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June 30, 2017

David Hayes
Georgia Environmental Protection Division
Response and Remediation Program
2 Martin Luther King, Jr. Drive, S.E.
East Tower, Suite 1054
Atlanta, Georgia 30334

Re: Voluntary Remediation Program Application, former Lowe's Site, HSI#10808

Dear Mr. Hayes,

On behalf of Light of Joy, Inc., please find enclosed an application for enrollment into the Georgia Voluntary Remediation Program (VRP) for the former Lowe's Site (HSI#10808) located at 7458 Georgia Highway 85 in Riverdale, Georgia (the "Site"). The Site was purchased by Light of Joy, Inc. for use as a church in April 2016.

As described in the VRP application, corrective action for Site soil was completed in 2006 and the Site received a Brownfield Limitation of Liability from the Georgia Environmental Protection Division (EPD) on April 9, 2007. The remaining corrective action task for the Site is monitored natural attenuation assessment for metals in groundwater, for which only lead in a single well remains above a Site Risk Reduction Standard following nine years of monitoring. The groundwater lead condition is delineated vertically and horizontally and is generally improved over the past nine years. No route of exposure to Site groundwater exists as the Site and the surrounding community are serviced by a public water supply.

It is anticipated that review of the Site VRP application and a closure resolution will require limited resources on behalf of the EPD based on the status of Site. For this reason and as Light of Joy, Inc. is a non-profit organization, a waiver from the standard VRP application fee as offered by Section 12-8-104(7) of the Georgia Code is respectfully requested. Certification from the State of Georgia identifying Light of Joy, Inc. as a domestic non-profit corporation is attached including proof of up-to-date registration.

Thank you for your consideration and please contact me directly with any questions.

Sincerely,

Aaron Williams
Principal

Kirk J. Kessler, P.G.
Senior Principal

Prepared for:

LIGHT OF JOY, INC.
7458 Georgia Highway 85
Riverdale, GA 30274

VOLUNTARY INVESTIGATION AND REMEDIATION PLAN
Former Lowe's Store (HSI #10808)
Riverdale, Georgia

Prepared by:

1050 Crown Pointe Parkway, Suite 550
Atlanta, Georgia 30338
Tel: 404-315-9113

June 2017

VOLUNTARY INVESTIGATION AND REMEDIATION PLAN

Former Lowe's Store (HSI #10808)
Riverdale, Georgia

Prepared For:

LIGHT OF JOY, INC.
7458 Georgia Highway 85
Riverdale, GA 30274

Prepared by:

1050 Crown Pointe Parkway, Suite 550
Atlanta, Georgia 30338
Tel: 404-315-9113

Kirk Kessler, P.G.
Senior Principal

Aaron Williams, PhD
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EPS

VOLUNTARY INVESTIGATION AND REMEDIATION PLAN
FORMER LOWE'S STORE (HSI #10808)
RIVERDALE, GEORGIA

June 2017

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APPENDICES

1 INTRODUCTION

1.1 Background

This Voluntary Investigation and Remediation Plan (VIRP) is being submitted on behalf of Light of Joy, Inc. for the former Lowe's facility located at 7458 GA Highway 85 in Riverdale, Georgia (the "Site"). The purpose of this document is to support application for enrollment into the Georgia Voluntary Remediation Program (VRP) by presenting a current understanding of conditions at the Site, based on existing environmental data and a Conceptual Site Model (CSM), and a plan for final closure for the Site. A completed VRP Application Form and Checklist is included in Appendix A. Tax map and warranty deed information for the Site property are included in Appendix B.

The Site received a Brownfield Limitation of Liability (LoL) from the Georgia Environmental Protection Division (EPD) in a letter dated April 9, 2007. The LoL and the groundwater Corrective Action Plan (CAP) requirements, including annual groundwater monitoring, were transferred from Lowe's to Light of Joy, Inc. Church following sale of the property in April 2016.

1.2 Site Location and Features

The Site is situated on a 15.5-acre parcel in Clayton County, Georgia (Parcel ID 13183D C001). The Site was redeveloped as a Lowe's Home Improvement store in 2007, which operated until 2011. The general improvements made to the Site during the redevelopment remain to the present. The Site is improved with a 138,822 square foot building and is covered with asphalt, except for grassed islands in the parking lot and grassed areas around the perimeter of the parcel. The land surrounding the Site is commercial and residential with scattered vacant woodland parcels. Previous Site assessments have documented four recognized environmental concerns in close proximity to the Site: two historical dry cleaners with documented releases of solvents to the subsurface and two former Chevron gas stations that reported a release from their underground storage tank systems. These businesses were located adjacent and south/southwest of the Site. A Site Location Map is included as Figure 1 (all figures are included in Appendix C of this application).

Prior to redevelopment, twelve smaller commercial and residential parcels occupied the Site; three of the parcels were undeveloped, three consisted of residential properties, and the remaining six were developed with a variety of small businesses. The parcels were designated 001, 002, 013, 014, 015, 015A, 016, 017, 018, 019, 020, and Gore Exchange Parcel as shown on Figure 2. Figure 2 also shows the location of three former small business facilities where releases of regulated constituents occurred, as described in Section 1.3 below.

1.3 Release Notification

During the initial environmental assessment activities in 2004, regulated constituents were detected in soil and groundwater above Hazardous Site Response Act (HSRA) notification criteria at three of the former parcels that occupied the Site:

- Parcel 013, which was occupied by an automotive repair facility (Fast Auto/Fast Radiator);
- Parcel 018, which was occupied by a battery repair facility (Miller Battery); and
- Parcel 019, which was occupied by a truck painting facility (Parkway Truck Painting).

Accordingly, release notifications were submitted to the EPD pursuant to the HSRA in May 2005 on behalf of the previous property owners and the Site was listed on the Georgia Hazardous Site Inventory (HSI) as #10808[1].

1.4 Property Eligibility

The Site meets the eligibility criteria for the VRP. A release of regulated substances on the Site has been confirmed. The Site is not listed on the National Priorities List, is not currently undergoing response activities required by an order of the Regional Administrator of the United States Environmental Protection Agency (EPA), and is not required to have a permit under Code Section 12-8-66. Qualifying the Site under this VRP would not violate the terms and conditions under which the division operates and administers remedial programs by delegation or by similar authorization from the EPA. There are no, and never have been any, outstanding liens filed against the Light of Joy, Inc. property pursuant to Code Sections 12-8-96 and 12-13-12.

1.5 Participant Eligibility

Light of Joy, Inc. is both the owner of the property and the VRP applicant. Furthermore, Light of Joy, Inc. is not in violation of any order, judgment, statute, rule, or regulation subject to the enforcement authority of the Director of the EPD.

[1] Parcel 019 was removed from the listing in November 2005.

1.6 Document Organization

This document is organized into five sections, following this introduction:

- Section 2.0 presents an overview of the Site including a summary of assessment activities and corrective actions taken to date and the regulated constituents detected at the Site;
- Section 3.0 presents the CSM;
- Section 4.0 presents a final closure strategy for the Site; and
- Section 5.0 provides document references.

2 SITE OVERVIEW

2.1 Summary of Site Assessment

2.1.1 Overview

Assessment events for soil and groundwater were completed between 2004 and 2007 during redevelopment of the Site. All events are detailed in a Compliance Status Report (CSR) submitted to the EPD in July 2007 following completion of soil corrective action (MACTEC, 2007a). The CSR is attached in Appendix E for reference. A summary of the assessment events in provided below.

2.1.2 2004 Initial Assessment

A progression of assessment events was conducted by Contour Engineering, LLC (Contour) from May-December 2004 and consisted of collection of soil and groundwater samples with testing for RCRA metals, volatile organic compounds (VOCs), and, in some instances, polycyclic aromatic hydrocarbons (PAHs).

Soil samples were collected from thirty-two distinct locations at depth intervals of 0-8 and/or 9-15 feet below ground surface ("ft-bgs") as shown on Figure 5 of the CSR and described below:

- 11 locations in Parcel 013 near the former Fast Auto/Fast Radiator facility, where spillage and stained soils were observed in the area surrounding several vats and holding tanks;
- 7 locations in Parcel 018 near the former Miller Battery facility, where numerous containers and drums (primarily used to hold used oil) were observed, as well as staining on the floor inside of the facility;
- 6 locations in Parcel 019 near the former Parkway Truck Painting facility, where numerous drums containing paint, solvents, and aluminum cleaners were observed;
- 4 locations in Parcel 015A near the former Nice Cars of America facility, where numerous containers and drums of unknown content were observed; and
- 4 locations along the eastern boundary of the Site.

The soil analytical results are summarized on Figure 5 and on Tables 1-3 and 5-9 of the CSR (Appendix E herein). Barium, chromium and lead were detected across the Site; samples collected from three locations exhibited lead or chromium exceeding HSRA notification criteria (B-1, B-9, and B-23). These samples were collected from the footprint of the Fast Auto/Fast Radiator and the Parkway Truck Painting facilities. Additionally, trace concentrations of tetrachloroethylene (PCE) were detected in boring B-16 located near the Miller Battery facility and boring B-22 near the southern boundary of the Site; both detections were below the HSRA notification criteria and were

noted as likely being collected at or below the water table where VOC plumes emanating from off-Site were identified.

Groundwater samples were collected from 19 monitoring wells across the Site, as shown on Figure 13 of the CSR and described below:

- 2 temporary wells installed on Parcel 015A;
- 8 temporary and 3 permanent wells installed on Parcel 018;
- 3 temporary wells installed on Parcel 019; and
- 1 temporary well each on Parcels 001, 002, and 015.

The groundwater analytical results are summarized on Figure 13 and on Tables 1A, 2A, 5A, 6A, 8A, and 9A of the CSR. Lead was detected above the HSRA notification criteria in groundwater samples collected from two monitoring wells near the former Miller Battery facility (MW-1 and MW-2) and one temporary monitoring well near the Parkway Truck Painting facility (TW-25). PCE was detected at concentrations exceeding the HSRA notification criteria in a groundwater sample collected from a temporary monitoring well near the former Parkway Truck Paint facility (TW-24) at the southern edge of the Site. Benzene was also detected above the HSRA notification criteria in the groundwater sample collected from TW-24, as well as in groundwater samples collected from three additional wells in the southern portion the Site (B-2, TW-23, and TW-26).

2.1.3 2005 Assessments

Two additional assessments were conducted by MACTEC in June and September 2005 and consisted of collection and laboratory analysis of soil and groundwater samples. Soil samples were analyzed for RCRA metals, and groundwater samples were analyzed for RCRA metals and VOCs. Three soil samples were collected on the Gore Exchange Parcel at depth intervals of 3-5 ft-bgs to establish the background condition; trace concentrations of barium, chromium, and lead were detected in these samples. Groundwater samples were collected from the three permanent monitoring wells sampled in December 2004 and fourteen newly installed temporary monitoring wells. The location of the fourteen temporary wells are as follows (and shown on Figure 13 of the CSR):

- 2 temporary wells installed on Parcel 017;
- 11 wells installed on Parcel 018; and
- 1 well installed on both the Gore Exchange Parcel and Parcel 013.

The groundwater sampling results are summarized on Figure 13 and on Tables 2A, 4A, 7, and 8A of the CSR. None of the samples exhibited elevated concentrations of metals. One groundwater sample collected east of the former Parkway Truck Painting facility in the southern portion of the Site (TW-41) detected PCE. Three groundwater samples collected from monitoring wells in the southern portion of the Site (TW-32, TW-40, and TW-42) exhibited elevated benzene concentrations.

2.1.4 2006 Soil Assessment

Follow-up assessments were conducted by MACTEC in January, March, and June 2006 that consisted of sampling and, in some instances, screening (using a handheld X-ray fluorescence unit) of soils to delineate, both laterally and vertically, the elevated metals condition. Samples were collected from 67 distinct locations that were selected in areas where metal concentrations exceeded background:

- 11 locations in Parcel 013 from the footprint of the former Fast Auto/Fast Radiator facility;
- 41 locations in Parcel 018 from the footprint of the former Miller Battery facility;
- 1 location in Parcel 018 in the vicinity of Contour boring B-16, where PCE was detected;
- 12 locations in Parcel 019 from the footprint of the former Parkway Truck Painting facility; and
- 2 locations in the Gore Exchange Parcel.

The soil delineation results are summarized on Figures 6 through 8 and on Tables 3, 8, and 9 of the CSR. These results were used to guide remedial action to bring Site soils into compliance during corrective action. Soil corrective action is described in Section 2.3.2 of this application.

2.1.5 2006 Well Installation and Groundwater Monitoring

All existing monitoring wells were abandoned in late 2005 due to construction grading activities associated with the redevelopment, and replaced with 13 new permanent monitoring wells between June and November 2006 (as shown on Figure 3):

- 6 wells located at or downgradient of the former Miller Battery facility (EW-1 EW-2, EW-3, EW-9, EW-10 and EW-11);
- 6 wells located at or downgradient of the former Parkway Truck Painting facility and downgradient of the off-Site dry cleaners and former Chevron facilities (EW-5 through EW-8, EW-8A and DW-1); and
- 1 well up-gradient of the Miller Battery facility (EW-4).

Well construction data is provided in Table 1 (all tables are included in Appendix D of this application). The groundwater analytical results obtained from the new wells in 2006 and 2007 are summarized in Table 8A of the CSR. Elevated concentrations of metals were detected in groundwater samples collected from EW-9 (lead, nickel, and zinc) and EW-10 (lead and cadmium). PCE was detected in EW-5 and benzene was detected in EW-7.

2.2 Constituents of Potential Concern

Soil corrective action was performed in February 2006 with removal of all soil reporting constituent concentrations above the approved Risk Reduction Standards (RRS), thus no Constituents of Potential Concern (COPC) currently exist for soil at the Site (Section 3.4.2.1 describes the current soil condition at the Site). Of the nineteen regulated constituents detected in

groundwater, four are COPCs: cadmium, lead, nickel, and zinc. Benzene and PCE are not considered COPCs in groundwater; the presence of benzene and PCE in groundwater is related to releases that occurred off-Site (see Section 3.4.3).

2.3 Corrective Actions Performed to Date

2.3.1 Overview

An initial CAP was submitted for the Site on June 27, 2005 and was approved by EPD on July 22, 2005 (MACTEC, 2005); the initial CAP focused on soil remediation. A second CAP was submitted for groundwater that proposed a 10-year monitored natural attenuation (MNA) program for select metals (MACTEC, 2007b). In a letter dated December 11, 2007, EPD agreed that the groundwater monitoring program could commence. Section 2.3.2 discusses the soil correction actions taken to date and Section 2.3.3 summarizes the groundwater activity and the MNA program outlined in the groundwater CAP.

2.3.2 Soil Corrective Action

Soil remediation was conducted in February 2006 in the vicinity of the former Parkway Truck Painting, Miller Battery, and Fast Auto/Fast Radiator facilities (Parcels 013, 018 and 019). Excavation was performed by Collins and Arnold. The following activities were conducted in accordance with the CAP:

- approximately 745 tons of soil was removed from footprint of the former Parkway Truck Painting facility (Parcel 019); this area was excavated to a depth ranging from 2 to 13 ft-bgs.
- approximate 663 tons of soil was removed near the former Miller Battery facility (Parcel 018); this area was excavated to a depth approximately 2 ft-bgs; and
- approximately 104 tons of soil was removed near the former Fast Auto/Fast Radiator facility (Parcel 013); this area was excavated to a depth of approximately 3 to 4 ft-bgs.

Waste characterization sampling was conducted prior to removal to determine proper disposal methods for the excavated soils. Soil removed in the vicinity of the former Parkway Truck Painting and near the former Fast Auto/Fast Radiator facilities was classified as non-hazardous and transported off-Site to the Pine Ridge Landfill in Griffin, Georgia. Soil removed near the former Miller Battery facility was classified as hazardous waste and transported off-Site to Envirite Landfill, a permitted hazardous waste disposal facility in Canton, Ohio.

An additional 5,000 cubic yards of low-pH soil was removed from the area of the former Miller Battery facility, immediately up-gradient of where metal-impacted groundwater was previously identified. The low-pH condition in this area was assumed to be related to improper disposal of battery acids. In consultation with the EPD, the low-pH soil was approved for reuse as on-Site fill material as the soil did not exceed applicable RRS.

Verification soil testing following exaction of soil from each area confirmed impacted soil had been removed and applicable RSS were attained as documented in the CSR (MACTEC, 2007a).

2.3.3 Groundwater Corrective Action

2.3.3.1 Limestone Treatment Drain

During the construction of a storm water drainage line, MACTEC installed a limestone-filled treatment drain downgradient of the former Miller Battery facility to treat the metal-impacted groundwater in this area. The limestone drain was installed beneath the drainage line, perpendicular to the direction of groundwater flow, as shown on Figure 9 of the CSR. An approximate 180-foot long section of the drainage line excavation was extended to a depth approximately four feet below the water table and filled with crushed limestone to a height approximately one foot above the water table. The drainage line was then constructed at its prescribed level above the limestone. Exposure of the impacted groundwater to the limestone aggregate elevates the pH to the point where dissolved metals precipitate, thereby reducing concentrations in groundwater downgradient of the treatment drain.

2.3.3.2 MNA Program

In accordance with the groundwater CAP, monitoring wells EW-1, EW-2, EW-3, EW-4, EW-9R[2], EW-11, and EW-12 have been sampled at an annual frequency for analysis of barium, cadmium, copper, lead, nickel, and zinc. The groundwater analytical data is compared to the non-residential RRSs established in the CAP. To date, nine monitoring events have been conducted (sampling was initiated in April 2008) and the groundwater analytical results obtained during these events (discussed in Section 3.4.2.2 of this application) support closure of the Site.

[2] Monitoring wells EW-9 and EW-10 were abandoned and replaced by deeper monitoring well EW-9R in May 2013; EW-9R was included in the monitoring program in place of EW-9 and EW-10

3 PRELIMINARY CSM

3.1 Overview

The CSM is intended to establish a common knowledge base about the Site and its environmental condition, to facilitate the development of remedial action objectives, and to allow an informed decision regarding possible remedial action measures. The CSM discusses: (i) the surface and subsurface features at the Site, (ii) nature and extent of current environmental condition, (iii) fate and transport characteristics of chemicals of concern at the Site, and (iv) potential receptors and exposure pathways.

3.2 Ground Surface Features

3.2.1 Regional Surface Features

The Site is in Clayton County, which falls in the Greenville Slope District of the Piedmont Physiographic Province (Piedmont Province) in Georgia. The Greenville Slope District is characterized by rolling topography that decreases gradually in elevation from 1000 feet in the northeast to 600 feet in the southwest. The southern boundary of the district follows the base of the northern side of Pine Mountain. All streams in the Greenville Slope District eventually drain to the Gulf Mexico; those flowing to the southwest occupy shallow, open valleys with broad, rounded divides while those flowing to the southeast occupy narrower, deeper valleys with narrow, rounded divides.

3.2.2 Site Surface Features

The following description of the Site's surface features is taken from the CSR (MACTEC, 2007a). The Site is located topographically in an area of rolling terrain, at an original elevation ranging from approximately 950 to 930 feet above mean sea level. The Site is characterized by the presence of a large east-sloping drainage swale. This swale has been largely filled in during Site redevelopment. The nearest stream to the Site, an unnamed tributary of the Flint River, is located approximately 1,200 feet northeast of the downgradient boundary of the Site.

3.3 Site Subsurface Composition

3.3.1 Site Geologic and Hydrogeologic Setting

Soils in the Piedmont, such as at the Site, are derived from underlying metamorphic and/or igneous rocks through weathering, disintegration, and decay. The typical soil profile consists of clayey

soils near the ground surface transitioning to sandy silts and silty sands that generally become more dense with depth to the top of the parent rock. The following description of the Site's subsurface composition is taken from the CSR (MACTEC, 2007a). The soil test borings generally encountered fill soils at the surface which overlaid residual soils (see Boring Logs in Appendix D of the CSR for soil descriptions). Residual soils on Site generally consists of clayey sandy silts in the upper horizons, trending to sandy silts and silty sands derived from the gneiss and amphibolite found on Site. The depth to rock varies across the Site, ranging in depth from as little as four feet below ground surface in several of the borings drilled and one excavation dug in the northern portion of the Site to over 65 feet in a deep well in the southern portion of the Site. The rock exposed through excavation was described as light gray, muscovite-biotite gneiss (see Figures 13 and 14 of the CSR for cross sections).

Groundwater in the Piedmont Province occurs under unconfined conditions where the potentiometric surface mimics the ground surface topography. Along topographically low areas, the water table typically occurs within the soil to saprolite portions of the hydrogeological profile. Along topographically high areas, the water table often occurs in underlying crystalline bedrock. The saprolite portion of the hydrogeological system generally contains significantly more fluid compared to the same volume of bedrock. The crystalline bedrock exhibits essentially no primary porosity/permeability and relies upon secondary permeability features such as fractures and faults for the transmission and storage of groundwater. These secondary permeability features generally are not abundant and of a relatively small apertures, which limits the amount of fluid flowing through the bedrock.

3.3.2 Groundwater Direction and Flow Velocity

Groundwater elevation data was obtained during each annual groundwater monitoring event since May 2011; this data is summarized in Table 2. Figure 4 posts the groundwater elevation measured in each monitoring well during the April 2016 monitoring event, indicating groundwater flow direction to the north/northeast with a gradient of approximately 0.015 ft/ft.

Groundwater velocity at the Site can be estimated using the modified Darcy equation, applying the hydraulic conductivity value presented in the CSR (7.8×10^{-5} cm/s) and the hydraulic gradient observed during the April 2016 groundwater monitoring event (0.015 ft/ft):

$$V = \frac{K \times i}{n_e}$$

where V = average linear groundwater velocity
K = hydraulic conductivity
i = hydraulic gradient
n_e = effective porosity

Assuming the effective porosity of the aquifer is approximately 20%, the groundwater velocity at the Site is calculated at approximately 6 ft/yr.

3.4 Environmental Conditions On- and Off-Site

3.4.1 Overview

EPS has reviewed available environmental data records pertaining to the Site. The focus of Site investigations to date have been the characterization of Site groundwater for metals and VOCs and Site soil for metals, VOCs, and PAHs. The discussion that follows includes review of prior COPCs reported for soil (*i.e.* prior to the 2006 soil corrective action) and current groundwater COPCs.

3.4.2 Nature and Extent of Environmental Conditions On-Site

3.4.2.1 Site Soil Condition

Based on historical information and sampling conducted to date, the release(s) of metals appear to be related to operations conducted at the former Fast Auto/Fast Radiator, Miller Battery, and Parkway Truck Painting facilities. Stained soils/floors were observed in these areas and elevated concentrations of metals were detected in soils collected from the footprint of these facilities. This soil condition has been abated and post-excavation soil sampling (summarized in Tables 5 and 6 of the CSR) shows the condition is now below residential RRS. EPD agreed that soil cleanup met RRSs in a letter dated December 11, 2007; thus, metals are no longer COPCs in soil at the Site.

3.4.2.2 Site Groundwater Condition

Groundwater analytical data for metals obtained from June 2006 to April 2016 are summarized in Table 3. Metal-impacted groundwater has been identified at the Site; this condition is limited to a relatively confined area at and immediately downgradient of the former Miller Battery facility (EW-9R). Cadmium, lead, nickel, and zinc have all been detected at or above their respective RRS in this area since the start of the MNA program in 2007. Of these metal constituents detected in groundwater, only lead is believed to be related to the surface release(s) that occurred at the former Miller Battery facility due to its elevated condition in soil prior to soil corrective action. The presence of other metals is attributed to the low-pH condition in groundwater in this area, which generally facilitates the mobilization of naturally-occurring cationic metals.

Currently, the only exceedance of a non-residential groundwater RRS occurs in EW-9R for lead. Other metals previously reported above RRS in EW-9R (or the wells EW-9R replaced), cadmium and zinc, have decreased to below RRS during the MNA period (2008-2017). Concentrations of lead in EW-9R have recently been stable, but are improved with respect to the condition in 2007 prior to the start of the MNA program.

3.4.3 Nature and Extent of Environmental Conditions Off-Site

Two VOC groundwater plumes containing benzene and PCE, respectively, have been identified in southern portion of the site extending beneath the former Lowe's store. The soil analytical data does not indicate a VOC release occurred on-Site (neither benzene nor PCE has been detected

above their respective Type 1 RRS); thus, the groundwater plumes are attributed to documented off-Site release(s). Based on the groundwater flow direction at the Site, the groundwater plumes appear to be related to releases that occurred at the former Professional Cleaners (PCE) and former Chevron gas station (benzene) located at the intersection of GA Highway 85 and GA Highway 138.

3.5 Potential Receptors and Exposure Pathways

3.5.1 On-Site Receptors and Exposure Pathways

Unrestricted use of shallow groundwater at the Site could potentially result in ingestion, dermal, and inhalation exposure of future occupants to regulated substances detected in groundwater at the Site. If groundwater is extracted for potable use, ingestion is the primary exposure route for the metals and VOCs. VOCs may be inhaled if groundwater is used for domestic or commercial purposes. Use of groundwater for domestic or commercial purposes may also expose users to VOCs and metals through the skin.

Exposure to VOCs through vapor intrusion was addressed at the time of construction of the former Lowe's facility. A vapor intrusion mitigation system comprised of a sub slab polyethylene vapor barrier was installed across the entire footprint of the building.

3.5.2 Off-Site Receptors and Exposure Pathways

In 2004, Contour conducted a water well survey to identify drinking water sources within a three mile radius of the Site. Four drinking water wells were identified within one or two miles of the Site; however, local residential and non-residential properties are documented to be connected to municipal water supplies mitigating any exposure to the Site groundwater.

4 FINAL CLOSURE STRATEGY

As provided in Section 3.4, the on-Site soil condition has already been abated and post-excavation soil sampling has verified the soil condition is below RRS. EPD concurred that soil cleanup met RRSs in a letter dated December 11, 2007. In groundwater, lead is the only metal to currently exceed a Site RRS and the exceedance is limited to one monitoring well (EW-9R). The lead condition in EW-9R has been monitored annually for ten years and is found to be spatially stable (*i.e.* not migrating), and is delineated to a non-detect condition by adjacent monitoring wells. Additionally, the concentration of lead in EW-9R has generally improved since 2007 and is expected to further improve as the low-pH groundwater condition is abated with time. Based on these Site-specific conditions, a no further action remedy supplemented with an environmental covenant prohibiting future use of Site groundwater is appropriate to close the Site. Future use of Site groundwater is improbable as the Site and surrounding community is serviced by a municipal water supply and the current property owner has no intention or need to install an on-Site water supply well.

5 REFERENCES

MACTEC (2005). Application for Limitation of Liability and Corrective Action Plan, MACTEC Engineering and Consulting, Inc., prepared for H/S Riverlo, LLC, dated June 27, 2005.

MACTEC (2007a). Compliance Status Report, HSI Site No. 10808. MACTEC Engineering and Consulting, Inc., dated July 20, 2007.

MACTEC (2007b). Groundwater Corrective Action Plan, HSI Site No. 10808. MACTEC Engineering and Consulting, Inc., dated October 29, 2007.

APPENDIX A
Voluntary Remediation Program Application and Checklist

Voluntary Remediation Plan Application Form and Checklist

VRP APPLICANT INFORMATION					
COMPANY NAME	Light of Joy, Inc				
CONTACT PERSON/TITLE	Frank Salters, CEO				
ADDRESS	8622 Wood Springs Court, Douglasville, GA 30135				
PHONE	404-384-0654	FAX		E-MAIL	franksalt@comcast.net

GEORGIA CERTIFIED PROFESSIONAL GEOLOGIST OR PROFESSIONAL ENGINEER OVERSEEING CLEANUP					
NAME	Kirk Kessler			GA PE/PG NUMBER	685
COMPANY	EPS Inc.				
ADDRESS	1050 Crown Pointe Parkway, Suite 550, Atlanta, Georgia 30338				
PHONE	404-315-9113	FAX	404-315-8509	E-MAIL	kkessler@envplanning.com

APPLICANT'S CERTIFICATION

In order to be considered a qualifying property for the VRP:

(1) The property must have a release of regulated substances into the environment;
(2) The property shall not be:
- (A) Listed on the federal National Priorities List pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 9601,
- (B) Currently undergoing response activities required by an order of the regional administrator of the federal Environmental Protection Agency; or
- (C) A facility required to have a permit under Code Section 12-8-66.

(3) Qualifying the property under this part would not violate the terms and conditions under which the division operates and administers remedial programs by delegation or similar authorization from the United States Environmental Protection Agency.
(4) Any lien filed under subsection (e) of Code Section 12-8-96 or subsection (b) of Code Section 12-13-12 against the property shall be satisfied or settled and released by the director pursuant to Code Section 12-8-94 or Code Section 12-13-6.

In order to be considered a participant under the VRP:
- (1) The participant must be the property owner of the voluntary remediation property or have express permission to enter another's property to perform corrective action.
- (2) The participant must not be in violation of any order, judgment, statute, rule, or regulation subject to the enforcement authority of the director.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering 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, including the possibility of fine and imprisonment for knowing violations.

I also certify that this property is eligible for the Voluntary Remediation Program (VRP) as defined in Code Section 12-8-105 and I am eligible as a participant as defined in Code Section 12-8-106.

APPLICANT'S SIGNATURE	Frank Salters		
APPLICANT'S NAME/TITLE (PRINT)	FRANK SALTERS	DATE	6/28/17

QUALIFYING PROPERTY INFORMATION			
TAX PARCEL ID	13183D C001	PROPERTY SIZE (ACRES)	15.5
PROPERTY ADDRESS	7458 Georgia Highway 85, Riverdale, Georgia 30274		
CITY	Riverdale	COUNTY	Clayton
LATITUDE	33.551396	LONGITUDE	-84.413006
PROPERTY OWNER(S)	Light of Joy, Inc.	PHONE #	404-384-0654
MAILING ADDRESS	8622 Wood Springs Court		
CITY	Douglasville	STATE/ZIP	GA, 30135

ITEM #	DESCRIPTION OF REQUIREMENT	Location in VRP (i.e. pg., Table #, Figure #, etc.)	For EPD Comment Only (Leave Blank)
1.	**$5,000 APPLICATION FEE** IN THE FORM OF A CHECK PAYABLE TO THE GEORGIA DEPARTMENT OF NATURAL RESOURCES.	See Cover Letter, Waiver Request Attached	
2.	**WARRANTY DEED(S)** FOR QUALIFYING PROPERTY.	Appendix B	
3.	**TAX PLAT** OR OTHER FIGURE INCLUDING QUALIFYING PROPERTY BOUNDARIES, ABUTTING PROPERTIES, AND TAX PARCEL IDENTIFICATION NUMBER(S).	Appendix B	
4.	**ONE (1) PAPER COPY AND TWO (2) COMPACT DISC (CD) COPIES** OF THE VOLUNTARY REMEDIATION PLAN IN A SEARCHABLE PORTABLE DOCUMENT FORMAT (PDF).	Enclosed	
5.	The VRP participant's initial plan and application must include , using all reasonably available current information to the extent known at the time of application, a graphic three-dimensional preliminary conceptual site model (CSM) including a preliminary remediation plan with a table of delineation standards, brief supporting text, charts, and figures (no more than 10 pages, total) that illustrates the site's surface and subsurface setting, the known or suspected source(s) of contamination, how contamination might move within the environment, the potential human health and ecological receptors, and the complete or incomplete exposure pathways that may exist at the site; the preliminary CSM must be updated as the investigation and remediation progresses and an up-to-date CSM must be included in each semi-annual status report submitted to the director by the participant; a **PROJECTED MILESTONE SCHEDULE** for investigation and remediation of the site, and after enrollment as a participant, must update the schedule in each semi-annual status report to the director describing implementation of the plan during the preceding period. A Gantt chart format is preferred for the milestone schedule. The following four (4) generic milestones are required in all initial plans with the results reported in the participant's next applicable semi-annual reports to the director. The director may extend the time for or waive these or other milestones in the participant's plan where the director determines, based on a showing by the participant, that a longer time period is reasonably necessary:	Sections 1-5 of the VRP Application	

5.a.	Within the first 12 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern on property where access is available at the time of enrollment;	Complete; See Appendix E (CSR) of VRP Applicati	
5.b.	Within the first 24 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern extending onto property for which access was not available at the time of enrollment;	Complete; See Appendix E (CSR) of VRP Application	
5.c.	Within 30 months after enrollment, the participant must update the site CSM to include vertical delineation, finalize the remediation plan and provide a preliminary cost estimate for implementation of remediation and associated continuing actions; and	Section 5 of VRP Application	
5.d.	Within 60 months after enrollment, the participant must submit the compliance status report required under the VRP, including the requisite certifications.	Section 5 of VRP Application	
6.	**SIGNED AND SEALED PE/PG CERTIFICATION** AND SUPPORTING DOCUMENTATION: "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." KEITH JOSEPH REESE 685 Printed Name and GA PE/PG Number 6/29/2017 Date Signature and Stamp GEORGIA REGISTERED PROFESSIONAL GEOLOGIST No 685		

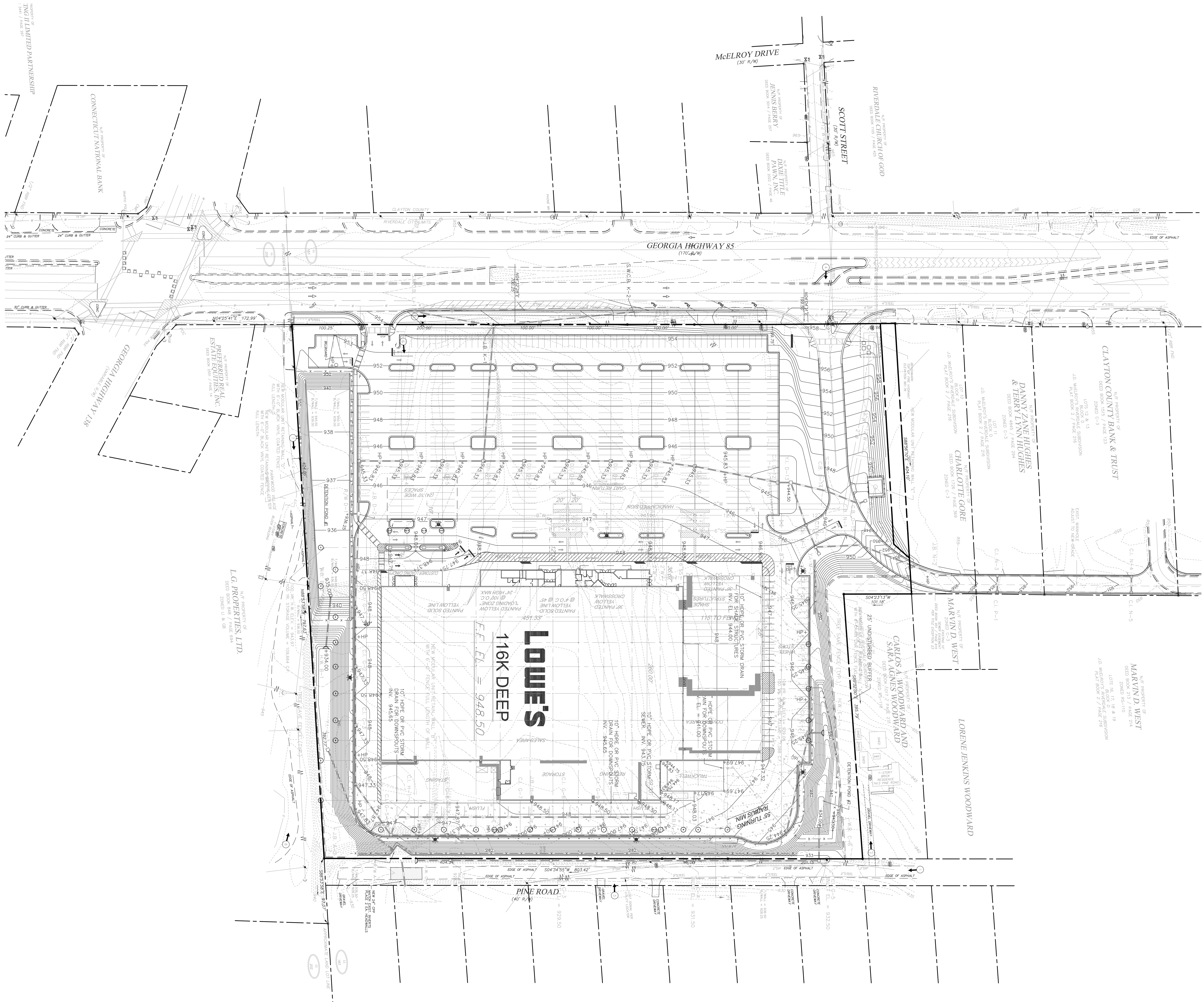
APPENDIX B
Tax Map and Warranty Deed

Property Description
Over-All Tract
Riverdale Lowe's
Clayton County, Georgia

All that tract or parcel of land lying and being in Land Lot 183 of the 13th District, Clayton County, Georgia, and being more particularly described as follows:

Commencing at a point at the intersection of the northerly right-of-way of Georgia Highway 138 (a variable width right-of-way) with the easterly right-of-way of Georgia Highway 85 (a 170 foot right-of-way); Thence departing the said northerly right-of-way of Georgia Highway 138 and continuing with the said easterly right-of-way of Georgia Highway 85, North 04 degrees 25 minutes 41 seconds East, a distance of 172.99 feet to a 5/8 inch rebar set in the division line between L.G. Properties, Ltd. (Deed Book 848 at Page 694) on the south and Hughes & Hughes Properties, Inc. (Deed Book 6698 at Page 162) on the north, said 5/8 inch rebar set being the **TRUE POINT OF BEGINNING.** Thence continuing with the said easterly right-of-way of Georgia Highway 85 the following two courses: North 04 degrees 32 minutes 28 seconds East, a distance of 700.25 feet to a 3/4 inch open top pipe found; Thence North 04 degrees 04 minutes 11 seconds East, a distance of 199.50 feet to a 1/2 inch rebar found in the division line between Larry J. Wallace (Deed Book 925 at Page 522) on the south and Charlotte Gore (Deed Book 1726 at Page 369) on the north; Thence departing the said easterly right-of-way of Georgia Highway 85 and continuing with the said division line, South 88 degrees 56 minutes 10 seconds East, a distance of 404.10 feet to a 5/8 inch rebar set in the division line between the said Larry J. Wallace on the west and Carlos A. Woodward and Sara Agnes Woodward (Deed Book 1017 at Page 271) on the east; Thence continuing with the said division line, South 04 degrees 23 minutes 13 seconds West, a distance of 101.18 feet to a 1 inch bolt found in the said division line between the said Carlos A. Woodward and Sara Agnes Woodward on the north and James L. Chapman, Jr. (Deed Book 1415 at Page 883) on the south; Thence continuing with the said division line, South 89 degrees 32 minutes 50 seconds East, a distance of 395.79 feet to a 3/4 inch open top pipe found in the westerly right-of-way of Pine Road (a 40 foot right-of-way); Thence continuing with the said westerly right-of-way of Pine Road, South 04 degrees 34 minutes 55 seconds West, a distance of 803.42 feet to a 5/8 inch rebar set in the said division line between the said L.G. Properties, Ltd. on the south and Wilson E. Miller (Deed Book 394 at Page 412, Deed Book 438 at Page 207 and Deed Book 533 at Page 610) on the north; Thence departing the said westerly right-of-way of Pine Road and continuing with the said division line between the said L.G. Properties, Ltd. on the south and the said Wilson E. Miller and continuing with the said Hughes & Hughes Properties, Inc. all on the north, North 88 degrees 53 minutes 58 seconds West, a distance of 797.63 feet to a 5/8 inch rebar set in the said easterly right-of-way of Georgia Highway 85, said 5/8 inch rebar set being the **TRUE POINT OF BEGINNING.**

Said tract of land contains 15.564 Acres.



McELROY DRIVE
(30' R/W)
SCOTT STREET
GEORGIA HIGHWAY 85
GEORGIA HIGHWAY 138
PINE ROAD
(40' R/W)
LOWE'S
116K DEEP
F.F. EL = 948.50
CONNECTICUT NATIONAL BANK
RIVERDALE CHURCH OF GOD
PREFERRED REAL ESTATE EQUITIES, INC.
L.G. PROPERTIES, LTD
CLAYTON COUNTY BANK & TRUST
DANNY ZANE HUGHES & TERRY LYNN HUGHES
CHARLOTTE GORE
MARVIN D. WEST
CARLOS A. WOODWARD AND SARA AGNES WOODWARD
LORENE JENKINS WOODWARD
DETENTION POND
EDGE OF ASPHALT

New Search | Current Year Assessment Notice | Sales Data | Previous Parcel | Next Parcel

Clayton County Property Card For Year 2017

LIGHT OF JOY INC
PO BOX 961750
RIVERDALE, GA 30274

PARCEL ID . . 13183D C001
LOCATION . . 7458 HIGHWAY 85

LEGAL DESC DISTRICT 6 RIVERDALE
NBRHOOD RD014 RIVERDALE LARGE LOT

DESCRIPTION NOT IN SUBDIVISION - ALL UTILITIES
DESCRIPTION SEMI-PAVED ROAD DISCOUNT STORES
ROAD FRONT . . . 878.0 803.4

******* CURRENT YR APV/LUV VALUE OVERRIDE EXISTS FOR: . . . LAND IMPROVEMENTS

SALES HISTORY

DEED BOOK	PAGE	SALE DATE	SALES INSTRUMENT	DISQUALIFIED	SALE AMT	DEED NAME
10878	624	4/15/16	WARRANTY DEED	SALE TO/FROM CH	2,000,100	LIGHT OF JOY INC
9376	502	2/22/08	WARRANTY DEED	OTHER	17,943,046	LOWES HOME CENTERS INC
8347	001	10/03/05	WARRANTY DEED	QUALIFIED	271,676	H/S RIVERLO LLC
4553	321	9/26/00	WARRANTY DEED	RELATED		SANCHEZ VICKI A
4423	110	5/31/00	QUIT CLAIM	RELATED		ROBINSON BETTY J
1054	371	1/01/82	WARRANTY DEED	.		ROBINSON JAMES E & BETTY J

LAND SEGMENTS

LND#	ZONE	LAND TYPE/CODE	LAND QTY
1	GB	SF 1	674,614.000

MAP ACRES . . 15.487

IMPROVEMENT # 1 MISC IMPR-Y

GROUND FLOOR AREA . .

