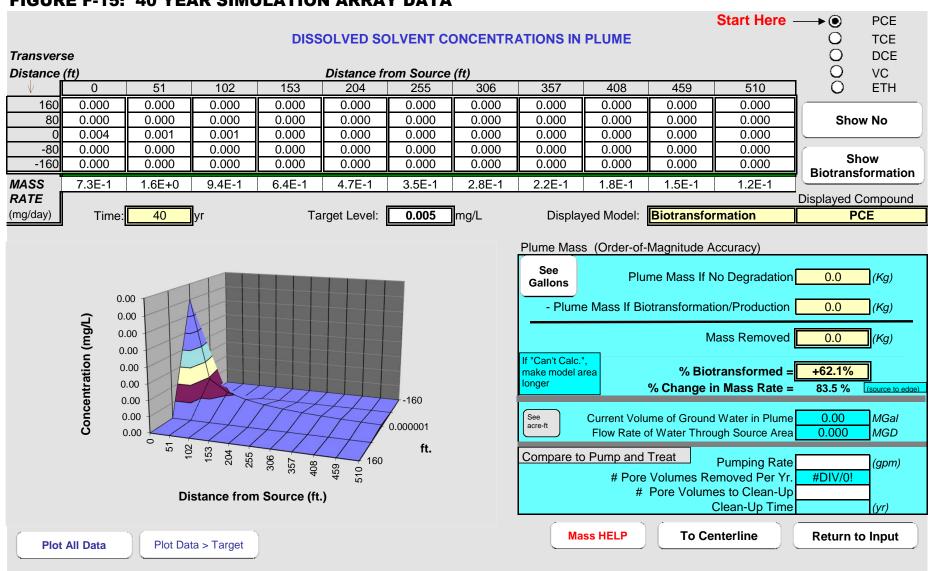


FIGURE F-15: 40 YEAR SIMULATION ARRAY DATA



APPENDIX G

BIOCHLOR NATURAL ATTENUATION SCREENING PROTOCOL WORKSHEET

Natural Attenuation Screening Protocol

The following is taken from the USEPA protocol (USEPA, 1998). The results of this scoring process have no regulatory significance.

Interpretation	Score
Inadequate evidence for anaerobic biodegradation* of chlorinated organics	0 to 5
Limited evidence for anaerobic biodegradation* of chlorinated organics	6 to 14
Adequate evidence for anaerobic biodegradation* of chlorinated organics	15 to 20
Strong evidence for anaerobic biodegradation* of chlorinated organics	>20

12 Score:

Scroll to End of Table

		Strong evidence for anaerobic biodegradation of chilomhated organics	>20	SCIOII to LII	J UI Table
Concentration i Analysis Most Contam. Zon		* reductive dechlorination	Yes	No	Points Awarded
Oxygen*	<0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations	0	•	0
	> 5mg/L	Not tolerated; however, VC may be oxidized aerobically	0	0	
Nitrate*	<1 mg/L	At higher concentrations may compete with reductive pathway	•	0	2
Iron II*	>1 mg/L	Reductive pathway possible; VC may be oxidized under Fe(III)-reducing conditions	0	•	0
Sulfate*	<20 mg/L	At higher concentrations may compete with reductive pathway	0	•	0
Sulfide*	>1 mg/L	Reductive pathway possible	0	•	0
Methane*	>0.5 mg/L	Ultimate reductive daughter product, VC Accumulates	•	0	3
Oxidation Reduction	<50 millivolts (mV)	Reductive pathway possible	•	0	1
Potential* (ORP)	<-100mV	Reductive pathway likely	0	•	0
рН*	5 < pH < 9	Optimal range for reductive pathway	•	0	0
TOC	>20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic	0	•	0
Temperature*	>20°C	At T >20°C biochemical process is accelerated	0	•	0
Carbon Dioxide	>2x background	Ultimate oxidative daughter product	0	•	0
Alkalinity	>2x background	Results from interaction of carbon dioxide with aquifer minerals	0	•	0
Chloride*	>2x background	Daughter product of organic chlorine	•	0	2
Hydrogen	>1 nM	Reductive pathway possible, VC may accumulate	0	•	0
Volatile Fatty Acids	>0.1 mg/L	Intermediates resulting from biodegradation of aromatic compounds; carbon and energy source	0	•	0
BTEX*	>0.1 mg/L	Carbon and energy source; drives dechlorination	0	•	0
PCE*		Material released	•	0	0
TCE*		Daughter product of PCE a/	•	0	2
DCE*		Daughter product of TCE. If cis is greater than 80% of total DCE it is likely a daughter product of TCE ^{al} ; 1,1-DCE can be a chem. reaction product of TCA	•	0	2
VC*		Daughter product of DCE ^{a/}	0	•	0
1,1,1- Trichloroethane*		Material released	0	•	0
DCA		Daughter product of TCA under reducing conditions	0	•	0
Carbon Tetrachloride		Material released	0	•	0
Chloroethane*		Daughter product of DCA or VC under reducing conditions	0	•	0
Ethene/Ethane	>0.01 mg/L	Daughter product of VC/ethene	0	•	0
	>0.1 mg/L	Daughter product of VC/ethene	0	•	0
Chloroform		Daughter product of Carbon Tetrachloride	0	•	0
Dichloromethane		Daughter product of Chloroform	0	•	0

(i.e., not a constituent of the source NAPL).

^{*} required analysis.

a/ Points awarded only if it can be shown that the compound is a daughter product

APPENDIX H

INVOICES, HOURS WORKED, AND COST ESTIMATE

Compliance Status Report Cost Estimate Voluntary Investigation and Remediation Plan Former Martha's Dry Cleaners Savannah, Georgia Terracon Project No. ES117125

Item	Unit	Unit Rate	Quantity	Cost	Subtotal					
TASK: Preparation of Compliance Status Report										
Professional Services (Compliance Status Report Preparation)										
Senior Registered Engineer	hour	\$125.00	2	\$250.00						
CADD Technician	hour	\$65.00	1	\$65.00						
Project Engineer	hour	\$95.00	12	\$1,140.00						
Administrative Personnel	hour	\$45.00	1	\$45.00						
			_	Subtotal	\$1,500.00					
		(Compliance Status Report							