ACT/EFF YR/AGE . . 2006 11
DESCRIPTION . . . .FORMER LOWES

	% COMP	SQ FOOTAGE	STORY
BUILDINGS	100	138822.00	

TOTAL PARCEL VALUES	LAND / OVR		IMPROVEMENTS / OVR		2017 VALUE	2016 VALUE
APV	1,999,100	J	1,000	J	2,000,100	4,859,000

YEAR OF OVR . . . 2017

APPENDIX C
Figures

0 500 1,000
Feet

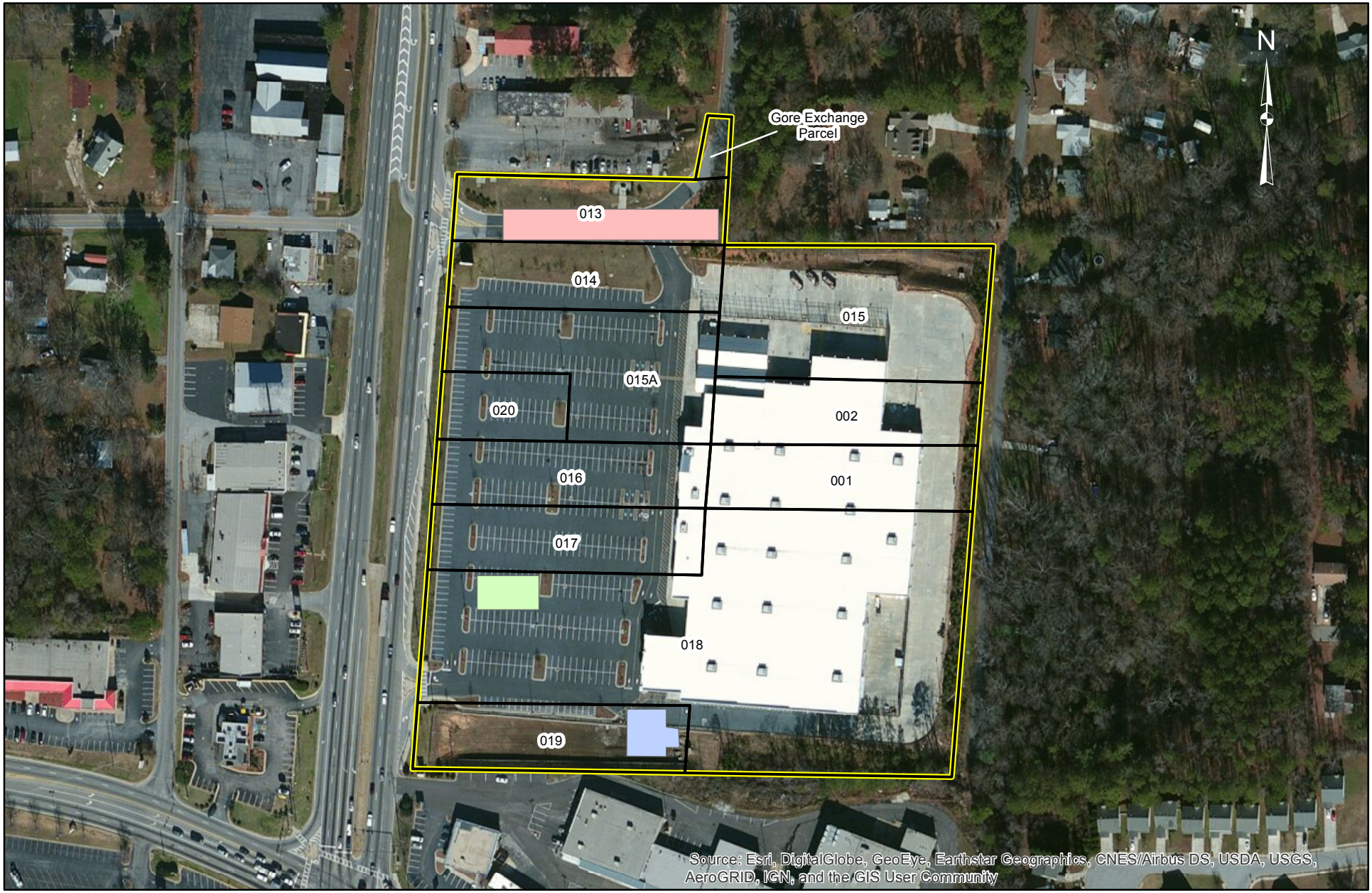
Legend

Approximate Site Boundary

Former Lowe's Store
HSI# 10808
Site Location Map

EPS
F:\Lowes-Church\VRP App\Figures\MXD

Figure No. 1



0 100 200 Feet

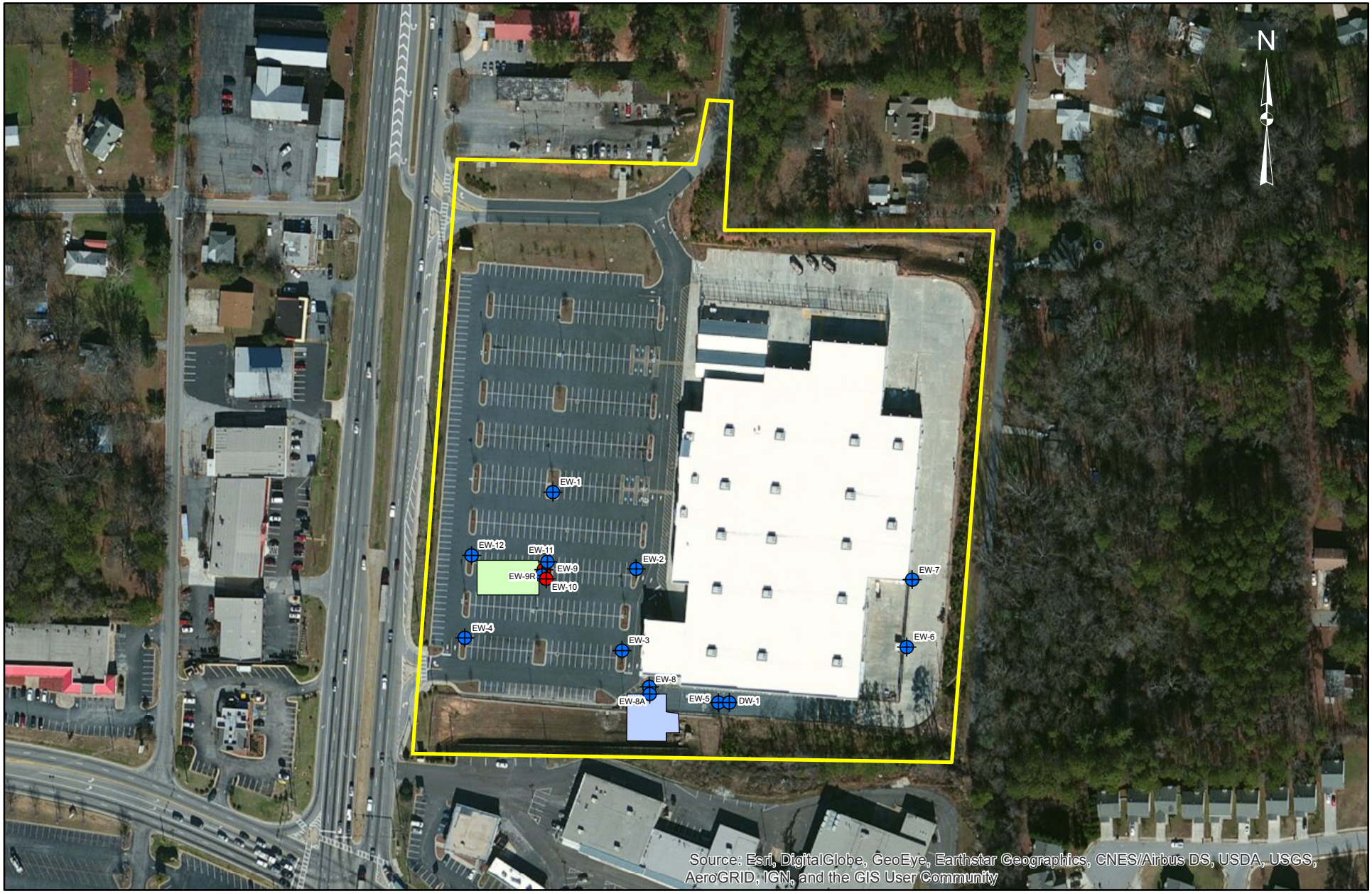
Legend

- Former Fast Auto/Fast Radiator
- Former Miller Battery
- Former Parkway Truck Painting
- Parcels
- Approximate Site Boundary

Former Lowe's Store
HSI# 10808
Site Plan

EPS
F:\Lowes-Church\VRP App\Figures\MXD

Figure No. 2



0 100 200
Feet

Legend

- Active Monitoring Well
- Abandoned Monitoring Well
- Former Miller Battery
- Former Parkway Truck Painting
- Approximate Site Boundary

Former Lowe's Store
HSI# 10808

Groundwater Monitoring Well Locations

EPS
F:\Lowes-Church\VRP App\Figures\MXD

Figure No. 3

0 100 200
Feet

Legend

- Former Miller Battery
- Former Parkway Truck Painting
- Approximate Site Boundary
- Monitoring Well Locations
- 932 Potentiometric Surface Contour
- Groundwater Flow Direction
- 930.22 Groundwater Elevation (ft amsl)

Former Lowe's Store
HSI# 10808

Potentiometric Surface Map (April 2016)

EPS
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Figure No. 4

APPENDIX D
Tables

Table 1. Well Construction Details

Well ID	TOC Elevation	Total Depth	Screen Length	Elevation of Screened Interval	Status
	(ft amsl)	(ft below TOC)	(ft)	(ft amsl)	
EW-1	947.42	22.75	10	934.67 - 924.67	Annual Testing
EW-2	948.31	30.40	10	927.91 - 917.91	Annual Testing
EW-3	948.22	19.90	10	938.32 - 928.32	Annual Testing
EW-4	953.20	28.00	10	935.20 - 925.20	Annual Testing
EW-5	948.65	23.60	10	935.20 - 925.20	Water Depth Only
EW-6	948.03	29.20	10	928.83 - 918.83	Water Depth Only
EW-7	948.68	26.90	10	931.78 - 921.78	Water Depth Only
EW-8	948.18	22.50	2.5	928.18 - 925.68	Water Depth Only
EW-8A	947.98	20.20	10	937.78 - 927.78	Water Depth Only
EW-9	947.67	22.05	2	927.62 - 925.62	Abondoned
EW-9R	947.67	29.70	15	932.97 - 917.97	Annual Testing
EW-10	947.57	20.00	10	937.57 - 927.57	Abondoned
EW-11	947.56	53.00	2	896.56 - 894.56	Annual Testing
EW-12	953.33	29.50	10	933.83 - 923.83	Annual Testing
DW-1	948.60	60.20	2	890.40 - 888.40	Water Depth Only

Notes:

TOC = Top of Casing

ft amsl= feet above mean sea level

Table 2. Groundwater Elevation Data

	May 31, 2011		May 15, 2012		May 15, 2013		April 24, 2014		April 22, 2015		April 25, 2016	
Well ID	Depth to Water (ft below TOC)	Groundwater Elevation (ft amsl)	Depth to Water (ft below TOC)	Groundwater Elevation (ft amsl)	Depth to Water (ft below TOC)	Groundwater Elevation (ft amsl)	Depth to Water (ft below TOC)	Groundwater Elevation (ft amsl)	Depth to Water (ft below TOC)	Groundwater Elevation (ft amsl)	Depth to Water (ft below TOC)	Groundwater Elevation (ft amsl)
EW-1	20.60	926.81*	22.07	925.35	21.50	925.92	20.35	927.07	20.50	926.92	18.10	929.32
EW-2	20.33	928.02*	21.50	926.81	20.90	927.41	19.86	928.45	19.84	928.47	18.17	930.14
EW-3	18.62	929.60	Dry	Dry	18.99	929.23	18.05	930.17	17.62	930.60	16.63	931.59
EW-4	23.52	929.68	25.06	928.14	24.52	928.68	23.20	930.00	23.27	929.93	20.97	932.23
EW-5	18.97	929.68	19.31	929.34	19.11	929.54	18.41	930.24	17.44	931.21	17.30	931.35
EW-6	21.61	926.42	21.98	926.05	21.04	926.99	21.07	926.96	20.39	927.64	19.95	928.08
EW-7	22.09	926.59	22.48	926.20	21.91	926.77	21.41	927.27	20.77	927.91	20.98	927.70
EW-8	18.25	929.93	18.90	929.28	18.54	929.64	17.43	930.75	16.45	931.73	16.11	932.07
EW-8A	17.82	930.16	18.34	929.64	18.18	929.80	17.45	930.53	16.18	931.80	16.02	931.96
EW-9	18.90	928.77	20.49	927.18	ABANDONED							
EW-9R	NOT INSTALLED				19.91	927.76	18.77	928.90	18.76	928.91	16.67	931.00
EW-10	18.95	928.62	Dry	Dry	ABANDONED							
EW-11	20.29	927.27	21.72	925.84	21.09	926.47	19.97	927.60	20.12	927.45	17.75	929.81
EW-12	25.65	927.68	27.14	926.19	26.60	926.73	25.37	927.96	25.56	927.77	23.11	930.22
DW-1	18.95	929.65	19.05	929.55	19.02	929.58	18.45	930.15	17.48	931.12	17.39	931.21

Notes:

*Groundwater elevation based on pre-2012 TOC surveying data.

TOC = Top of Casing

ft amsl = feet above mean sea level

Table 3. Summary Historical Groundwater Data (Metals)

Location	Date Sampled	Barium (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)
Type 3 RRS		--	--	--	15	--	--
Type 4 RRS		20,400	51	4,090	--	2,040	3,070
EW-1	6/2006	21.8	NA	NA	<10	N/A	N/A
	4/2007	Dry	Dry	Dry	Dry	Dry	Dry
	4/3/2008	Dry	Dry	Dry	Dry	Dry	Dry
	4/16/2009	36.7	<5	<10	<10	<20	<20
	4/15/2010	39.2	<5	<10	<10	<20	<20
	5/31/2011	41.0	<1	<20	3.0 J	<3	<8
	5/16/2012	64.8	<1	<10	<5	<10	<50
	5/15/2013	53.2	<1	<10	<7.5	<10	<50
	4/24/2014	43.9	<1	18.3	<5	<10	110
	4/22/2015	36.6	<1	<10	<5	<10	<50
	4/25/2016	36.9	<1	19.3	<5	<10	62.3
EW-2	6/2006	56.9	N/A	N/A	<10	N/A	N/A
	4/2007	29.9	N/A	4.1	<10	<20	27.2
	4/3/2008	Dry	Dry	Dry	Dry	Dry	Dry
	4/16/2009	42.7	<5	<10	<10	<20	<20
	4/15/2010	27.3	<5	<10	<10	<20	<20
	5/31/2011	27.0	<1	<2	<2	<3	14.0 J
	5/16/2012	21.0	<1	<10	<5	<10	<50
	5/15/2013	25.8	<1	11.5	<5	<10	<50
	4/24/2014	32.2	<1	64.1	<5	<10	210
	4/22/2015	34.2	<1	<10	<5	<10	<50
	4/25/2016	44.0	<1	37.0	<5	<10	95.0
EW-3	6/2006	36.8	N/A	N/A	<10	N/A	N/A
	4/2007	36.4	N/A	2.8	<10	<20	3.4
	4/3/2008	24.6	<5	<10	<10	<20	<20
	4/16/2009	<20	<5	<10	<10	<20	<20
	4/15/2010	<20	<5	<10	<10	<20	<20
	5/31/2011	13.0	<1	<2	2.8 J	<3	<8
	5/16/2012	Dry	Dry	Dry	Dry	Dry	Dry
	5/15/2013	17.8	<1	<10	7.7	<10	<50
	4/24/2014	18.9	<1	90.5	<5	<10	307
	4/22/2015	20.2	<1	<10	<5	<10	<50
	4/25/2016	18.9	<1	<10	<5	<10	<50
EW-4	6/2006	<20	N/A	N/A	<10	N/A	N/A
	4/2007	37.1	N/A	3.0	<10	<20	5.2
	4/3/2008	33.9	<5	<10	<10	<20	<20
	4/16/2009	30.4	<5	<10	<10	<20	<20
	4/15/2010	28.7	<5	<10	<10	<20	<20
	5/31/2011	26.0	<1	<2	3.6 J	<3	<8
	5/16/2012	24.3	<1	<10	<5	<10	<50
	5/15/2013	20.6	<1	<10	6.2	<10	<50
	4/24/2014	24.2	<1	49.0	<5	<10	161
	4/22/2015	20.4	<1	<10	<5	<10	<50
	4/25/2016	22.0	<1	14.7	<5	<10	132

Notes:

µg/L = micrograms per liter

exceeds applicable Risk Reduction Standard (RRS)

Table 3. Summary Historical Groundwater Data (Metals)

Location	Date Sampled	Barium (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Zinc (µg/L)
Type 3 RRS		--	--	--	15	--	--
Type 4 RRS		20,400	51	4,090	--	2,040	3,070
EW-9 (Replaced by MW-9R)	6/2006	299	**94.4**	N/A	**494**	N/A	N/A
	4/2007	178	**99.3**	1410	**481**	135	**5400**
	4/3/2008	160	20.3	513	**140**	42.0	2430
	4/16/2009	38.2	15.8	450	**118**	<20	646
	4/15/2010	46.0	**57.0**	504	**171**	41.6	1230
	5/31/2011	7.4 J	49.0	440	**190**	58.0	**3100**
	5/16/2012	<10	38.9	401	**437**	108	**4860**
EW-9R	5/16/2013	94.0	11.2	121	**34.2**	20.8	635
	4/24/2014	22.1	12.3	390	**149**	22.9	940
	4/22/2015	17.3	14.4	225	**128**	23.0	1140
	4/25/2016	15.9	16.9	348	**147**	23.8	1240
EW-10 (Replaced by MW-9R)	11/2006	300	15.4	N/A	**204**	N/A	N/A
	4/2007	46.0	5.4	404.0	**289**	<20	**3190**
	4/3/2008	266	<5	58.1	**294**	35.1	2380
	4/16/2009	Dry	Dry	Dry	Dry	Dry	Dry
	4/15/2010	67.4	<5	52.0	**154**	<20	681
	5/31/2011	13.0	3.5 J	64.0	**130**	21.0	670
	5/16/2012	Dry	Dry	Dry	Dry	Dry	Dry
EW-11	11/2006	30.6	<5	N/A	<10	N/A	N/A
	4/2007	39.6	<5	6.4	<10	<20	10.8
	4/3/2008	72.1	<5	<10	<10	<20	<20
	4/16/2009	100	<5	11.6	<10	<20	66.7
	4/15/2010	<20	<5	<10	<10	<20	<20
	5/31/2011	18.0	<1	<2	3.6 J	<3	19.0 J
	5/15/2012	19.7	<1	<10	<5	<10	<50
	5/15/2013	16.7	<1	<10	8.4	<10	<50
	4/24/2014	16.0	<1	<10	<5	<10	52.8
	4/22/2015	13.9	<1	<10	<5	<10	<50
	4/25/2016	16.0	<1	<10	<5	<10	<50
EW-12	9/25/2007	38.5	<5	<10	<10	<20	20.0
	4/3/2008	37.9	<5	<10	<10	<20	<20
	4/16/2009	40.8	<5	<10	<10	<20	<20
	4/15/2010	48.0	<5	<10	<10	<20	<20
	5/31/2011	62.0	<1	<2	<2	<3	11.0 J
	5/16/2012	67.1	<1	<10	<5	<10	<50
	5/15/2013	65.6	<1	<10	<5	<10	<50
	4/24/2014	58.4	<1	40.9	<5	<10	113
	4/22/2015	58.2	<1	<10	<5	<10	<50
	4/25/2016	58.9	<1	11.7	<5	<10	58.0

Notes:

µg/L = micrograms per liter

exceeds applicable Risk Reduction Standard (RRS)

APPENDIX E
2007 Compliance Status Report

COMPLIANCE STATUS REPORT

HSI SITE NO. 10808
GEORGIA HIGHWAY 85
RIVERDALE, CLAYTON COUNTY, GEORGIA

Prepared for Submission to:

Georgia Environmental Protection Division
Hazardous Site Response Program
Suite 1462, East Tower
2 Martin Luther King Jr. Drive
Atlanta, Georgia 30334

Prepared by:

MACTEC Engineering and Consulting, Inc.
396 Plasters Ave.
Atlanta, Georgia 30324

MACTEC Project No. 6305-05-0303

Volume 1 of 2

July 2007

MACTEC

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 BACKGROUND

The subject Site currently consists of a 15.564-acre tract of land located along Georgia Highway 85 in Riverdale, Clayton County, Georgia which is currently under development with a Lowe's Home Improvement Center. The subject Site consists of an assemblage of eleven parcels which were owned by six individuals. The eleven parcels were designated 001, 002, 013, 014, 015, 015A, 016, 017, 018, 019 and 020. At the time the property was acquired by H/S Riverlo, two of the parcels were undeveloped (016 and 017); three consisted of residential properties (001, 002 and 015) and the remaining six were at least partly commercially developed with a variety of small businesses. A legal description and boundary survey of the property are included in Appendix A. Figure 1 in Appendix B depicts the Site location and area topography. Figure 2 provides a pre-development aerial view of the Site and surrounding area and Figure 3 is a Site plan which illustrates the various parcels from which the subject Site was assembled and their previous owners.

HSRA notifications for releases to soil and groundwater were submitted on behalf of the various previous property owners in May 2005, resulting in the listing of Parcel 013, owned by Mr. Larry Wallace, Parcel 018, owned by Mr. Wilson Miller and Parcel 019, owned by Mr. Hughes and Hughes Properties, Inc. on the Georgia Hazardous Site Inventory (HSI). The property was assigned HSI Site No. 10808 and appears on the HSI as a single site under the designation Lowes Home Improvement Warehouse (Proposed). We note that the Hughes Parcel (Parcel 019) was subsequently removed from the listing as per the attached correspondence from GA-EPD in Appendix H.

Based on the data obtained by Contour Engineering, LLC (Contour), an Application for Limitation of Liability and Corrective Action Plan (CAP) was prepared by MACTEC Engineering and Consulting, Inc. (MACTEC) and submitted to the GA-EPD on June 27, 2005. The application and CAP were approved by the GA-EPD on July 22, 2005. As discussed in subsequent sections of this report, MACTEC then conducted additional soil testing on Site in order to delineate the extent of constituents present above applicable RRS. The Site was cleaned up and received a Brownfield Limitation of Liability on April 9, 2007. This terminated any regulatory obligation on the part of H/S Riverlo

1.1 PREVIOUS ASSESSMENTS

Several previous environmental assessments have been conducted at the subject Site between December 2003 and February 2005. The following lists the previous reports utilized by MACTEC in preparation of this CSR.

- Draft Phase I Environmental Site Assessment, Contour Engineering, LLC, prepared for Hendon Properties, dated December 22, 2003;
- Draft Limited Phase II Site Investigation, Contour Engineering, LLC, prepared for Home Depot USA, Inc., dated August 24, 2004;
- Draft Corrective Action Plan, Contour Engineering, LLC, prepared for Hull Storey Acquisitions, dated February 7, 2005;
- Application for Limitation of Liability and Corrective Action Plan, MACTEC Engineering and Consulting, Inc., prepared for H/S Riverlo, LLC, dated June 27, 2005; and
- Compliance Status Report, MACTEC Engineering and Consulting Inc., prepared for H/S Riverlo, LLC, dated December 14, 2006.

Previous historical research indicates the Site consisted primarily of residential or undeveloped property from at least the 1950s until the 1960s or 1970s when most commercial development in the area began. Three of the parcels (001, 002 and 015) remained residential properties until the time they were acquired by H/S Riverlo. Two of the homes were connected to septic systems. Parcels 016, 017, the eastern portion of Parcel 018 and Parcel 020 remained historically undeveloped. The remaining parcels were occupied by various commercial establishments at the time of acquisition by H/S Riverlo.

During the previous Phase I assessment conducted by Contour in 2003, recognized environmental conditions (RECs) were identified on four of the eleven parcels. RECs were also identified in the immediate upgradient watershed. These RECs are summarized in the following sections:

1.1.1 On-Site Conditions

Parcel 013 (Wallace) – Parcel 013, located in the northwestern corner of the Site, was occupied most recently by 1) Fast Auto Parts, 2) Stone and Sons Plumbing and 3) Fast Radiator and Fast Air Conditioner Service. This facility has also been occupied in the past by several environmentally suspect businesses, including: Riverdale Radiator, Hatcher Welding and Mobil Hydraulics. Numerous containers and drums of anti-freeze, used oil and other unknown materials, as well as several vats and holding tanks, were observed on this Parcel. Spillage and staining were noted in the area surrounding the tanks and containers. Ultimately, soil remediation was performed on this Parcel as part of the Brownfield CAP.

Parcel 015A (Chapman) – Parcel 015A, located in the northwestern portion of the Site, was occupied by Nice Cars of America. Numerous containers and drums of unknown content were identified on this parcel. In addition, a hydraulic lift was located within one of the service bays. This building was also serviced by a septic system. Ultimately, soil remediation was not required on this Parcel as part of the Brownfield CAP.

Parcel 018 (Miller) – The western portion of Parcel 018 was most recently occupied by Discount Auto Service Center. Numerous containers and drums, primarily containing used oil, were identified as well as staining of the floor inside the facility. The building on this parcel was constructed in 1965 and was occupied by Miller Battery, a battery repair facility, through the 1970s. A second building, located just south of Discount Auto Service Center, was occupied by Tubs Unlimited and C&A Automotive Service Center. This facility was constructed in 1968 and was previously used as a parts shop and repair center. Tubs Unlimited began leasing a part of the building in 1974. Both of these facilities were serviced by septic systems. Ultimately, soil remediation was performed on this Parcel as part of the Brownfield CAP.

Parcel 019 (Hughes) – The western portion of Parcel 019 was occupied by a vacant restaurant which operated between the 1940s and 2000s. Parkway Truck Painting, constructed in 1980, was located in the eastern portion of the parcel. Numerous containers and drums containing paint, solvents and aluminum cleaners were identified at this facility. Several floor drains were identified within the building which was serviced by a septic system. Ultimately, soil remediation was performed on this Parcel as part of the Brownfield CAP.

1.1.2 Off-Site Conditions

The subject Site is located in an area characterized by a combination of residential and commercial development. The Site is bound to the east by Pine Road, beyond which is an area of single-family residential development. The area south of the Site is occupied by the Parkwood Village Shopping Center which contains a dry cleaner tenant space, and several free standing retail stores, one of which is also a dry cleaner. Both dry cleaners have documented releases of solvents into the subsurface. A Chevron gas station, previously located adjacent to the southwest corner of the Site, was demolished in the early 1990s. This station had reported a release from their UST system. Further to the south is Georgia Highway 138, beyond which is the relocated Chevron station that has also reported a UST release. The Site is bound to the west by Georgia Highway 85, beyond which is a variety of commercial

and retail facilities including a muffler shop, several pawn shops, a hardware store and a farmers market. The northeastern portion of the Site is bound to the north by residential property while the northwestern portion is bound to the north by commercial property.

Previous groundwater elevation data obtained by Contour indicated groundwater flows in a generally northeasterly direction. Based on this data, our review of local topography and drainage features and our review of groundwater data collected from nearby LUST facilities, the Site's upgradient watershed appears to extend to the south, just south of GA Highway 138 (see Figure 1). Nearby properties to the south, including Professional Cleaners, Riverdale Cleaners, an active Chevron Station and a former Chevron Station (see Figure 2) are interpreted to be located upgradient of the Site.

Based on our research and previous assessment findings, it appears that off-Site environmental conditions have impacted the property. In particular, releases from the former Chevron station and possibly the current Chevron station, as well as the Professional Cleaners facility, appear to have impacted groundwater on Parcels 018 and 019 in the southern portion of the Site.

The other nearby dry cleaner, Riverdale Cleaners, was listed on the Hazardous Site Inventory (HSI) as a result of a release of chlorinated solvents to groundwater. This property has since been remediated and was removed from the HSI. The contamination from this property did not impact the Site.

2.0 PURPOSE

The purpose of this Compliance Status Report (CSR) is to document the current status of the Site with regard to the Hazardous Site Response Act for all regulated substances associated with releases at the property. This CSR was compiled on the basis of property conditions which were primarily characterized through a series of investigations and remedial activities performed at the Site by Contour and MACTEC between December 2003 and June 2007.

3.0 DESCRIPTION OF THE RELEASE SOURCES

Results of soil and groundwater assessment activities indicate releases of regulated substances in soil and groundwater have occurred at the Site. This section of the CSR provides a description of the source(s) of the release.

3.1 SOURCES OF RELEASE

Information obtained to date and documented in subsequent sections of this report indicates that three primary on-Site release sources have been identified, including: a former radiator repair facility and auto repair facility on the "Wallace" Parcel 013 (lead and chromium), a former battery facility on the "Miller" Parcel 018 (lead) and the former Parkway Truck Painting facility on "Hughes" Parcel 019 (chromium and lead).

In addition, testing indicates that the Site has been impacted by off-Site groundwater contamination migrating from the former Chevron gas station and the Professional Cleaners facility located adjacent to the Site to the south.

HSRA notifications for releases to soil and groundwater were submitted on behalf of the various previous property owners in May, 2005, resulting in the listing of the Wallace, Miller and Hughes parcels (Parcels 013, 018 and 019) on the Georgia Hazardous Site Inventory (HSI). The property was assigned HSI Site No. 10808. However, the Hughes Parcel 019 was subsequently removed from the listing as per the attached correspondence from GA-EPD in Appendix H.

3.2 REGULATED SUBSTANCES RELEASED FROM THE SOURCE

The substances identified in soil at the Site include: acetone, cis-1,2-dichloroethene, methyl tertiary butyl ether (MTBE), tetrachloroethene, toluene, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel and zinc.

The substances identified in groundwater at the Site include: acetone, benzene, n-butylbenzene, chloroform, cyclohexane, cis-1,2-dichloroethene, diisopropyl ether, ethylbenzene, isopropylbenzene, methylcyclohexane, MTBE, naphthalene, n-propylbenzene, tetrachloroethene, toluene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene, xylenes, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc.

3.3 DESCRIPTION OF THE SOURCES

Based on the information obtained during the assessments of the Site, the metals contamination identified in soil on Parcels 013, 018 and 019 appear to be associated with various automotive service related facilities which previously operated at these locations on Site. A release of lead, cadmium, chromium, copper, nickel and zinc was identified in groundwater on Parcel 018 which appears to be related to the former Miller Battery facility previously located on this Parcel. The chlorinated VOCs (CVOCs) identified in groundwater on Parcel 019 and 018 appear to be related to off-Site dry cleaning operations at the Professional Cleaners facility located adjacent to the Site to the south. Petroleum hydrocarbon impacts to groundwater identified in the southern portion of the Site (Parcels 018 and 019) appear to be related to a Chevron gas station formerly located at the northeast corner of Highway 138 and Highway 85. This facility was closed in 1991 and remediation of soil and groundwater contamination on the former Chevron property was conducted following demolition of the facility. Remediation of groundwater did not extend onto the subject property.

3.4 CHRONOLOGY OF THE RELEASE

Specific information regarding the chronology of the releases is not available. The businesses suspected of being responsible for the identified releases and their approximate periods of operation are summarized as follows: Wallace Parcel 013 consisted of residential property until approximately the early 1970s and has been commercially developed since that time. A variety of tenants including auto and radiator service companies have occupied this Parcel but information regarding specific tenant histories has not been obtained. The former Miller Battery facility was located in the western portion of the Miller Parcel 018 during the 1960s and 1970s, after which this facility was used as an auto repair facility. The Parkway Truck Painting facility operated from the early 1980s until 2005 in the eastern portion of the Hughes Parcel 019. The former Chevron gas station located south of the Site operated until 1991 when it was demolished. The off-Site dry cleaner (Professional Cleaners) has been present immediately south of the Site since at least the mid 1990s. This facility has recently ceased operation at this location.

4.0 DELINEATION OF SOIL CONTAMINATION

Soil sampling was conducted on Site during the installation of 38 groundwater monitoring wells, 50 Geoprobe borings, 11 soil borings and 2 hand auger borings between 2004 and 2006. Refer to Figures 5-8 for plans of the soil boring locations and Appendices C and D for a summary of the laboratory data and the complete laboratory reports, respectively. The sampling procedures employed by MACTEC are described in the following sections. Available information regarding Contour's sampling procedures is also presented.

4.1 ANALYTICAL PARAMETERS SELECTED AND RATIONALE

Soil samples collected during the various assessments conducted by MACTEC and Contour were analyzed for volatile organic compounds (VOCs, SW-846 Test Method 8260B), polynuclear aromatic hydrocarbons (PAHs, SW-846 Test Method 8270C) and RCRA Metals (SW-846 Test Method 6010B and 7471A). These parameters were appropriately selected based on the type of historical business operation identified on the subject Site and in the immediate upgradient vicinity.

4.2 SAMPLING AND ANALYSIS PROCEDURES

4.2.1 Sampling Equipment and Collection Techniques

Soil samples from Geoprobe borings were collected using a four-foot long stainless steel sampling tube which is lined with a polyethylene sleeve and driven into the ground to the desired sampling depth. Soil samples collected from auger borings were collected using a split-spoon sampler and the standard penetration test method. Other samples were collected using a stainless steel hand auger. Confirmation samples obtained during the soil remediation activities were collected from the appropriate depth on the sidewalls of the excavation by hand or using a backhoe bucket, depending on the depth of the sample. Samples collected by MACTEC were discreet samples collected from the designated depths. In order to reduce the loss of VOCs from the collected samples, the soil samples were not homogenized prior to packing in the appropriate containers.

4.2.2 Soil Sample Handling and Preservation Techniques

The collected soil samples were removed from the sampling device and placed in clean sample containers supplied by the laboratory. Soil samples for laboratory testing for VOCs were collected using the syringe method, in accordance with SW-846 Method 5035. Samples for PAH and metals analyses were collected in four-ounce glass jars. Clean latex gloves were worn during all sampling activities and the gloves were then discarded. Following sample collection, the samples were maintained on ice in a cooler until they were transferred to the laboratory.

4.2.3 Equipment Decontamination Procedures

Soil sampling tools and equipment, including drill rigs were decontaminated by steam cleaning prior to beginning work on the Site. During drilling operations, only clean drilling tools were used in each borehole. The split spoons and Geoprobe sampling tubes were decontaminated between samples using non-phosphate detergent and then rinsed with distilled water. New polyethylene liners were used for each Geoprobe sample. Clean latex gloves were used during the collection of all soil samples. Gloves were changed prior to the collection of each soil sample.

4.2.4 Chain-of-Custody Procedures

All collected samples were logged on a chain-of-custody form that was signed by the MACTEC field representative and the laboratory representative upon release of the samples to the laboratory. Chain-of-custody documentation is provided with the laboratory reports in Appendix I. We note that, according to Contour's August 2004 draft report, chain-of-custody records were completed for the samples from this assessment which were submitted to Pace Analytical Services. However, the laboratory reports available for our review did not include chain-of-custody records. Chains-of-custody were available for subsequent sampling events in which the samples were submitted to Analytical Services, Inc. and are included with the laboratory reports.

4.2.5 Laboratory Analytical Procedures

4.2.5.1 Standard Analytical Methods

Following delivery to the laboratory, soil samples collected by Contour and MACTEC were analyzed for VOCs using SW-846 Test Method 8260B, polynuclear aromatic hydrocarbons (SW-846 Test Method 8270C) and RCRA metals (SW-846 Test Method 6010B and 7471A).

4.2.5.2 Quality Assurance/Quality Control Procedures

Quality control samples were prepared and analyzed during the assessment. Duplicate soil samples were tested. Trip blanks were included with the samples submitted to the laboratory. The trip blanks were provided by the laboratory and consisted of 40-ml vials filled with water. Results of the trip blank analyses are included in the laboratory reports. Results of Surrogate analysis are also included in the laboratory reports. Backup QA/QC data for these samples are included in laboratory reports in Appendix I.

The soil samples collected by Contour were submitted to Pace Analytical Services, Inc. (Pace) or Analytical Environmental Services, Inc. (AES) for laboratory analysis. The soil samples collected by MACTEC were submitted to AES for laboratory analysis. Both Pace and AES maintain a National Environmental Laboratory Accreditation Conference (NELAC) certification for the analysis of VOCs, PAHs, and metals.

4.3 SUMMARY OF PERTINENT SOIL TESTING DATA

Early due diligence assessment was performed by Contour, while follow-up assessment was performed by MACTEC.

4.3.1 Early Due Diligence

The soil testing results are summarized on Figures 4 through 8 in Appendix B and in Tables 1 through 9 in Appendix C.

The initial subsurface assessment of soil at the Site was conducted by Contour in 2004 and 2005. These assessments included the installation of three monitoring wells (MW-1, MW-2 and MW-3) in June 2004 which were used to collect soil samples from Parcel 018. In December 2004, an additional assessment was conducted which included the installation of 30 Geoprobe borings (B/TW 1 through B/TW-30). Soil samples were generally laboratory tested for VOCs, RCRA metals and, in some instances, PAHs.

We note that the laboratory reports and chains-of-custody for the soil samples tested by Contour in December 2004 indicate sampling intervals of either 0-8 feet or 9-15 feet and that the samples collected were grab samples. The draft reports prepared by Contour, in which the soil sampling is described, state that the samples were collected from depths of either 6-8 feet or 13-15 feet. For consistency, we have presented the sampling depths as those reported on the laboratory reports. However, in our opinion, it is more likely that the 6-8 and 13-15 foot sampling intervals were correct, based on common sampling procedures. The results of the laboratory analyses from Contour's assessments are summarized by Parcel on Figure 5 in Appendix B and in Tables 1 through 9 in Appendix C.

VOCs were detected in soil in the southern and central portions of the Site on Parcels 018 and 019. Tetrachloroethene (PCE), toluene and methyl tertiary butyl ether (MTBE) were detected in soil samples on Parcel 019 in the vicinity of the Parkway Truck Painting facility. We note that, based on groundwater elevation data, the soil sample from Parcel 019 which exhibited toluene appears to have been collected from below the water table. It appears that the PCE and MTBE detected in soil on this Parcel were also collected very close to the water table, likely within the smear zone created by fluctuations in groundwater levels. Each of the VOCs detected on Parcel 019 were collected from an area underlain by groundwater plumes emanating from off-Site which exhibited the same constituents detected in the soil samples. PCE, MTBE and cis-1,2-dichloroethene (DCE) were also detected on Parcel 018 in the area of Discount Auto Service Center, the former location of the Miller Battery facility. VOCs were not detected in soils on Site above either the HSRA notification concentration or the Type 1 risk reduction standard (RRS).

Contour detected the metals barium, chromium and lead in soils throughout the Site, typically at concentrations consistent with naturally occurring background levels. Three exceptions were noted, including: two soil samples collected from the area immediately behind the Fast Auto facility on Parcel 013 which exhibited lead and chromium in excess of Type 1 RRS and one sample collected from within the Parkway Auto Painting facility which exhibited chromium at a concentration above the Type 1 RRS. Elevated metals concentrations were not detected in soil on Parcel 018. However, as discussed in Section 5.7, lead was detected in groundwater at the former Miller Battery facility location. Based on the groundwater findings and the presence of a former battery service facility, lead impacted soil was suspected at this location during the due diligence assessment period.

Based on the data obtained by Contour, an Application for Limitation of Liability and Corrective Action Plan (CAP) was prepared by MACTEC and submitted to the GA-EPD on June 27, 2005. The application and CAP were approved by the GA-EPD on July 22, 2005. MACTEC then conducted additional soil testing on Site in order to delineate the extent of constituents present above applicable RRS.

4.3.2 Follow-Up Assessment

The initial phase of MACTEC's soil assessment consisted of sampling and screening of shallow soils in a grid pattern in each of the three Parcels (013, 018 and 109) which previously exhibited elevated metals concentrations in soil. Samples were collected using a Geoprobe on twenty-foot centers over a 100 x 100 foot grid in each of the Parcel's area of concern, and the grid was expanded as necessary. Three samples were collected from each boring at depths of 3-6, 12-15 and 21-24 inches below ground surface and scanned for the presence of RCRA metals using a hand-held X-ray fluorescence (XRF) unit. The screening results for the metals of concern in each area are summarized on Figure 4. We note that the other RCRA metals, with the exception of barium, were included in the XRF scan, but none were found to exceed applicable RRS and were, therefore, not included in the summary tables in Appendix C.

The XRF scan identified a number of locations within each of the sampling grids which contained metals in excess of applicable RRS. In particular, lead and chromium were identified on Parcel 013, lead was identified on Parcel 018 and lead and chromium were identified on Parcel 019. In order to confirm the XRF results, five soil samples from each area were initially selected for laboratory testing for all eight RCRA metals. In addition, in order to further delineate the areas, both laterally and vertically, a number of additional samples were submitted for testing of one or more metals. Further sampling and testing was also required in several areas outside of the original grids in order to complete the delineation of the various metals to below background. The soil delineation laboratory testing results for Parcels 013, 018 and 019 are summarized on Figure 6 through 8 in Appendix B and in Tables 3, 8 and 9 in Appendix C.

In addition to the follow-up assessment of metals in soil, one additional soil sample was collected from Parcel 018 to check the previous finding of a very low concentration of PCE in soil detected in Contour boring B-16 in a sample identified as coming from 0-8 feet. In March 2007, MACTEC installed a shallow hand auger boring, B-59, in the vicinity of B-16. A soil sample was collected from a depth of two feet below the existing grade (corresponding to a depth of approximately six feet below the original grade) and tested for the presence of PCE. As shown on Figure 7A, PCE was not detected in this sample above the reporting limit of 5.0 ug/kg. We note the PCE concentration was also below the method detection limit of 0.19 ug/kg.

4.4 BACKGROUND SOIL CONCENTRATIONS

Because the suspected VOC compounds in soil are not characteristic of naturally occurring conditions in Piedmont soils, naturally occurring background conditions on the affected property were assumed to be below laboratory detection limits. The metals detected on Site are naturally occurring components of Piedmont soils. In order to evaluate the background concentrations of these metals in soil, metals concentrations from samples collected throughout the Site, exclusive of those samples which exhibited apparent concentrations indicative of potential releases were statistically evaluated using 95% tolerance limits. Data were determined to be log-normally distributed, so tolerance limits were calculated on log-transformed data and the results were back transformed. The statistical analyses indicate the following background concentrations for barium, chromium and lead as shown on Table I. Refer to the calculations in Appendix E.

Table I – Background Concentrations of Metals

Constituent	Background Concentration Upper Limits, mg/kg
Barium	310
Chromium	47
Lead	34

Other metals detected in soil on Site included arsenic, cadmium, copper, mercury, nickel and zinc. During the various assessments, soil samples were typically analyzed for RCRA metals. The concentrations detected of these metals, as well as barium, were consistent with established naturally occurring conditions as reported in The Geochemical Atlas of Georgia or as calculated. Analysis of soil testing data indicated that three areas of the Site, Parcels 013, 018 and 019 exhibited concentrations of lead and chromium in soil which exceeded background concentrations.

5.0 DELINEATION OF GROUNDWATER CONTAMINATION

Groundwater assessment activities on Site have been conducted by MACTEC and others between 2004 and 2006. A total of 41 groundwater monitoring wells have been installed on Site, 28 of which have been properly closed as a result of site redevelopment. Thirteen wells remain intact at this time. Refer to Figure 11 for a plan of the existing monitoring well locations.

5.1 CHARACTERIZATION OF SUBSURFACE GEOLOGY

The geology and hydrogeology of the Site discussed below are based on the data obtained and review of published literature.

The property is located in the Piedmont Geologic Region of the Appalachian Province. The Piedmont parallels the eastern edge of the North American continent south of New England and east of the Blue Ridge Geologic Region. The Piedmont is the non-mountainous part of the Appalachians, and slopes generally from the mountains toward the Coastal Plain Geologic Region. In general, the northwest boundary of the Piedmont is at the foot of the mountains. The southeastern boundary is located where the crystalline rocks of the Piedmont are overlain by the younger marine sediments of the Coastal Plain.

The Piedmont landscape typically consists of rolling terrain of gentle slope, cut or bounded by valleys of steeper slope and greater depth. The Site is located topographically in an area of rolling terrain, at an original elevation ranging from approximately 950 to 930 feet above mean sea level. Recent Site grading activities have changed the contour of the Site somewhat. The Site was characterized by the presence of a large east-sloping drainage swale. This swale has been largely filled in during Site redevelopment. The nearest stream to the Site, an unnamed tributary of the Flint River, is located approximately 1,200 feet northeast of the downgradient boundary of the Site.

The subject Site is mapped by the Georgia Geologic Survey as being underlain by the Camp Creek Formation (McConnell and Abrams, 1984). The Camp Creek Formation in this area is composed of massive granite gneiss interlayered with thin fine grained hornblende-plagioclase amphibolite. The residual soils present in this geologic area have been formed by in-place chemical and physical weathering of the parent rock types. Weathering is facilitated by fractures, joints, and by the presence of less resistant rock types. The typical soil profile consists of clayey soils near the ground surface transitioning to sandy silts and silty sands that generally become harder with depth to the top of the parent rock.

The soil test borings generally encountered fill soils at the surface which overlaid residual soils (see Boring Logs in Appendix D for soil descriptions). Residual soils on Site generally consisted of clayey sandy silts in the upper horizons, trending to sandy silts and silty sands derived from the gneiss and amphibolite found on Site. The depth to rock varied across the Site, ranging in depth from as little as four feet below ground surface in several of the borings drilled and one excavation dug in the northern portion of the Site to over 65 feet in a deep well in the southern portion of the Site. The rock exposed through excavation was described as light gray, muscovite-biotite gneiss (see Figures 13 and 14 for cross sections).

5.2 CHARACTERIZATION OF HYDROGEOLOGY

In the Piedmont Physiographic Province, groundwater generally occurs under water table (unconfined) conditions and is stored in the overlying mantle of residuum and in the structural features (i.e., joints, fractures, faults) present in the underlying rock. Recharge to the water table is primarily by precipitation infiltrating the upper soils and percolating downward, under the influence of gravity, to the groundwater table. Typically, the water table is not a level surface, but a subdued reflection of the land surface. Also, depth to the water table is variable, being dependant on many factors which include: the amount of rainfall, the permeability of the residuum, the extent of fracturing in the underlying rock, and the amount of groundwater being pumped from the area.

5.2.1 Surface Water Drainage

Pre-redevelopment surface water drainage in the area of the Site was controlled by curbs and gutters along the streets and is intercepted by storm sewer intakes and routed to local surface water bodies. In general, the surface drainage of the Site was to the southeast, toward a low lying area at the southeast corner of Parcel 018. A drainage swale located in this area flows in a north-northeasterly direction toward an unnamed tributary of the Flint River, located approximately 1,200 feet northeast the Site. Grading operations associated with Site redevelopment have not changed the general surface water drainage patterns, although all surface water runoff is currently routed through storm drains into two detention basins located in series along the southern boundary of the Site prior to discharge to the drainage swale described above.

The Site's upgradient watershed is interpreted to extend a short distance to the west, across Georgia Highway 85 and to the south as far as Georgia Highway 138. Refer to Figure 1 for a depiction of the interpreted upgradient watershed. However, because of extensive development in the area, off-Site surface water drainage is controlled through curbs, gutters and storm drains along the roadways.

Following well installation, the monitoring wells were surveyed to determine their elevations and the depth to groundwater measured. The water depth measurements were made within an approximately 30 minute time period. These depths were used to calculate the elevation of the groundwater in each well and develop groundwater elevation contours to evaluate groundwater flow direction.

The water level information is tabulated below in Table II.

Table II – Groundwater Elevations, 4/30/06

Well No.	Top of Casing Elevation*, Ft.	Depth to Groundwater, Ft.	Relative Groundwater Elevation, Ft.
EW-1	947.66	Dry	NA
EW-2	948.59	18.60	929.99
EW-3	948.22	16.73	931.49
EW-4	953.20	21.58	931.62
EW-5	948.65	17.33	931.32
EW-6	948.03	20.48	927.55
EW-7	948.68	21.23	927.45
DW-1	948.60	17.35	931.25
EW-8	948.18	17.79	930.39
EW-8A	947.98	16.08	931.90
EW-9	947.67	17.37	930.30
EW-10	947.57	17.17	930.40
EW-11	947.56	17.72	929.84

*Tied to drop inlet elevation presented on Site Grading Plan prepared by Haines, Gipson and Associates, Inc.

Based on the measured groundwater elevations, the interpreted groundwater flow direction within the shallow aquifer across the subject Site is generally in a northeasterly direction (see Figure 9). Previous potentiometric surface maps prepared for the Site in 2004 and 2005 by Contour and 2006 by MACTEC utilized considerably more wells than are currently available and these events are depicted on Figures 10 and 11. All of the previous wells have since been closed. The previous data also indicated a northeasterly groundwater flow direction.

5.2.3 Hydraulic Conductivity

In their February 2005 draft CAP, Contour presented an estimated hydraulic conductivity of 7.8×10^{-5} cm/sec or 0.225 feet per day for the Site. Based on the data obtained from the July 2006 groundwater elevation measurements, the horizontal groundwater gradient within the shallow portion of the aquifer on Site appears to vary from approximately 1.1% to 1.5% with an average value of approximately 1.3%. These values were utilized for the purpose of calculating the groundwater flow rate which has not been quantified.

Effective porosity was assumed to be 15% (Applied Hydrology, C.W. Fetter, 1994). The formula used to calculate the groundwater flow rate is as follows (Applied Hydrology, C.W. Fetter, 1994):

$$\text{Velocity} = \frac{K\,i}{n_e}$$

where: K	= hydraulic conductivity (feet per day)	= 0.225 ft/day
i	= hydraulic gradient (feet per foot)	= 0.013 ft/ft
n_e	= effective porosity (unitless)	= 0.15

Based on the data input, an estimated groundwater velocity ranging of approximately 0.0195 feet/day or approximately 7.1 feet per year was calculated for the Site. We note, however, that organic and inorganic constituents do not migrate at the same rate as groundwater and also attenuate as they migrate. Organic constituents break down or volatilize and inorganic constituents may precipitate out of solution or are adsorbed to soil particles.

Groundwater generally flows in directions subparallel to the ground surface slopes and under the influence of gravity toward points of discharge such as creeks, swamps, drainage swales or pumped groundwater wells. The depth to groundwater on Site ranged from approximately 16 to 21 feet during the April 2007 monitoring event.

5.2.4 Vertical Hydraulic Conductivity

The vertical hydraulic gradient at the Site was calculated by comparing groundwater elevations within two pairs of shallow and deep wells, the deep well DW-1 and the adjacent shallow well, EW-5, and the deep well EW-11 and the adjacent shallow well EW-10, as measured in April 2007. The differences in groundwater elevations between the well pairs were 0.07 and 0.56 feet, respectively with the deeper wells exhibiting the lower groundwater elevation, indicating a downward hydraulic gradient. A vertically downward gradient of 0.0015 ft/ft was measured in the EW-5/DW-1 well pair. A vertically downward gradient of 0.0137 was measured in the EW-11/EW-10 well pair.

5.3 GROUNDWATER MONITORING WELL LOCATIONS, INSTALLATION AND CONSTRUCTION METHODS

A total of 43 groundwater monitoring wells were installed on the subject Site between 2004 and 2006. The locations of these groundwater monitoring wells are shown on Figure 12. Fourteen wells (TW-3, TW-11, TW-13, TW-17, TW-19, TW-20 and TW-23 through TW-30) were constructed in borings installed using a Geoprobe. The remaining wells (TW-31 through TW-42, TW-44, MW-1 through MW-3, EW-1 through EW-11 and DW-1) were constructed in borings installed using a truck-mounted drill rig and hollow-stem augers. In addition to the wells which were installed, groundwater samples were collected directly from five auger borings (B-1 through B-5) during Contour's May 2004 assessment. Three of these borings were later converted to permanent wells (MW-1 through MW-3) and resampled.

5.3.1 Type of Well Casing Material

The monitoring wells installed on Site consist of Schedule 40 PVC well casing and screen with threaded joints. Monitoring wells MW-1 through MW-3, TW-31 through TW-42, TW-44, EW-1 through EW-11 and DW-1 were two inches in diameter while the remaining monitoring wells were one inch in diameter.

5.3.2 Description of Well Intake Design

5.3.2.1 Screen Slot Size and Length

Each of the drilled wells on Site was constructed with 0.01-inch factory slotted PVC well screen. Each of the wells utilized a 10-foot screen length with the exception of DW-1 which utilized a five-foot screen length and EW-8, EW-9 and EW-11 which utilized two-foot screen lengths.

5.3.2.2 Filter Pack Materials and Length

Washed 20/30 sieve size quartz sand was used to create the filter pack around the well screen in each of the wells. The sand generally extended to a height of approximately two feet above the top of the screen (see boring logs in Appendix D). We note that boring logs were not prepared by Contour for the Geoprobe wells that they installed in 2004. Contour did indicate in a letter dated March 20, 2007, that their Geoprobe wells were constructed with a sand pack which extended approximately two feet above the screen (see Appendix L).

5.3.2.3 Method of Filter Pack Emplacement

The sand pack in the augered wells was placed around the screen by pouring the sand through the hollow-stem augers while simultaneously raising the augers to prevent bridging of the sand within the augers. Sand was placed around the Geoprobe well screen by pouring the sand around the well screen from the surface. The filter pack was then sealed from above with at least a two-foot layer of hydrated bentonite clay.

5.3.2.4 Surface Seal

The permanent wells (MW-1 through MW-3, EW-1 through EW-7 and DW-1) were grouted to within approximately six inches of the ground surface with portland cement grout (Type II well construction). These wells were then topped with flush-mount lockable steel covers. The Geoprobe wells installed by Contour were backfilled with bentonite chips to the ground surface. The remaining wells were constructed as temporary wells (TW wells) which were backfilled with auger cuttings above the bentonite seal. No surface covers were installed on these wells.

5.3.2.5 Well Development Methods and Procedures

Following installation, the monitoring wells were developed to remove fine grained formation materials. A minimum of five well volumes of water were removed during well development. The parameters temperature, pH and specific conductivity were periodically monitored during well development. Development continued until these parameters stabilized pursuant to EPA methodology.

5.3.2.6 Well Abandonment

Prior to commencement of Site grading activities in March 2006, all existing wells on Site were properly abandoned in accordance with Georgia well abandonment procedures. Note that the thirteen wells installed after Site grading remain intact (EW-1 through EW-11 and DW-1).

5.4 SAMPLING AND ANALYSIS PROCEDURES

The monitoring wells were sampled by Contour and MACTEC between May 2004 and June 2006. The collected samples were submitted to Pace or AES and tested for the presence of VOCs, PAHs and/or RCRA metals.

5.4.1 Groundwater Elevation

Groundwater levels were measured in each well from the top of the well casing. As discussed in Section 5.3.3, a survey was conducted to measure the elevation of the top of each well casing (see Figure 9).

5.4.2 Well Evacuation Procedures

Well development/purging were accomplished using a peristaltic pump. During well purging, the parameters temperature, pH and specific conductivity were monitored. Purging continued until these parameters stabilized pursuant to EPA methodology. In order to minimize the amount of purge water generated, the deep well, DW-1, was purged using a low-flow/low-volume technique as described in the EPA document Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM). The well was purged with a peristaltic pump with the pump inlet set at the midpoint of the well screen. Purging continued until the water quality parameters stabilized, thereby ensuring the introduction of representative formation water into the pump. Immediately following stabilization of the water quality parameters, the sample was collected.

5.4.3 Groundwater Sampling, Handling and Preservation

Groundwater samples were collected using a peristaltic pump and low-flow sampling procedures. Clean latex gloves were worn during all development and sampling activities and were changed between each well location.

Samples were collected in clean sample containers, supplied by the laboratory, which contained the appropriate preservative. 40ml glass vials were used for the collection of groundwater samples for VOC analysis. Following sample collection, the bottles were stored on ice in a cooler until they were transferred to the laboratory. The samples were maintained under strict chain-of-custody control from the time they were collected until they were relinquished to the laboratory.

5.4.4 Decontamination Procedures

Decontamination procedures consisted of the use of clean, unused disposable bailers and rope at each sampling location. Latex gloves were also worn and changed between each sampling location. Bailers were disposed of after each use. No equipment was used to sample more than one well.

5.4.5 Laboratory Analytical Techniques

5.4.5.1 Analytical Procedures

Following delivery to the laboratory, the groundwater samples were analyzed for VOCs (SW-846 Test Method 8260B), PAHs (SW-846 Test Method 8270C) and/or RCRA metals (SW-846 Test Method 6010B and 7471A).

5.4.5.2 Quality Control Samples

The groundwater samples were maintained under chain-of-custody control and submitted to the analytical laboratory for testing. Trip blanks prepared by the laboratory were also submitted for testing. QA/QC was conducted in accordance with the laboratory analysis selected. Backup QA/QC data for these samples is included in the laboratory reports in Appendix I.

5.4.5.3 Chain-of-Custody Procedures

Samples collected during the assessment were delivered to the analytical laboratory under strict chain-of-custody protocol. From the time of collection until they were released to the laboratory, the samples were stored in ice-filled coolers. Chain-of-Custody records documenting the transfer of the samples to the laboratory were maintained and are included in the laboratory reports in Appendix I. As discussed in Section 4.2.4, chain-of-custody records were missing from several of the laboratory reports from Contour's initial site investigations from 2004.

5.5 BACKGROUND GROUNDWATER QUALITY

Because the VOCs and PAHs in question are not typical of naturally occurring substances in the Piedmont, naturally occurring background conditions for these constituents at the subject property were assumed to be below laboratory detection limits.

Metals are naturally occurring in groundwater and several metals were identified in groundwater samples taken at various times. In most cases, the metals concentrations were elevated by sample turbidity as demonstrated by later retesting. Barium was consistently identified in groundwater throughout the site at concentrations well below the EPA maximum contaminant level (MCL) for barium in drinking water of 2 mg/l. The only metals above their respective MCLs were lead, cadmium, and copper on Parcel 018. Zinc was also identified on Parcel 018 above its secondary drinking water standard.

Elevated concentrations of cadmium, chromium, copper, lead, nickel and zinc were detected in the area of the former Miller Battery facility on Parcel 018. These metals were delineated to background concentrations or below detection limits both vertically and in the downgradient direction from the source area. Background concentrations of metals in groundwater were calculated from samples collected throughout the Site, exclusive of those samples which exhibited apparent concentrations indicative of potential releases, and were statistically evaluated using 99% nonparametric confidence limits when sufficient data was available (N>6). Due to the preponderance of results below laboratory detection limits for most samples, background concentrations were calculated for chromium, copper, lead and zinc. Because copper and zinc were not generally detected outside of the release area, the laboratory results for copper and zinc were reviewed utilizing method detection limits instead of standard reporting limits in order to statistically evaluate their site specific background concentrations. The results indicated that copper and zinc were present in nearly all of the samples which had previously been reported as below detection limits, with the estimated concentrations above the method detection limits, but below the standard reporting limits. The statistical analyses indicate the following background concentrations for chromium, lead and zinc as shown below. Refer to the calculations in Appendix E.

Chromium	<0.0122 mg/l
Copper	0.0158 mg/l
Lead	<0.01 mg/l
Zinc	0.0779 mg/l

Barium was not suspected to have been released on site, so the maximum detected value (0.112 mg/L) is considered indicative of background. Cadmium, mercury and nickel were detected at isolated locations on Site and have been delineated to below laboratory detection limits.

5.6 ANALYTICAL PARAMETERS SELECTED AND RATIONALE

The wells installed on Site were intended to evaluate the horizontal and vertical extent of contamination. Groundwater samples were analyzed for VOCs and/or metals. In addition, several samples were also analyzed for PAHs. These parameters were appropriately selected based on the type of historical business operation identified on the subject Site and in the immediate upgradient vicinity.

5.7 SUMMARY OF GROUNDWATER TESTING RESULTS

Early due diligence assessment was performed by Contour, while follow-up assessment was performed by MACTEC. A summary of all groundwater testing results is presented on Figure 13 in Appendix B and in Tables 1A through 9A in Appendix C. Delineation of regulated constituents in groundwater is presented on Figures 14A through 14E in Appendix B. The laboratory reports are presented in Appendix I.

5.7.1 Early Due Diligence

The initial groundwater samples were collected by Contour in May 2004 from five auger borings (B-1 through B-5) located on Parcels 015A, 018 and 019. Each of the water samples was tested for VOCs and PAHs. Water from two of the five borings, located near the former Miller Battery facility, were also tested for RCRA metals. A number of petroleum VOCs, as well as chloroform were detected in boring B-2, located on Parcel 019 in the south-central portion of the Site. The two borings located near the former Miller Battery facility each exhibited elevated concentrations of lead in groundwater, although it is assumed that these results were heavily influenced by suspended sediment content because the samples were obtained from uncased boreholes. No other VOCs, PAHs or metals were detected on Site during this initial sampling event. The May 2004 assessment also included sampling and testing of groundwater from two off-Site monitoring wells (MW-NE and MW-NW) located immediately behind the Professional Cleaners facility south of the Site. The results obtained from these wells indicated CVOCs were present in the area located immediately upgradient of the subject Site at significantly higher concentrations than had been detected on Site (up to 5,200 ug/l of PCE).

The three Contour borings located on Parcel 018 were converted to permanent wells (MW-1 through MW-3) and resampled. During the first sampling event in June 2004, these wells were tested only for metals. The June 2004 data indicated the presence of arsenic, cadmium, copper, lead, nickel and selenium at generally low concentrations in groundwater. Lead, however, was identified at higher concentrations in the two wells located on the former Miller Battery property, although the concentrations were significantly lower than those obtained in May 2004 from the uncased borehole sampling. These three wells were then resampled for metals in July 2004 by Contour. The results identified both lead and cadmium at concentrations above the EPA maximum contaminant levels (MCLs) in the two of the three wells.

During Contour's December 2004/January 2005 assessment, 14 Geoprobe borings installed at various locations around the Site were converted to temporary one-inch diameter wells. The wells were primarily located in areas of concern on Parcels 013, 015A, 018 and 019, although four of the wells were located along the Site's eastern (downgradient) boundary. Groundwater was not encountered in two of the Geoprobe wells, TW-3 and TW-19 and they could not be sampled. Contour also resampled the permanent wells MW-1 through MW-3. All samples were tested for VOCs and RCRA metals.

The December 2004/January 2005 groundwater testing confirmed the presence of lead and cadmium in groundwater in the vicinity of the former Miller Battery facility (Parcel 018) at concentrations above their respective MCLs. Lead was also identified in several other wells located on Parcel 013 and 019 above its MCL although these results were likely influenced by high sediment content in the samples. In addition, barium was detected in a number of wells across the Site and chromium and mercury were detected in one well on Parcel 019. Barium, chromium and mercury were not detected at concentrations above their respective MCLs. A number of VOCs, including both petroleum and CVOCs, were detected in groundwater in 2004, primarily in the southern portion of the Site on Parcels 018 and 019. These constituents are believed to have migrated from the adjacent former Chevron station and the Professional Cleaners located immediately south of the Site. The only VOCs detected in groundwater elsewhere on the Site included chloroform adjacent to the former Miller Battery facility (Parcel 018) and acetone in two locations in the northern portion of the Site, on Parcels 013 and 015A. Chloroform is a common component of municipal water systems and is likely indicative of a leaking water line or sewer line in the area. Furthermore, no obvious sources of acetone were identified on Parcels 013 and 015A and it was not detected in soil during the 2004 assessment or in groundwater from nearby wells during subsequent assessments. This compound is a common laboratory contaminant and its presence in this area is not interpreted to be indicative of a release.

5.7.2 Follow-Up Assessment

In 2005, MACTEC was hired by H/S Riverlo to conduct additional assessment of the Site as part of the Brownfield redevelopment. MACTEC's initial activities involved additional sampling and testing of groundwater on-Site in June 2005. Monitoring well TW-11, located on Parcel 013 in the northern portion of the Site was also resampled and tested for metals as barium and lead had previously been detected in this area. Lead was not detected and barium was present at a lower concentration than was previously detected. The Parcel 018 monitoring wells, MW-1 through MW-3, were resampled and tested for total and dissolved RCRA metals. The testing confirmed the presence of lead in groundwater in the two wells located downgradient of the former Miller Battery facility.

A subsequent assessment, conducted in August 2005, focused primarily on the southern and central portions of the Site. Three wells were installed in the area downgradient of the former Miller Battery facility to delineate the extent of lead-impacted groundwater previously identified. The testing indicated that the lead-impacted groundwater was confined to a relatively small area immediately east of the former facility. Eight additional wells were installed on Parcel 018 to further evaluate the petroleum and chlorinated VOC plumes entering the Site from the south and to assess whether the plumes extended beneath the proposed Lowe's building footprint on the east-central portion of the Site. Testing in this area confirmed that the petroleum and CVOC groundwater plumes did extend beneath the southern end of the proposed building.

Due to on-Site grading and construction activities, all monitoring wells existing at that time were properly abandoned in late 2005. Between June and November 2006, once the soil remediation had been completed and Site grading and construction associated with the redevelopment had been largely completed, 13 new permanent wells were installed on Site to provide additional delineation data and allow for continued monitoring of groundwater conditions, if desired. These included six wells (EW-1 EW-2, EW-3, EW-9, EW-10 and EW-11) located at or downgradient of the former Miller Battery facility, six wells (EW-5 through EW-8, EW-8A and DW-1) located at or downgradient of the former Parkway Truck Painting facility (Hughes) and downgradient of the off-Site Professional Cleaners and former Chevron facilities and one upgradient well (EW-4) located near GA Highway 85. Groundwater testing results obtained from the new wells were consistent with those previously obtained on Site. Metals derived from on-Site sources were detected in the shallow wells located in the area of the former Miller Battery facility and the Parkway Truck Painting facility. Both petroleum and CVOCs derived from off-Site sources were identified in groundwater in the southern portion of the Site. Regulated constituents were not detected in the remaining wells, including two deep wells, installed in the areas of metals impacts.

Based on the findings of the groundwater sampling, it is evident that two groundwater contaminant plumes are entering the Site from the south. These partially overlapping plumes appear to emanate from the former Chevron gas station and the off-Site Professional Cleaners facility located immediately south of the Site, extending in a northeasterly direction nearly to Pine Street along the eastern Site boundary. Based on the results of the off-Site testing conducted by Contour, it is likely that the CVOC concentrations in groundwater on the subject Site will increase over time as the concentrations of CVOCs detected on the Professional Cleaners property were significantly higher than those detected immediately downgradient, on the subject Site. We also note that, to date, only one constituent of PCE degradation (cis-1,2-DCE) has been detected on Site. Other daughter products of PCE breakdown, including trichloroethene, trans-1,2-dichloroethene and vinyl chloride have not been detected on Site to date. Trichloroethene was detected at low concentrations in the off-Site wells. It is likely that, as the CVOC plume migrates and ages, the degradation of PCE in the groundwater will result in the future detection of these other CVOCs on the subject Site. As such, the detection of these constituents on Site would be considered as part of the same release.

At the request of GA-EPD, another round of groundwater sampling of all remaining wells (EW-1 through EW-11 and DW-1) was conducted in April 2007. This testing event was limited to metals and included the eight RCRA metals as well as copper, nickel and zinc. Copper nickel and zinc had been tested from three wells in two groundwater sampling events conducted in 2004, but had not been tested since and were specified in order that site specific background values could be calculated for these metals. The RCRA metals testing results obtained were generally consistent with those previously obtained. Elevated concentrations of several metals were detected in the area of the former Miller Battery facility, including barium, cadmium, copper, lead, nickel and zinc. In our opinion, with the exception of lead, the presence of these metals in groundwater is likely not related to a spill or other surface releases of the metals themselves. Rather, the lowered pH of the soil due to the release of battery acids from the former Miller Battery facility resulted in the mobilization of the natural soil constituent metals. The impacted groundwater in the immediate area of the acid release was therefore the result of migration of these metals. As such, the zone of metals-impacted groundwater is limited to a relatively confined area in and immediately downgradient of the Miller Battery facility release.

The extent of impacted groundwater has been delineated within the Site boundaries based on data obtained between 2004 and 2007. In addition, the vertical extent of impacted groundwater has been delineated based on the absence of VOCs and metals above background in the deep wells, DW-1 and EW-11. We note that one monitoring well, EW-1, located north (sidegradient) of the former Miller Battery facility, was dry at the time of the most recent sampling event and could not be sampled. Previous testing from this well had identified no evidence of metals impact from the Miller Battery facility release. Specifically, all RCRA metals, including those found to be elevated to the south of EW-1, were consistent with background concentrations. Due to its hydrologic position with respect to the release, no impact associated with other metals detected in the vicinity of the former Miller Battery facility is suspected. This well will be monitored in the future and, when appropriate, will be resampled and tested for metals to confirm the groundwater delineation in this area.

6.0 POTENTIAL RECEPTORS

6.1 WATER USAGE

In 2004 Contour conducted a water usage survey to identify drinking water sources within a three mile radius of the Site. At least four active drinking water wells were identified within one to two miles of the Site. Based on the locations of the wells with respect to hydrogeology, exposure to contaminated groundwater is considered unlikely for both the residential and non-residential properties in the Site vicinity due to the fact that local properties are all connected to municipal water supplies.

6.2 ENVIRONMENTAL RECEPTORS

The original topography of the subject Site was characterized by the presence of a large east-sloping drainage swale. This swale has been largely filled in during Site redevelopment. The nearest stream to the Site, an unnamed tributary of the Flint River, is located approximately 1,200 feet northeast of the downgradient boundary of the Site. In our opinion, the potential for impacted groundwater from the Site to affect this stream is negligible, based on its distance from the Site and the limited impact to groundwater on Site. Our review of local topography and the National Wetlands Inventory Map did not indicate other surface water features or mapped wetlands in the immediate vicinity of the Site.

6.3 RISK REDUCTION STANDARDS

The subject Site is located in Riverdale, Georgia in an area of both commercial and residential properties. The properties immediately north and south of the Site and across GA Highway 85 to the west are commercially developed. Properties east of the Site, across Pine Road are developed with single family residences. The subject Site is being redeveloped as a retail home improvement store and, therefore, the future Site use would be considered "non-residential" property as defined under HSRA.

6.3.1 Soil Criteria

Two HSRA-regulated constituents, lead and chromium, were detected in soil above HSRA notification concentrations during Contour's and MACTEC's assessments. Soil verification testing conducted following the remedial activities conducted in February 2006 indicated that these constituents were no longer above their respective RRS. Five VOCs and seven additional metals were also detected, but not at concentrations above any RRS. Type 1-4 RRS for all constituents detected in soil on Site are presented below in Table III along with the highest concentration of each constituent detected in the post remediation testing.

Table III - Risk Reduction Standards for Soil

Regulated Substance	Highest Concentration (Post Remediation) mg/kg	Depth	Location	Residential		Non-Residential	
				Type 1 RRS Criteria, mg/kg	Type 2 RRS Criteria, mg/kg	Type 3 RRS Criteria, mg/kg	Type 4 RRS Criteria, mg/kg
VOCs							
Acetone	0.170	3'	B-54	400	60	400	390
Cis-1,2-dichloroethene	0.0045	0-8'	B-19	0.53	2.90	0.53	19
MTBE*	6.2	21-24"	3-5B	0.50	0.51	0.50	0.93
Tetrachloroethene	0.073	9-15'	B-22	0.50	0.34	0.50	0.34
Toluene	0.021	9-15'	B-21	100	77	100	400
Metals							
Arsenic	5.92	12-15"	3-4B	20	5.8	38	5.8
Barium	247	21-24"	1-4C	1,000	2,600	1,000	17,000
Cadmium	5.54	3-6"	1-1B	2.0	12.0	39	77
Chromium	52.6	21-24"	3-5D	100	38	1,200	120
Copper	22.0	10-12'	B-5/MW-1	100	3,100	1,500	35,000
Lead	156	1.5'	A2-J	75	270	400	270
Mercury	0.428	3-6"	3-6F	0.50	4.9	17	32
Nickel	1.4	10-12'	B-5/MW-1	50	410	420	100
Zinc	6.1	10-12'	B-5/MW-1	100	5,800	2,800	38,000

mg/kg - milligrams per kilogram (equivalent to parts per million)
* - Not regulated under the Rules for Hazardous Site Response

No Petroleum or CVOCs were detected in soil on Site at concentrations above residential RRS. All areas on Site which exhibited concentrations of metals above residential risk reduction standards were included within the excavation areas described in Section 8.0. Based on the soil testing data collected to date, including the soil verification testing completed as part of the 2006 remediation effort, the subject Site is in compliance with Type 1 or Type 2 RRS for soil (see Figures 6 through 8).

6.3.2 Groundwater Criteria

Type 1-4 RRS for all constituents detected in groundwater on Site are presented below in Table IV. HSRA RRS criteria for groundwater for the detected constituents are shown compared to their highest concentrations detected on Site.

Table IV - Risk Reduction Standards for Groundwater

Regulated Substance	Highest Concentration mg/L	Sample Date	Location	Residential		Non-Residential	
				Type 1 RRS Criteria, mg/L	Type 2 RRS Criteria, mg/L	Type 3 RRS Criteria, mg/L	Type 4 RRS Criteria, mg/L
VOCs							
Acetone	0.027	12/04	TW-13	4.0	14.1	4.0	92
Benzene	0.960	9/05	TW-40	0.005	0.00448	0.005	0.0088
n-Butylbenzene*	0.0025	5/04	B-2	0.005	0.626	0.005	4.09
Chloroform	0.0053	6/06	EW-1	0.10	0.0021	0.10	0.00353
Cyclohexane*	0.036	9/05	TW-40	0.005	3.55	0.005	17.4
Cis-1,2-dichloroethene	0.005	6/06	EW-5	0.005	0.156	0.005	1.02
Diisopropyl ether*	0.038	5/04	B-2	0.005	0.229	0.005	1.12
Ethylbenzene	0.190	9/05	TW-40	0.70	0.436	0.70	2.3
Isopropylbenzene	0.016	5/04	B-2	0.005	0.20	0.005	1.01
Methylcyclohexane*	0.023	9/05	TW-40	0.005	1.79	0.005	8.79
Methyl tertiary butyl ether*	0.390	9/05	TW-40	0.005	0.0789	0.005	0.145
Naphthalene	0.052	5/04	B-2	0.02	0.00178	0.02	0.00875
n-Propylbenzene*	0.017	5/04	B-2	0.005	0.626	0.005	4.09
Tetrachloroethene	0.270	12/04	TW-24	0.005	0.00132	0.005	0.00382
Toluene	0.720	9/05	TW-40	1.0	0.876	1.0	5.2
1,2,4-Trimethylbenzene*	0.084	5/04	B-2	0.005	0.00353	0.005	0.0173
1,3,5-Trimethylbenzene*	0.110	5/04	B-2	0.005	0.00353	0.005	0.0173
Xylenes	0.83	9/05	TW-40	10.0	0.0593	10.0	0.292
Metals							
Arsenic	0.0064	7/04	MW-2	0.01	0.000568	0.01	0.01
Barium	0.557	12/04	TW-25	2.0	3.13	2.0	20.4
Cadmium	0.0903	4/07	EW-9	0.005	0.00782	0.005	0.0511
Chromium	0.0465	12/04	TW-25	0.10	0.0469	0.10	0.307
Copper	1.41	4/07	EW-9	1.3	0.626	1.3	4.09
Lead	4.1**	5/04	B-4	0.015	ND	0.015	ND
Mercury	0.00047	12/04	TW-25	0.002	0.00469	0.002	0.0307
Nickel	0.135	4/07	EW-9	0.10	0.313	0.10	2.04
Selenium	0.0055	7/04	MW-3	0.05	0.0782	0.05	0.511
Zinc	5.40	4/07	EW-9	2.0	4.69	2.0	3.07

ug/l - micrograms per liter
* - Not regulated under the Rules for Hazardous Site Response
** - Sample collected from open borehole
Shaded values exceed all 4 types of Risk Reduction Standards

Based on the groundwater testing data collected to date and presented herein, groundwater at the Site related to the listing of HSI Site No. 10808 does not currently comply with groundwater RRS for the following HSRA-regulated constituents which have been identified as emanating from the site: cadmium, lead and zinc. The following HSRA-regulated substances associated with off-Site sources are not in compliance with groundwater RRS: benzene, naphthalene, tetrachloroethene

7.0 DESCRIPTION OF RESPONSIBLE PERSON FOR THE CONTAMINATION DETECTED AT THE PROPERTY

During the course of the various assessments conducted at the Site, the extent of soil contamination and groundwater contamination have been delineated within the Site boundaries. Based on the available data, it is apparent that two VOC plumes in groundwater are entering the Site from the south. The sources of these plumes are believed to be the Professional Cleaners and the former Chevron gas station located immediately south of the Site near the intersection of GA Highway 138 and GA Highway 85. The suspected sources of the metals contamination in soil on Site are Fast Auto/Fast Radiator on Parcel 013, Miller Battery Company on Parcel 018 and Parkway Truck Painting on Parcel 019. We note, however, that various tenants have occupied the buildings on Parcels 013 and 018 and the exact source of the soil impacts in these areas cannot be definitively identified. The lead in groundwater plume on Parcel 018 is associated with the lead release to soil on that Parcel which was remediated. This release is also believed to be responsible for elevated concentrations of several other metals in this area, including barium, cadmium, copper, nickel and zinc. Low levels of chromium, selenium and mercury were identified in groundwater immediately adjacent to the former Parkway Truck Painting facility and may be related to the soil release in this area. Other sources of significant soil or groundwater contamination have not been identified on Site during extensive assessments completed since 2004.

8.0 ACTIONS TAKEN TO ELIMINATE, CONTROL, OR MINIMIZE ANY POTENTIAL RISK AT THE SITE

Corrective actions to achieve and document compliance were accomplished between February and June 2006.

8.1 SOIL IMPACTS

In order to address the soil contamination present on Site at concentrations above applicable RRS, in February 2006, H/S Riverlo, in conjunction with their contractor, Collins and Arnold, completed the remediation of metals-impacted soils on Parcel 013, 018 and 019. This action was performed voluntarily to implement the approved Brownfield CAP. The excavations were conducted following demolition of the on-Site structures in each area and were observed by representatives of MACTEC. The lateral and vertical extents of the three excavations had been largely delineated during the previous soil sampling events; however, in several instances, excavations had to be extended based on the failure of certain verification samples.

MACTEC's field representatives also collected verification samples from each excavation in accordance with the Brownfield CAP in order to confirm that the removal of impacted soil was complete and the Site soils met applicable RRS. Confirmation soil samples were collected at 25-foot horizontal intervals and five-foot vertical intervals along the sidewalls of the excavations. Bottom confirmation samples were collected at the rate of at least one sample per 1,000 square feet of excavation area. Extensive testing prior to the soil excavation had identified the constituents of concern in each of the three areas (refer to Section 4.3). Therefore, the verification testing was limited to those particular constituents which had been found in excess of applicable RRS.

Excavation Area 1 was located on Parcel 019, at the former location of the Parkway Truck Painting facility. This excavation was extended to depths ranging from approximately two feet in the southern portion of the excavation to approximately 13 feet in the northern portion. This excavation was largely contained within the footprint of the former building except for a small area to the south and southwest. Prior to excavation, impacted soils were characterized to determine proper disposal methods. Waste characterization testing indicated the soils were non-hazardous. Impacted soils in this area were transported to the Pine Ridge Landfill in Griffin, Georgia for disposal. A total of approximately 745 tons of soil from Parcel 013 were excavated and properly disposed as non-hazardous waste.

Excavation Area 2 was located on Parcel 018, at the former location of the Miller Battery/Discount Auto Service Center. A small portion of the excavation was located within the former building footprint. This excavation was initially extended to a depth of approximately two feet below grade. The bulk of the soil was removed from the area behind the building. Waste characterization testing indicated that much of the soil in this area was classified as hazardous waste. Therefore, the soil removed from Parcel 018 was handled separately from other soils on Site. The removal and transportation of this soil was handled by Greenleaf Environmental. The soil was transported to the Envirite landfill, a permitted hazardous waste disposal facility located in Canton, Ohio. A total of approximately 663 tons of lead-impacted soil were excavated from Parcel 018 and properly disposed as hazardous waste.

Following the removal of soils impacted with lead above applicable RRS, additional soil was removed from the area of the former Miller Battery/Discount Auto Service Center. The purpose of this additional excavation was to remove soils from the area which exhibited low pH. As discussed in Section 8.2, it was shown that the low pH condition of the soil and groundwater in this area was a contributing factor in the presence and migration of lead in the groundwater in this area. The removal of the low pH soils was intended to positively affect the groundwater condition through the eventual elevation of the groundwater pH, thereby resulting in the precipitation of the dissolved lead and other metals over time. As illustrated on Figure 7B, soils were excavated down to the water table from the area encompassing Excavation Area 2. After consultation with EPD, it was decided that, because these excavated soils were in compliance with applicable RRS, they could be reused on Site as fill material. Approximately 5,000 cubic yards of low pH soil were excavated and spread in a very thin (six inches or less) lift over other portions of the Site requiring structural fill.

Excavation Area 3 was located on Parcel 013, at the former location of Fast Auto/Fast Radiator and other businesses which previously occupied the building in this area. Shallow rock was encountered in this excavation area. Therefore, this excavation was extended to a depth of three to four feet, the vertical limit to which the excavation equipment could penetrate. Prior to excavation, the impacted soils were characterized to determine proper disposal methods. Waste characterization testing indicated the soils were non-hazardous. Impacted soils in this area were transported to the Pine Ridge Landfill in Griffin, Georgia for disposal. A total of approximately 104 tons of soil from Parcel 013 were excavated and properly disposed as non-hazardous waste.

The results of the soil verification testing are summarized below in Tables V through VII and on Figures 6 through 8 in Appendix B. Disposal manifests are attached in Appendix G. Following removal of the soil, the excavations were backfilled with clean fill soil.

Table V - Summary of Soil Confirmation Testing Results – Area 1 (Parcel 019)

Sample ID	Date	Sample Depth, Ft.*	Chromium	Lead
A1-A	2/7/06	0.5-1	273**	NT
A1-B	2/7/06	0.5-1	159**	NT
A1-C	2/7/06	2	223**	NT
A1-D	2/7/06	2	34.1	NT
A1-E	2/8/06	4	42.0	NT
A1-E	2/7/06	8	18.5	NT
A1-F	2/8/06	5	19.1	NT
A1-F	2/7/06	8	14.3	NT
A1-G	2/8/06	3	12.8	NT
A1-G	2/7/06	8	14.3	NT
A1-H	2/7/06	2	31.6	21.2
A1-I	2/7/06	0.5-1	641**	NT
A1-J	2/10/06	2	612**	NT
A1-K	2/10/06	2	20.8	NT
A1-L	2/10/06	2	13.6	NT
A1-M	2/10/06	2	17.7	NT
A1-N	2/14/06	2	20.0	NT
A1-O	2/14/06	2	35.1	NT
A1-P	2/14/06	2	30.3	NT
A1-Q	2/14/06	2	19.7	NT
A1@1'	2/7/06	1	1410**	NT
A1@3'	2/7/06	3	13.9	NT
A1@10'	2/7/06	10	7.1	NT
A1-3A	2/8/06	3	13.1	NT
A1-3B	2/14/06	3	18.5	NT
A1-1A	2/14/06	3	157**	NT
A1-1B	2/14/06	3	19.8	NT
A1-1C	2/14/06	3	34.8	NT
A1-D	2/16/06	6	18.1	NT
A1-D	2/16/06	8	11.3	NT

All results presented in mg/kg * Recorded in feet below original surface grade
** - Additional excavation conducted as result was above applicable RRS

Table VI - Summary of Soil Confirmation Testing Results – Area 2 (Parcel 018)

Sample ID	Date	Sample Depth, Ft.*	Lead
A2-A	2/9/06	1.5	73.8
A2-B	2/9/06	1.5	12.8
A2-C	2/9/06	1.5	11.1
A2-D	2/9/06	1.5	139
A2-E	2/9/06	1.5	58.1
A2-F	2/9/06	1.5	35.2
A2-G	2/9/06	1.5	7.03
A2-H	2/9/06	1.5	67.6
A2-I	2/9/06	1.5	6,730**
A2-J	2/9/06	1.5	156
A2-K	2/9/06	1.5	70.8
A2-L	2/9/06	1.5	19
A2-M	2/10/06	1.5	6.37
A2-N	2/10/06	1.5	5.72
A2-O	2/10/06	1.5	14.3
A2-P	2/10/06	1.5	9.39
A2-Q	2/10/06	1.5	378**
A2-R	2/10/06	1.5	5.37
A2-S	2/14/06	1	4.85
A2-T	2/14/06	1	29.4
A2-U	2/14/06	1	44.4
A2-V	2/14/06	2	4.68
A2-W	2/14/06	2	5.82
A2-X	2/16/06	1	7.39
A2-Y	2/10/06	1.5	15.8
A2-Z	2/16/06	1	22,600**
A2-AA	2/20/06	1.5	77.5
A2-1	2/9/06	1.5	18.3
A2-2	2/9/06	1.5	8.04
A2-3	2/9/06	1.5	30.7
A2-4	2/9/06	1.5	42.4
A2-5	2/10/06	2	54.2
A2-6	2/10/06	2	20.1
A2-7	2/14/06	2	<4.11
A2-8	2/14/06	2	<4.06
A2-9	2/14/06	2	9.00
A2-10	2/16/06	1.5	13.4
A2-10	2/16/06	3	5.20

All results presented in mg/kg * Recorded in feet below original surface grade
** - Additional excavation conducted as result was above applicable RRS

Table VII - Summary of Soil Confirmation Testing Results – Area 3 (Parcel 013)

Sample ID	Date	Sample Depth, Ft.*	Chromium	Lead
A3-A	2/15/06	3	10.7	10.2
A3-B	2/15/06	5	49.5	10.7
A3-C	2/15/06	2.5	11.5	9.68
A3-D	2/15/06	2.5	6.28	6.12
A3-E	2/15/06	2	12.6	13.2
A3-1	2/15/06	5	45.2	13.0
A3-2	2/15/06	3	308**	10.5
A3-3^{+}	2/18/06	4	3.31	NT

All results presented in mg/kg * Recorded in feet below original surface grade
** Additional excavation conducted as result was above applicable RRS
$^{+}$ Repeat sample after additional excavation NT - Not Tested

8.2 GROUNDWATER IMPACTS

Lead-impacted groundwater had previously been identified in the area immediately downgradient of the former Miller Battery facility on Parcel 018. Delineation testing of groundwater indicated that the area of lead impact was confined to a relatively small area. Testing of groundwater in the source area indicated the groundwater exhibited a pH in the range of 3.5 to 4.5. The soils in this area also exhibited low pH. The low pH condition in the soil and groundwater was assumed to be related to improper disposal of battery acids in this area and was believed to facilitate the leaching and migration of lead and other metals, such as cadmium, copper, nickel and zinc from the shallow soils into groundwater.

Although it had been shown that the metals-impacted groundwater had not migrated a great distance, and despite the fact that H/S Riverlo is not responsible for groundwater remediation under the Brownfield CAP, H/S Riverlo took a proactive approach with respect to the condition of lead in groundwater in order to reduce the concern associated with the lead plume and minimize the potential for future Site activities which could be disruptive to facility operations (ie. active remediation). MACTEC investigated the effect of raising the pH of the groundwater in the affected area through exposure to limestone. Testing indicated that a relatively short exposure duration of the impacted groundwater to limestone aggregate was sufficient to raise the pH to the point where the dissolved lead would precipitate, thereby significantly lowering the lead concentration in the groundwater (Refer to sample A2-4D on Table 8A in Appendix C). Therefore, it was decided that a "precipitation barrier" consisting of a trench filled with crushed limestone would be placed immediately downgradient of the affected area.

A stormwater drainage line was to be installed in the area immediately downgradient of the Parcel 018 soil excavation area perpendicular to the direction of groundwater migration. An approximate 180-foot long section of the storm sewer excavation was extended to a depth approximately four feet below the water table and filled with crushed limestone to a height approximately one foot above the water table (see Figure 9 for location of the precipitation barrier). The storm sewer was then constructed at its prescribed level above the limestone. In the future, as impacted groundwater migrates through the barrier the pH will be raised resulting in the precipitation of the lead. Although the precipitation barrier will not affect groundwater in the source area, the impacted groundwater will be contained within a limited area and the lead levels will eventually decrease as the plume migrates eastward.

Two VOC plumes have also been identified in groundwater in the southern portion of the Site which appear to be emanating from a former off-site dry cleaner and a former gas station located immediately south of the Site. The plumes extend beneath the southernmost portion of the proposed Lowe's building footprint. A 6-mil polyethylene vapor barrier was utilized beneath the slab in the northern portion of the building and a 20-mil vapor barrier, with seams taped to prevent breakthrough, was constructed beneath approximately the southern third of the Lowe's building (see Figure 9).

9.0 SUMMARY OF PROPOSED CORRECTIVE ACTION

Following the soil remediation activities described in Section 8.0, the subject Site is in compliance with Type 1 or Type 2 RRS for soil. No sources of metals or VOCs remain at the property. Therefore, additional corrective action related to soil and/or source material is not anticipated. Based on the provisions of the Hazardous Site Response Act, H/S Riverlo, LLC, as current owner of the subject Site, is not liable for existing groundwater contamination. Nevertheless, a Groundwater Corrective Action Plan has been submitted by MACTEC under separate cover at the request of H/S Riverlo, LLC.

APPENDIX A

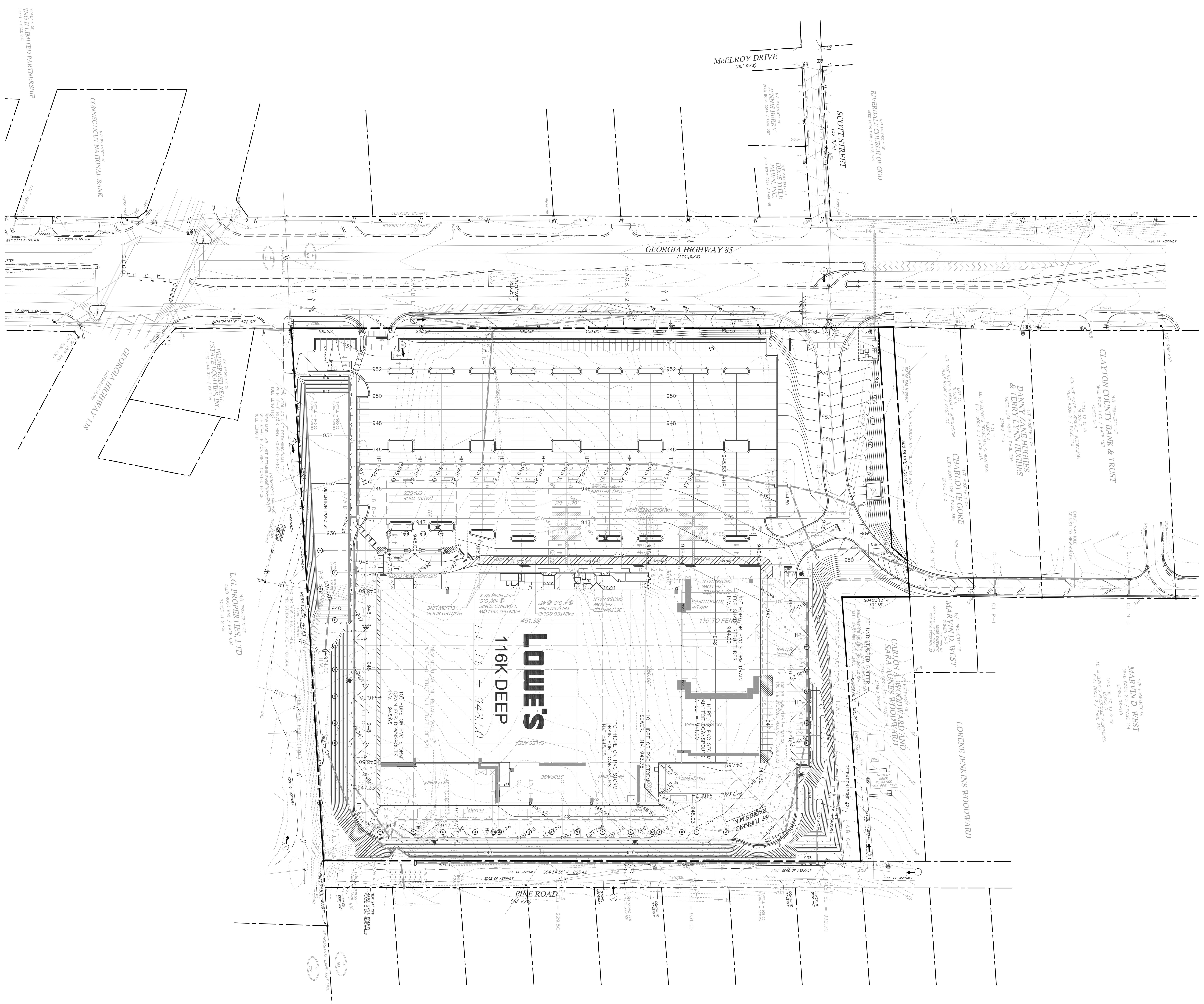
LEGAL DESCRIPTION

Property Description
Over-All Tract
Riverdale Lowe's
Clayton County, Georgia

All that tract or parcel of land lying and being in Land Lot 183 of the 13th District, Clayton County, Georgia, and being more particularly described as follows:

Commencing at a point at the intersection of the northerly right-of-way of Georgia Highway 138 (a variable width right-of-way) with the easterly right-of-way of Georgia Highway 85 (a 170 foot right-of-way); Thence departing the said northerly right-of-way of Georgia Highway 138 and continuing with the said easterly right-of-way of Georgia Highway 85, North 04 degrees 25 minutes 41 seconds East, a distance of 172.99 feet to a 5/8 inch rebar set in the division line between L.G. Properties, Ltd. (Deed Book 848 at Page 694) on the south and Hughes & Hughes Properties, Inc. (Deed Book 6698 at Page 162) on the north, said 5/8 inch rebar set being the **TRUE POINT OF BEGINNING.** Thence continuing with the said easterly right-of-way of Georgia Highway 85 the following two courses: North 04 degrees 32 minutes 28 seconds East, a distance of 700.25 feet to a 3/4 inch open top pipe found; Thence North 04 degrees 04 minutes 11 seconds East, a distance of 199.50 feet to a 1/2 inch rebar found in the division line between Larry J. Wallace (Deed Book 925 at Page 522) on the south and Charlotte Gore (Deed Book 1726 at Page 369) on the north; Thence departing the said easterly right-of-way of Georgia Highway 85 and continuing with the said division line, South 88 degrees 56 minutes 10 seconds East, a distance of 404.10 feet to a 5/8 inch rebar set in the division line between the said Larry J. Wallace on the west and Carlos A. Woodward and Sara Agnes Woodward (Deed Book 1017 at Page 271) on the east; Thence continuing with the said division line, South 04 degrees 23 minutes 13 seconds West, a distance of 101.18 feet to a 1 inch bolt found in the said division line between the said Carlos A. Woodward and Sara Agnes Woodward on the north and James L. Chapman, Jr. (Deed Book 1415 at Page 883) on the south; Thence continuing with the said division line, South 89 degrees 32 minutes 50 seconds East, a distance of 395.79 feet to a 3/4 inch open top pipe found in the westerly right-of-way of Pine Road (a 40 foot right-of-way); Thence continuing with the said westerly right-of-way of Pine Road, South 04 degrees 34 minutes 55 seconds West, a distance of 803.42 feet to a 5/8 inch rebar set in the said division line between the said L.G. Properties, Ltd. on the south and Wilson E. Miller (Deed Book 394 at Page 412, Deed Book 438 at Page 207 and Deed Book 533 at Page 610) on the north; Thence departing the said westerly right-of-way of Pine Road and continuing with the said division line between the said L.G. Properties, Ltd. on the south and the said Wilson E. Miller and continuing with the said Hughes & Hughes Properties, Inc. all on the north, North 88 degrees 53 minutes 58 seconds West, a distance of 797.63 feet to a 5/8 inch rebar set in the said easterly right-of-way of Georgia Highway 85, said 5/8 inch rebar set being the **TRUE POINT OF BEGINNING.**

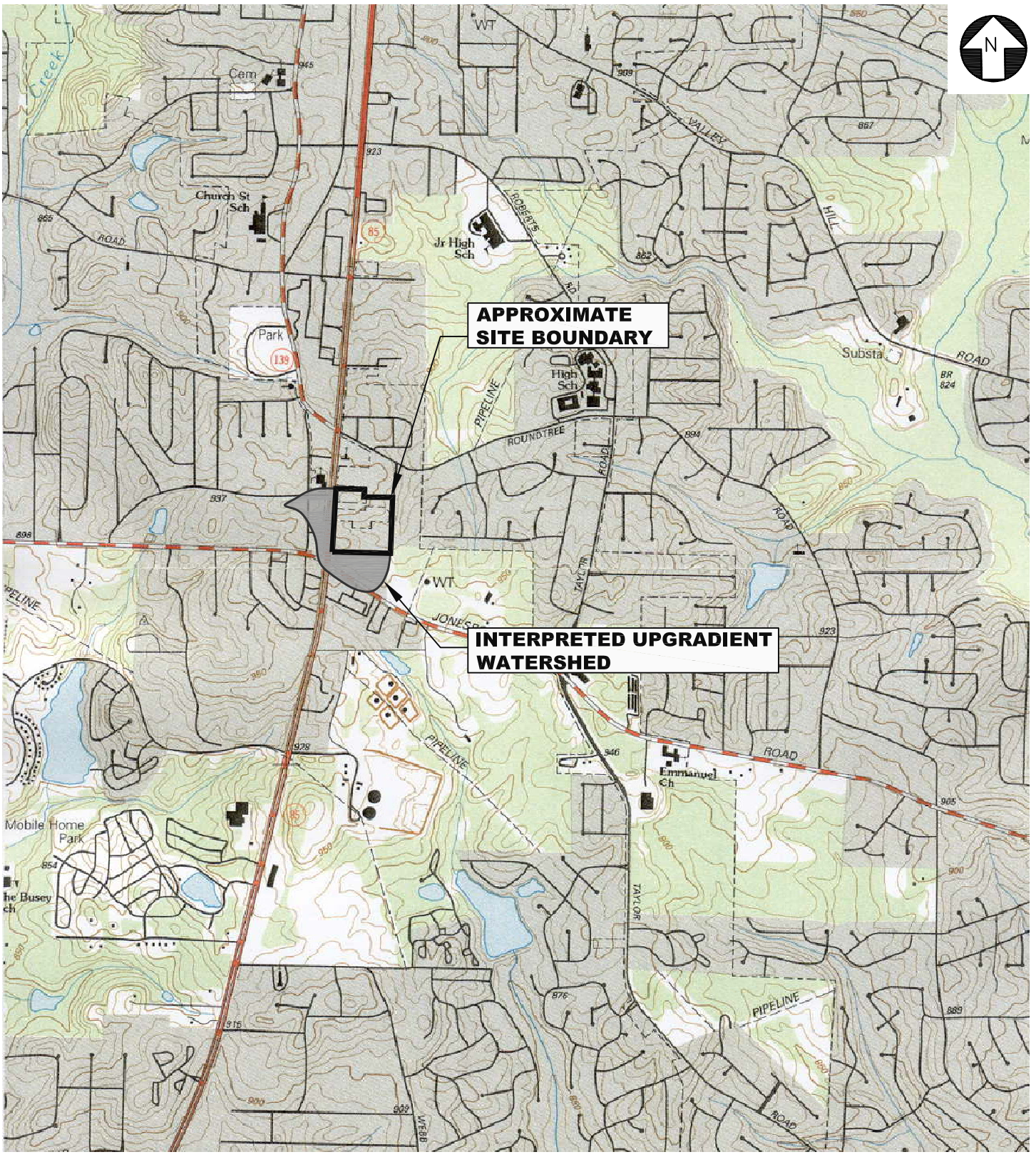
Said tract of land contains 15.564 Acres.


McELROY DRIVE
(30' R/W)
SCOTT STREET
GEORGIA HIGHWAY 85
(170' R/W)
GEORGIA HIGHWAY 138
CONNECTICUT NATIONAL BANK
PREFERRED REAL ESTATE EQUITIES, INC.
JENNIS BERRY
DIXIE TITLE PAWN, INC.
RIVERDALE CHURCH OF GOD
CLAYTON COUNTY BANK & TRUST
DANNY ZANE HUGHES & TERRY LYNN HUGHES
CHARLOTTE GORE
MARVIN D. WEST
CARLOS A. WOODWARD AND SARA AGNES WOODWARD
LORENE JENKINS WOODWARD
L.G. PROPERTIES, LTD
PINE ROAD
(40' R/W)
LOWE'S
116K DEEP
F.F. EL = 948.50
DETENTION POND
EDGE OF ASPHALT

APPENDIX B

FIGURES

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\SITE-TOPO.dwg - TOPO 07/19/2007 11:36am rthorpe



SOURCE: USGS TOPOGRAPHIC MAP: RIVERDALE, GA QUAD DATED 1993

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324
(404)873-4761

SITE LOCATION / TOPOGRAPHIC MAP

JOB NO.	DATE:		FIGURE:
6305-05-0303	JUNE 2005		1
TASK: 01	DRAWN: RBT	APPROV.:	SCALE: 1"=1000'

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\site-aerial.dwg - AERIAL 07/19/2007 11:35am rthorpe

SCALE IN FEET

0 150 300

SOURCE: www.microsoft.terraserver.com. 2002

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

2002 AERIAL
PHOTOGRAPH OF
SITE AND VICINITY

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JUNE 2005	1"=100'	RBT		2

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE.dwg - SITE 07/19/2007 11:27am rthorpe

GEORGIA HIGHWAY 85

LARRY J. WALLACE
PARCEL 013

FAST RADIATOR & AIR CONDITION SERVICE/
STONE & SON PLUMBING/
FAST AUTO PARTS

FORMER E&R INTERIORS
(VACANT)

FORMER NICE CARS OF AMERICA

EDWARD M. GIBBS
AND ROSE GIBBS
PARCEL 014

JAMES L. CHAPMAN, JR.
PARCEL 015A

LEONARD CHAPMAN
PARCEL 020

JAMES L. CHAPMAN, JR.
PARCEL 016

JAMES L. CHAPMAN, JR.
PARCEL 017

DISCOUNT AUTO
SERVICE CENTER

FORMER TUBS UNLIMITED/
CORY'S C&A AUTOMOTIVE
SERVICE CENTER

FORMER VACANT
FORMER
RESTAURANT

HUGHES & HUGES PROPERTIES, INC.
PARCEL 019

FORMER PARKWAY
TRUCK PAINTING

GORE
EXCHANGE
PARCEL

JAMES L. CHAPMAN, JR.
PARCEL 015

FORMER RESIDENCE

FORMER
SHEDS

BETTY J. PARRISH
PARCEL 002

VICKI A. SANCHEZ
PARCEL 001

FORMER
SHED

FORMER
RESIDENCE

FORMER
RESIDENCE

FORMER
GARAGE

FORMER
METAL
BUILDING

LOWE'S HOME IMPROVEMENT
WAREHOUSE

WILSON E. MILLER
PARCEL 018

TREE LINE

RIVERDALE CITY LIMITS
CLAYTON COUNTY

PINE ROAD

PINE ROAD

0
100
200
SCALE IN FEET

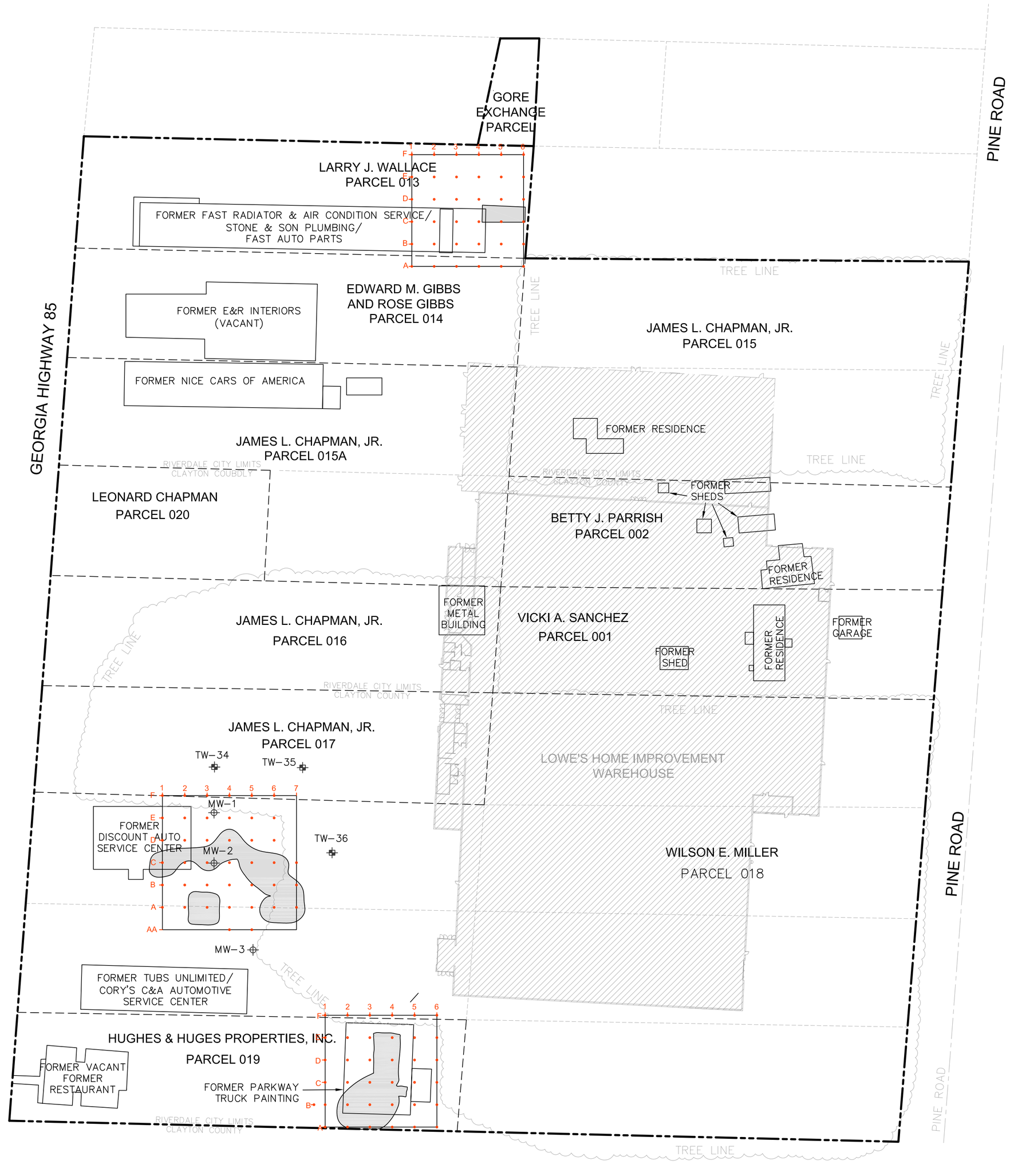
N

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

SITE PLAN

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JULY 2006	1"=100'	RBT		3



PARCEL 013 - INITIAL GRID SAMPLING
XRF SOIL TESTING RESULTS FOR CHROMIUM

	1			2			3			4			5			6		
	Depth	Metals, mg/kg		Depth	Metals, mg/kg		Depth	Metals, mg/kg		Depth	Metals, mg/kg		Depth	Metals, mg/kg		Depth	Metals, mg/kg	
		Lead	Chromium		Lead	Chromium		Lead	Chromium		Lead	Chromium		Lead	Chromium		Lead	Chromium
F	3–6" 12–15" 21–24"	<10.1 <9.5 <10.2	<94.7 <96.1 <96.2	3–6" 12–15" 21–24"	11.7 <10.1 10.2	<98.4 <104.5 <104.0	3–6" 12–15" 21–24"	<12.8 <11.9 <9.6	<97.4 <96.0 <86.3	3–6" 12–15" 21–24"	<11.3 12.8 <10.1	<103.4 <97.8 <94.3	3–6" 12–15" 21–24"	<12.1 40.4 <14.8	<99.1 <101.2 <98.5	3–6" 12–15" 21–24"	116.7 15.1 20.7	<97.7 <98.3 <100.6
E	3–6" 12–15" 21–24"	11.1 11.5 12.2	<97.1 <97.0 <92.8	3–6" 12–15" 21–24"	20.3 <9.9 16.3	<96.5 <91.9 <100.4	3–6" 12–15" 21–24"	<10.7 14.0 <9.5	<104.6 <99.4 <92.1	3–6" 12–15" 21–24"	27.2 14.2 16.7	110.2 <98.9 99.3	3–6" 12–15" 21–24"	88.9 <10.1 <12.1	<97.9 <101.2 <96.3	3–6" 12–15" 21–24"	105.0 12.6 11.6	<102.8 <100.3 <93.4
D	3–6" 12–15" 21–24"	35.5 10.9 <9. 8	<99.3 <101.6 <100.6	3–6" 12–15" 21–24"	<10.4 11.3 <10.8	<105.4 <92.6 <111.5	3–6" 12–15" 21–24"	47.1 13.8 <10.3	<98.4 <102.3 <100.4	3–6" 12–15" 21–24"	29.8 15.9 23.5	<117.5 <97.6 <90.8	3–6" 12–15" 21–24"	78.3 19.3 17.0	<105.0 <103.8 217.1	3–6" 12–15" 21–24"	21.1 17.3 15.0	<88.6 <98.1 <106.8
C	3–6" 12–15" 21–24"	15.3 13.6 16.5	<87.9 <103.5 <97.5	3–6" 12–15" 21–24"	19.4 18.0 <10.9	<95.0 <103.2 <98.9	3–6" 12–15" 21–24"	20.3 17.9 <9.7	<99.4 <102.2 <98.8	3–6" 12–15" 21–24"	19.4 <10.1 <12.1	<103.8 <96.4 <97.3	3–6" 12–15" 21–24"	<12.2 <12.7 <10.1	<96.8 <96.4 <94.9	3–6" 12–15" 21–24"	22.4 <9.8 <8.7	<88.6 <98.7 <86.1
B	3–6" 12–15" 21–24"	17.5 16.7 <10.8	<90.3 <93.1 <96.6	3–6" 12–15" 21–24"	38.2 <12.1 <9.1	<88.8 <98.4 <90.1	3–6" 12–15" 21–24"	34.7 12.5 10.6	<88.5 <96.7 <97.5	3–6" 12–15" 21–24"	98.7 <9.3 12.8	<87.6 <92.5 <90.9	3–6" 12–15" 21–24"	14.8 14.7 12.6	<91.3 <99.5 <98.2	3–6" 12–15" 21–24"	21.2 <9.2 <10.1	<86.9 <88.3 <84.5
A	3–6" 12–15" 21–24"	16.3 13.8 <12.7	<102.8 <81.2 <94.4	3–6" 12–15" 21–24"	27.4 14.5 <1 0.3	<94.4 <96.0 <95.6	3–6" 12–15" 21–24"	48.0 14.4 <9.4	<91.5 <85.5 <84.4	3–6" 12–15" 21–24"	<9.5 <8.7 23.9	<89.1 <92.3 <105.8	3–6" 12–15" 21–24"	45.8 16.2 10.3	<83.7 <99.1 <95.7	3–6" 12–15" 21–24"	<12.1 <10.3 <10.1	<94.5 <98.2 <96.7

PARCEL 018 - INITIAL GRID SAMPLING
XRF SOIL TESTING RESULTS FOR LEAD

	1		2		3		4		5		6		7	
	Depth	Lead Conc., mg/kg	Depth	Lead Conc., mg/kg	Depth	Lead Conc., mg/kg	Depth	Lead Conc., mg/kg	Depth	Lead Conc., mg/kg	Depth	Lead Conc., mg/kg	Depth	Lead Conc., mg/kg
F	3–6" 12–15" 21–24"	22.5 <14.7 <11.2	3–6" 12–15" 21–24"	14.6 <11.7 <11.8	3–6" 12–15" 21–24"	28.8 20.6 <11.4	3–6" 12–15" 21–24"	199.4 14.7 14.1	3–6" 12–15" 21–24"	145.9 23.7 <15.5	3–6" 12–15" 21–24"	84.7 214.3 67.1	3–6" 12–15" 21–24"	
E	3–6" 12–15" 21–24"	<14.4 24.4 22.0	3–6" 12–15" 21–24"	35.4 <14.8 25.9	3–6" 12–15" 21–24"	260.4 78.7 <13.7	3–6" 12–15" 21–24"	33.1 107.7 39.2	3–6" 12–15" 21–24"	297.6 65.0 77.2	3–6" 12–15" 21–24"	44.9 34.8 <12.8	3–6" 12–15" 21–24"	
D	3–6" 12–15" 21–24"	18.7 <14.7 28.7	3–6" 12–15" 21–24"	36.5 <11.8 22.3	3–6" 12–15" 21–24"	24.4 <14.6 42.9	3–6" 12–15" 21–24"	2,140 58,200 211.7	3–6" 12–15" 21–24"	74.3 118.4 61.8	3–6" 12–15" 21–24"	199.3 <11.7 67.5	3–6" 12–15" 21–24"	
C	3–6" 12–15" 21–24"	131.8 <12.5 <14.8	3–6" 12–15" 21–24"	72.7 37.9 <14.4	3–6" 12–15" 21–24"	<14.8 5,344 <12.0	3–6" 12–15" 21–24"	113.0 <12.4 <11.4	3–6" 12–15" 21–24"	608.4 72.6 51.3	3–6" 12–15" 21–24"	4,009 99.6 40.8	3–6" 12–15" 21–24"	56.7
B	3–6" 12–15" 21–24"	862.7 <12.1 <12.1	3–6" 12–15" 21–24"	514.1 908 93.3	3–6" 12–15" 21–24"	38.8 <12.0 <11.8	3–6" 12–15" 21–24"	321 82.0 39.1	3–6" 12–15" 21–24"	165.3 58.9 19.9	3–6" 12–15" 21–24"	510.1 25.7 <11.3	3–6" 12–15" 21–24"	100.7
A	3–6" 12–15" 21–24"	347.1 <14.5 <11.8	3–6" 12–15" 21–24"	<17.7 <11.9 <14.4	3–6" 12–15" 21–24"	509.4 684.9 <11.7	3–6" 12–15" 21–24"	<11.4 <12.2 <11.3	3–6" 12–15" 21–24"	379.4 28.7 <12.4	3–6" 12–15" 21–24"	544.8 49.8 <12.8	3–6" 12–15" 21–24"	532.7

PARCEL 019 - INITIAL GRID SAMPLING
XRF SOIL TESTING RESULTS FOR CHROMIUM

	1		2		3		4		5		6	
	Depth	Chromium Conc., mg/kg	Depth	Chromium Conc., mg/kg	Depth	Chromium Conc., mg/kg	Depth	Chromium Conc., mg/kg	Depth	Chromium Conc., mg/kg	Depth	Chromium Conc., mg/kg
F	3–6" 12–15" 21–24"	<91.6 <97.6 <96.8	3–6" 12–15" 21–24"	<95.3 <91.2 <92.4	3–6" 12–15" 21–24"	<91.1 <91.5 <89.2	3–6" 12–15" 21–24"	<93.4 <98.3 <96.1	3–6" 12–15" 21–24"	<108.4 <93.4 <96.4	3–6" 12–15" 21–24"	<94.6 <98.7 <101.4
E	3–6" 12–15" 21–24"	<87.9 <92.7 <95.8	3–6" 12–15" 21–24"	<95.6 <97.0 <96.8	3–6" 12–15" 21–24"	<92.2 <932 <98.9	3–6" 12–15" 21–24"	<97.2 <98.1 <91.8	3–6" 12–15" 21–24"	<96.0 <103.2 <100.4	3–6" 12–15" 21–24"	<96.4 <88.9 <95.6
D	3–6" 12–15" 21–24"	<97.2 <90.2 <93.4	3–6" 12–15" 21–24"	<96.1 <93.1 <97.7	3–6" 12–15" 21–24"	<94.9 <102.6 <98.9	3–6" 12–15" 21–24"	<89.9 <99.8 <97.8	3–6" 12–15" 21–24"	<102.6 <96.8 <94.3	3–6" 12–15" 21–24"	<89.4 176.1 <96.1
C	3–6" 12–15" 21–24"	<97.0 <98.9 <93.9	3–6" 12–15" 21–24"	<102.7 <91.4 <94.6	3–6" 12–15" 21–24"	<96.0 <98.2 <99.7	3–6" 12–15" 21–24"	<97.7 <101.4 511.8	3–6" 12–15" 21–24"	<107.4 <101.2 <101.9	3–6" 12–15" 21–24"	<96.8 <93.1 <94.6
B	3–6" 12–15" 21–24"	<101.6 <104.6 <91.7	3–6" 12–15" 21–24"	<93.7 <97.6 <94.7	3–6" 12–15" 21–24"	356.7 <88.4 <94.8	3–6" 12–15" 21–24"	<98.9 <104.1 <107.7	3–6" 12–15" 21–24"	<99.8 <103.8 <91.8	3–6" 12–15" 21–24"	<102.4 <98.1 <94.8
A	3–6" 12–15" 21–24"	<102.3 <98.7 <95.4	3–6" 12–15" 21–24"	<102.1 <102.7 <97.2	3–6" 12–15" 21–24"	<92.8 <99.7 <94.8	3–6" 12–15" 21–24"	<103.5 <95.2 <94.6	3–6" 12–15" 21–24"	<91.2 <101.6 <97.5	3–6" 12–15" 21–24"	<98.1 <102.9 <103.0

LEGEND
- AREA OF EXCAVATION
- mg/kg MILLIGRAMS PER KILOGRAM
- INITIAL GRID SAMPLE LOCATION

SCALE IN FEET
0 60 120

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED
DRAWN RBT
CHECKED
IN CHARGE
DATE JULY 2006

HSI SITE No. 10808
GEORGIA HIGHWAY 85, RIVERDALE, GEORGIA

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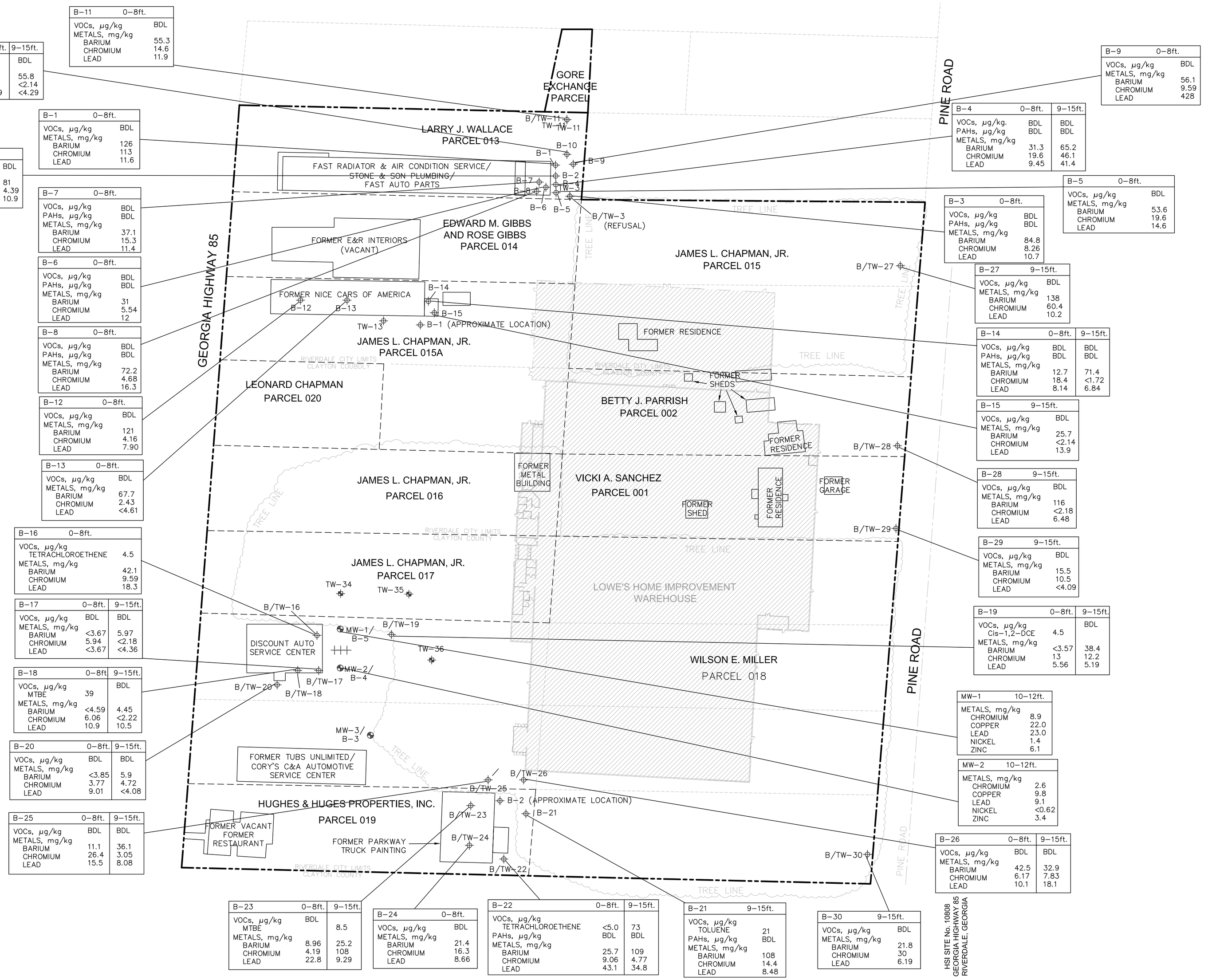
XRF SOIL SCREENING RESULTS

SCALE AS SHOWN
CONTRACT 6305-05-0303
DWG. NO. 4 | REV 0 | PAGE NO N/A



B-10	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	125	55.8
CHROMIUM	2.61	<2.14
LEAD	8.59	<4.29

B-11	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	55.3
CHROMIUM	14.6
LEAD	11.9

B-1	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	126
CHROMIUM	113
LEAD	11.6

B-2	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	81
CHROMIUM	4.39
LEAD	10.9

B-7	0–8ft.
VOCs, µg/kg	BDL
PAHs, µg/kg	BDL
METALS, mg/kg	
BARIUM	37.1
CHROMIUM	15.3
LEAD	11.4

B-6	0–8ft.
VOCs, µg/kg	BDL
PAHs, µg/kg	BDL
METALS, mg/kg	
BARIUM	31
CHROMIUM	5.54
LEAD	12

B-8	0–8ft.
VOCs, µg/kg	BDL
PAHs, µg/kg	BDL
METALS, mg/kg	
BARIUM	72.2
CHROMIUM	4.68
LEAD	16.3

B-12	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	121
CHROMIUM	4.16
LEAD	7.90

B-13	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	67.7
CHROMIUM	2.43
LEAD	<4.61

B-16	0–8ft.
VOCs, µg/kg	
TETRACHLOROETHENE	4.5
METALS, mg/kg	
BARIUM	42.1
CHROMIUM	9.59
LEAD	18.3

B-17	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	<3.67	5.97
CHROMIUM	5.94	<2.18
LEAD	<3.67	<4.36

B-18	0–8ft.	9–15ft.
VOCs, µg/kg		BDL
MTBE	39	
METALS, mg/kg		
BARIUM	<4.59	4.45
CHROMIUM	6.06	<2.22
LEAD	10.9	10.5

B-20	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	<3.85	5.9
CHROMIUM	3.77	4.72
LEAD	9.01	<4.08

B-25	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	11.1	36.1
CHROMIUM	26.4	3.05
LEAD	15.5	8.08

B-9	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	56.1
CHROMIUM	9.59
LEAD	428

B-4	0–8ft.	9–15ft.
VOCs, µg/kg.	BDL	BDL
PAHs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	31.3	65.2
CHROMIUM	19.6	46.1
LEAD	9.45	41.4

B-5	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	53.6
CHROMIUM	19.6
LEAD	14.6

B-3	0–8ft.
VOCs, µg/kg	BDL
PAHs, µg/kg	BDL
METALS, mg/kg	
BARIUM	84.8
CHROMIUM	8.26
LEAD	10.7

B-27	9–15ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	138
CHROMIUM	60.4
LEAD	10.2

B-14	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	BDL
PAHs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	12.7	71.4
CHROMIUM	18.4	<1.72
LEAD	8.14	6.84

B-15	9–15ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	25.7
CHROMIUM	<2.14
LEAD	13.9

B-28	9–15ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	116
CHROMIUM	<2.18
LEAD	6.48

B-29	9–15ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	15.5
CHROMIUM	10.5
LEAD	<4.09

B-19	0–8ft.	9–15ft.
VOCs, µg/kg		BDL
Cis-1,2-DCE	4.5	
METALS, mg/kg		
BARIUM	<3.57	38.4
CHROMIUM	13	12.2
LEAD	5.56	5.19

MW-1	10–12ft.
METALS, mg/kg	
CHROMIUM	8.9
COPPER	22.0
LEAD	23.0
NICKEL	1.4
ZINC	6.1

MW-2	10–12ft.
METALS, mg/kg	
CHROMIUM	2.6
COPPER	9.8
LEAD	9.1
NICKEL	<0.62
ZINC	3.4

B-26	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	42.5	32.9
CHROMIUM	6.17	7.83
LEAD	10.1	18.1

B-23	0–8ft.	9–15ft.
VOCs, µg/kg	BDL	
MTBE		8.5
METALS, mg/kg		
BARIUM	8.96	25.2
CHROMIUM	4.19	108
LEAD	22.8	9.29

B-24	0–8ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	21.4
CHROMIUM	16.3
LEAD	8.66

B-22	0–8ft.	9–15ft.
VOCs, µg/kg		
TETRACHLOROETHENE	<5.0	73
PAHs, µg/kg	BDL	BDL
METALS, mg/kg		
BARIUM	25.7	109
CHROMIUM	9.06	4.77
LEAD	43.1	34.8

B-21	9–15ft.
VOCs, µg/kg	
TOLUENE	21
PAHs, µg/kg	BDL
METALS, mg/kg	
BARIUM	108
CHROMIUM	14.4
LEAD	8.48

B-30	9–15ft.
VOCs, µg/kg	BDL
METALS, mg/kg	
BARIUM	21.8
CHROMIUM	30
LEAD	6.19

LEGEND	
mg/kg	KILOGRAMS PER LITER
BDL	BELOW DETECTION LIMIT
NT	NOT TESTED
VOCs	VOLATILE ORGANIC COMPOUNDS
MTBE	METHYL TERTIARY BUTYL ETHER
PAHs	POLYNUCLEAR AROMATIC HYDROCARBONS
B-1 ⊕	GEOPROBE BORING BY CONTOUR
TW-1 ⊕	1 INCH MONITORING WELL BY CONTOUR
MW-1 ⊕	2 INCH MONITORING WELL BY CONTOUR
TW-3 ⊕	2 INCH MONITORING WELL BY MACTEC
○	AUGER BORING BY MACTEC

HSI SITE No. 10808
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RIVERDALE, GEORGIA

SCALE IN FEET
0 60 120

P:\Atlanta CAD\GS_JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE.dwg - TEST RESULTS-SOIL 07/19/2007

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED	
DRAWN	RBT
CHECKED	
IN CHARGE	
DATE	JULY 2006

HSI SITE No. 10808
GEORGIA HIGHWAY 85, RIVERDALE, GEORGIA

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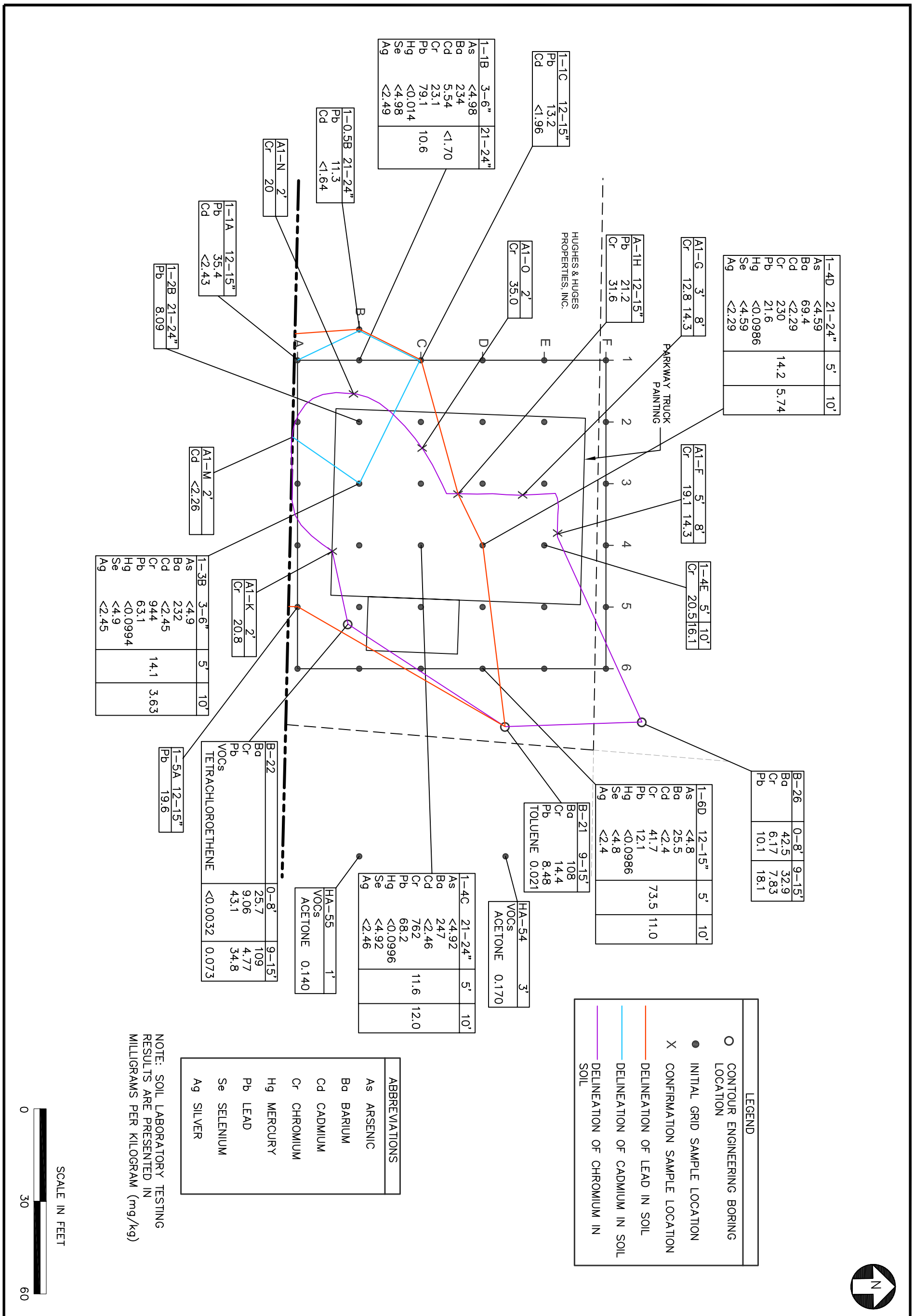
SOIL TESTING RESULTS
CONTOUR ENGINEERING 2004–2005

SCALE	AS SHOWN	
CONTRACT	6305-05-0303	
DWG. NO.	REV	PAGE NO
5	0	N/A

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE_SOIL-DELINEATION.dwg - AREA 1 07/19/2007 11:35am rthorpe



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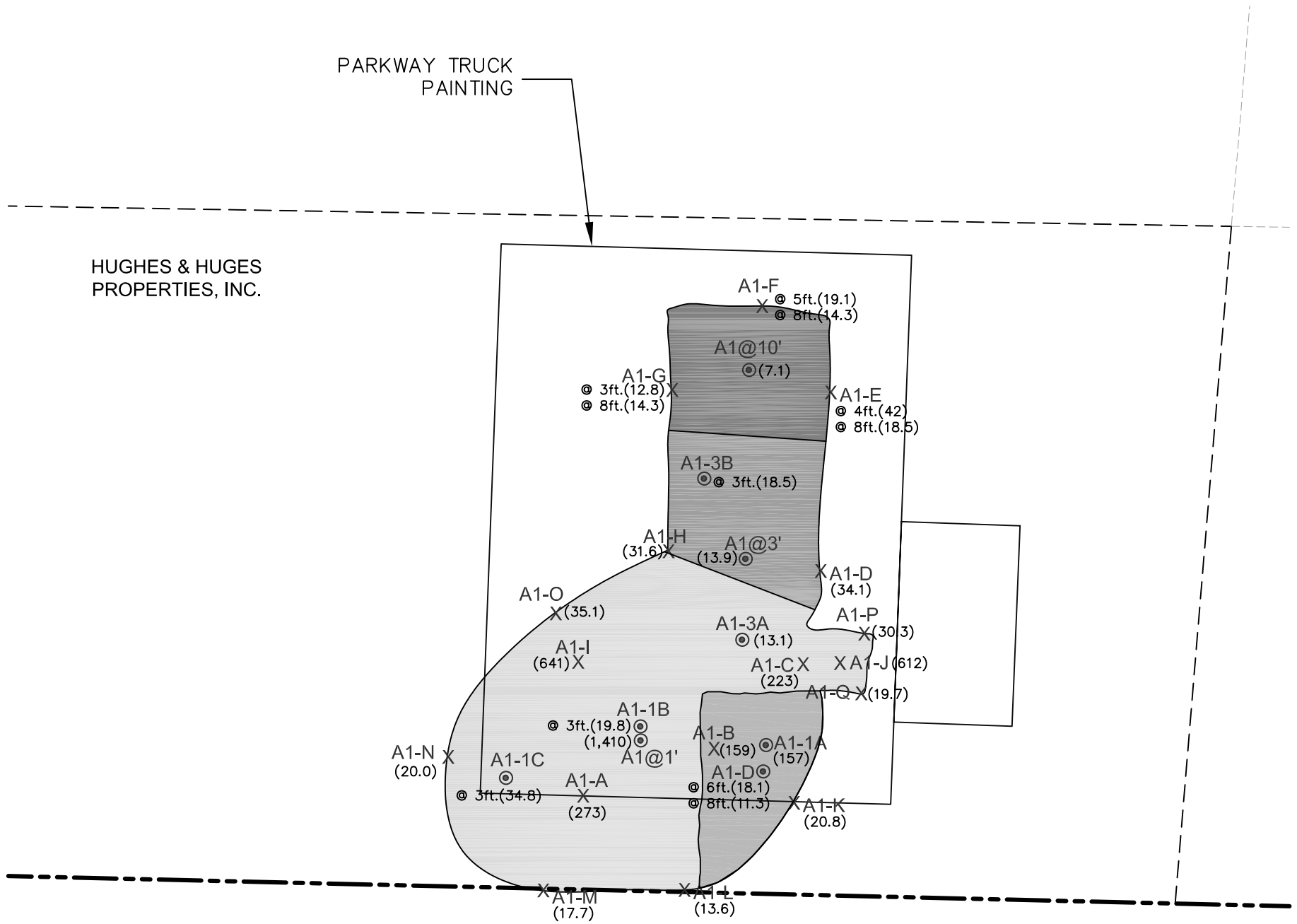
HUGHES PARCEL 019
SOIL ASSESSMENT / DELINEATION RESULTS
2006

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JULY 2006	1"=100'	RBT		6A



LEGEND

- EXCAVATION DEPTH APPROXIMATELY 2–3 FT.
- EXCAVATION DEPTH APPROXIMATELY 3 FT.
- EXCAVATION DEPTH APPROXIMATELY 4–6 FT.
- EXCAVATION DEPTH APPROXIMATELY 13 FT.
- X SIDEWALL CONFIRMATION SAMPLE LOCATION
- ◉ BOTTOM CONFIRMATION SAMPLE LOCATION
- O CONTOUR ENGINEERING BORING LOCATION
- (20.8) CHROMIUM CONCENTRATION, mg/kg (LABORATORY TEST RESULTS)

NOTES:

SOIL LABORATORY TESTING RESULTS ARE PRESENTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

FOLLOWING REMEDIATION, THE AREA OF IMPACTED SOIL WAS EXCAVATED TO A DEPTH OF APPROXIMATELY 12–13 FT. TO ALLOW FOR CONSTRUCTION OF STORMWATER BASIN

SCALE IN FEET

0 20 40

HUGHES PARCEL 019
CONFIRMATION SAMPLE RESULTS

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JULY 2006	1"=100'	RBT		6B

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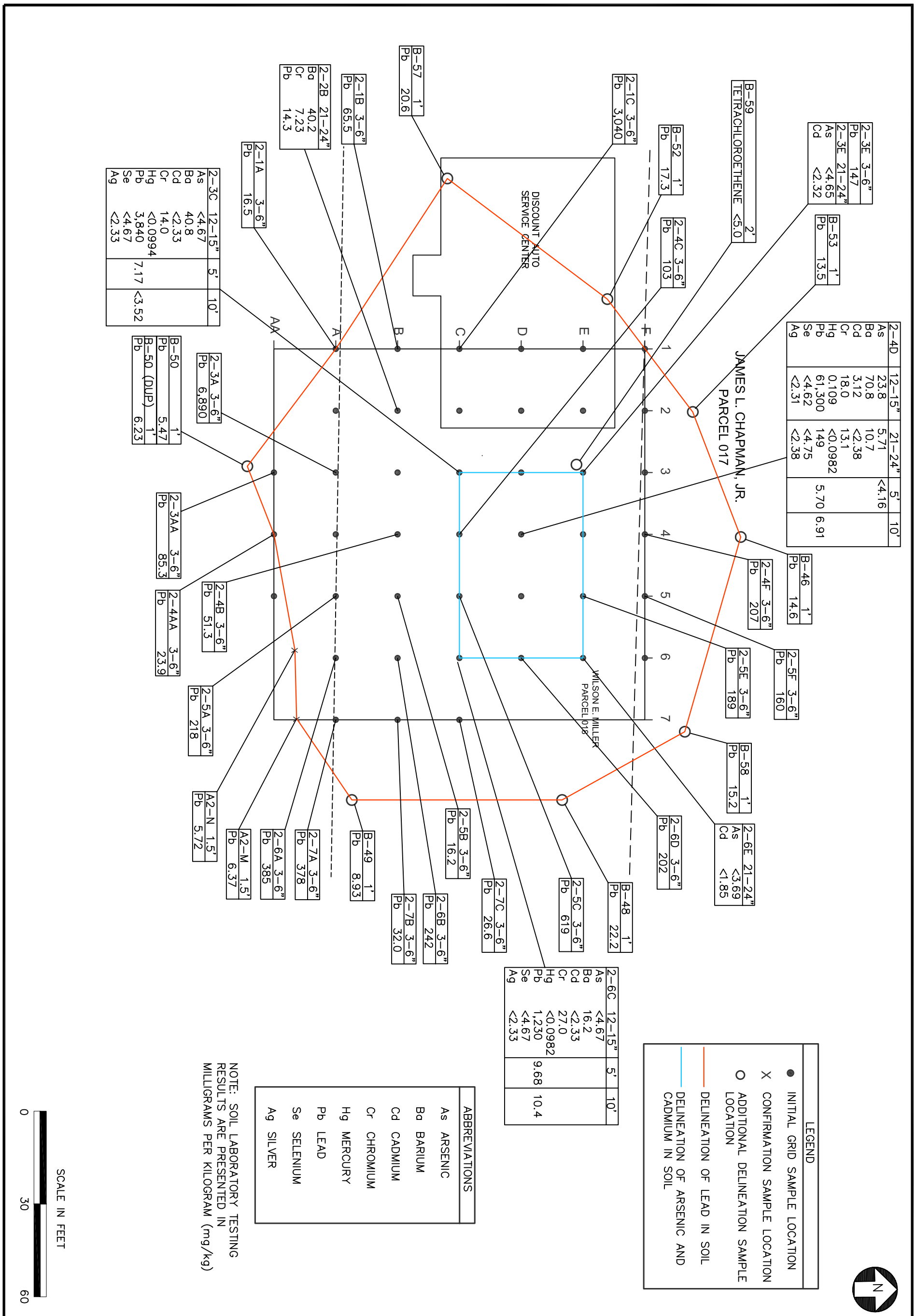

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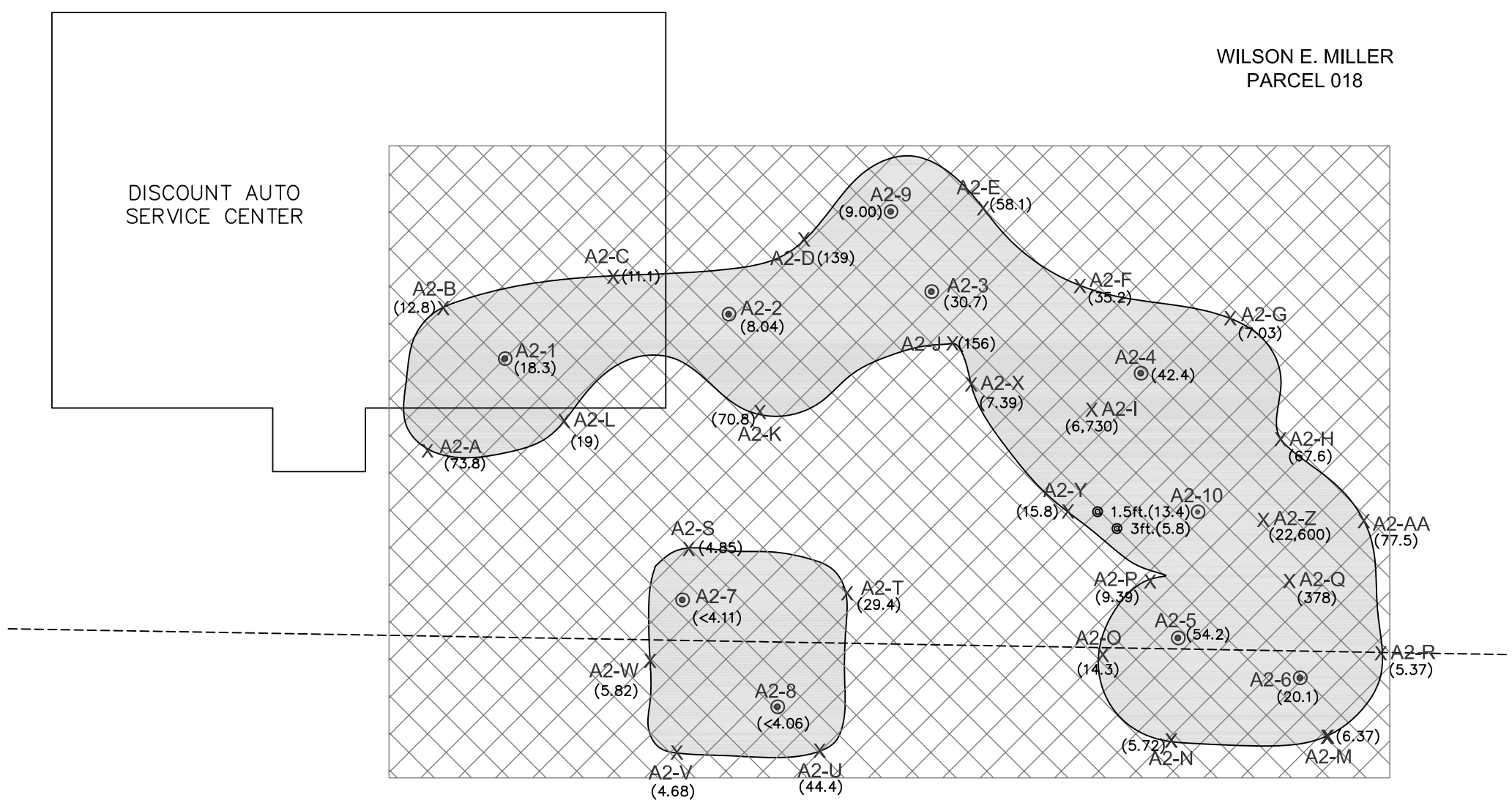
MILLER PARCEL 018
SOIL ASSESSMENT / DELINEATION RESULTS
2006

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JULY 2006	1"=100'	RBT		7A



LEGEND

- AREAS OF EXCAVATION TO MEET RISK REDUCTION STANDARD
- AREA OF SUBSEQUENT EXCAVATION TO GROUNDWATER TABLE
- X SIDEWALL CONFIRMATION SAMPLE LOCATION
- ◉ BOTTOM CONFIRMATION SAMPLE LOCATION
- (58.1) LEAD CONCENTRATION, mg/kg (LABORATORY TEST RESULTS)

NOTES:
SOIL LABORATORY TESTING RESULTS ARE PRESENTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

THE ORIGINAL DEPTH OF EXCAVATION WAS APPROXIMATELY 2 FT. FOLLOWING REMOVAL AND OFF-SITE DIPOSAL OF SOILS ABOVE RISK REDUCTION STANDARDS, ADDITIONAL SOILS WERE REMOVED FROM THE AREA DOWN TO THE GROUNDWATER TABLE AND USED AS FILL MATERIAL IN OTHER PORTIONS OF THE SITE

SCALE IN FEET

0 20 40

MILLER PARCEL 018
CONFIRMATION SAMPLE RESULTS

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Job Number 6305-05-0303 | Task 01 | Date JULY 2006 | Scale 1"=20' | Drawn RBT | Approv. | Figure 7B

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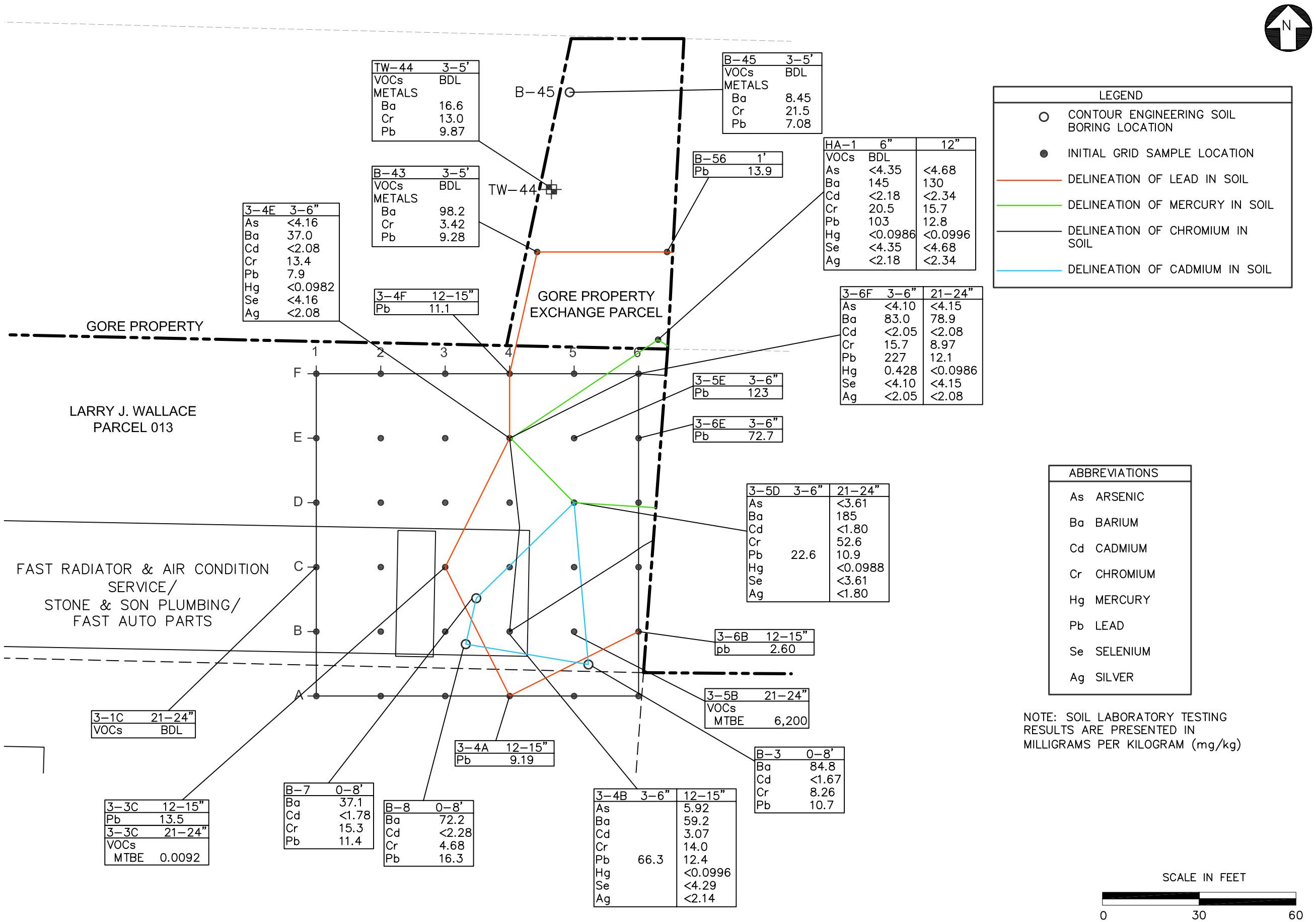

WALLACE PARCEL 013 / GORE EXCHANGE PARCEL SOIL ASSESSMENT / DELINEATION RESULTS 2006

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Drawn RBT | Approv. | Figure 8A
Scale 1"=100'
Date JULY 2006
Task 01
Job Number 6305-05-0303

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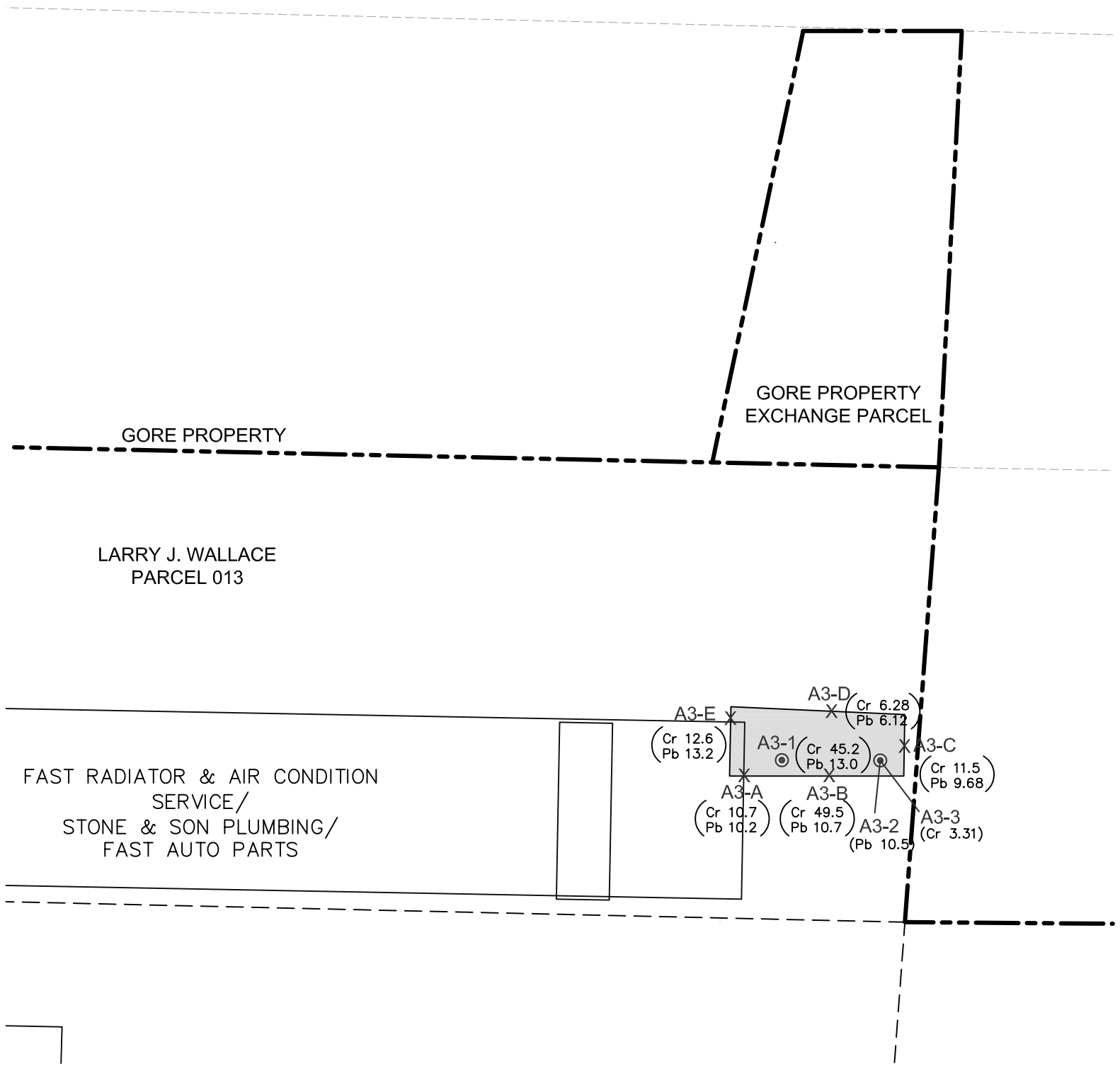

LEGEND

- AREA OF EXCAVATION (EXCAVATION DEPTH APPROXIMATELY 3–4 FT.)
- X — SIDEWALL CONFIRMATION SAMPLE LOCATION
- ◉ — BOTTOM CONFIRMATION SAMPLE LOCATION
- ○ — CONTOUR ENGINEERING BORING LOCATION
- (20.8) LEAD CONCENTRATION, mg/kg (LABORATORY TEST RESULTS)

SCALE IN FEET

0 30 60

WALLACE PARCEL 013
CONFIRMATION SAMPLE
RESULTS

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Drawn	Approv.	Figure
RBT		8B

Job Number	Task	Date	Scale
6305–05–0303	01	JULY 2006	1"=100'

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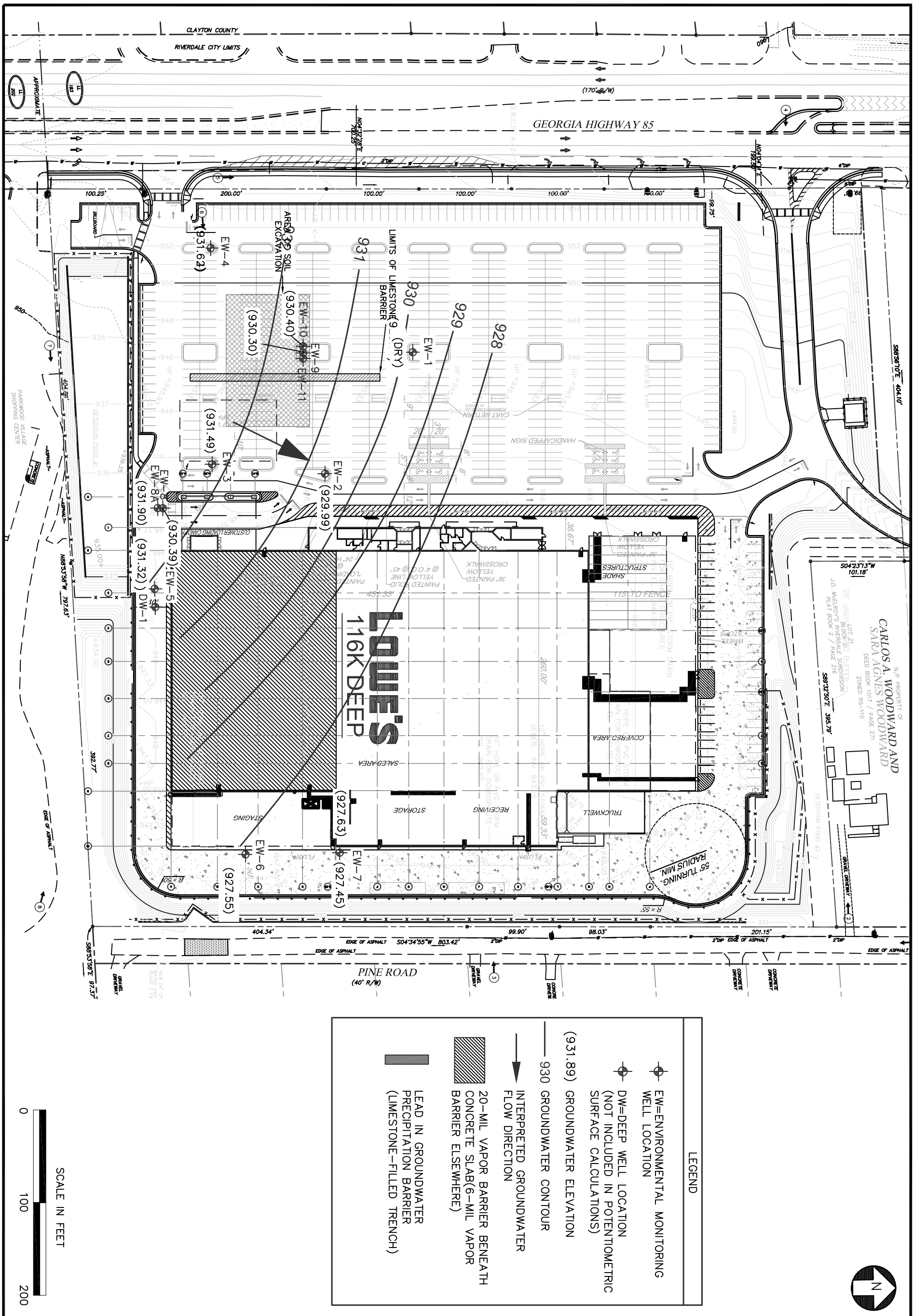

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POTENTIOMETRIC SURFACE MAP
(7/11/06)

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JULY 2006	1"=100'	RBT		9

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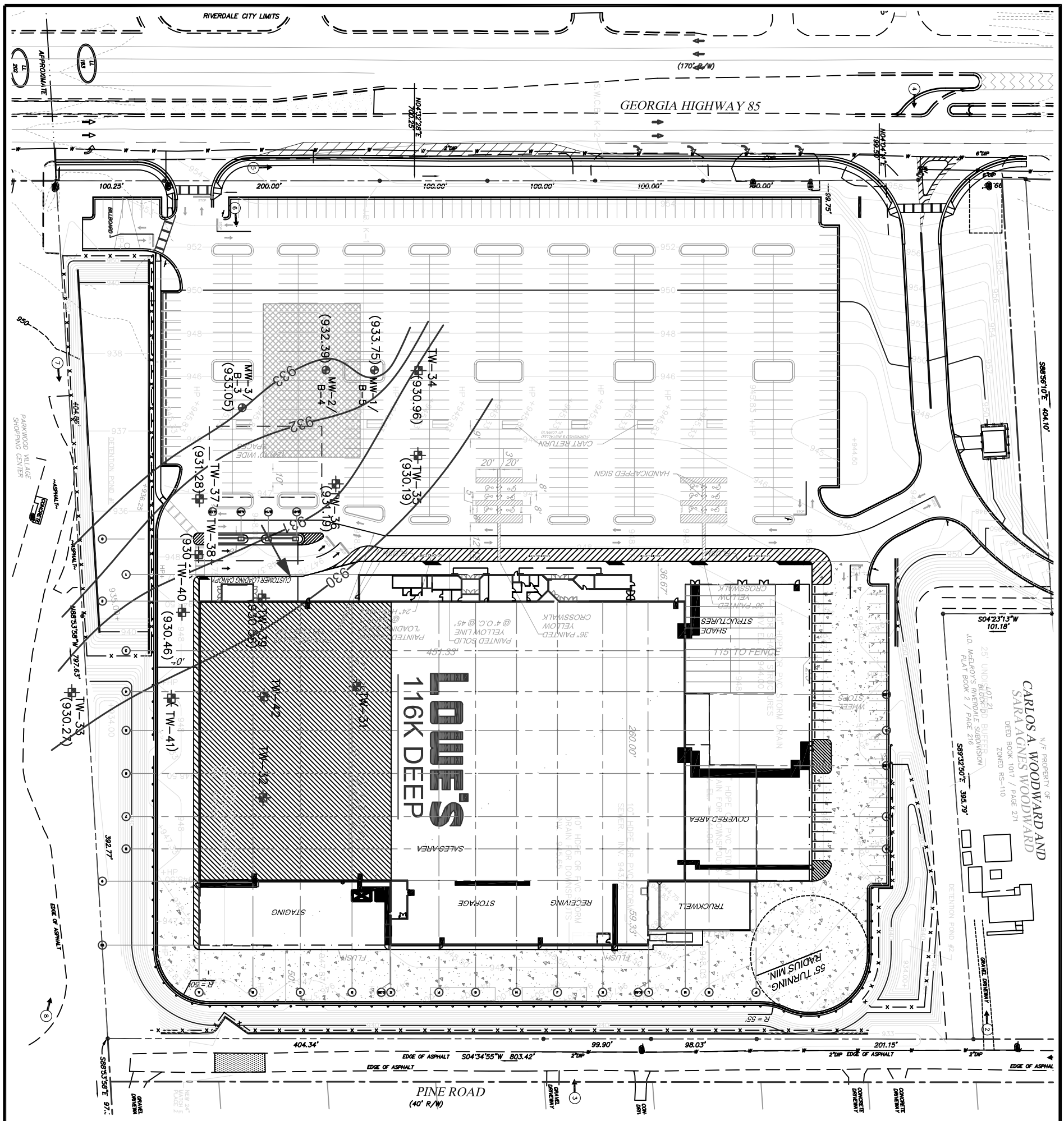


LEGEND	
MW-1	PERMANENT 2 INCH MONITORING WELL
TW-38	TEMPORARY 2 INCH MONITORING WELL
930	GROUNDWATER CONTOUR
(930.27)	GROUNDWATER ELEVATION IN FEET
	INTERPRETED GROUNDWATER FLOW DIRECTION
	20-MIL VAPOR BARRIER BENEATH CONCRETE SLAB (6-MIL VAPOR BARRIER ELSEWHERE)
	LEAD IN GROUNDWATER PRECIPITATION BARRIER (LIMESTONE-FILLED TRENCH)

SCALE IN FEET
0 100 200

N

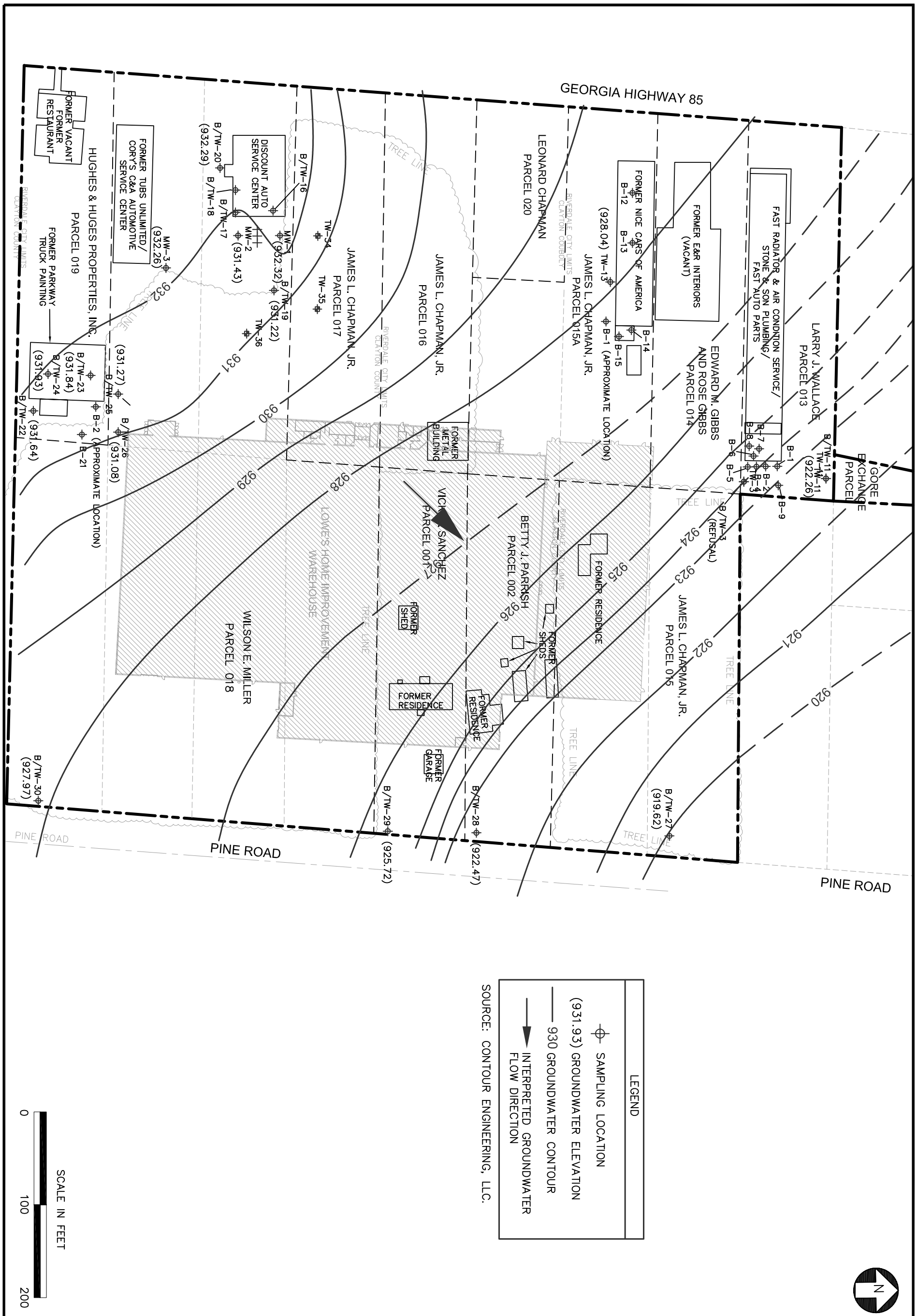
MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

POTENTIOMETRIC SURFACE MAP
(9/8/05)

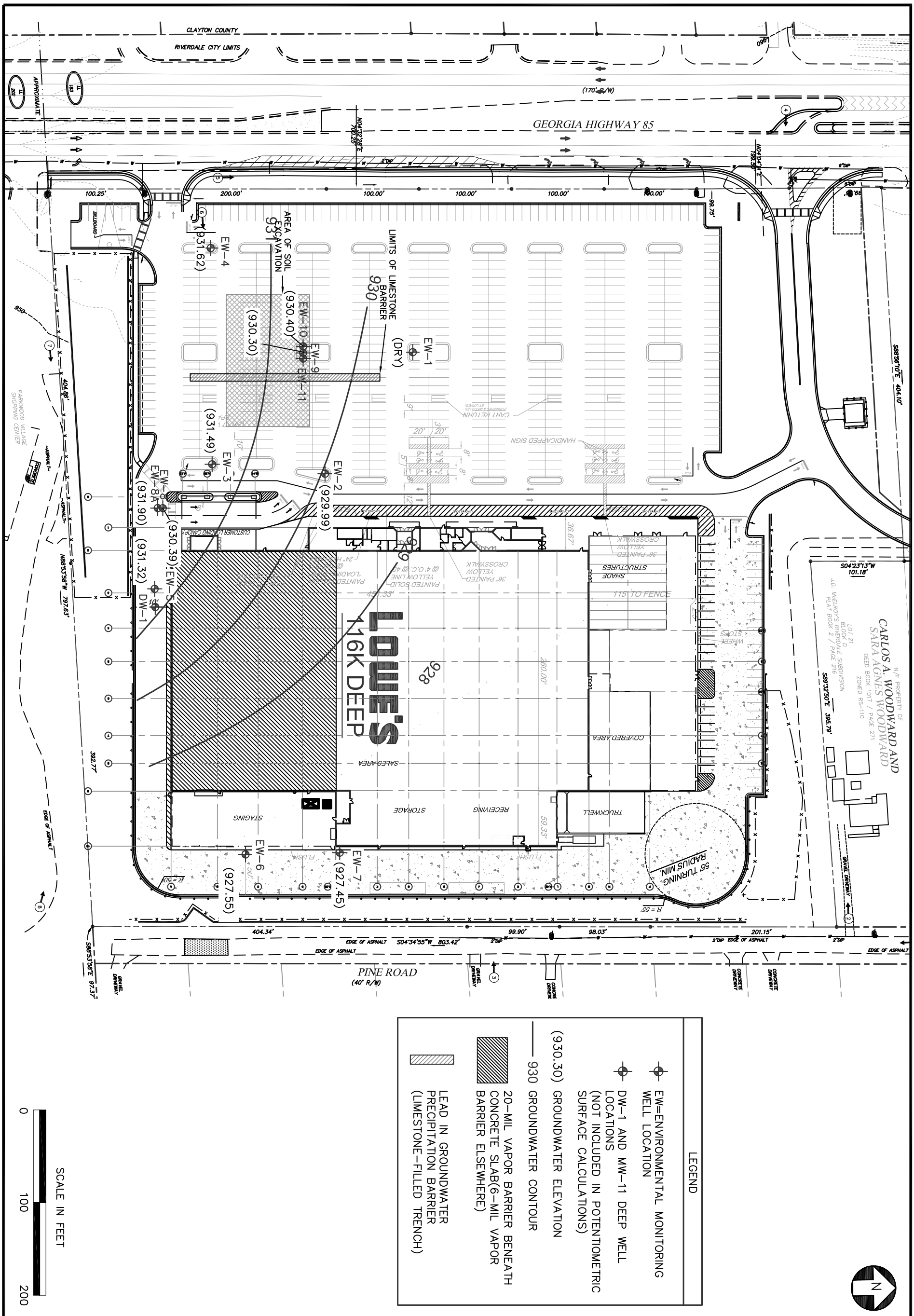
Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JULY 2006	1"=100'	RBT		10

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE.dwg - POT 1-05 07/19/2007 11:26am rthorpe



MACTEC Mactec Engineering and Consulting, Inc. 396 PLASTERS AVENUE, N.E. ATLANTA, GEORGIA 30324 (404)873-4761	HSI SITE No. 10808 GEORGIA HIGHWAY 85 RIVERDALE, GEORGIA				POTENTIOMETRIC SURFACE MAP (1/24/05)		
	Job Number 6305-05-0303	*Task* 01	*Date* JULY 2006	*Scale* 1"=100'	*Drawn* RBT	*Approv.*	*Figure* 11

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE_GW-DATA.dwg - GW 4-07 07/19/2007 12:01pm rthorpe



LEGEND

- EW=ENVIRONMENTAL MONITORING WELL LOCATION
- DW-1 AND MW-11 DEEP WELL LOCATIONS (NOT INCLUDED IN POTENTIOMETRIC SURFACE CALCULATIONS)
- (930.30) GROUNDWATER ELEVATION
- 930 GROUNDWATER CONTOUR
- 20-MIL VAPOR BARRIER BENEATH CONCRETE SLAB(6-MIL VAPOR BARRIER ELSEWHERE)
- LEAD IN GROUNDWATER PRECIPITATION BARRIER (LIMESTONE-FILLED TRENCH)

SCALE IN FEET
0 100 200

N

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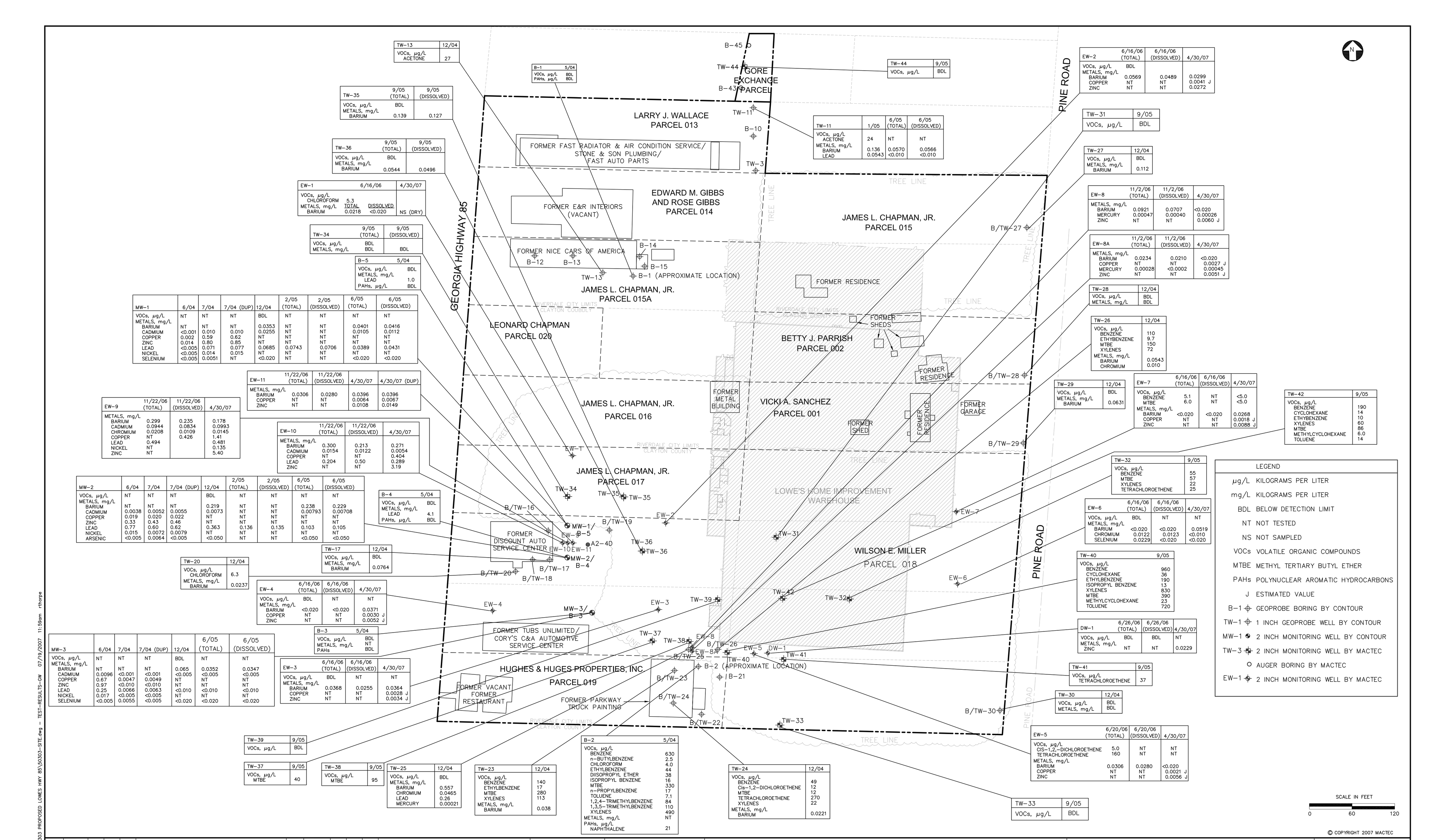
HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

POTENTIOMETRIC SURFACE MAP
(4/30/07)

Job Number	Task	Date	Scale	Drawn	Approv.	Figure
6305-05-0303	01	JUNE 2007	1"=100'	RBT		12



TW-13	12/04
VOCs, µg/L	
ACETONE	27

B-1	5/04
VOCs, µg/L	BDL
PAHs, µg/L	BDL

TW-44	9/05
VOCs, µg/L	BDL

TW-35	9/05 (TOTAL)	9/05 (DISSOLVED)
VOCs, µg/L	BDL	
METALS, mg/L		
BARIUM	0.139	0.127

TW-11	1/05	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L			
ACETONE	24	NT	NT
METALS, mg/L			
BARIUM	0.136	0.0570	0.0566
LEAD	0.0543	<0.010	<0.010

EW-2	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL		
METALS, mg/L			
BARIUM	0.0569	0.0489	0.0299
COPPER	NT	NT	0.0041 J
ZINC	NT	NT	0.0272

TW-31	9/05
VOCs, µg/L	BDL

TW-36	9/05 (TOTAL)	9/05 (DISSOLVED)
VOCs, µg/L	BDL	
METALS, mg/L		
BARIUM	0.0544	0.0496

TW-27	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.112

EW-1	6/16/06	4/30/07
VOCs, µg/L		
CHLOROFORM	5.3	
METALS, mg/L	TOTAL	DISSOLVED
BARIUM	0.0218	<0.020
		NS (DRY)

EW-8	11/2/06 (TOTAL)	11/2/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.0921	0.0707	<0.020
MERCURY	0.00047	0.00040	0.00026
ZINC	NT	NT	0.0060 J

TW-34	9/05 (TOTAL)	9/05 (DISSOLVED)
VOCs, µg/L	BDL	
METALS, mg/L	BDL	BDL

EW-8A	11/2/06 (TOTAL)	11/2/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.0234	0.0210	<0.020
COPPER	NT	NT	0.0027 J
MERCURY	0.00028	<0.0002	0.00045
ZINC	NT	NT	0.0051 J

B-5	5/04
VOCs, µg/L	BDL
METALS, mg/L	
LEAD	1.0
PAHs, µg/L	BDL

TW-28	12/04
VOCs, µg/L	BDL
METALS, mg/L	BDL

MW-1	6/04	7/04	7/04 (DUP)	12/04	2/05 (TOTAL)	2/05 (DISSOLVED)	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L	NT	NT	NT	BDL	NT	NT	NT	NT
METALS, mg/L								
BARIUM	NT	NT	NT	0.0353	NT	NT	0.0401	0.0416
CADMIUM	<0.001	0.010	0.010	0.0255	NT	NT	0.0105	0.0112
COPPER	0.002	0.59	0.62	NT	NT	NT	NT	NT
ZINC	0.014	0.80	0.85	NT	NT	NT	NT	NT
LEAD	<0.005	0.071	0.077	0.0685	0.0743	0.0706	0.0389	0.0431
NICKEL	<0.005	0.014	0.015	NT	NT	NT	NT	NT
SELENIUM	<0.005	0.0051	NT	<0.020	NT	NT	<0.020	<0.020

TW-26	12/04
VOCs, µg/L	
BENZENE	110
ETHYBENZENE	9.7
MTBE	150
XYLENES	72
METALS, mg/L	
BARIUM	0.0543
CHROMIUM	0.010

EW-11	11/22/06 (TOTAL)	11/22/06 (DISSOLVED)	4/30/07	4/30/07 (DUP)
METALS, mg/L				
BARIUM	0.0306	0.0280	0.0396	0.0396
COPPER	NT	NT	0.0064	0.0067
ZINC	NT	NT	0.0108	0.0149

TW-29	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.0631

EW-7	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L			
BENZENE	5.1	NT	<5.0
MTBE	6.0	NT	<5.0
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0268
COPPER	NT	NT	0.0018 J
ZINC	NT	NT	0.0088 J

TW-42	9/05
VOCs, µg/L	
BENZENE	190
CYCLOHEXANE	14
ETHYBENZENE	10
XYLENES	60
MTBE	86
METHYLCYCLOHEXANE	6.0
TOLUENE	14

EW-9	11/22/06 (TOTAL)	11/22/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.299	0.235	0.178
CADMIUM	0.0944	0.0834	0.0993
CHROMIUM	0.0208	0.0109	0.0145
COPPER	NT	0.426	1.41
LEAD	0.494		0.481
NICKEL	NT		0.135
ZINC	NT		5.40

EW-10	11/22/06 (TOTAL)	11/22/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.300	0.213	0.271
CADMIUM	0.0154	0.0122	0.0054
COPPER	NT	NT	0.404
LEAD	0.204	0.50	0.289
ZINC	NT	NT	3.19

TW-32	9/05
VOCs, µg/L	
BENZENE	55
MTBE	57
XYLENES	22
TETRACHLOROETHENE	25

MW-2	6/04	7/04	7/04 (DUP)	12/04	2/05 (TOTAL)	2/05 (DISSOLVED)	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L	NT	NT	NT	BDL	NT	NT	NT	NT
METALS, mg/L								
BARIUM	NT	NT	NT	0.219	NT	NT	0.238	0.229
CADMIUM	0.0038	0.0052	0.0055	0.0073	NT	NT	0.00793	0.00708
COPPER	0.019	0.020	0.022	NT	NT	NT	NT	NT
ZINC	0.33	0.43	0.46	NT	NT	NT	NT	NT
LEAD	0.77	0.60	0.62	0.363	0.136	0.135	0.103	0.105
NICKEL	0.015	0.0072	0.0079	NT	NT	NT	NT	NT
ARSENIC	<0.005	0.0064	<0.005	<0.050	NT	NT	<0.050	<0.050

B-4	5/04
VOCs, µg/L	BDL
METALS, mg/L	
LEAD	4.1
PAHs, µg/L	BDL

TW-40	9/05
VOCs, µg/L	
BENZENE	960
CYCLOHEXANE	36
ETHYLBENZENE	190
ISOPROPYL BENZENE	13
XYLENES	830
MTBE	390
METHYLCYCLOHEXANE	23
TOLUENE	720

TW-17	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.0764

TW-20	12/04
VOCs, µg/L	
CHLOROFORM	6.3
METALS, mg/L	
BARIUM	0.0237

EW-4	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0371
COPPER	NT	NT	0.0030 J
ZINC	NT	NT	0.0052 J

DW-1	6/26/06 (TOTAL)	6/26/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	BDL	NT
METALS, mg/L			
ZINC	NT	NT	0.0229

B-3	5/04
VOCs, µg/L	BDL
METALS, mg/L	NT
PAHs	BDL

MW-3	6/04	7/04	7/04 (DUP)	12/04	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L	NT	NT	NT	BDL	NT	NT
METALS, mg/L						
BARIUM	NT	NT	NT	0.065	0.0352	0.0347
CADMIUM	0.0096	<0.001	<0.001	<0.005	<0.005	<0.005
COPPER	0.67	0.0047	0.0049	NT	NT	NT
ZINC	0.97	<0.010	<0.010	NT	NT	NT
LEAD	0.25	0.0066	0.0063	<0.010	<0.010	<0.010
NICKEL	0.017	<0.005	<0.005	NT	NT	NT
SELENIUM	<0.005	0.0055	<0.005	<0.020	<0.020	<0.020

EW-3	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	0.0368	0.0255	0.0364
COPPER	NT	NT	0.0028 J
ZINC	NT	NT	0.0034 J

TW-41	9/05
VOCs, µg/L	
TETRACHLOROETHENE	37

TW-30	12/04
VOCs, µg/L	BDL
METALS, mg/L	BDL

TW-39	9/05
VOCs, µg/L	BDL

TW-37	9/05
VOCs, µg/L	
MTBE	40

TW-38	9/05
VOCs, µg/L	
MTBE	95

TW-25	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.557
CHROMIUM	0.0465
LEAD	0.26
MERCURY	0.00021

TW-23	12/04
VOCs, µg/L	
BENZENE	140
ETHYLBENZENE	17
MTBE	280
XYLENES	113
METALS, mg/L	
BARIUM	0.038

B-2	5/04
VOCs, µg/L	
BENZENE	630
n-BUTYLBENZENE	2.5
CHLOROFORM	4.0
ETHYLBENZENE	44
DIISOPROPYL ETHER	38
ISOPROPYL BENZENE	16
MTBE	330
n-PROPYLBENZENE	17
TOLUENE	7.1
1,2,4-TRIMETHYLBENZENE	84
1,3,5-TRIMETHYLBENZENE	110
XYLENES	490
METALS, mg/L	NT
PAHs, µg/L	
NAPHTHALENE	21

TW-24	12/04
VOCs, µg/L	
BENZENE	49
Cis-1,2-DICHLOROETHENE	12
MTBE	12
TETRACHLOROETHENE	270
XYLENES	22
METALS, mg/L	
BARIUM	0.0221

EW-5	6/20/06 (TOTAL)	6/20/06 (DISSOLVED)	4/30/07
VOCs, µg/L			
CIS-1,2-DICHLOROETHENE	5.0	NT	NT
TETRACHLOROETHENE	160	NT	NT
METALS, mg/L			
BARIUM	0.0306	0.0280	<0.020
COPPER	NT	NT	0.0021 J
ZINC	NT	NT	0.0056 J

TW-33	9/05
VOCs, µg/L	BDL

EW-6	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0519
CHROMIUM	0.0122	0.0123	<0.010
SELENIUM	0.0229	<0.020	<0.020

LEGEND

- µg/L KILOGRAMS PER LITER
- mg/L KILOGRAMS PER LITER
- BDL BELOW DETECTION LIMIT
- NT NOT TESTED
- NS NOT SAMPLED
- VOCs VOLATILE ORGANIC COMPOUNDS
- MTBE METHYL TERTIARY BUTYL ETHER
- PAHs POLYNUCLEAR AROMATIC HYDROCARBONS
- J ESTIMATED VALUE
- B-1 GEOPROBE BORING BY CONTOUR
- TW-1 1 INCH GEOPROBE WELL BY CONTOUR
- MW-1 2 INCH MONITORING WELL BY CONTOUR
- TW-3 2 INCH MONITORING WELL BY MACTEC
- AUGER BORING BY MACTEC
- EW-1 2 INCH MONITORING WELL BY MACTEC

SCALE IN FEET
0 60 120

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE.dwg - TEST-RESULTS-GW 07/19/2007 11:59am rthorpe

REV	DATE	BY	SUB	APP	DESCRIPTION

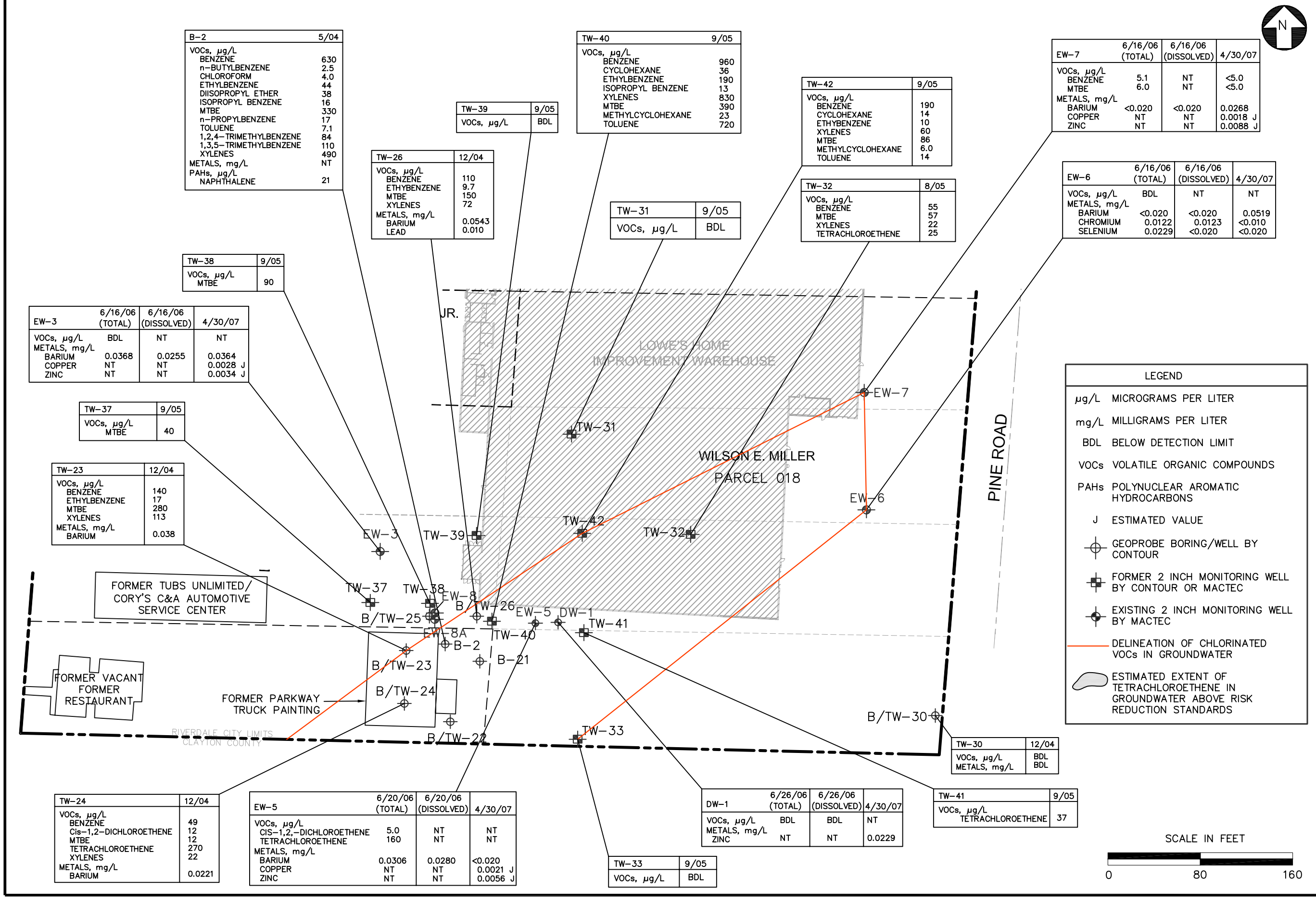
DESIGNED
DRAWN RBT
CHECKED
IN CHARGE
DATE JULY 2006

HSI SITE No. 10808
GEORGIA HIGHWAY 85, RIVERDALE, GEORGIA

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324
(404) 873-4761

GROUNDWATER TESTING RESULTS 2004-2007

SCALE: AS SHOWN
CONTRACT: 6305-05-0303
DWG. NO. 13 | REV 0 | PAGE NO N/A



DELINEATION OF CHLORONATED VOCs IN GROUNDWATER

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Figure 14A
Approv.
Drawn RBT
Scale 1"=100'
Date JUNE 2007
Task 01
Job Number 6305-05-0303

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Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE_DELINEATION.dwg — CHLORONATED VOCs 07/19/2007 11:53am rthorpe

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE_DELINEATION.dwg — PETROLEUM VOCs 07/19/2007 11:54am rthorpe

B-2	5/04
VOCs, µg/L	
BENZENE	630
n-BUTYLBENZENE	2.5
CHLOROFORM	4.0
ETHYLBENZENE	44
DIISOPROPYL ETHER	38
ISOPROPYL BENZENE	16
MTBE	330
n-PROPYLBENZENE	17
TOLUENE	7.1
1,2,4-TRIMETHYLBENZENE	84
1,3,5-TRIMETHYLBENZENE	110
XYLENES	490
METALS, mg/L	NT
PAHs, µg/L	
NAPHTHALENE	21

TW-40	9/05
VOCs, µg/L	
BENZENE	960
CYCLOHEXANE	36
ETHYLBENZENE	190
ISOPROPYL BENZENE	13
XYLENES	830
MTBE	390
METHYLCYCLOHEXANE	23
TOLUENE	720

TW-39	9/05
VOCs, µg/L	BDL

TW-31	8/05
VOCs, µg/L	BDL

TW-42	8/05
VOCs, µg/L	
BENZENE	190
CYCLOHEXANE	14
ETHYLBENZENE	10
XYLENES	60
MTBE	86
METHYLCYCLOHEXANE	6.0
TOLUENE	14

TW-32	8/05
VOCs, µg/L	
BENZENE	55
MTBE	57
XYLENES	22
TETRACHLOROETHENE	25

TW-28	12/04
VOCs, µg/L	BDL
METALS, mg/L	BDL

TW-29	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.0631

TW-38	9/05
VOCs, µg/L	
MTBE	90

EW-7	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L			
BENZENE	5.1	NT	<5.0
MTBE	6.0	NT	<5.0
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0268
COPPER	NT	NT	NT
ZINC	NT	NT	NT

EW-3	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	0.0368	0.0255	0.0364
COPPER	NT	NT	0.0028 J
ZINC	NT	NT	0.0034 J

EW-6	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0519
CHROMIUM	0.0122	0.0123	<0.010
SELENIUM	0.0229	<0.020	<0.020

TW-25	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.557
CHROMIUM	0.0465
LEAD	0.26
MERCURY	0.00021

EW-4	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0371
COPPER	NT	NT	0.0030 J
ZINC	NT	NT	0.0052 J

TW-37	9/05
VOCs, µg/L	
MTBE	40

TW-30	12/04
VOCs, µg/L	
METALS, mg/L	BDL
	BDL

TW-41	9/05
VOCs, µg/L	
TETRACHLOROETHENE	37

TW-23	12/04
VOCs, µg/L	
BENZENE	140
ETHYLBENZENE	17
MTBE	280
XYLENES	113
METALS, mg/L	
BARIUM	0.038

TW-24	12/04
VOCs, µg/L	
BENZENE	49
Cis-1,2-DICHLOROETHENE	12
MTBE	12
TETRACHLOROETHENE	270
XYLENES	22
METALS, mg/L	
BARIUM	0.0221

TW-26	12/04
VOCs, µg/L	
BENZENE	110
ETHYBENZENE	9.7
MTBE	150
XYLENES	72
METALS, mg/L	
BARIUM	0.0543
LEAD	0.010

TW-33	8/05
VOCs, µg/L	BDL

EW-5	6/20/06 (TOTAL)	6/20/06 (DISSOLVED)	4/30/07
VOCs, µg/L			
CIS-1,2-DICHLOROETHENE	5.0	NT	NT
TETRACHLOROETHENE	160	NT	NT
METALS, mg/L			
BARIUM	0.0306	0.0280	<0.020
COPPER	NT	NT	0.0021 J
ZINC	NT	NT	0.0056 J

DW-1	6/26/06 (TOTAL)	6/26/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	BDL	NT
METALS, mg/L			
ZINC	NT	NT	0.0229

JAMES L. CHAPMAN, JR.
PARCEL 016

JAMES L. CHAPMAN, JR.
PARCEL 017

VICKI A. SANCHEZ
PARCEL 001

WILSON E. MILLER
PARCEL 018

FORMER METAL BUILDING

FORMER RESIDENCE

FORMER SHED

FORMER RESIDENCE

FORMER GARAGE

LOWE'S HOME IMPROVEMENT WAREHOUSE

RIVERDALE CITY LIMITS
CLAYTON COUNTY

PINE ROAD

FORMER TUBS UNLIMITED/
CORY'S C&A AUTOMOTIVE
SERVICE CENTER

FORMER VACANT
FORMER
RESTAURANT

FORMER PARKWAY
TRUCK PAINTING

B/TW-28
B/TW-29
B/TW-30
B/TW-25
B/TW-23
B/TW-24
B/TW-22
B-2
B-21
EW-3
EW-4
EW-5
EW-6
EW-7
EW-8
EW-8A
TW-31
TW-32
TW-33
TW-37
TW-38
TW-39
TW-40
TW-41
TW-42
DW-1

LEGEND

µg/L	MICROGRAMS PER LITER
mg/L	MILLIGRAMS PER LITER
BDL	BELOW DETECTION LIMIT
VOCs	VOLATILE ORGANIC COMPOUNDS
PAHs	POLYNUCLEAR AROMATIC HYDROCARBONS
J	ESTIMATED VALUE

GEOPROBE BORING/WELL BY CONTOUR

FORMER 2 INCH MONITORING WELL BY CONTOUR OR MACTEC

EXISTING 2 INCH MONITORING WELL BY MACTEC

DELINEATION OF PETROLEUM VOCs IN GROUNDWATER

ESTIMATED EXTENT OF BENZENE IN GROUNDWATER ABOVE RISK REDUCTION STANDARDS

ESTIMATED EXTENT OF NAPHTHALENE IN GROUNDWATER ABOVE RISK REDUCTION STANDARDS

SCALE IN FEET

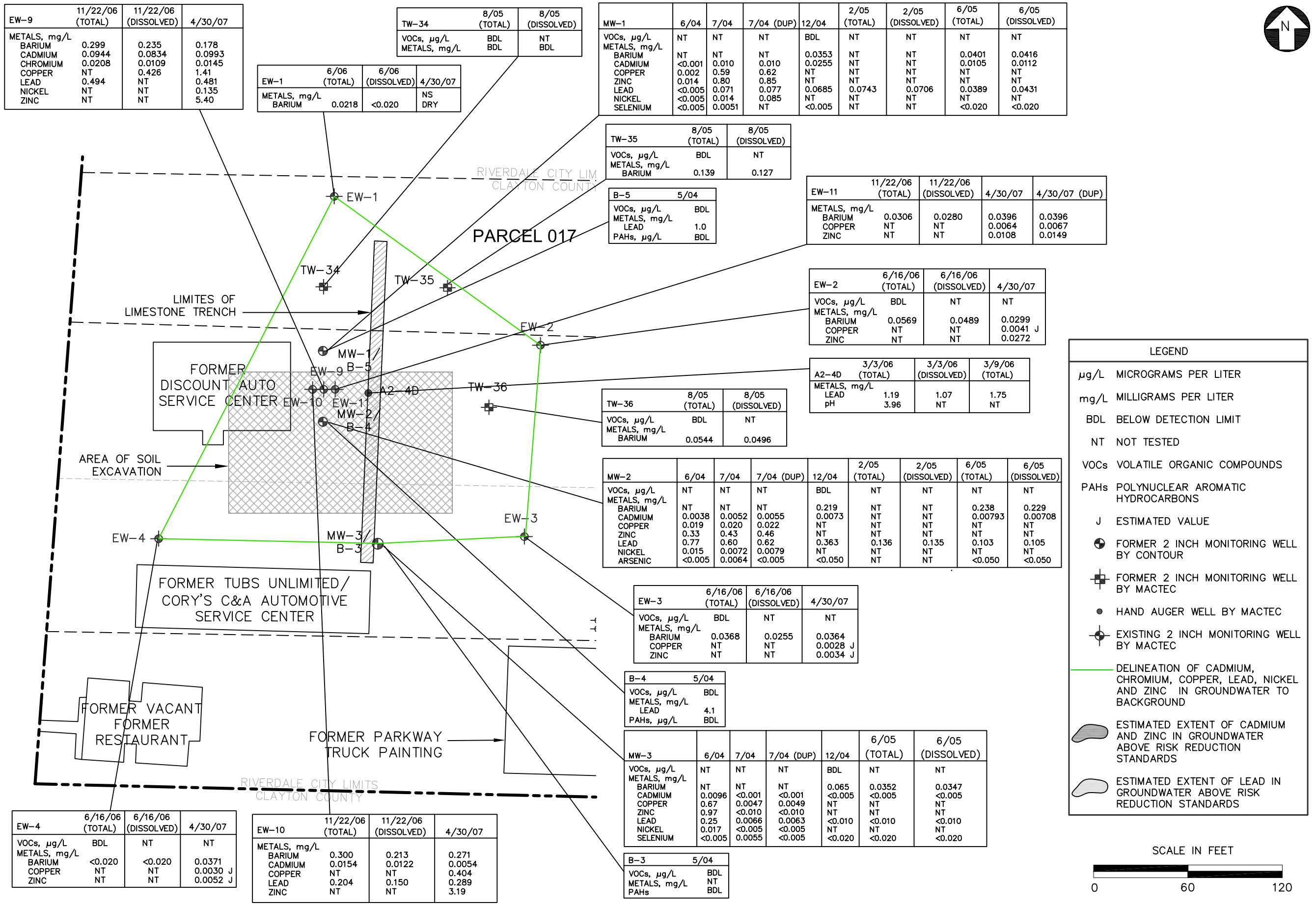
0 80 160

DELINEATION OF PETROLEUM IN GROUNDWATER

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Figure 14B
Approv.
Drawn RBT
Scale 1"=100'
Date JUNE 2007
Task 01
Job Number 6305-05-0303

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761



EW-9	11/22/06 (TOTAL)	11/22/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.299	0.235	0.178
CADMIUM	0.0944	0.0834	0.0993
CHROMIUM	0.0208	0.0109	0.0145
COPPER	NT	0.426	1.41
LEAD	0.494	NT	0.481
NICKEL	NT	NT	0.135
ZINC	NT	NT	5.40

TW-34	8/05 (TOTAL)	8/05 (DISSOLVED)
VOCs, µg/L	BDL	NT
METALS, mg/L	BDL	BDL

EW-1	6/06 (TOTAL)	6/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.0218	<0.020	NS DRY

MW-1	6/04	7/04	7/04 (DUP)	12/04	2/05 (TOTAL)	2/05 (DISSOLVED)	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L	NT	NT	NT	BDL	NT	NT	NT	NT
METALS, mg/L								
BARIUM	NT	NT	NT	0.0353	NT	NT	0.0401	0.0416
CADMIUM	<0.001	0.010	0.010	0.0255	NT	NT	0.0105	0.0112
COPPER	0.002	0.59	0.62	NT	NT	NT	NT	NT
ZINC	0.014	0.80	0.85	NT	NT	NT	NT	NT
LEAD	<0.005	0.071	0.077	0.0685	0.0743	0.0706	0.0389	0.0431
NICKEL	<0.005	0.014	0.085	NT	NT	NT	NT	NT
SELENIUM	<0.005	0.0051	NT	<0.005	NT	NT	<0.020	<0.020

TW-35	8/05 (TOTAL)	8/05 (DISSOLVED)
VOCs, µg/L	BDL	NT
METALS, mg/L		
BARIUM	0.139	0.127

B-5	5/04
VOCs, µg/L	BDL
METALS, mg/L	
LEAD	1.0
PAHs, µg/L	BDL

EW-11	11/22/06 (TOTAL)	11/22/06 (DISSOLVED)	4/30/07	4/30/07 (DUP)
METALS, mg/L				
BARIUM	0.0306	0.0280	0.0396	0.0396
COPPER	NT	NT	0.0064	0.0067
ZINC	NT	NT	0.0108	0.0149

EW-2	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	0.0569	0.0489	0.0299
COPPER	NT	NT	0.0041 J
ZINC	NT	NT	0.0272

A2-4D	3/3/06 (TOTAL)	3/3/06 (DISSOLVED)	3/9/06 (TOTAL)
METALS, mg/L			
LEAD	1.19	1.07	1.75
pH	3.96	NT	NT

TW-36	8/05 (TOTAL)	8/05 (DISSOLVED)
VOCs, µg/L	BDL	NT
METALS, mg/L		
BARIUM	0.0544	0.0496

MW-2	6/04	7/04	7/04 (DUP)	12/04	2/05 (TOTAL)	2/05 (DISSOLVED)	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L	NT	NT	NT	BDL	NT	NT	NT	NT
METALS, mg/L								
BARIUM	NT	NT	NT	0.219	NT	NT	0.238	0.229
CADMIUM	0.0038	0.0052	0.0055	0.0073	NT	NT	0.00793	0.00708
COPPER	0.019	0.020	0.022	NT	NT	NT	NT	NT
ZINC	0.33	0.43	0.46	NT	NT	NT	NT	NT
LEAD	0.77	0.60	0.62	0.363	0.136	0.135	0.103	0.105
NICKEL	0.015	0.0072	0.0079	NT	NT	NT	NT	NT
ARSENIC	<0.005	0.0064	<0.005	<0.050	NT	NT	<0.050	<0.050

EW-3	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	0.0368	0.0255	0.0364
COPPER	NT	NT	0.0028 J
ZINC	NT	NT	0.0034 J

B-4	5/04
VOCs, µg/L	BDL
METALS, mg/L	
LEAD	4.1
PAHs, µg/L	BDL

MW-3	6/04	7/04	7/04 (DUP)	12/04	6/05 (TOTAL)	6/05 (DISSOLVED)
VOCs, µg/L	NT	NT	NT	BDL	NT	NT
METALS, mg/L						
BARIUM	NT	NT	NT	0.065	0.0352	0.0347
CADMIUM	0.0096	<0.001	<0.001	<0.005	<0.005	<0.005
COPPER	0.67	0.0047	0.0049	NT	NT	NT
ZINC	0.97	<0.010	<0.010	NT	NT	NT
LEAD	0.25	0.0066	0.0063	<0.010	<0.010	<0.010
NICKEL	0.017	<0.005	<0.005	NT	NT	NT
SELENIUM	<0.005	0.0055	<0.005	<0.020	<0.020	<0.020

B-3	5/04
VOCs, µg/L	BDL
METALS, mg/L	NT
PAHs	BDL

EW-4	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	<0.020	<0.020	0.0371
COPPER	NT	NT	0.0030 J
ZINC	NT	NT	0.0052 J

EW-10	11/22/06 (TOTAL)	11/22/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.300	0.213	0.271
CADMIUM	0.0154	0.0122	0.0054
COPPER	NT	NT	0.404
LEAD	0.204	0.150	0.289
ZINC	NT	NT	3.19

LEGEND	
µg/L	MICROGRAMS PER LITER
mg/L	MILLIGRAMS PER LITER
BDL	BELOW DETECTION LIMIT
NT	NOT TESTED
VOCs	VOLATILE ORGANIC COMPOUNDS
PAHs	POLYNUCLEAR AROMATIC HYDROCARBONS
J	ESTIMATED VALUE
	FORMER 2 INCH MONITORING WELL BY CONTOUR
	FORMER 2 INCH MONITORING WELL BY MACTEC
	HAND AUGER WELL BY MACTEC
	EXISTING 2 INCH MONITORING WELL BY MACTEC
	DELINEATION OF CADMIUM, CHROMIUM, COPPER, LEAD, NICKEL AND ZINC IN GROUNDWATER TO BACKGROUND
	ESTIMATED EXTENT OF CADMIUM AND ZINC IN GROUNDWATER ABOVE RISK REDUCTION STANDARDS
	ESTIMATED EXTENT OF LEAD IN GROUNDWATER ABOVE RISK REDUCTION STANDARDS

SCALE IN FEET

0 60 120

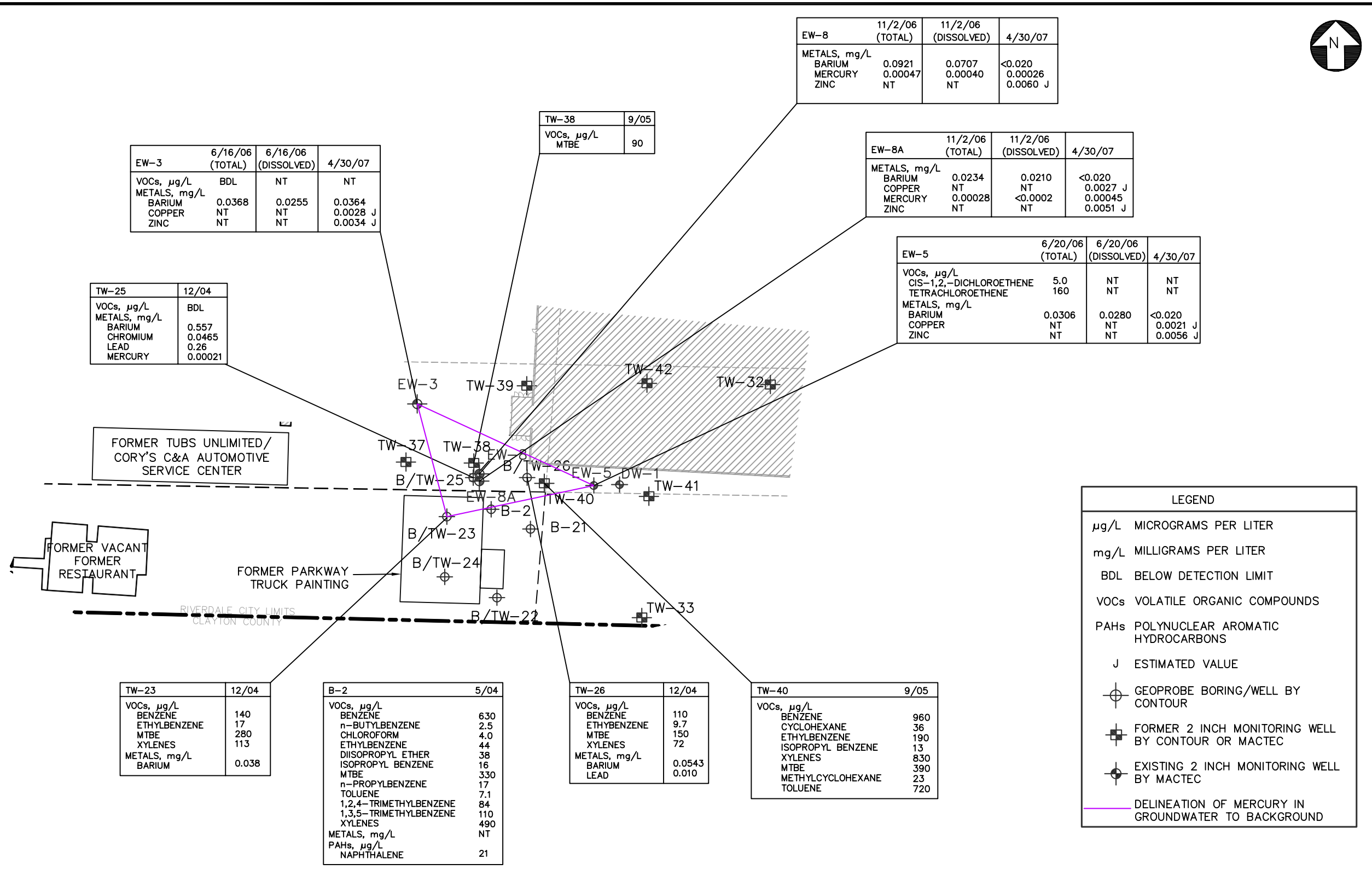
DELINEATION OF LEAD, CADMIUM, CHROMIUM, COPPER, NICKEL AND ZINC IN GROUNDWATER

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Figure 14C
Approv.
Drawn RBT
Scale 1"=100'
Date JUNE 2007
Task 01
Job Number 6305-05-0303

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

P:\Atlanta CAD\05 JOBS\5-0303 PROPOSED LOWES HWY 85\50303-SITE_DELINEATION.dwg - LEAD 07/19/2007 11:53am rthorpe



EW-3	6/16/06 (TOTAL)	6/16/06 (DISSOLVED)	4/30/07
VOCs, µg/L	BDL	NT	NT
METALS, mg/L			
BARIUM	0.0368	0.0255	0.0364
COPPER	NT	NT	0.0028 J
ZINC	NT	NT	0.0034 J

TW-38	9/05
VOCs, µg/L	
MTBE	90

EW-8	11/2/06 (TOTAL)	11/2/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.0921	0.0707	<0.020
MERCURY	0.00047	0.00040	0.00026
ZINC	NT	NT	0.0060 J

EW-8A	11/2/06 (TOTAL)	11/2/06 (DISSOLVED)	4/30/07
METALS, mg/L			
BARIUM	0.0234	0.0210	<0.020
COPPER	NT	NT	0.0027 J
MERCURY	0.00028	<0.0002	0.00045
ZINC	NT	NT	0.0051 J

EW-5	6/20/06 (TOTAL)	6/20/06 (DISSOLVED)	4/30/07
VOCs, µg/L			
CIS-1,2,-DICHLOROETHENE	5.0	NT	NT
TETRACHLOROETHENE	160	NT	NT
METALS, mg/L			
BARIUM	0.0306	0.0280	<0.020
COPPER	NT	NT	0.0021 J
ZINC	NT	NT	0.0056 J

TW-25	12/04
VOCs, µg/L	BDL
METALS, mg/L	
BARIUM	0.557
CHROMIUM	0.0465
LEAD	0.26
MERCURY	0.00021

TW-23	12/04
VOCs, µg/L	
BENZENE	140
ETHYLBENZENE	17
MTBE	280
XYLENES	113
METALS, mg/L	
BARIUM	0.038

B-2	5/04
VOCs, µg/L	
BENZENE	630
n-BUTYLBENZENE	2.5
CHLOROFORM	4.0
ETHYLBENZENE	44
DIISOPROPYL ETHER	38
ISOPROPYL BENZENE	16
MTBE	330
n-PROPYLBENZENE	17
TOLUENE	7.1
1,2,4-TRIMETHYLBENZENE	84
1,3,5-TRIMETHYLBENZENE	110
XYLENES	490
METALS, mg/L	NT
PAHs, µg/L	
NAPHTHALENE	21

TW-26	12/04
VOCs, µg/L	
BENZENE	110
ETHYLBENZENE	9.7
MTBE	150
XYLENES	72
METALS, mg/L	
BARIUM	0.0543
LEAD	0.010

TW-40	9/05
VOCs, µg/L	
BENZENE	960
CYCLOHEXANE	36
ETHYLBENZENE	190
ISOPROPYL BENZENE	13
XYLENES	830
MTBE	390
METHYLCYCLOHEXANE	23
TOLUENE	720

LEGEND	
µg/L	MICROGRAMS PER LITER
mg/L	MILLIGRAMS PER LITER
BDL	BELOW DETECTION LIMIT
VOCs	VOLATILE ORGANIC COMPOUNDS
PAHs	POLYNUCLEAR AROMATIC HYDROCARBONS
J	ESTIMATED VALUE
	GEOPROBE BORING/WELL BY CONTOUR
	FORMER 2 INCH MONITORING WELL BY CONTOUR OR MACTEC
	EXISTING 2 INCH MONITORING WELL BY MACTEC
	DELINEATION OF MERCURY IN GROUNDWATER TO BACKGROUND

SCALE IN FEET

0 80 160

DELINEATION OF MERCURY IN GROUNDWATER

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Figure 14D
Approv.
Drawn RBT
Scale 1"=100'
Date JUNE 2007
Task 01
Job Number 6305-05-0303

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

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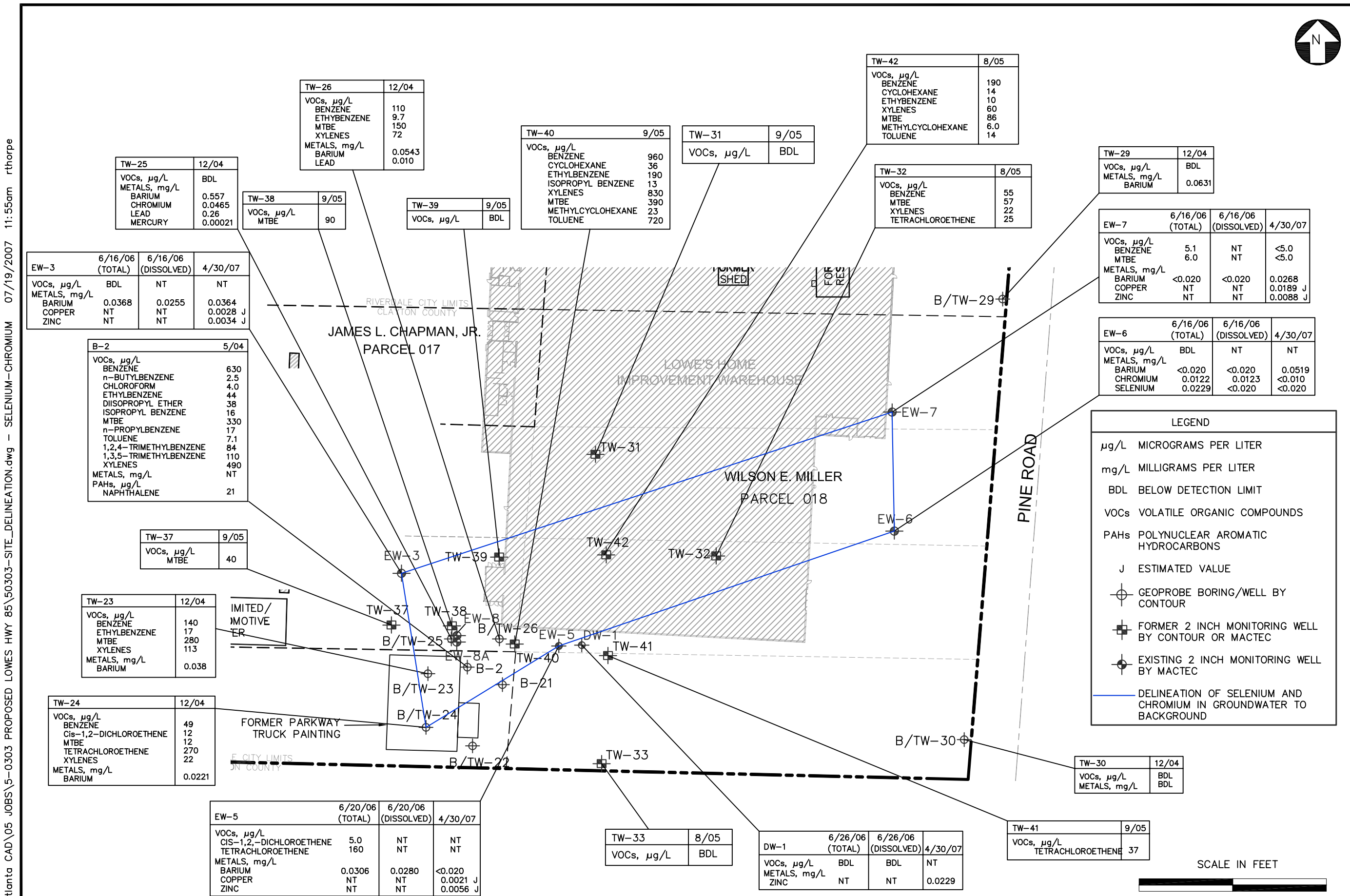

DELINEATION OF CHROMIUM AND SELENIUM IN GROUNDWATER

HSI SITE No. 10808
GEORGIA HIGHWAY 85
RIVERDALE, GEORGIA

Figure 14E
Approv.
Drawn RBT
Scale 1"=100'
Date JUNE 2007
Task 01
Job Number 6305-05-0303

MACTEC
Mactec Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324 (404)873-4761

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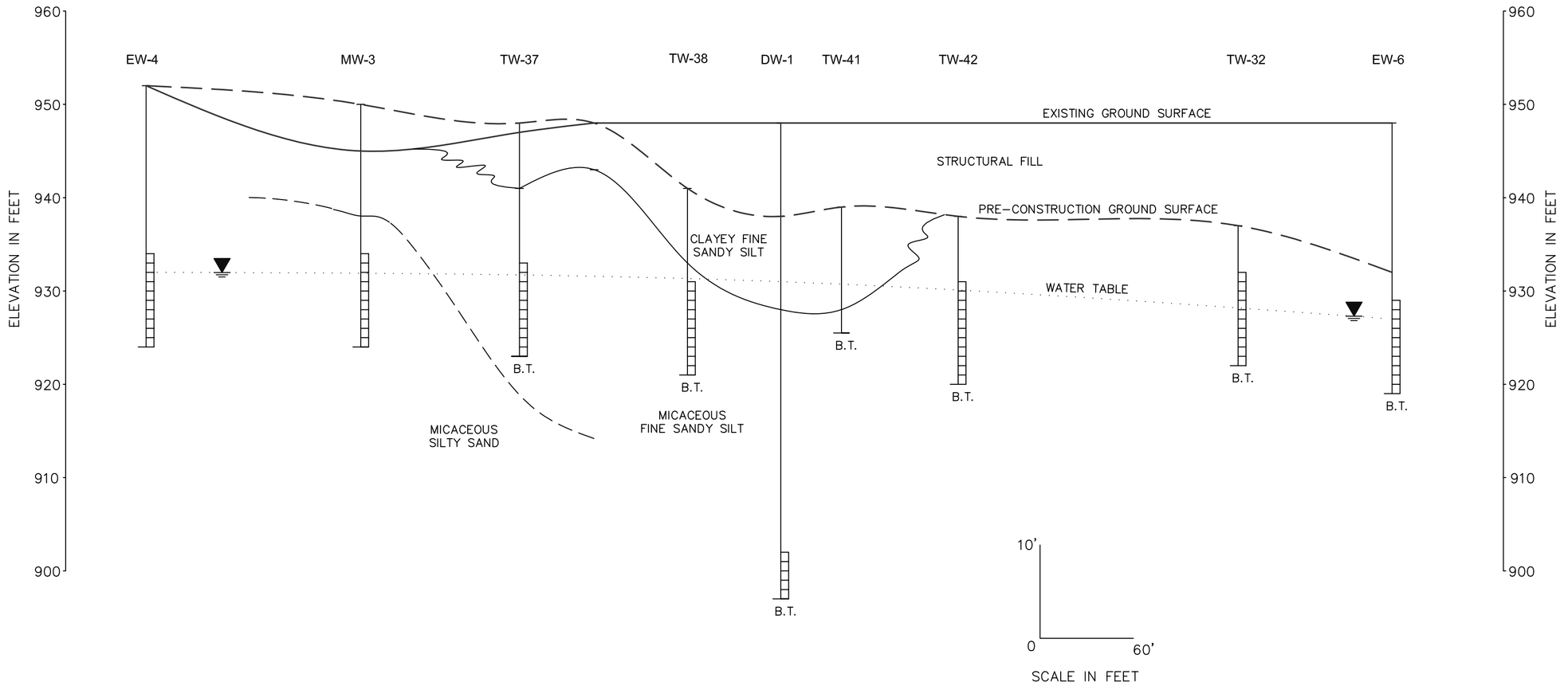

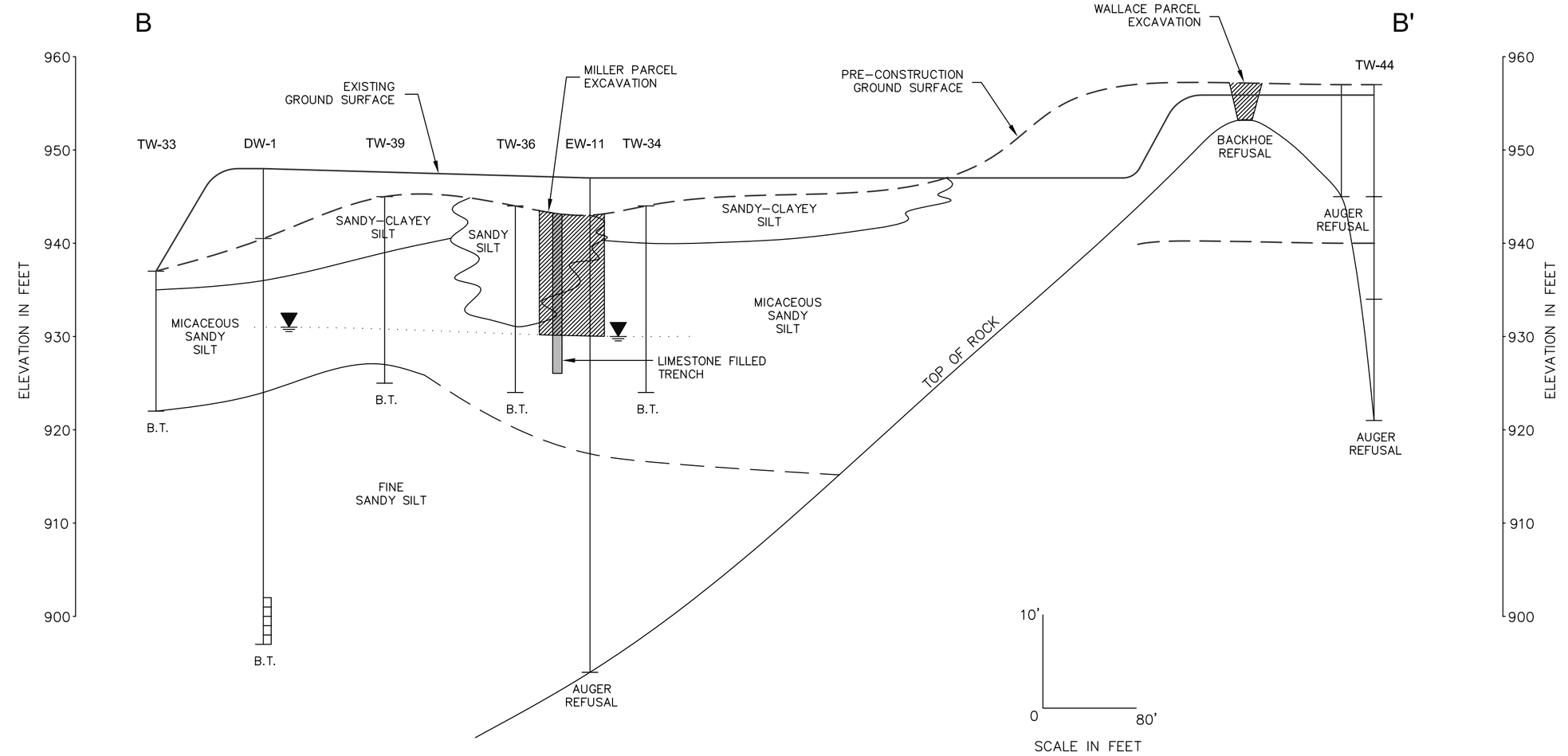

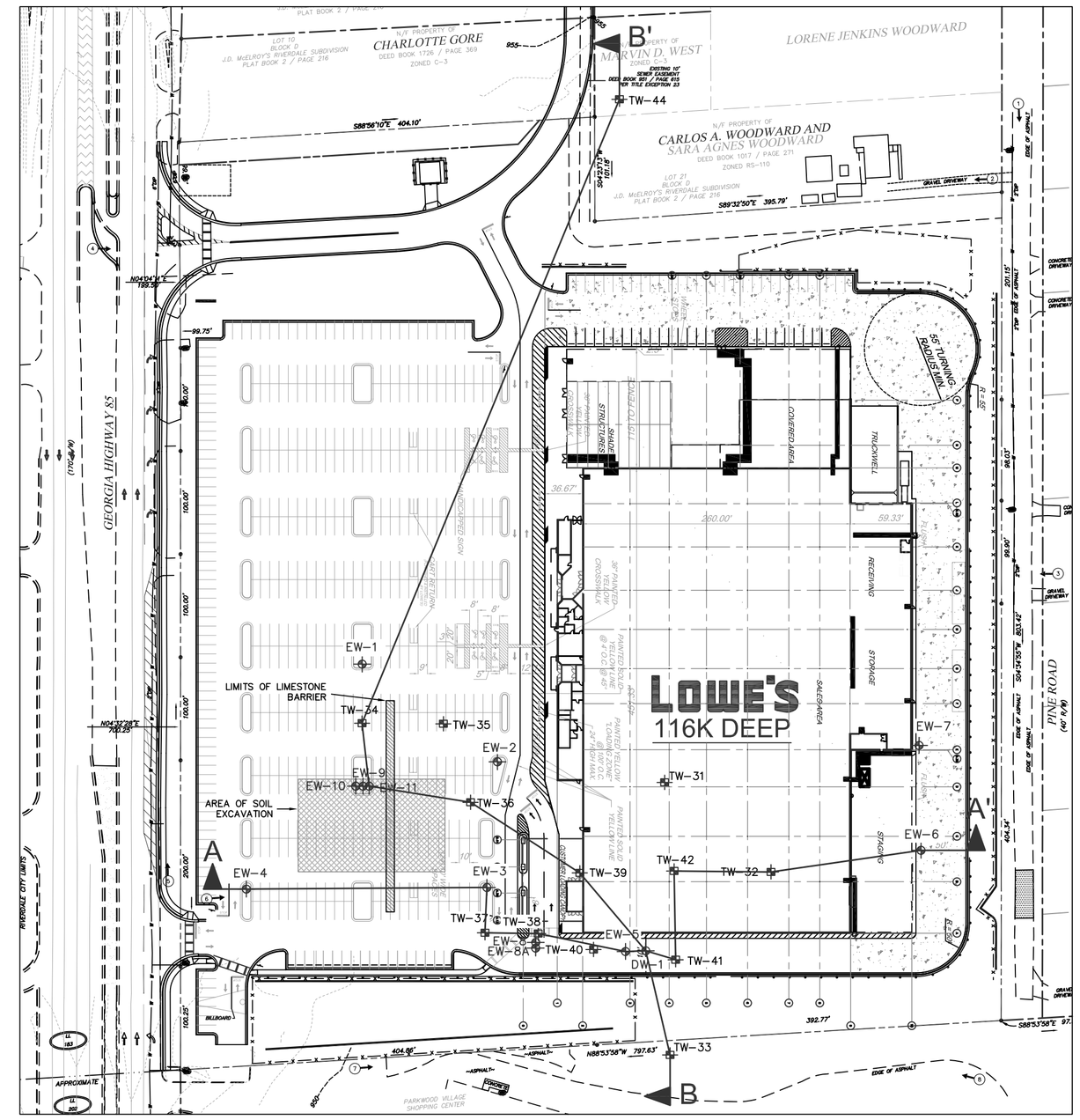

PLAN
SCALE: 1"=100'-0"

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED
DRAWN RBT
CHECKED
IN CHARGE
DATE MAY 2007

HSI SITE No. 10808
GEORGIA HIGHWAY 85, RIVERDALE, GEORGIA

MACTEC Engineering and Consulting, Inc.
396 PLASTERS AVENUE, N.E.
ATLANTA, GEORGIA 30324
(404) 873-4761

CROSS SECTIONS
A-A' AND B-B'

SCALE: AS SHOWN
CONTRACT: 6305-05-0303
DWG. NO.: 15
REV: 0
PAGE NO: N/A

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APPENDIX C

SUMMARY OF LABORATORY DATA

TABLE 1 - PARCEL 001 – SOIL TESTING RESULTS

Boring No.	B-29*	HSRA Notification Concentrations	Risk Reduction Standards	
Depth	9-15 Ft.			
Collection Method	Geoprobe			
Sample Date	12/04		Type 1	Type 2
VOCs, ug/kg	BDL	NA	NA	NA
Metals, mg/kg				
Barium	15.5	500	1,000	910
Chromium	10.5	1,200	100	38
Lead	<4.09	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
BDL - Below detection limits
NA - Not applicable
* - Data from boring used in calculation of background metals concentrations

TABLE 1A - PARCEL 001 – GROUNDWATER TESTING RESULTS

Well No.	TW-29
Well Type	Temp. 1" dia.
Well Depth, Ft.	18.22
Screened Interval, Ft.	13-18
Depth to water, 1/05, Ft.	6.13
Sample Date	12/04
VOCs, ug/l	BDL
Metals, mg/l	
Barium	0.0631

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
BDL - Below detection limits

TABLE 2 - PARCEL 002 – SOIL TESTING RESULTS

Boring No.	B-28*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	9-15 Ft.			
Collection Method	Geoprobe			
Sample Date	12/04		Type 1	Type 2
VOCs, ug/kg	BDL	NA	NA	NA
Metals, mg/kg				
Barium	116	500	1,000	910
Chromium	<2.18	1,200	100	38
Lead	6.48	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
BDL - Below detection limits
* - Data from boring used in calculation of background metals concentrations

TABLE 2A - PARCEL 002 – GROUNDWATER TESTING RESULTS

Well No.	TW-28
Well Type	Temp. 1" dia.
Well Depth, Ft.	17.21
Screened Interval, Ft.	15-17
Depth to water, 1/05, Ft.	13.22
Sample Date	12/04
VOCs, ug/l	BDL
Metals, mg/l	BDL

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
BDL - Below detection limits

TABLE 3 - PARCEL 013 – SOIL TESTING RESULTS

Boring No.	B-1	B-2*	B-3*	B-4*	B-4*	B-5	B-6*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	0-8 Ft.	0-8 Ft.	0-8 Ft.	0-8 Ft.	9-15 Ft.	0-8 Ft.	0-8 Ft.			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	12/04	12/04	12/04	12/04	12/04	12/04	12/04		Type 1	Type 2
PAHs, ug/kg	NT	NT	BDL	BDL	BDL	BDL	BDL			
VOCs, ug/kg	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA	NA
Metals, mg/kg										
Barium	126	81	84.8	31.3	65.2	53.6	31	500	1,000	910
Chromium	113	4.39	8.26	19.6	46.1	19.6	5.54	1,200	100	38
Lead	11.6	10.9	10.7	9.45	41.4	14.6	12	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
HSRA - Hazardous Site Response Act
BDL - Below Detection Limits
NA - Not Applicable
* - Data from boring used in calculation of background metals concentrations

TABLE 3 - PARCEL 013 – SOIL TESTING RESULTS (CONTINUED)

Boring No.	B-7*	B-8*	B-9	B-10*	B-10*	B-11*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	0-8 Ft.	0-8 Ft.	0-8 Ft.	0-8 Ft.	9-15 Ft.	0-8 Ft.			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	12/04	12/04	12/04	12/04	12/04	12/04		Type 1	Type 2
PAHs, ug/kg	BDL	BDL	NT	NT	NT	NT			
VOCs, ug/kg	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA	NA
Metals, mg/kg									
Barium	37.1	72.2	56.1	125	55.8	55.3	500	1,000	910
Chromium	15.3	4.68	9.59	2.61	<2.14	14.6	1,200	100	38
Lead	11.4	16.3	428	8.59	<4.29	11.9	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
HSRA - Hazardous Site Response Act
* - Data from boring used in calculation of background metals concentrations

TABLE 3 - PARCEL 013 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	3-1C	3-3C		3-4A	3-4B		3-4E	3-4F	HSRA Notification Concentration	Risk Reduction Standards	
Depth	21-24"	12-15"	21-24"	12-15"	3-6"	12-15"	3-6"	12-15"			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
VOCs, ug/kg											
MTBE	<4.6	NT	9.2	NT	NT	NT	NT	NT	NA	NA	NA
Metals, mg/kg											
Arsenic	NT	NT	NT	NT	NT	5.92	<4.16	NT	41	20	5.8
Barium	NT	NT	NT	NT	NT	59.2	37.0	NT	500	1,000	910
Cadmium	NT	NT	NT	NT	NT	3.07	<2.08	NT	39	2.0	12.0
Chromium	NT	NT	NT	NT	NT	14.0	13.4	NT	1,200	100	38
Lead	NT	13.5	NT	9.19	66.3	12.4	7.9	11.1	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
NT - Not tested
HSRA - Hazardous Site Response Act

TABLE 3 - PARCEL 013 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	3-5B	3-5D		3-5E	3-6E	3-6F		HSRA Notification Concentration	Risk Reduction Standards	
Depth	21-24"	3-6"	21-24"	3-6"	3-6"	3-6"	21-24"			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
VOCs, ug/kg										
MTBE	6,200	NT	NT	NT	NT	NT	NT	NA	NA	NA
Metals, mg/kg										
Barium	NT	NT	185	NT	NT	83.0	78.9	500	1,000	910
Chromium	NT	NT	52.6	NT	NT	15.7	8.97	1,200	100	38
Lead	NT	22.6	10.9	123	72.7	227	12.1	400	75	270
Mercury	NT	NT	<0.0988	NT	NT	0.428	<0.0986	17	0.50	4.9
TCLP Metals, mg/l										
Chromium	NT	NT	NT	NT	NT	<0.05	NT	NA	NA	NA
Lead	NT	NT	NT	NT	NT	0.101	NT	NA	NA	NA

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
mg/l - milligrams per liter (parts per million)
NT - Not tested
HSRA - Hazardous Site Response Act

TABLE 3A - PARCEL 013 – GROUNDWATER TESTING RESULTS

Well No.	TW-11	
Well Type	Temp. 2" dia.	
Well Depth, Ft.	40.33	
Screened Interval, Ft.	35-40	
Depth to water, 1/05, Ft.	37.75	
Sample Date	1/05*	6/05
VOCs, ug/l		
Acetone	24	NT
Metals, mg/l		
Barium	0.136	0.0570 (T) 0.0566 (D)
Mercury	BDL	0.00062(T) 0.00032(D)
Lead	0.0543	<0.010 (T) <0.010 (D)

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested
T - Total metals
D - Dissolved metals
* - Reported in Contour Draft CAP, laboratory report not available

TABLE 4 – GORE PARCEL EXCHANGE AREA – SOIL TESTING RESULTS

Boring No.	B-43*	TW-44*	B-45*	HA-1		B-56	HSRA Notification Concentration	Risk Reduction Standards	
Depth	3-5 Ft.	3-5 Ft.	3-5 Ft.	6"	12"	12"			
Collection Method	Split Spoon	Split Spoon	Split Spoon	Hand Auger	Hand Auger	Hand Auger			
Sample Date	9/05	9/05	9/05	1/06	1/06	6/06		Type 1	Type 2
VOCs, ug/kg	BDL	BDL	BDL	BDL	NT	NT	NA	NA	NA
Metals, mg/kg									
Barium	98.2	16.6	8.45	145	130	NT	500	1,000	910
Chromium	3.42	13.0	21.5	20.5	15.7	NT	1,200	100	38
Lead	9.28	9.87	7.08	103	12.8	13.9	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
BDL - Below detection limit
HSRA - Hazardous Site Response Act
* - Data from boring used in calculation of background metals concentrations

TABLE 4A – GORE PARCEL EXCHANGE AREA – GROUNDWATER TESTING RESULTS

Well No.	TW-44
Well Type	Temp. 2" dia.
Well Depth, Ft.	34.5
Screened Interval, Ft.	24.5-34.5
Depth to water, 9/05, Ft.	31.0
Sample Date	9/05
VOCs, ug/l	BDL

ug/l - micrograms per liter (parts per billion)
BDL - Below detection limit

TABLE 5 - PARCEL 015 – SOIL TESTING RESULTS

Boring No.	B-27*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	9-15 Ft.			
Collection Method	Geoprobe			
Sample Date	12/04		Type 1	Type 2
VOCs, ug/kg	BDL	NA	NA	NA
Metals, mg/kg				
Barium	138	500	1,000	910
Chromium	60.4	1,200	100	38
Lead	10.2	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
BDL - Below detection limit
HSRA - Hazardous Site Response Act
* - Data from boring used in calculation of background metals concentrations

TABLE 5A - PARCEL 015 – GROUNDWATER TESTING RESULTS

Well No.	TW-27
Well Type	Temp. 1" dia.
Well Depth, Ft.	25.01
Screened Interval, Ft.	20-25
Depth to water, 1/05, Ft.	17.74
Sample Date	12/04
VOCs, ug/l	BDL
Metals, mg/l	
Barium	0.112

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
BDL - Below detection limit

TABLE 6 - PARCEL 015A – SOIL TESTING RESULTS

Boring No.	B-12*	B-13*	B-14*	B-14*	B-15*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	0-8 Ft.	0-8 Ft.	0-8 Ft.	9-15 Ft.	9-15 Ft.			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	12/04	12/04	12/04	12/04	12/04		Type 1	Type 2
PAHs, ug/kg	NT	NT	NT	NT	NT	NA	NA	NA
VOCs, ug/kg	BDL	BDL	NT	NT	BDL	NA	NA	NA
Metals, mg/kg								
Barium	121	67.7	12.7	71.4	25.7	500	1,000	910
Chromium	4.16	2.43	18.4	<1.72	<2.14	1,200	100	38
Lead	7.90	<4.61	8.14	6.84	13.9	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
HSRA - Hazardous Site Response Act
BDL - Below Detection Limits
NA - Not Applicable
* - Data from boring used in calculation of background metals concentrations

TABLE 6A - PARCEL 015A – GROUNDWATER TESTING RESULTS

Well No.	B-1	TW-13
Well Type	Geoprobe Boring	Temp. 1" dia.
Well Depth, Ft.	30	39.99
Screened Interval, Ft.	None	35-40
Depth to water, 1/05, Ft.	Not measured	29.61
Sample Date	5/04	12/04
VOCs, ug/l		
Acetone	<10	27
PAHs, ug/l	BDL	NT

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested
BDL - Below Detection Limits

TABLE 7 - PARCEL 017 – GROUNDWATER TESTING RESULTS

Well No.	TW-34	TW-35
Well Type	2" dia.	2" dia.
Well Depth, Ft.	18	18
Screened Interval, Ft.	8-18	8-18
Sample Date	9/05	9/05
VOCs, ug/l		
Acetone	BDL	BDL
Metals, mg/l		
Barium	<0.020 (T) <0.020 (D)	0.139 (T) 0.127 (D)

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS

Boring No.	MW-1/B-5	MW-2/B-4	B-16*	B-17*	B-17*	B-18*	B-18*	B-19*	B-19*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	10-12 Ft.	10-12 Ft.	0-8 Ft.	0-8 Ft.	9-15 Ft.	0-8 Ft.	9-15 Ft.	0-8 Ft.	9-15 Ft.			
Collection Method	Split Spoon	Split Spoon	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	6/04	6/04	12/04	12/04	12/04	12/04	12/04	12/04	12/04		Type 1	Type 2
VOCs, ug/kg												
Cis-1,2-DCE	NT	NT	<4.4	<160	<3.3	<3.3	<3.6	4.5	<3.3	530	530	3,000
MTBE	NT	NT	<4.4	<160	<3.3	39	<3.6	<3.5	<3.3	NA	NA	NA
Tetrachloroethene	NT	NT	4.5	<160	<3.3	<3.3	<3.6	<3.5	<3.3	180	500	340
Metals, mg/kg												
Barium	NT	NT	42.1	<3.67	5.97	<4.59	4.45	<3.57	38.4	500	1,000	910
Chromium	8.9	2.6	9.59	5.94	<2.18	6.06	<2.22	13	12.2	1,200	100	38
Copper	22.0	9.8	NT	NT	NT	NT	NT	NT	NT	1,500	100	3,100
Lead	23.0	9.1	18.3	<3.67	<4.36	10.9	10.5	5.56	5.19	400	75	270
Nickel	1.4	<0.62	NT	NT	NT	NT	NT	NT	NT	420	50	400
Zinc	6.1	3.4	NT	NT	NT	NT	NT	NT	NT	2,800	100	5,800

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
NT - Not tested
HSRA - Hazardous Site Response Act
* - Data from boring used in calculation of background metals concentrations

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS (CONTINUED)

Boring No.	B-20*	B-20*	B-25*	B-25*	B-26*	B-26*	B-30*	HSRA Notification Concentration	Risk Reduction Standards	
Depth	0-8 Ft.	9-15 Ft.	0-8 Ft.	9-15 Ft.	0-8 Ft.	9-15 Ft.	9-15 Ft.			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	12/04	12/04	12/04	12/04	12/04	12/04	12/04		Type 1	Type 2
VOCs, ug/kg										
Cis-1,2-DCE	<3.3	<3.5	<3.1	<3.2	<3.7	<7.8	<3.5	530	530	3,000
MTBE	<3.3	<3.5	<3.1	<3.2	<3.7	<7.8	<3.5	NA	NA	NA
Tetrachloroethene	<3.3	<3.5	<3.1	<3.2	<3.7	<7.8	<3.5	180	500	340
Metals, mg/kg										
Barium	<3.85	5.9	11.1	36.1	42.5	32.9	21.8	500	1,000	910
Chromium	3.77	4.72	26.4	3.05	6.17	7.83	30	1,200	100	38
Copper	NT	NT	NT	NT	NT	NT	NT	1,500	100	3,100
Lead	9.01	<4.08	15.5	8.08	10.1	18.1	6.19	400	75	270
Nickel	NT	NT	NT	NT	NT	NT	NT	420	50	400
Zinc	NT	NT	NT	NT	NT	NT	NT	2,800	100	5,800

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
NT - Not tested
HSRA - Hazardous Site Response Act
* - Data from boring used in calculation of background metals concentrations

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	2-1A	2-1B	2-1C	2-2B	2-3A	2-3C			2-3E		2-AA3	2-AA4	2-4B	HSRA Notification Concentration	Risk Reduction Standards	
Depth	3-6"	3-6"	3-6"	21-24"	3-6"	12-15"	5'	10'	3-6"	12-15"	3-6"	3-6"	3-6"			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
Metals, mg/kg																
Arsenic	NT	NT	NT	<4.76	NT	<4.67	NT	NT	NT	<4.65	NT	NT	NT	41	20	5.8
Cadmium	NT	NT	NT	<2.38	NT	<2.33	NT	NT	NT	<2.30	NT	NT	NT	39	1,000	910
Barium	NT	NT	NT	40.2	NT	40.8	NT	NT	NT	NT	NT	NT	NT	500	1,000	910
Chromium	NT	NT	NT	7.23	NT	14.0	NT	NT	NT	NT	NT	NT	NT	1,200	100	38
Lead	16.5	65.5	3,040	14.3	6,890	3,840	7.17	<3.52	147	NT	85.3	23.9	51.3	400	75	270
TCLP Metals, mg/l																
Lead	NT	NT	NT	NT	NT	180	NT	NT	NT		NT	NT	NT	NA	NA	NA

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
mg/l - milligrams per liter (parts per million)

NT - Not tested
HSRA - Hazardous Site Response Act

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	2-4C	2-4D				2-4F	2-5A	2-5B	2-5C	2-5E	2-5F	HSRA Notification Concentration	Risk Reduction Standards	
Depth	3-6"	12-15"	21-24"	5'	10'	3-6"	3-6"	3-6"	3-6"	3-6"	3-6"			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
Metals, mg/kg														
Arsenic	NT	23.8	5.71	4.16	NT	NT	NT	NT	NT	NT	NT	41	20	5.8
Barium	NT	70.8	10.7	NT	NT	NT	NT	NT	NT	NT	NT	500	1,000	910
Cadmium	NT	3.12	<2.38	NT	NT	NT	NT	NT	NT	NT	NT	39	2	12
Chromium	NT	18.0	13.1	NT	NT	NT	NT	NT	NT	NT	NT	1,200	100	38
Lead	103	61,300	149	5.70	6.91	207	218	16.2	619	189	160	400	75	270
Mercury	NT	0.109	<0.0982	NT	NT	NT	NT	NT	NT	NT	NT	17	0.50	4.9
TCLP Metals, mg/l														
Lead	NT	289	1.24	NT	NT	NT	NT	NT	NT	NT	NT	NA	NA	NA

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
NT - Not tested
HSRA - Hazardous Site Response Act

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	2-6A	2-6B	2-6C			2-6D	2-6E	2-7A/2-A7	2-7B	2-7C	2-AA3	HSRA Notification Concentration	Risk Reduction Standards	
Depth	3-6"	3-6"	3-6"	5'	10'	3-6"	21-24	3-6"	3-6"	3-6"	3-6"			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
Metals, mg/kg														
Arsenic	NT	NT	<4.67	NT	NT	NT	<3.69	NT	NT	NT	NT	41	20	5.8
Barium	NT	NT	16.2	NT	NT	NT	NT	NT	NT	NT	NT	500	1,000	910
Cadmium	NT	NT	<2.33	NT	NT	NT	<1.85	NT	NT	NT	NT	39	2	12
Chromium	NT	NT	27.0	NT	NT	NT	NT	NT	NT	NT	NT	1,200	100	38
Lead	385	242	1,230	9.68	10.4	202	NT	378	32.0	26.6	85.3	400	75	270
TCLP Metals, mg/l														
Lead	4.62	NT	87.4	NT	NT	NT	NT	5.89	NT	NT	NT	NA	NA	NA

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
mg/l - milligrams per liter (parts per million)

NT - Not tested
HSRA - Hazardous Site Response Act

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	A2-11	A2-12	A2-13	A2-4D				
Depth	1.5'	1.5'	1.5'	3.5'	5.5'	7.5'	9.5'	11.5'
Collection Method	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger
Sample Date	3/06	3/06	3/06	3/06	3/06	3/06	3/06	3/06
pH	4.33	4.51	3.49	3.77	3.94	4.06	4.04	3.78

TABLE 8 - PARCEL 018 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	B-46	B-48	B-49	B-50	Duplicate (B-50)	B-52	B-53	B-54	B-55	B-57	B-58	B-59	HSRA Notification Concentration	Risk Reduction Standards	
Depth	1'	1'	1'	1'	1'	1'	1'	3'	1'	1'	1'	2'			
Collection Method	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Split Spoon	Hand Auger			
Sample Date	6/06	6/06	6/06	6/06	6/06	6/06	6/06	6/06	6/06	6/06	6/06	3/07		Type 1	Type 2
Metals, mg/kg															
Lead	14.6	22.2	8.93	5.47	6.23	17.3	13.5	NT	NT	20.6	15.2	NT	400	75	270
VOCs, ug/kg															
Acetone	NT	NT	NT	NT	NT	NT	NT	170	140	NT	NT	NT	2740	400	60
Tetrachloroethene	NT	NT	NT	NT	NT	NT	NT	<0.003	<0.0044	NT	NT	<0.005	180	0.50	0.34

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)

NT - Not tested
HSRA - Hazardous Site Response Act

TABLE 8A - PARCEL 018 – GROUNDWATER TESTING RESULTS

Well No.	B-5	MW-1						B-4	MW-2					
Well Type	Temp. 1"	Permanent 2" dia.						Temp. 1"	Permanent 2" dia.					
Well Depth, Ft.	20	24.98						20	25.14					
Screened Interval	Unknown	14.9-24.9						Unknown	15-25					
Depth to water, 1/05, Ft.	Not measured	13.01						Not measured	13.21					
Sample Date	5/04	6/04	7/04	7/04 (dup)	12/04	2/05	6/05	5/04	6/04	7/04	7/04 (dup)	12/04	2/05	6/05
VOCs, ug/l	BDL	NT	NT	NT	BDL	NT	NT	BDL	NT	NT	NT	BDL	NT	NT
PAHs, ug/l	BDL	NT	NT	NT	NT	NT	NT	BDL	NT	NT	NT	NT	NT	NT
Metals, mg/l														
Arsenic	NT	<0.005	<0.005	<0.005	<0.050	NT	<0.050	NT	<0.005	0.0064	<0.005	<0.050	NT	<0.050 (T) <0.050 (D)
Barium	NT	NT	NT	NT	0.0353	NT	0.0401 (T) 0.0416 (D)	NT	NT	NT	NT	0.219	NT	0.238 (T) 0.229 (D)
Cadmium	NT	<0.001	0.010	0.010	0.0255	NT	0.0105 (T) 0.0112 (D)	NT	0.0038	0.0052	0.0055	0.0073	NT	0.00793 (T) 0.00708 (D)
Copper	NT	0.002	0.59	0.62	NT	NT	NT	NT	0.019	0.020	0.022	NT	NT	NT
Lead	1.0	<0.005	0.071	0.077	0.0685	0.0743 (T) 0.0706 (D)	0.0389 (T) 0.0431 (D)	4.1	0.77	0.60	0.62	0.363	0.136 (T) 0.135 (D)	0.103 (T) 0.105 (D)
Nickel	NT	<0.005	0.014	0.015	NT	NT	NT	NT	0.015	0.0072	0.0079	NT	NT	NT
Selenium	NT	<0.005	0.0051	<0.005	<0.020	NT	<0.02 (T) <0.02 (D)	NT	<0.005	<0.005	<0.005	<0.020	NT	<0.020 (T) <0.020 (D)
Zinc	NT	0.014	0.80	0.85	NT	NT	NT	NT	0.33	0.43	0.46	NT	NT	NT

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested

(T)- Total metals
(D)- Dissolved metals
BDL – Below Detection Limit

TABLE 8A - PARCEL 018 – GROUNDWATER TESTING RESULTS (CONTINUED)

Well No.	B-3	MW-3					TW-17	TW-20	TW-25	TW-26	TW-30
Well Type	Temp. 1"	Permanent 2"					Temp. 1"	Temp. 1"	Temp. 1"	Temp. 1"	Temp. 1"
Well Depth, Ft.	24	25.14					23.28	27.00	14.20	12.21	15.10
Screened Interval	Unknown	15-25					18-23	22-27	9-14	7-12	10-15
Depth to water, 1/05, Ft.	Not measured	17.49					13.61	13.44	13.20	10.30	3.00
Sample Date	5/04	6/04	7/04	7/04 (dup)	12/04	6/05	12/04	12/04	12/04	12/04	12/04
VOCs, ug/l											
Benzene	<1.0	NT	NT	NT	<5.0	NT	<5.0	<5.0	<5.0	110	<5.0
Chloroform	<1.0	NT	NT	NT	<5.0	NT	<5.0	6.3	<5.0	<5.0	<5.0
Ethylbenzene	<1.0	NT	NT	NT	<5.0	NT	<5.0	<5.0	<5.0	9.7	<5.0
MTBE	<1.0	NT	NT	NT	<5.0	NT	<5.0	<5.0	<5.0	150	<5.0
Xylenes	<1.0	NT	NT	NT	<10	NT	<10	<10	<10	72	<10
PAHs, ug/l	BDL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Metals, mg/l											
Barium	NT	NT	NT	NT	0.065	0.0352 (T) 0.0347 (D)	0.0764	0.0237	0.557	0.0543	<0.020
Cadmium	NT	0.0096	<0.001	<0.001	<0.005	<0.005 (T) <0.005 (D)	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	NT	<0.002	<0.002	<0.002	<0.010	<0.010 (T) <0.010 (D)	<0.010	<0.010	0.0465	0.010	<0.010
Copper	NT	0.67	0.0047	0.0049	NT	NT	NT	NT	NT	NT	NT
Lead	NT	0.25	0.0066	0.0063	<0.010	<0.010 (T) <0.010 (D)	<0.010	<0.010	0.260	<0.010	<0.010
Mercury	NT	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002 (T) <0.0002 (D)	<0.0002	<0.0002	0.00021	<0.0002	<0.0002
Nickel	NT	0.017	<0.005	<0.005	NT	NT	NT	NT	NT	NT	NT
Selenium	NT	<0.005	0.0055	<0.005	<0.020	<0.020 (T) <0.020 (D)	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc	NT	0.97	<0.010	<0.010	NT	NT	NT	NT	NT	NT	NT

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
(T) - Total metals
(D) - Dissolved metals
NT - Not tested
BDL - Below Detection Limit

TABLE 8A - PARCEL 018 – GROUNDWATER TESTING RESULTS (CONTINUED)

Well No.	TW-31	TW-32	TW-33	TW-36	TW-37	TW-38	TW-39	TW-40	TW-41	TW-42
Well Type	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"	Temp. 2"
Well Depth, Ft.	17.5	15	15	20	25	20	20	20	13.5	17
Screened Interval	7.5–17.5	5-15	5-15	10-20	15-25	10-20	10-20	8-18	3.5-13.5	7-17
Sample Date	9/05	9/05	9/05	9/05	9/05	9/05	9/05	9/05	9/05	9/05
VOCs, ug/l										
Benzene	<5	55	<5	<5	<5	<5	<5	960	<5	190
Cyclohexane	<5	<5	<5	<5	<5	<5	<5	36	<5	14
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	190	<5	10
Isopropyl Benzene	<5	<5	<5	<5	<5	<5	<5	13	<5	<5
Methylcyclohexane	<5	<5	<5	<5	<5	<5	<5	23	<5	6.0
MTBE	<5	57	<5	<5	40	95	<5	390	<5	86
Tetrachloroethene	<5	25	<5	<5	<5	<5	<5	<5	37	<5
Toluene	<5	<5	<5	<5	<5	<5	<5	720	<5	14
Xylenes	<10	22	<10	<10	<10	<10	<10	830	<10	60
Metals, mg/l										
Barium	NT	NT	NT	0.0544 (T) 0.0496 (D)	NT	NT	NT	NT	NT	NT

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested

T - Total metals
D - Dissolved metals

TABLE 8A - PARCEL 018 – GROUNDWATER TESTING RESULTS

Sample No.	A2-4D	A2-4D	A2-4D-LS+
Well Type	Hand Auger Boring	Hand Auger Boring	Hand Auger Boring
Well Depth, Ft.	12	12	12
Screened Interval, Ft.	None	None	None
Sample Date	3/3/06	3/9/06	3/9/06
pH	3.96	NT	NT
Metals, mg/l			
Lead	1.19 (T) 1.07 (D)	1.75 (D)	0.0191 (D)

mg/l - milligrams per liter (parts per million)
NT - Not tested
+ - Sample tested after overnight exposure to limestone aggregate

TABLE 8A - PARCEL 018 – GROUNDWATER TESTING RESULTS (CONTINUED)

Well No.	EW-1		EW-2		EW-3		EW-4		EW-5		EW-6		DW-1	
Well Type	Permanent 2"		Permanent 2"		Permanent. 2"		Permanent 2"		Permanent 2"		Permanent. 2"		Permanent 2"	
Well Depth, Ft.	20		21		21		28		24		29		65	
Screened Interval	10 - 20		10 – 21		10 - 21		18 – 28		14 - 24		19 - 29		63 – 65	
Sample Date	6/06	4/07	6/06	4/07	6/06	4/07	6/06	4/07	6/06	4/07	6/06	4/07	6/06	4/07
VOCs, ug/l														
Benzene	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT
Chloroform	5.3	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT
MTBE	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT
Cis-1,2-Dichloroethene	<5	NT	<5	NT	<5	NT	<5	NT	5.0	NT	<5	NT	<5	NT
Tetrachloroethene	<5	NT	<5	NT	<5	NT	<5	NT	160	NT	<5	NT	<5	NT
Toluene	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT	<5	NT
Xylenes	<10	NT	<10	NT	<10	NT	<10	NT	<10	NT	<10	NT	<10	NT
Metals, mg/l														
Barium	0.0218 (T) <0.020 (D)	NS (DRY)	0.0569 (T) 0.0489 (D)	0.0299 (T)	0.0368 (T) 0.0255 (D)	0.0364 (T)	<0.020 (T) <0.020 (D)	0.0371 (T)	0.0306 (T) 0.0280 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	0.0519 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)
Chromium	<0.010 (T) <0.010 (D)	NS (DRY)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010(D)	<0.010 (T)	<0.010 (T) <0.010(D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	0.0122 (T) 0.0123 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)
Copper	NT	NS (DRY)	NT	0.0041 J (T)	NT	0.0028 J (T)	NT	0.0030 J (T)	NT	0.0021 J (T)	NT	<0.010 (T)	NT	<0.010 (T)
Lead	<0.010 (T) <0.010 (D)	NS (DRY)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)
Nickel	NT	NS (DRY)	NT	<0.020 (T)	NT	<0.020 (T)	NT	<0.020 (T)	NT	<0.020 (T)	NT	<0.020 (T)	NT	<0.020 (T)
Selenium	<0.020 (T) <0.020 (D)	NS (DRY)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	0.0229 (T) <0.0200 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)
Zinc	NT	NS (DRY)	NT	0.0272 (T)	NT	0.0034 J (T)	NT	0.0052 J (T)	NT	0.0056 J (T)	NT	<0.020 (T)	NT	0.0229 (T)

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested

T - Total metals
D - Dissolved metals
NS - Not sampled

J - Estimated value

TABLE 8A - PARCEL 018 – GROUNDWATER TESTING RESULTS (CONTINUED)

Well No.	EW-7		EW-8		EW-8A		EW-9		EW-10		EW-11		
Well Type	Permanent 2"		Permanent 2"		Permanent 2"		Permanent. 2"		Permanent 2"		Permanent 2"		
Well Depth, Ft.	27		22.5		20		23.5		20.5		53		
Screened Interval	17 - 27		20 – 22.5		10 – 20		21.5 – 23.5		10.5 – 20.5		51-53		
Sample Date	6/06	4/07	11/06	4/07	11/06	4/07	11/06	4/07	11/06	4/07	11/06	4/07	4/07 (DUP)
VOCs, ug/l													
Benzene	5.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Chloroform	<5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
MTBE	6.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cis-1,2-Dichloroethene	<5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tetrachloroethene	<5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Toluene	<5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Xylenes	<10	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Metals, mg/l													
Barium	<0.020 (T) <0.020 (D)	0.0268 (T)	0.0921 (T) 0.0707 (D)	<0.020 (T)	0.0234 (T) 0.0210 (D)	<0.020 (T)	0.299 (T) 0.235 (D)	0.178 (T)	0.300 (T) 0.213 (D)	0.271 (T)	0.0306 (T) 0.0280 (D)	0.0396 (T)	0.0386 (T)
Cadmium	<0.005 (T) <0.005 (D)	<0.005 (T)	<0.005 (T) <0.005 (D)	<0.005 (T)	<0.005 (T) <0.005 (D)	<0.005 (T)	0.0944 (T) 0.0834 (D)	0.0993 (T)	0.0154 (T) 0.0122 (D)	0.0054 (T)	<0.005 (T) <0.005 (D)	<0.005 (T)	<0.005 (T)
Chromium	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	0.0208 (T) 0.0109 (D)	0.0145 (T)	<0.010 (T) <0.010(D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T)
Copper	NT	0.0018 J (T)	NT	<0.010 (T)	NT	0.0027 J (T)	NT	1.41 (T)	NT	0.404 (T)	NT	0.0064 J (T)	0.0067 J (T)
Lead	<0.010 (T) <0.010 (D)	<0.020 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	0.494 (T) 0.426 (D)	0.481 (T)	0.204 (T) 0.150 (D)	0.289 (T)	<0.010 (T) <0.010 (D)	<0.010 (T)	<0.010 (T)
Mercury	<0.0002 (T) <0.0002 (D)	<0.0002 (T)	0.00047 (T) 0.00040 (D)	0.00026 (T)	0.00028 (T) <0.0002 (D)	0.00045 (T)	<0.0002 (T) <0.0002 (D)	<0.0002 (T)	<0.0002 (T) <0.0002 (D)	<0.0002 (T)	<0.0002 (T) <0.0002 (D)	<0.0002 (T)	<0.0002 (T)
Nickel	NT	<0.020 (T)	NT	<0.020 (T)	NT	<0.020 (T)	NT	0.135 (T)	NT	<0.020 (T)	NT	<0.020 (T)	<0.020 (T)
Selenium	<0.020 (T) <0.020 (D)	<0.010 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T) <0.020 (D)	<0.020 (T)	<0.020 (T)
Zinc	NT	0.0088 J (T)	NT	0.0060 J (T)	NT	0.0051 J (T)	NT	5.4 (T)	NT	3.19 (T)	NT	0.0108 J (T)	0.0149 J (T)

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested

T - Total metals
D - Dissolved metals
J - Estimated concentration

TABLE 9 - PARCEL 019 – SOIL TESTING RESULTS

Boring No.	B-21*	B-22*	B-22*	B-23*	B-23	B-24*	HSRA Notification Concentration	Risk Reduction Standards	
Depth, Ft.	9-15	0-8	9-15	0-8	9-15	0-8			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	12/4	12/4	12/4	12/4	12/4	12/04			
PAHs	BDL	BDL	BDL	NT	NT	NT		Type 1	Type 2
VOCs, ug/kg									
MTBE	<3.6	<3.2	<3.3	<3.2	8.5	<4.7	NA	NA	NA
Toluene	21	<3.2	<3.3	<3.2	<3.1	<4.7	14,400	100,000	77,000
Tetrachloroethene	<3.6	<3.2	73	<3.2	<3.1	<4.7	180	500	340
Metals, mg/kg									
Barium	108	25.7	109	8.96	25.2	21.4	500	1,000	910
Chromium	14.4	9.06	4.77	4.19	108	16.3	1,200	100	38
Lead	8.48	43.1	34.8	22.8	9.29	8.66	400	75	270

ug/kg - micrograms per kilogram (parts per billion)
mg/kg - milligrams per kilogram (parts per million)
NT - Not tested
* - Data from boring used in calculation of background metals concentrations

TABLE 9 - PARCEL 019 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	1-1A	1-0.5B	1-1B		1-2B	1-3B/1-B3			1-1C	1-4C	HSRA Notification Concentration	Risk Reduction Standards	
Depth	12-15"	21-24"	3-6"	21-24"	21-24"	3-6"	5'	10'	12-15"	21-24"			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
Metals, mg/kg													
Barium	NT	NT	234	NT	NT	232	NT	NT	NT	247	500	1,000	910
Cadmium	<2.43	<1.64	5.54	<1.70	NT	<2.45	NT	NT	<1.96	<2.46	39	2	12
Chromium	NT	NT	23.1	NT	NT	944	14.1	3.63	NT	762	1,200	100	38
Lead	35.4	11.3	79.1	10.6	8.09	63.1	NT	NT	13.2	68.2	400	75	270
TCLP Metals, mg/l													
Chromium	NT	NT	NT	NT	NT	<0.05	NT	NT	NT	<0.05	NA	NA	NA

mg/kg - milligrams per kilogram (parts per million) HSRA - Hazardous Site Response Act
NT - Not tested

TABLE 9 - PARCEL 019 – SOIL TESTING RESULTS (CONTINUED)

Sample No.	1-4C		1-4D			1-4E		1-5A	1-6D			HSRA Notification Concentration	Risk Reduction Standards	
Depth	5'	10'	21-24"	5'	10'	5'	10'	12-15"	12-15"	5'	10'			
Collection Method	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe	Geoprobe			
Sample Date	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06	1/06		Type 1	Type 2
Metals, mg/kg														
Barium	NT	NT	69.4	NT	NT	NT	NT	NT	25.5	NT	NT	500	1,000	910
Chromium	11.6	12.0	230	14.2	5.74	20.5	16.1	NT	41.7	73.5	11.0	1,200	100	38
Lead	4.18	NT	21.6	NT	NT	NT	NT	19.6	12.1	NT	NT	400	75	270

mg/kg - milligrams per kilogram (parts per million) HSRA - Hazardous Site Response Act
NT - Not tested

TABLE 9A - PARCEL 019 – GROUNDWATER TESTING RESULTS

Well No.	B-2	TW-23	TW-24
Well Type	Geoprobe Boring	Temp. 1" dia.	Temp. 1" dia.
Well Depth, Ft.	24	20.05	20.60
Screened Interval, Ft.	None	15-20	15-20
Depth to water, 1/05, Ft.	Not measured	16.59	16.42
Sample Date	5/04	12/04	12/04
VOCs, ug/l			
Benzene	630	140	49
n-Butylbenzene	2.5	NT	NT
Chloroform	4.0	<5.0	<5.0
Cis-1,2-dichloroethene	<1.0	<5.0	12
Ethylbenzene	44	17	<5.0
Diisopropyl ether	38	NT	NT
Isopropyl benzene	16	NT	NT
MTBE	330	280	12
n-Propylbenzene	17	NT	NT
Tetrachloroethene	<1.0	<5.0	270
Toluene	7.1	<5.0	<5.0
1,2,4-Trimethylbenzene	84	NT	NT
1,3,5-Trimethylbenzene	110	NT	NT
Xylenes	490	113	22
PAHs, ug/l			
Naphthalene	21	NT	NT
Metals, mg/l			
Barium	NT	0.038	0.0221

ug/l - micrograms per liter (parts per billion)
mg/l - milligrams per liter (parts per million)
NT - Not tested

APPENDIX D

BORING LOGS

CONTOUR ENGINEERING, LLC

BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER E04HUL:03
PROJECT NAME Proposed Lowe's Home Improvement
LOCATION Riverdale, Georgia
DRILLING METHOD Hollow-Stem Auger
SAMPLING METHOD Split-spoon sampler
GROUND ELEVATION 945.66
TOP OF CASING 945.66
LOGGED BY Steve Yekich
REMARKS

BORING/WELL NUMBER MW-1
DATE DRILLED
CASING TYPE/DIAMETER PVC
SCREEN TYPE/SLOT Slotted
GROUT TYPE
DEPTH TO WATER 13.01
GROUND WATER ELEVATION 932.65

PID (ppm)	BLOW COUNTS	RECOVERY (ft)	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
								Asphalt ~ 4 inches	0.5	
								Brown and red sandy SILT (ML), with mica	3.0	
					5			Brown red and white sandy SILT (ML), with mica and some rock fragments		Bentonite Seal
					10			Gray and red silty SAND (SM), with mica	10.0	
					15					Slotted Screen with sand packing
					20					
								Bottom of boring at 24.98 feet.	26.0	

ENVIRONMENTAL BORING/WELL LOG LOGS.GPJ CONTOUR.GDT 2/24/05

CONTOUR ENGINEERING, LLC

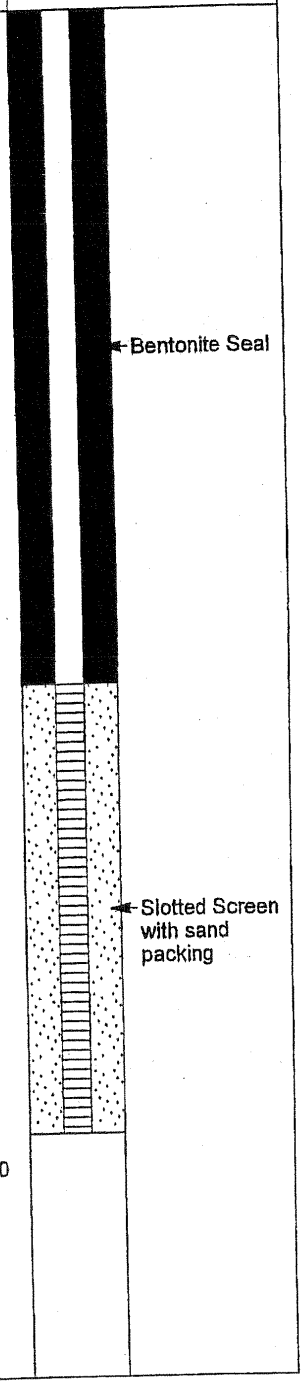
BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER E04HUL:03
PROJECT NAME Proposed Lowe's Home Improvement
LOCATION Riverdale, Georgia
DRILLING METHOD Hollow-Stem Auger
SAMPLING METHOD Split-spoon sampler
GROUND ELEVATION 944.64
TOP OF CASING 944.64
LOGGED BY Steve Yekich
REMARKS

BORING/WELL NUMBER MW-2
DATE DRILLED
CASING TYPE/DIAMETER PVC
SCREEN TYPE/SLOT Slotted
GROUT TYPE
DEPTH TO WATER 13.21
GROUND WATER ELEVATION 931.43

PID (ppm)	BLOW COUNTS	RECOVERY (ft)	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
								Asphalt ~ 4 inches	0.5
								Brown and red sandy SILT (ML), with mica	4.0
					5			Brown red and white sandy SILT (ML), with mica and some rock fragments	10.0
					10			Gray and red silty SAND (SM), with mica	
					15				
					20				
					25				26.0
								Bottom of boring at 25.14 feet.	

WELL DIAGRAM



ENVIRONMENTAL BORING/WELL LOG LOGS.GPJ CONTOUR.GDT 2/24/05

CONTOUR ENGINEERING, LLC

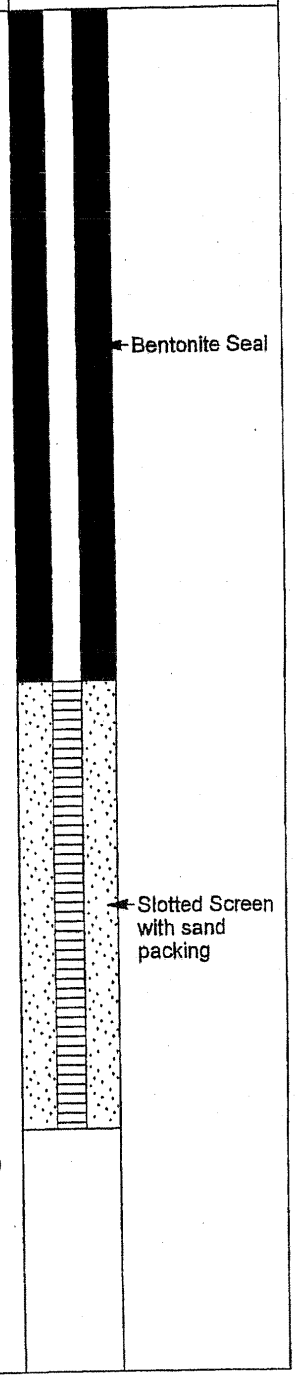
BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER E04HUL:03
PROJECT NAME Proposed Lowe's Home Improvement
LOCATION Riverdale, Georgia
DRILLING METHOD Hollow-Stem Auger
SAMPLING METHOD Split-spoon sampler
GROUND ELEVATION 949.75
TOP OF CASING 949.75
LOGGED BY Steve Yekich
REMARKS

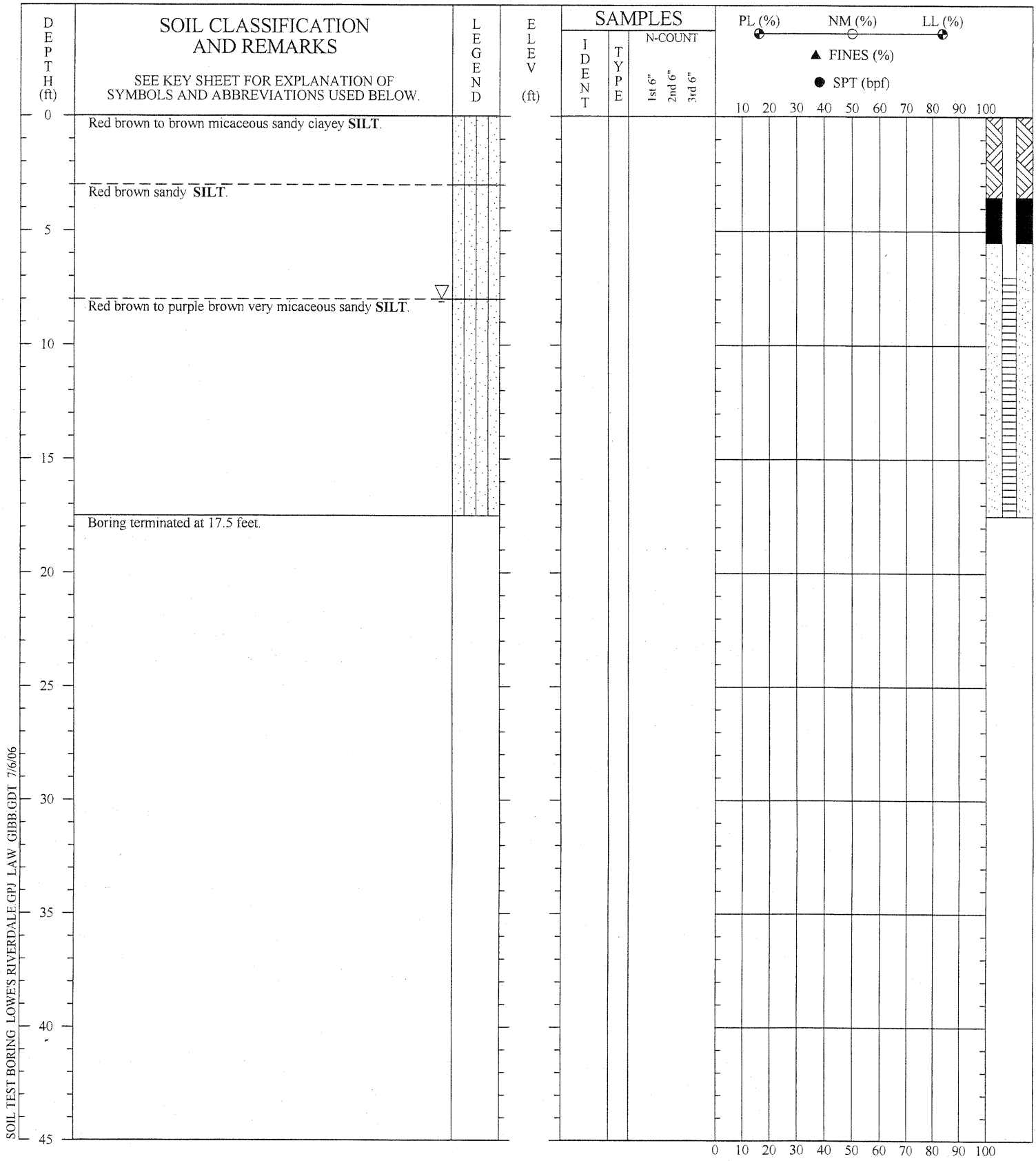
BORING/WELL NUMBER MW-3
DATE DRILLED
CASING TYPE/DIAMETER PVC
SCREEN TYPE/SLOT Slotted
GROUT TYPE
DEPTH TO WATER 17.49
GROUND WATER ELEVATION 932.26

PID (ppm)	BLOW COUNTS	RECOVERY (ft)	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH
								Asphalt ~ 4 inches	0.5
								Brown and red sandy SILT (ML), with mica	3.0
					5			Brown red and white sandy SILT (ML), with mica and some rock fragments	
					10				12.0
					15			Gray and red silty SAND (SM), with mica	
					20				
					25			Bottom of boring at 25.14 feet.	26.0

WELL DIAGRAM



ENVIRONMENTAL BORING/WELL LOG LOGS.GPJ CONTOUR.GDT 2/24/05



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

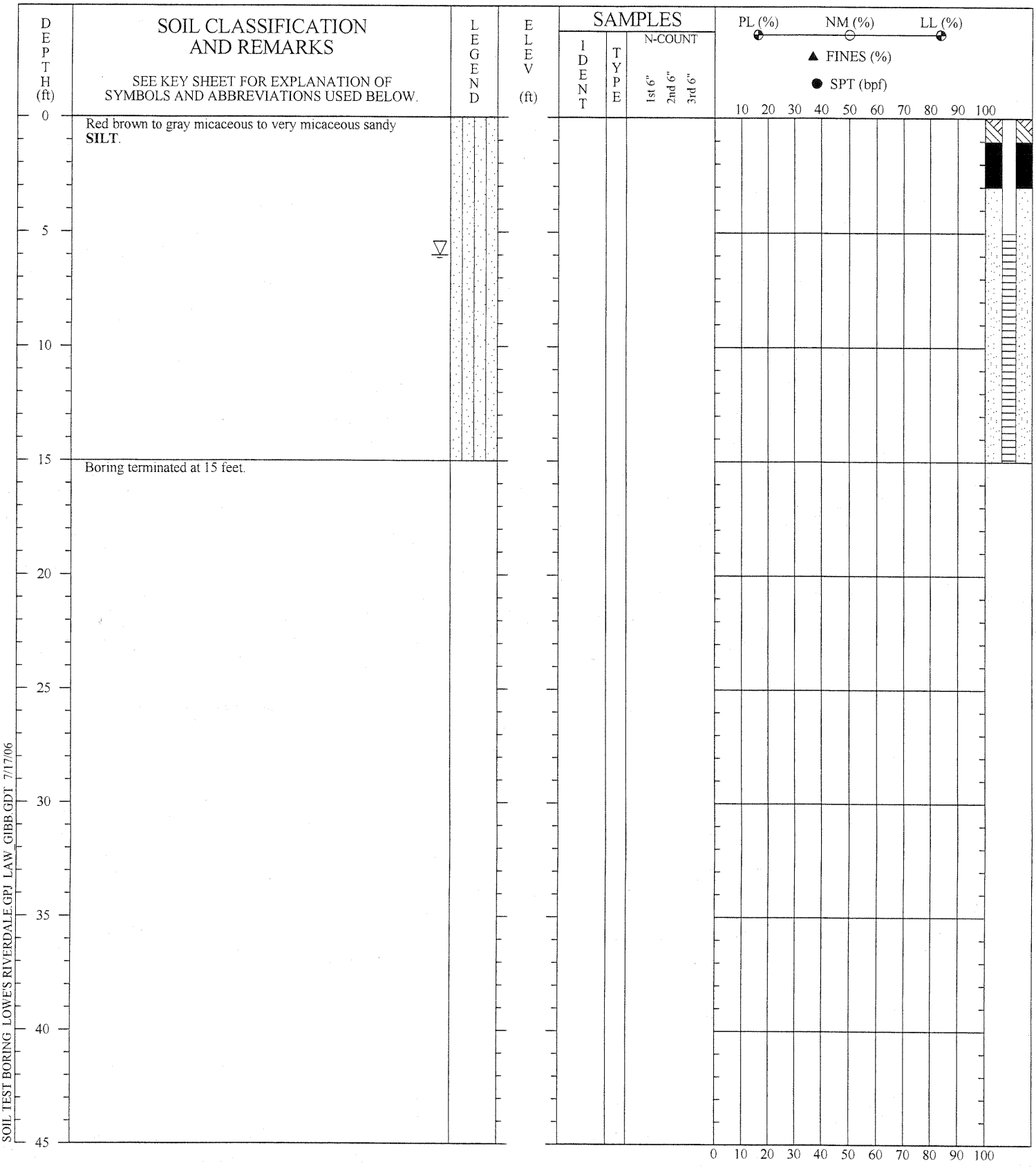
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-31
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: August 31, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWES RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

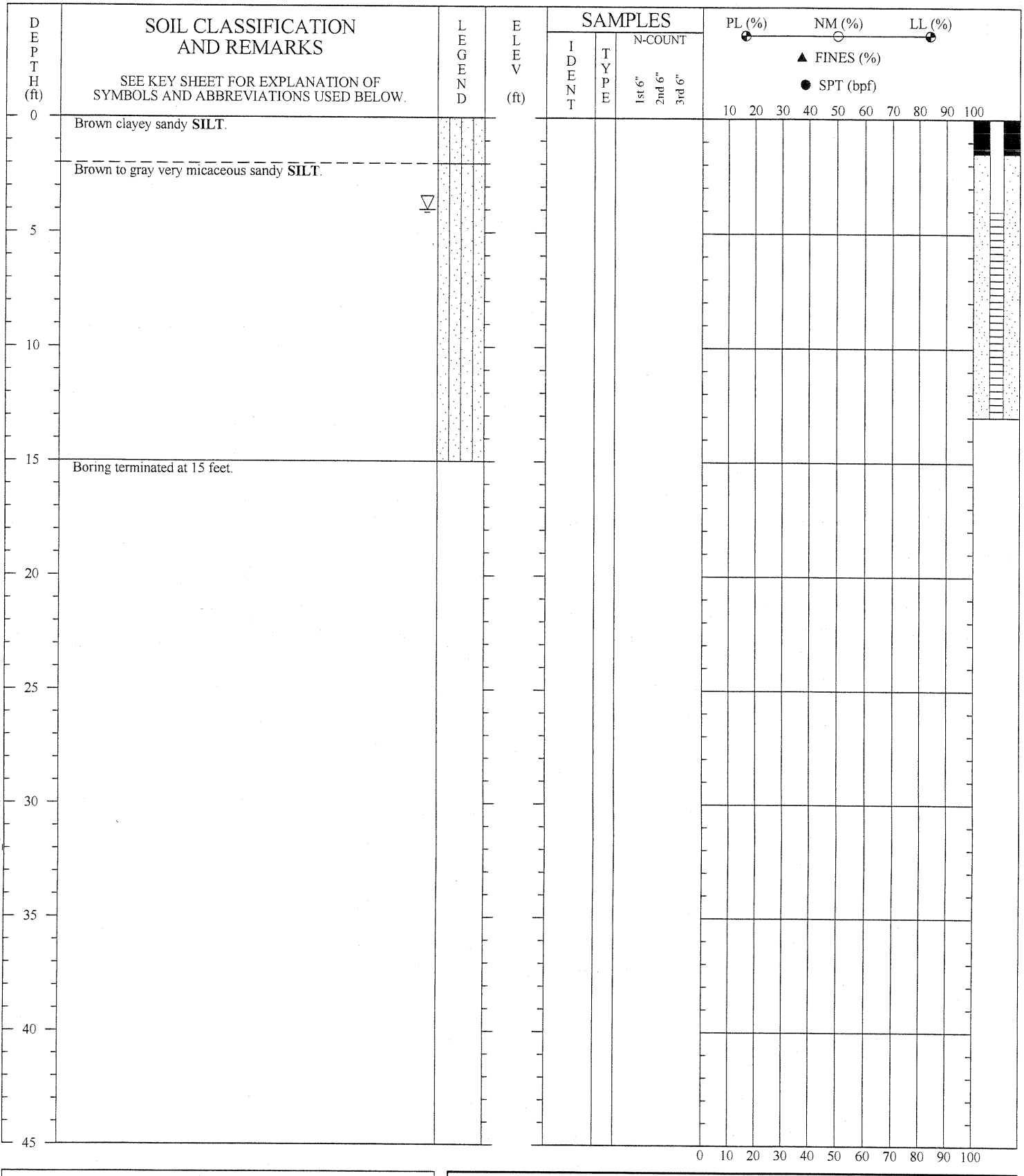
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-32
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: August 31, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

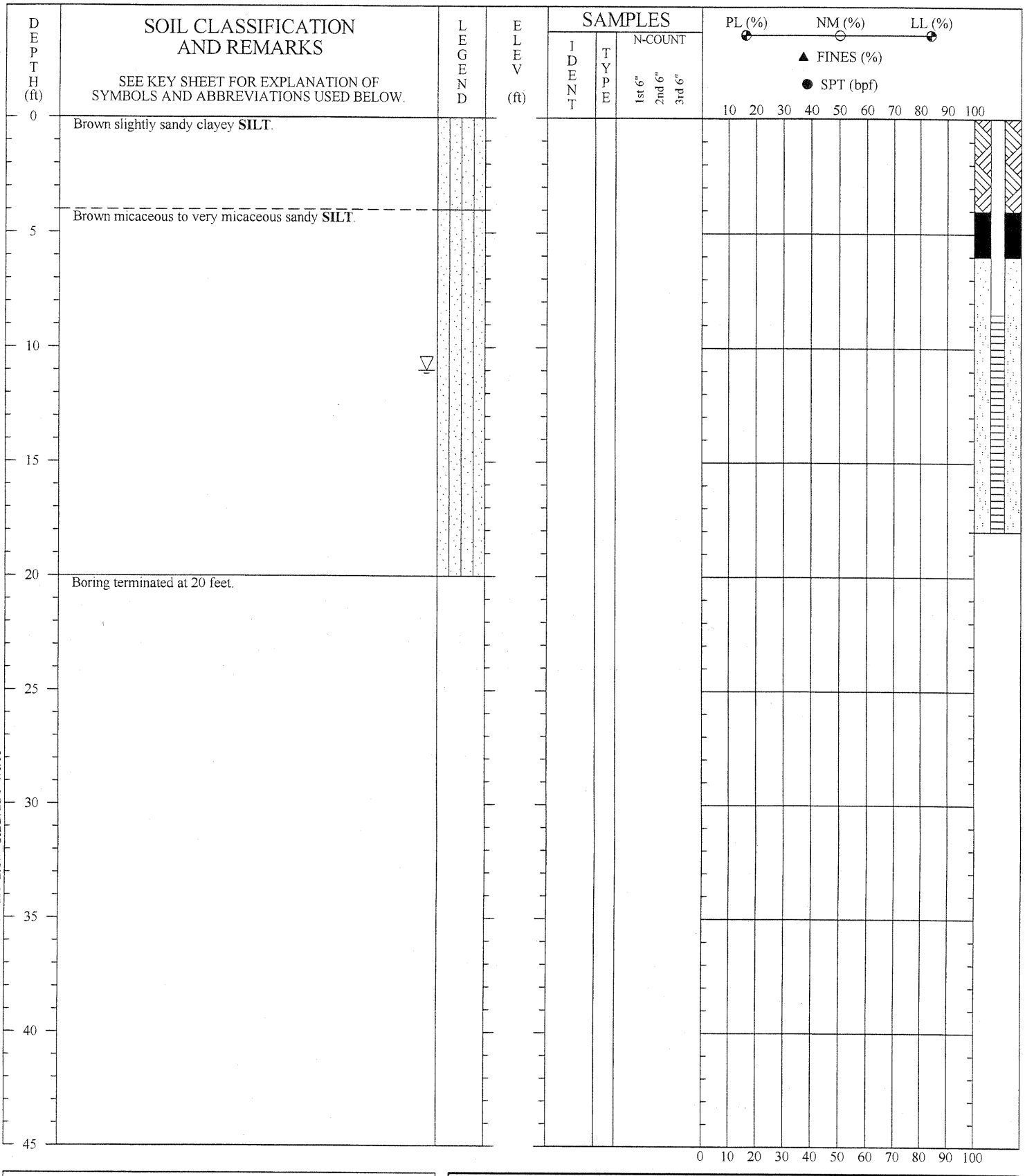
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-33
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: August 31, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

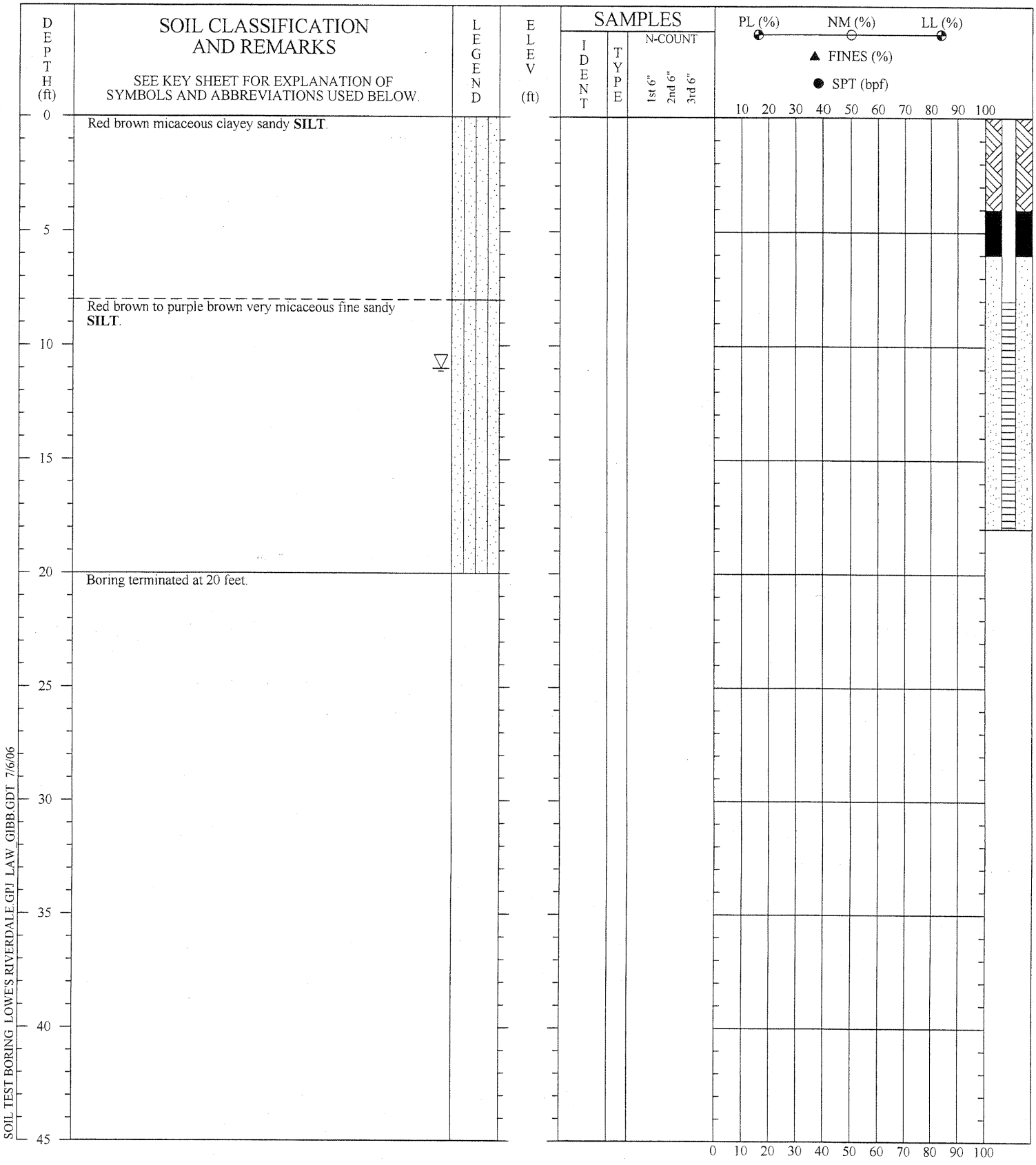
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-34
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: August 31, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

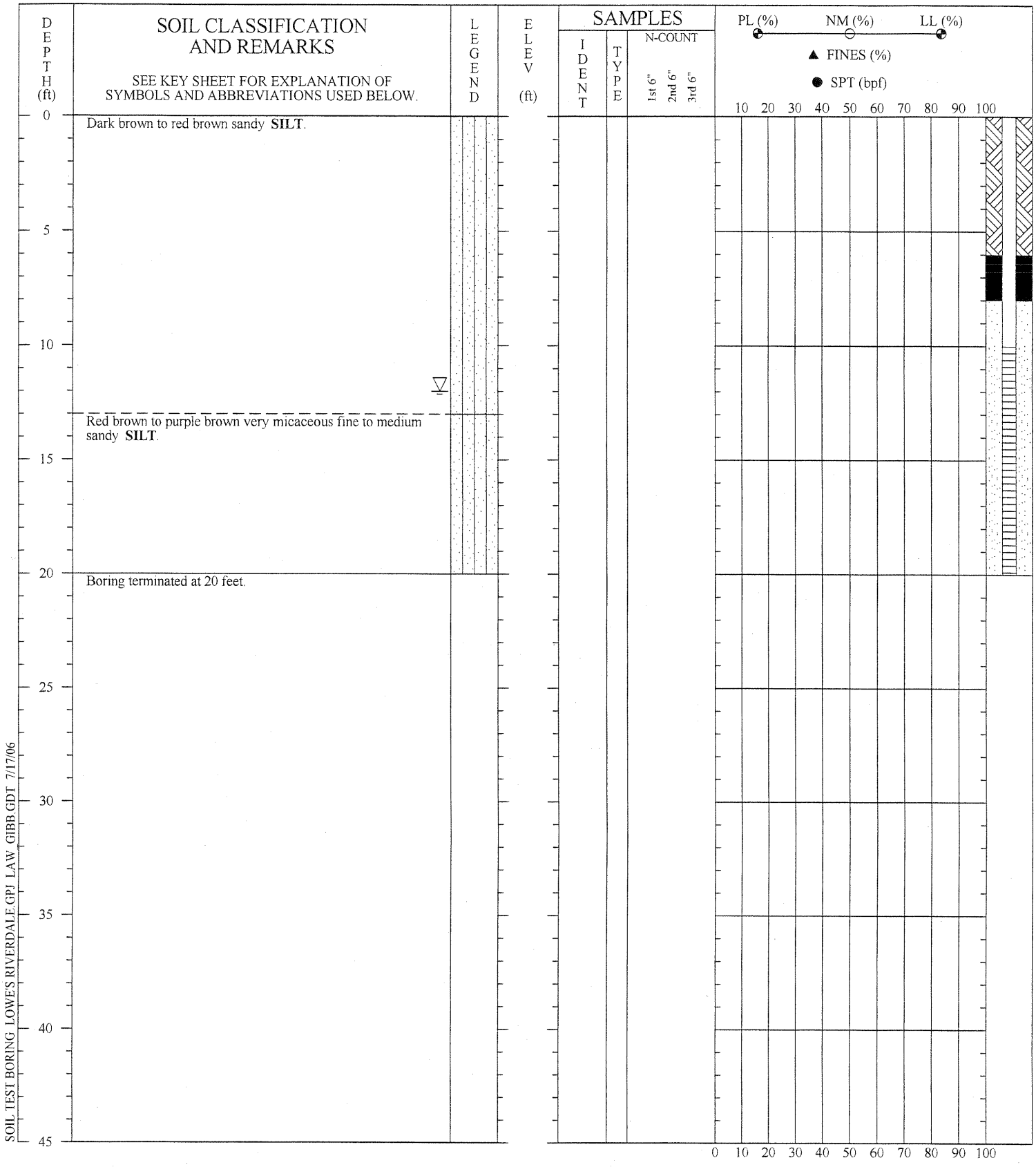
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-35
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: August 31, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

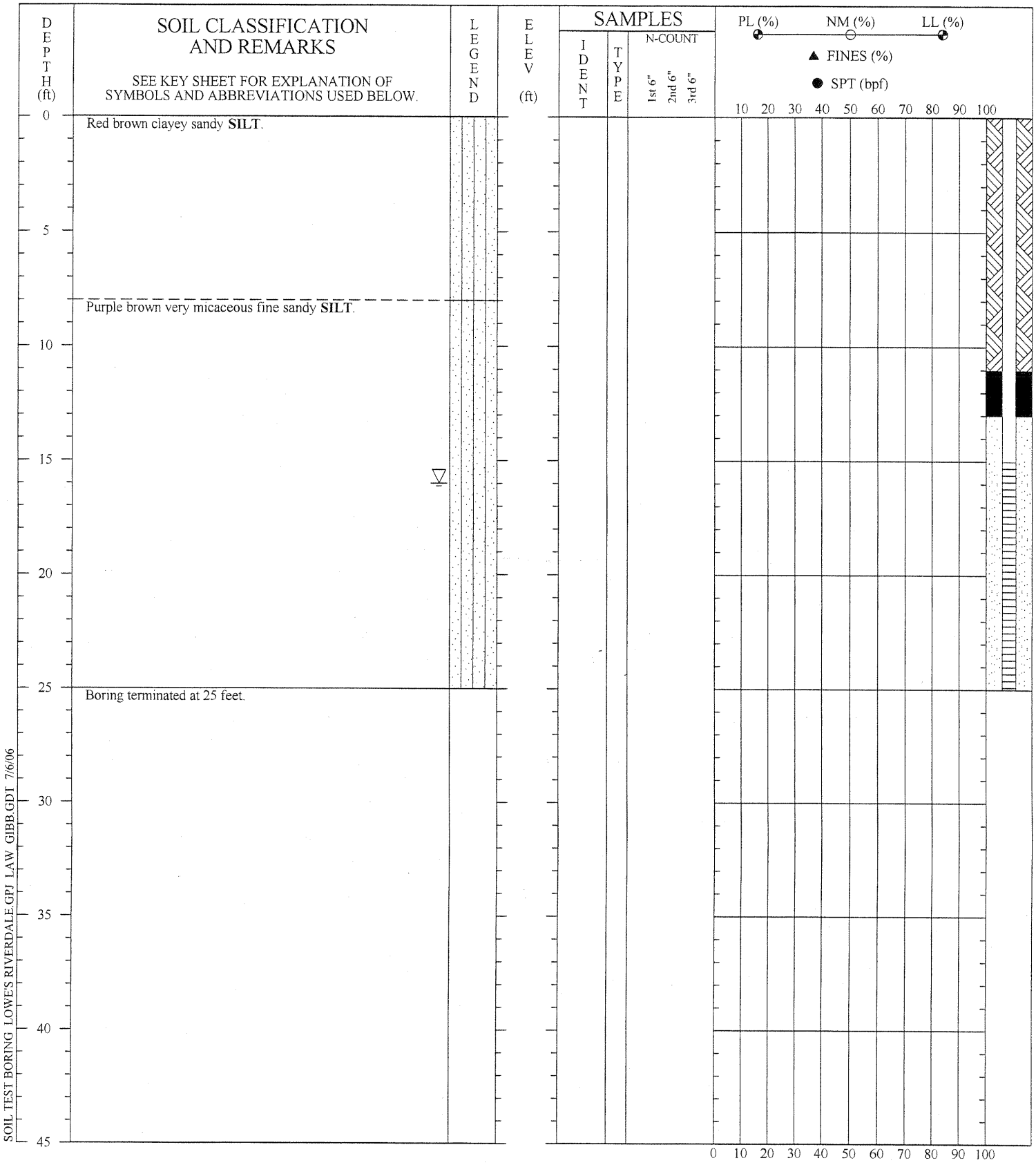
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type 1 well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-36
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

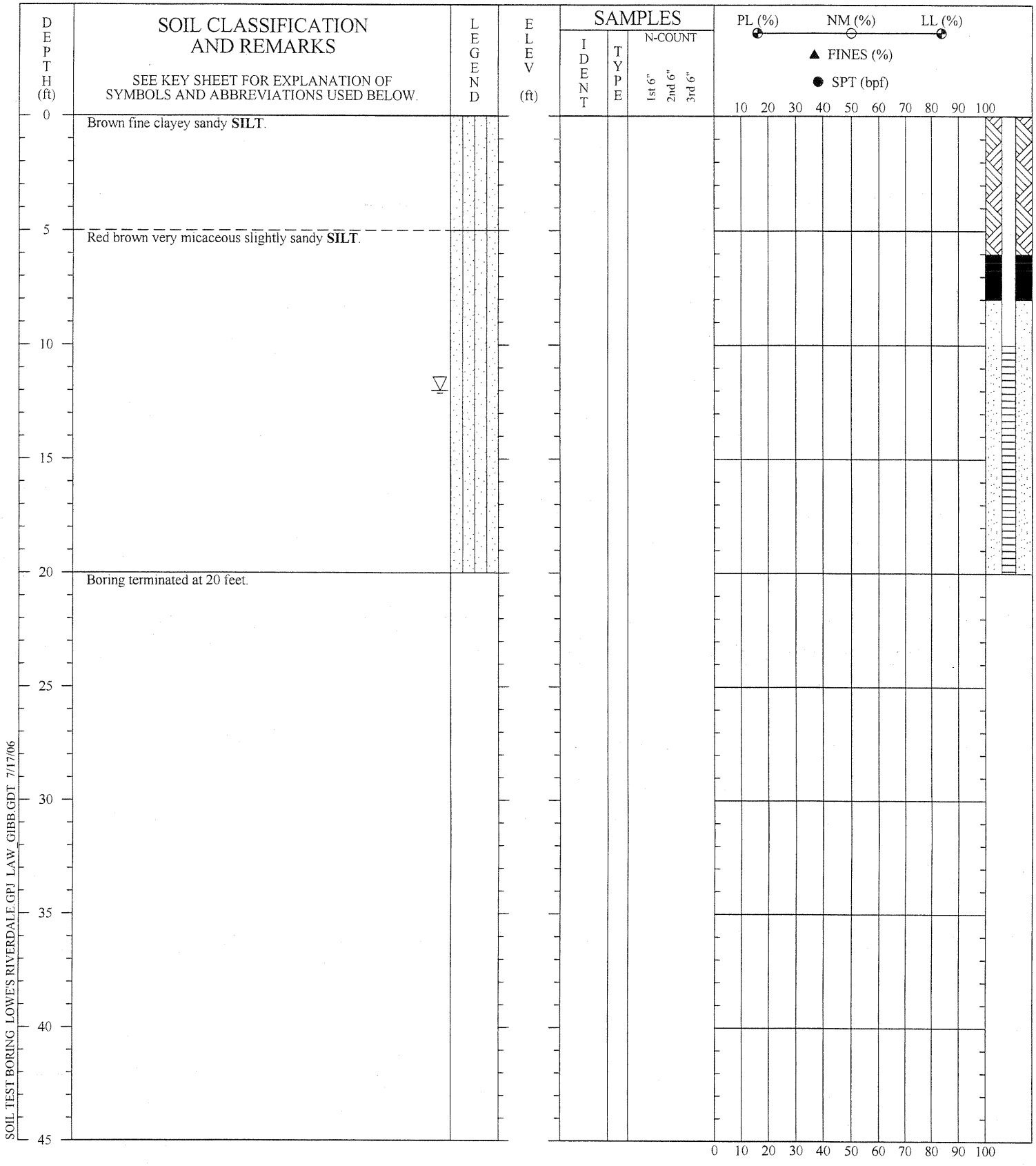
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-37
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWES RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

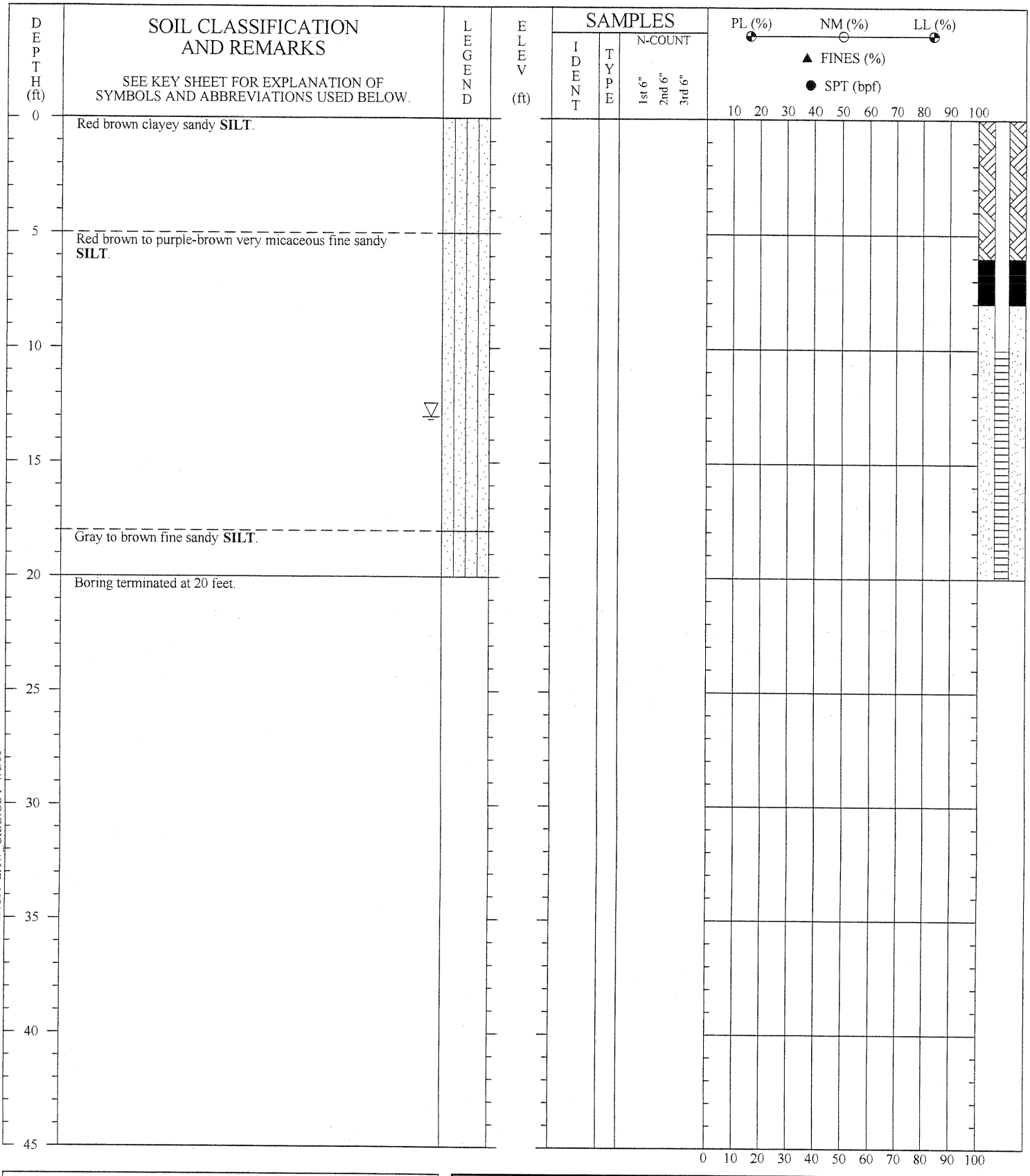
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type 1 well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-38
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

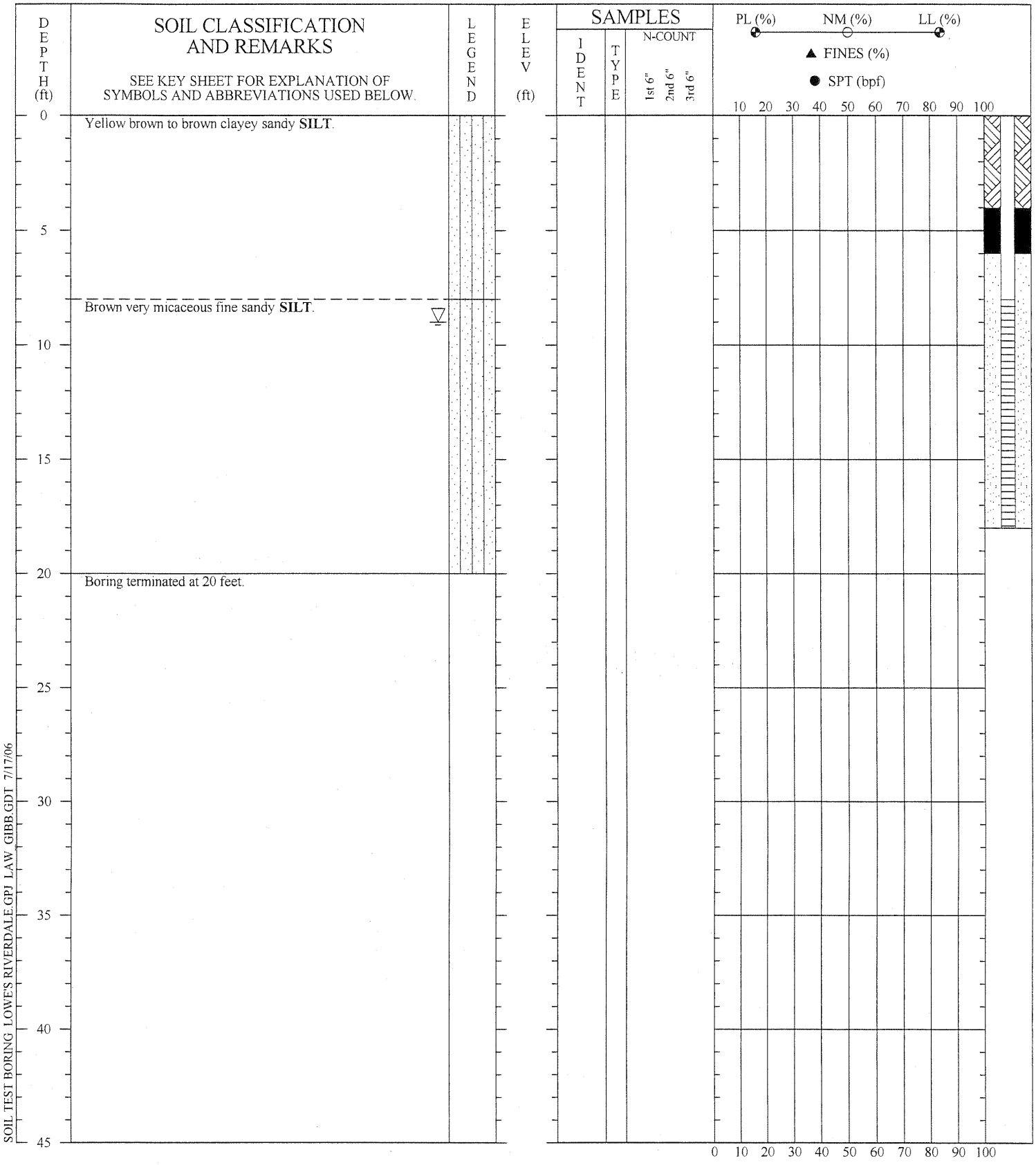
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type 1 well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-39
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

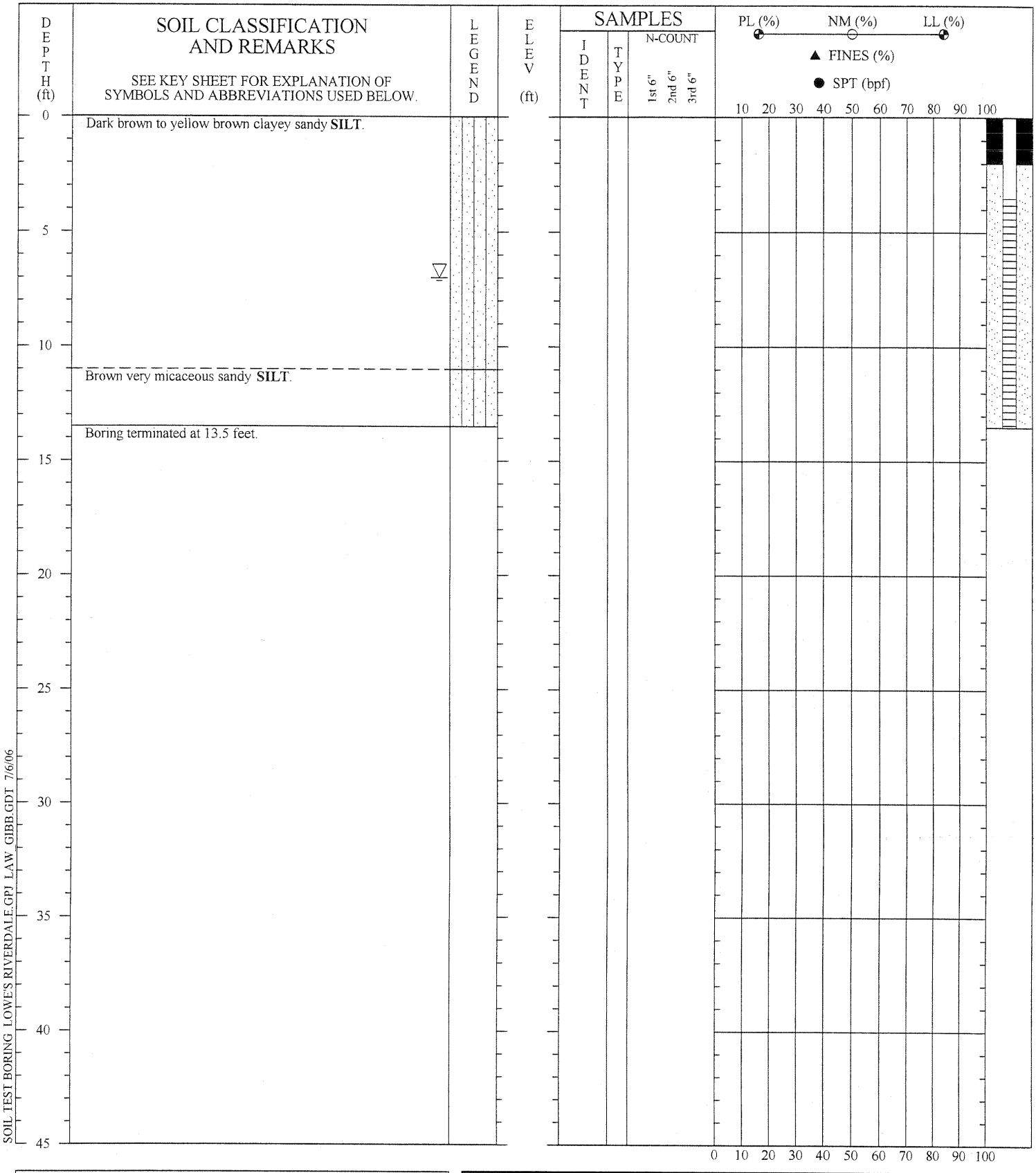
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-40
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303 **PAGE** 1 **OF** 1

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

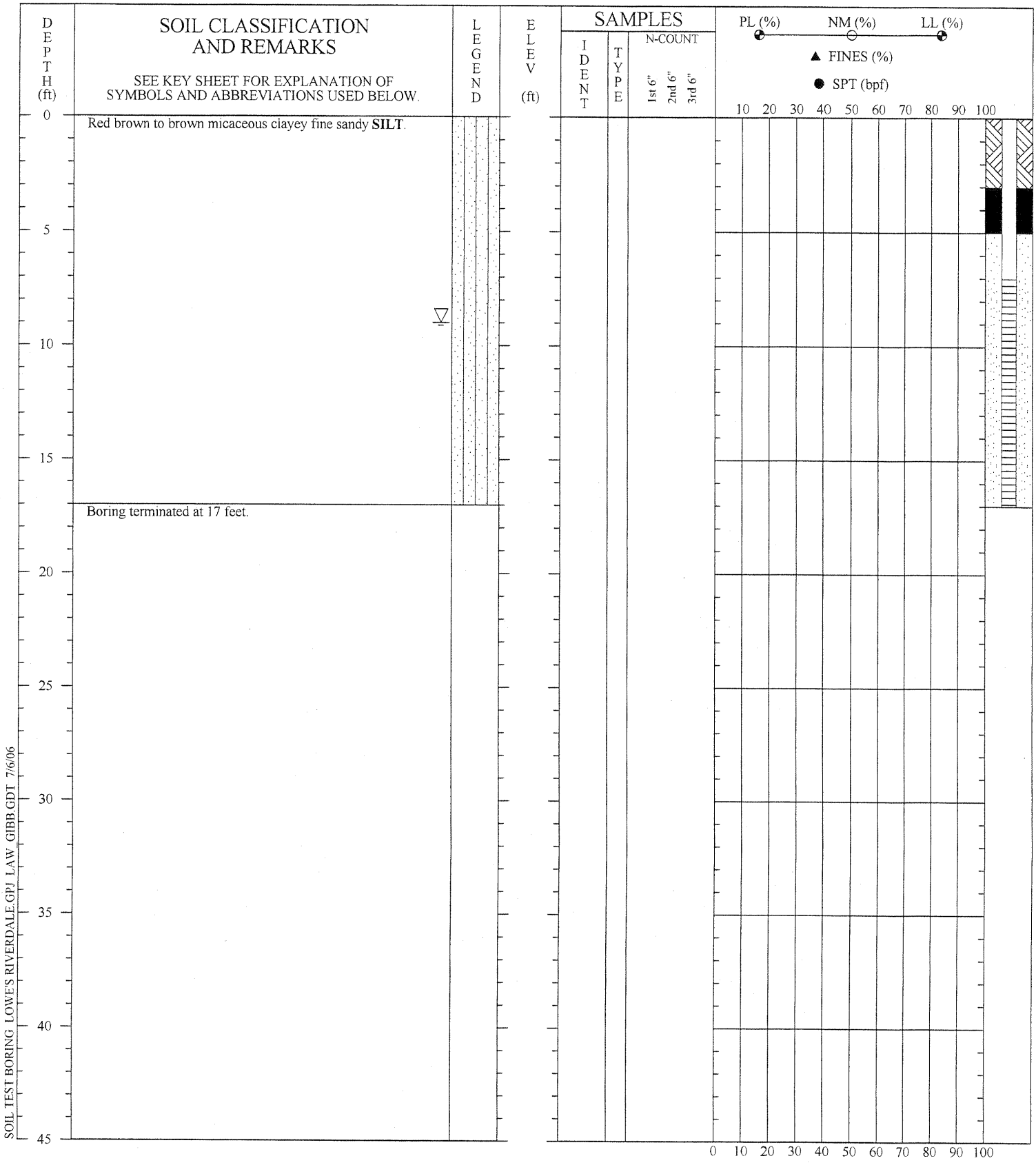
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-41
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-42
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 1, 2005
PROJECT NO.: 6305-05-0303

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)
0	Red brown micaceous fine sandy **SILT**.		
5	Brown micaceous silty **SAND** with partially weathered rock.		
10	Auger refusal at 12 feet.		
15			
20			
25			
30			
35			
40			
45			

SAMPLES: IDENT | TYPE | N-COUNT (1st 6" / 2nd 6" / 3rd 6")

PL (%) NM (%) LL (%)

▲ FINES (%)

● SPT (bpf)

10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

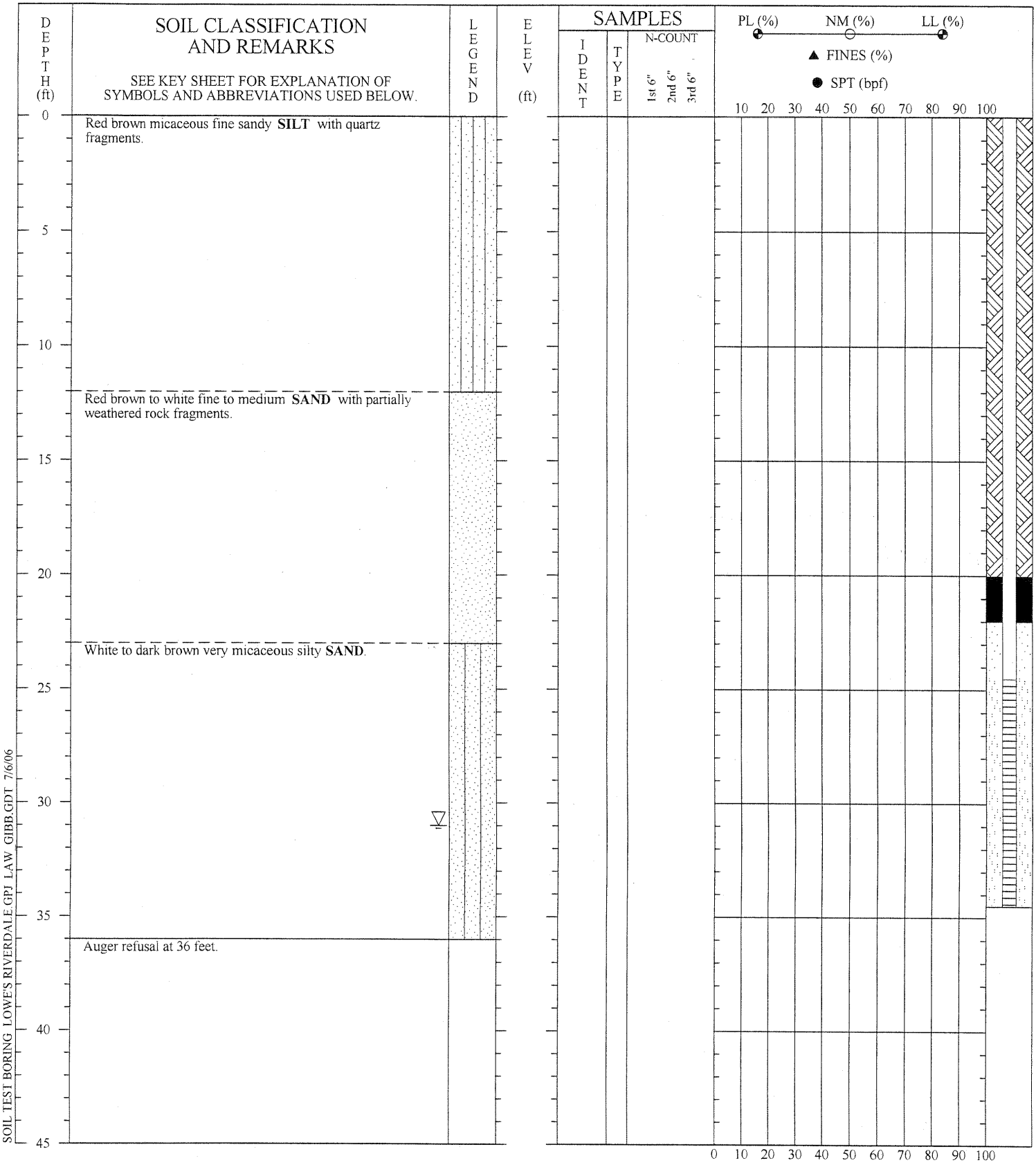
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	No groundwater encountered.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-43
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 2, 2005
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/6/06

DRILLER:	MACTEC
EQUIPMENT:	CME 550
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	Type I well installed.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: TW-44
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: September 2, 2005
PROJECT NO.: 6305-05-0303

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES: IDENT	SAMPLES: TYPE	SAMPLES: N-COUNT (1st 6" / 2nd 6" / 3rd 6")
0	Red brow to brown micaceous to very micaceous sandy **SILT**.					
15	Red brown, brown and gray micaceous to very micaceous silty fine to medium **SAND** with partially weathered rock fragments.					
30	Auger refusal at 32 feet.					
45						

PL (%) NM (%) LL (%)

▲ FINES (%)

● SPT (bpf)

10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

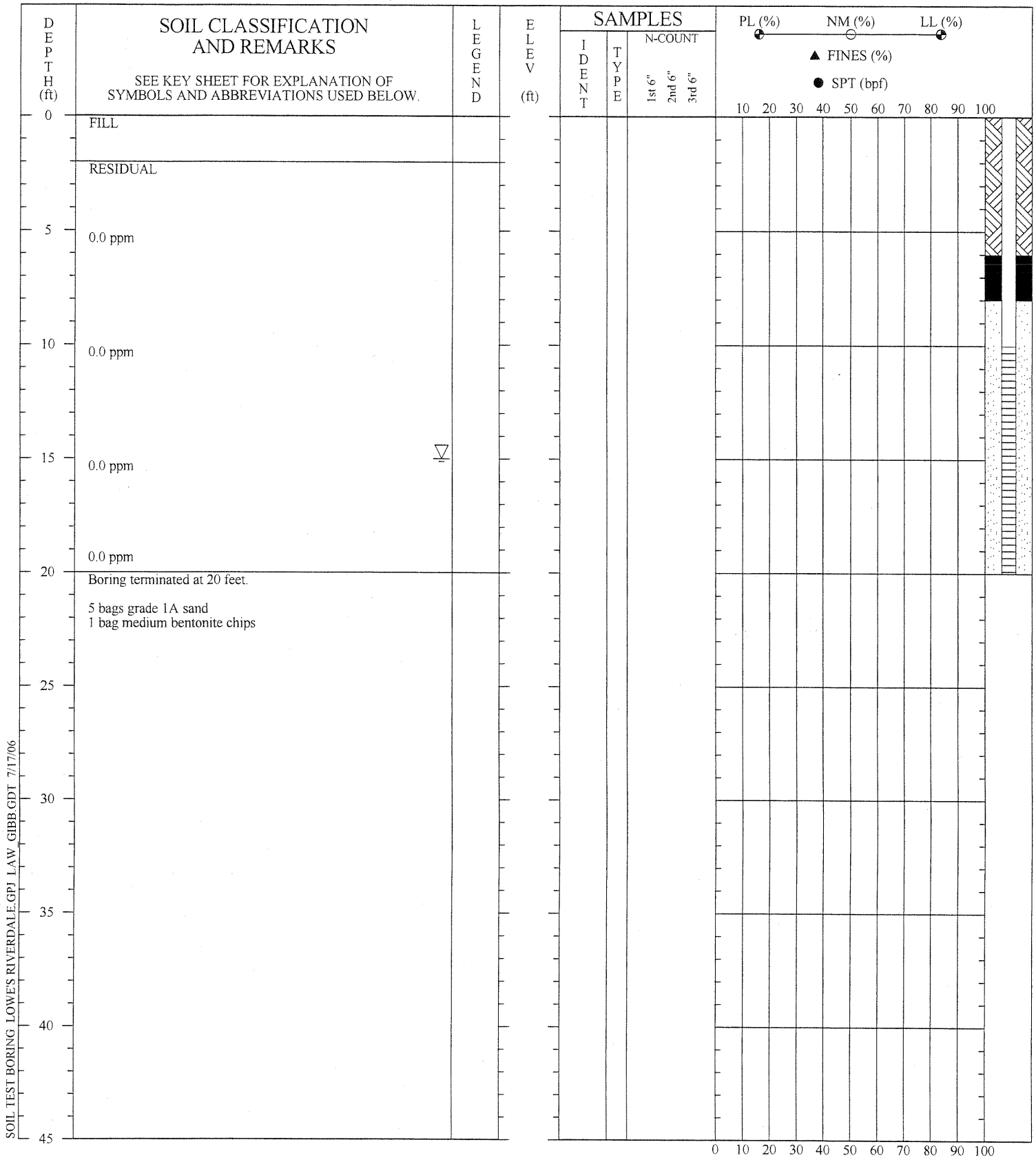
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	8 inches
REMARKS:	No groundwater encountered.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: B-45
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED:
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

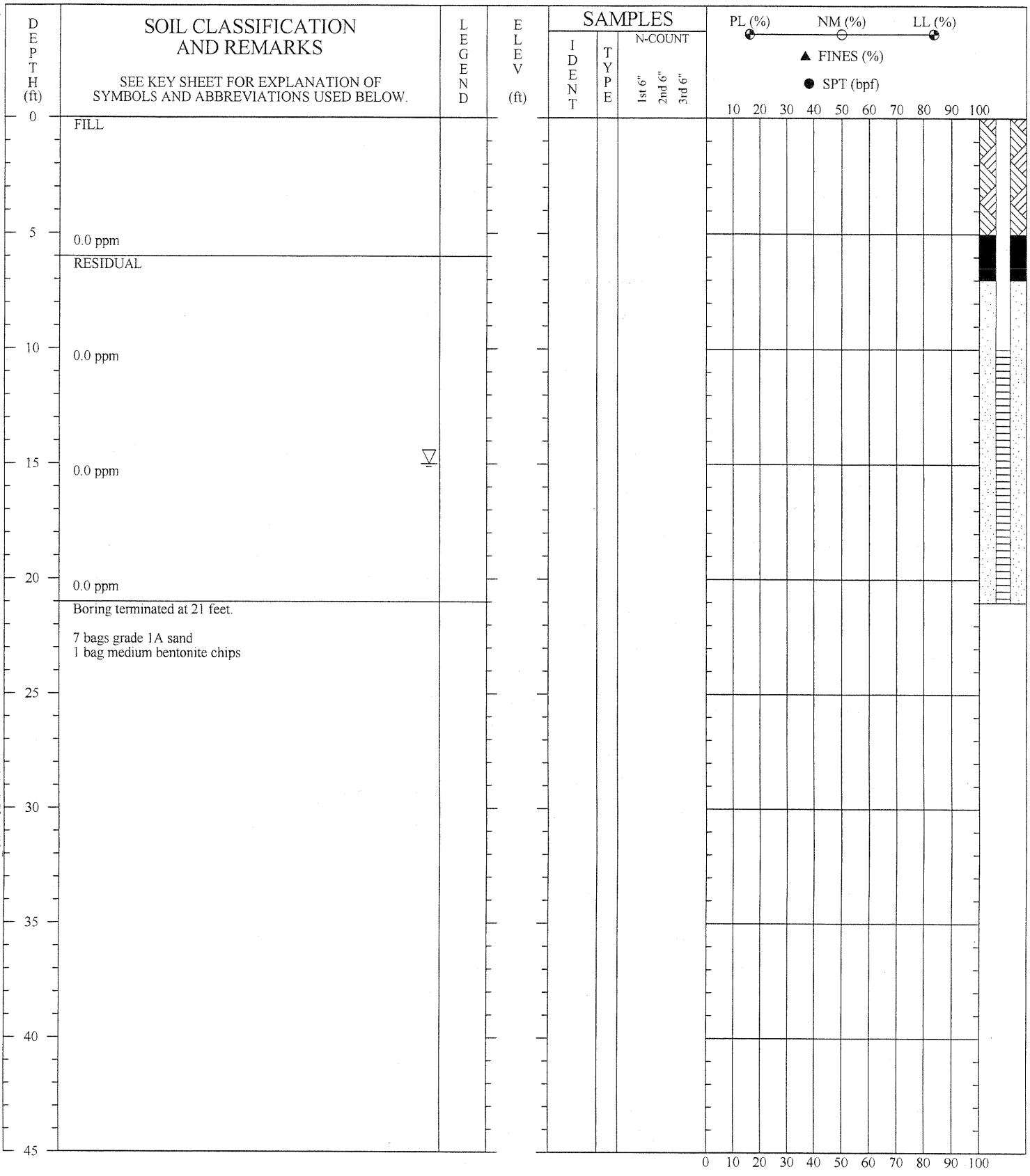
DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-17.88, TD-19.50

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-1
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 12, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-17.79, TD-19.95

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-2
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 12, 2006
PROJECT NO.: 6305-05-0303

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED BELOW.	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES N-COUNT 1st 6" 2nd 6" 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	FILL						
	RESIDUAL						
5	0.0 ppm						
10	0.0 ppm						
15	0.0 ppm						
20	0.0 ppm						
	Boring terminated at 21 feet. 7 bags grade 1A sand 1 bag medium bentonite chips						
25							
30							
35							
40							
45							

10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

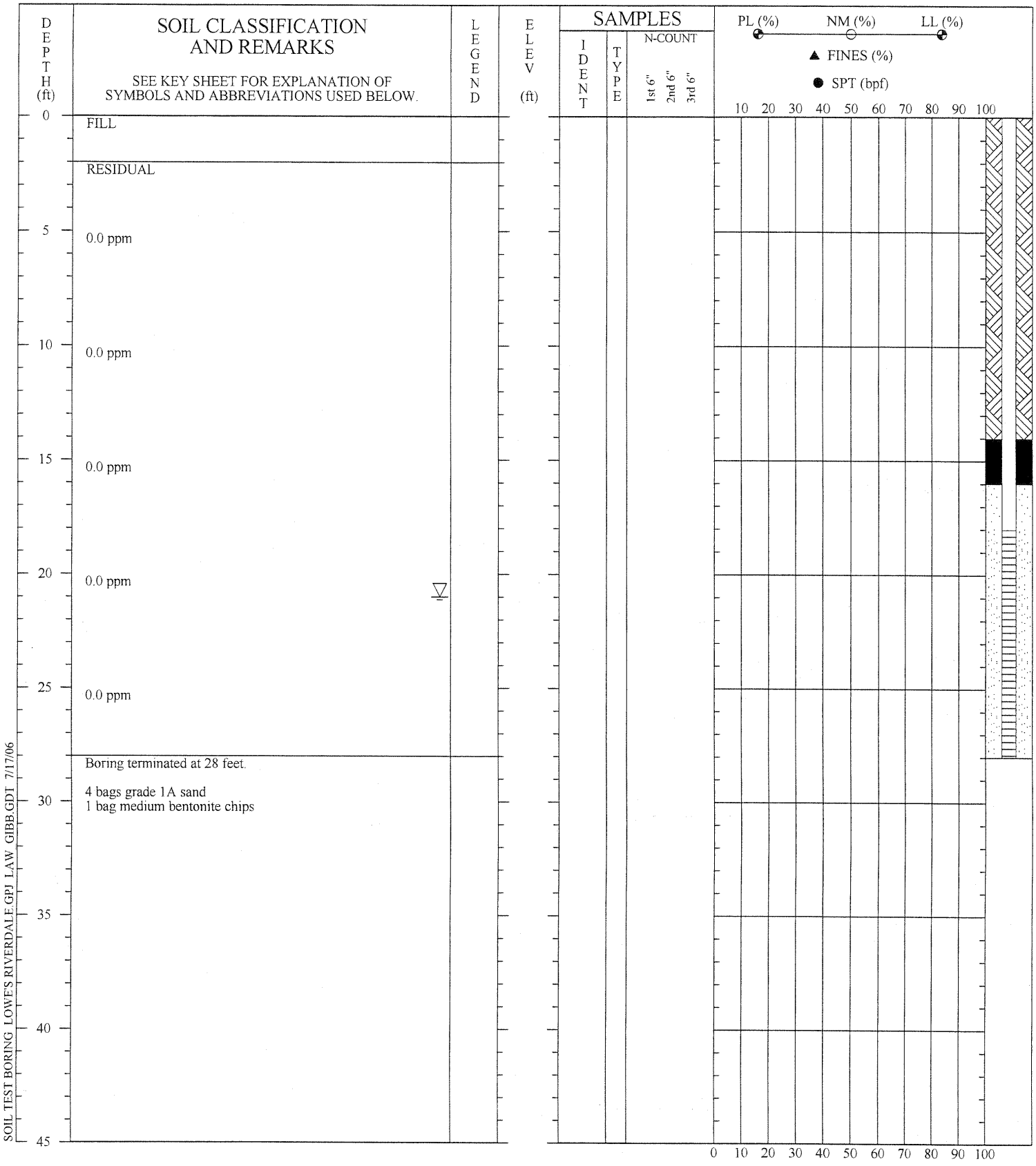
DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-15.65, TD-19.85

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-3
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 12, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW GIBB.GDT 7/17/06

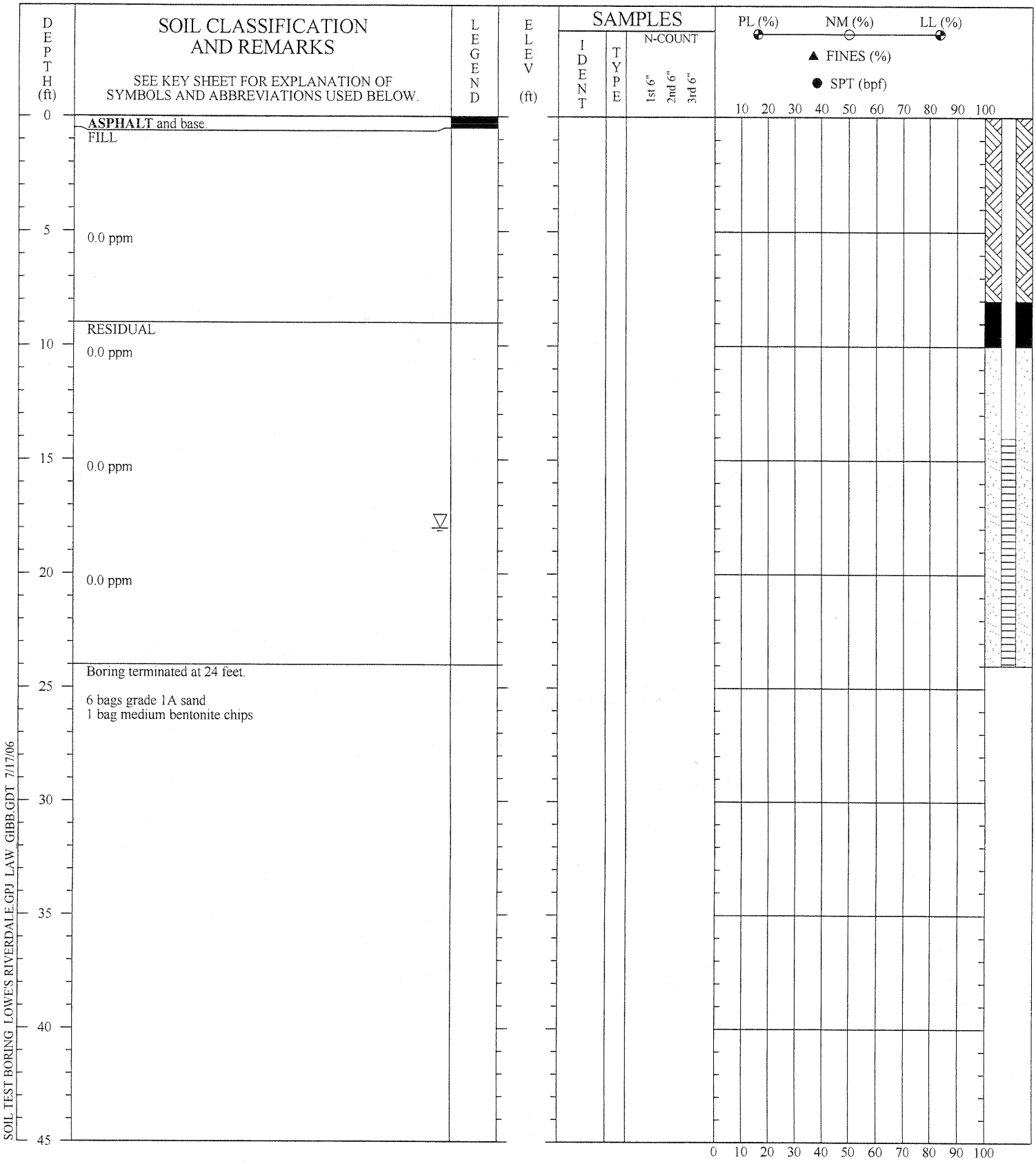
DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-20.25, TD-28.05

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-4
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 19, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

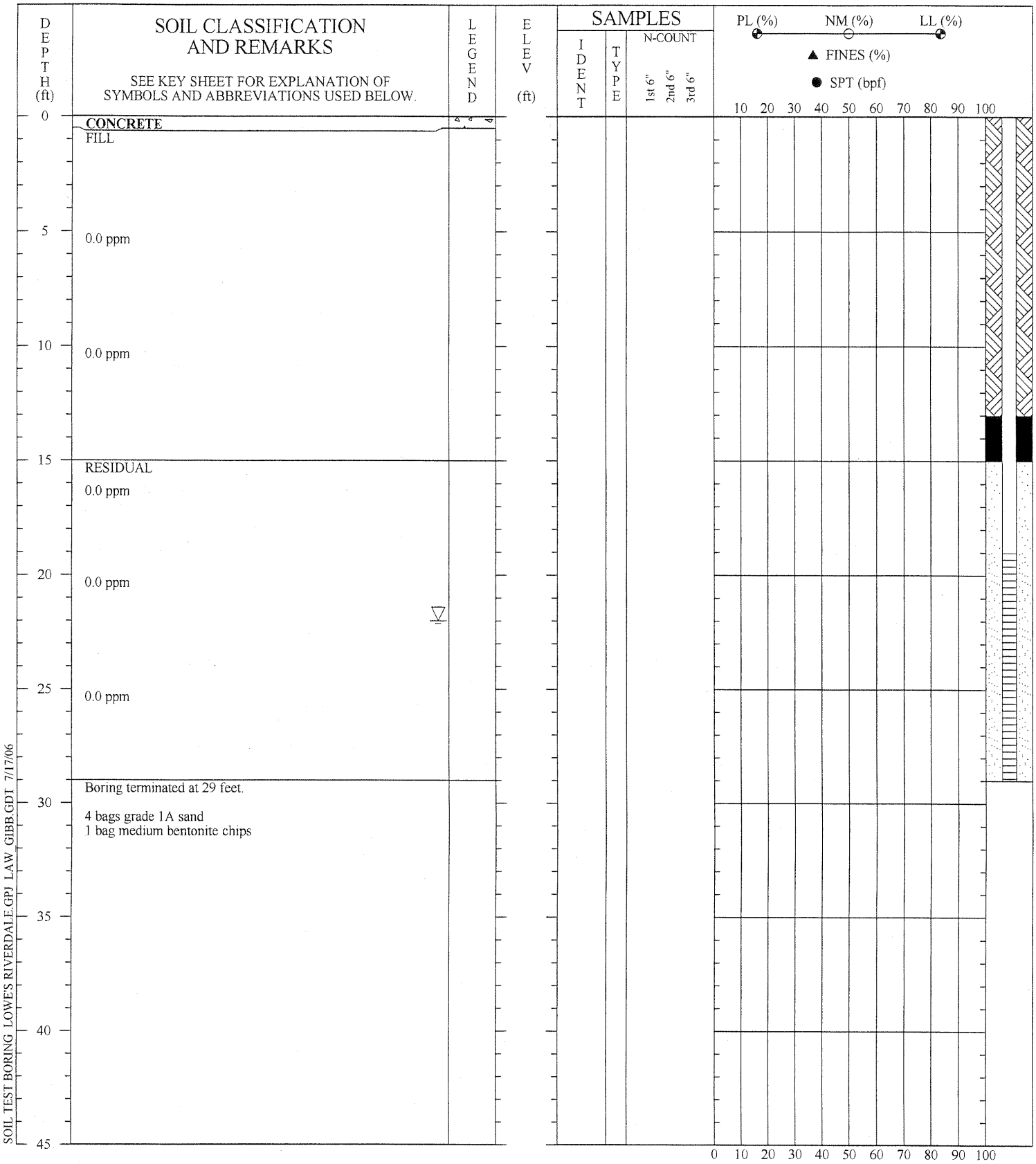
DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-17.18, TD-23.60

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-5
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 13, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

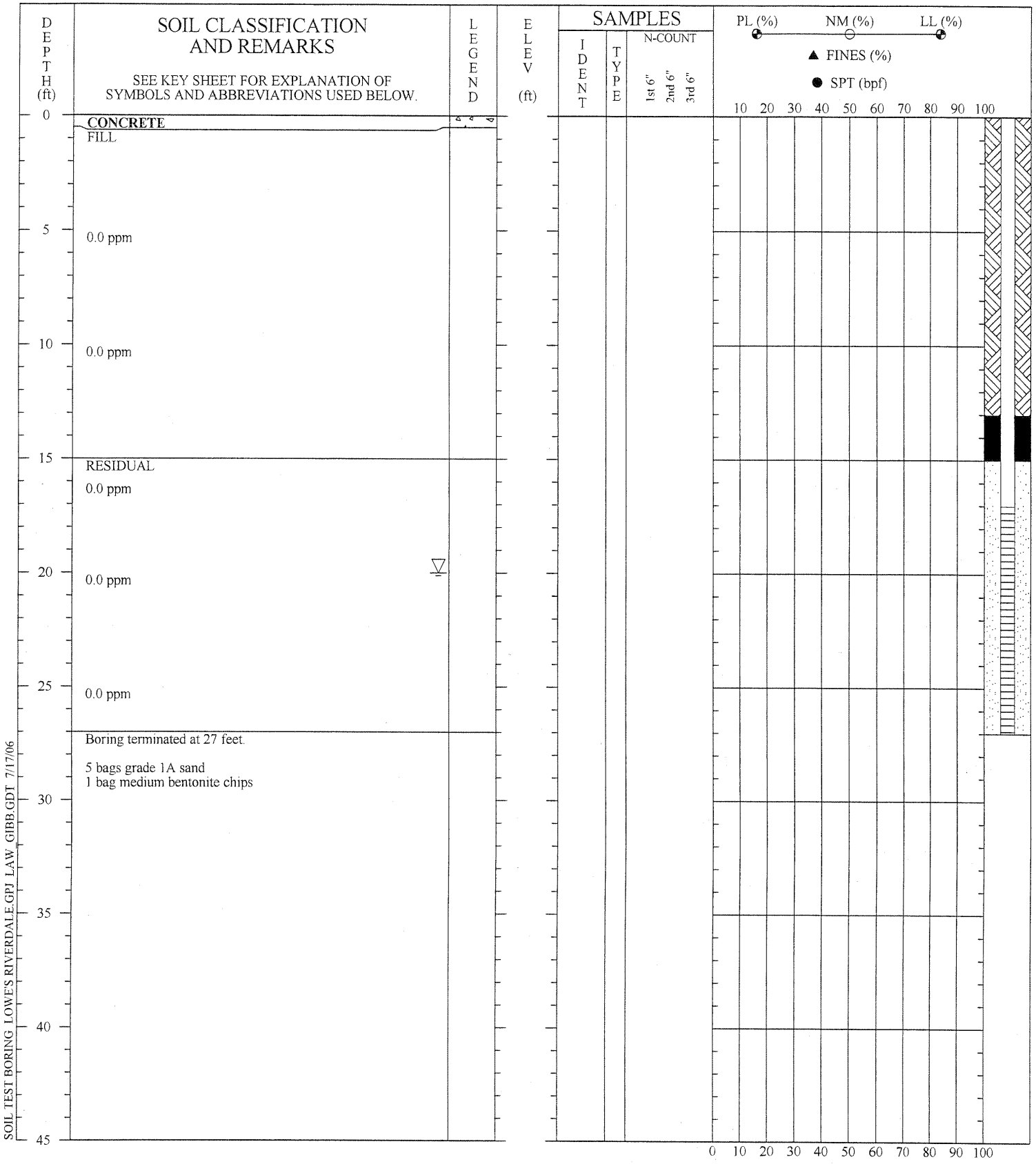
DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-20.42, TD-29.05

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-6
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 19, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

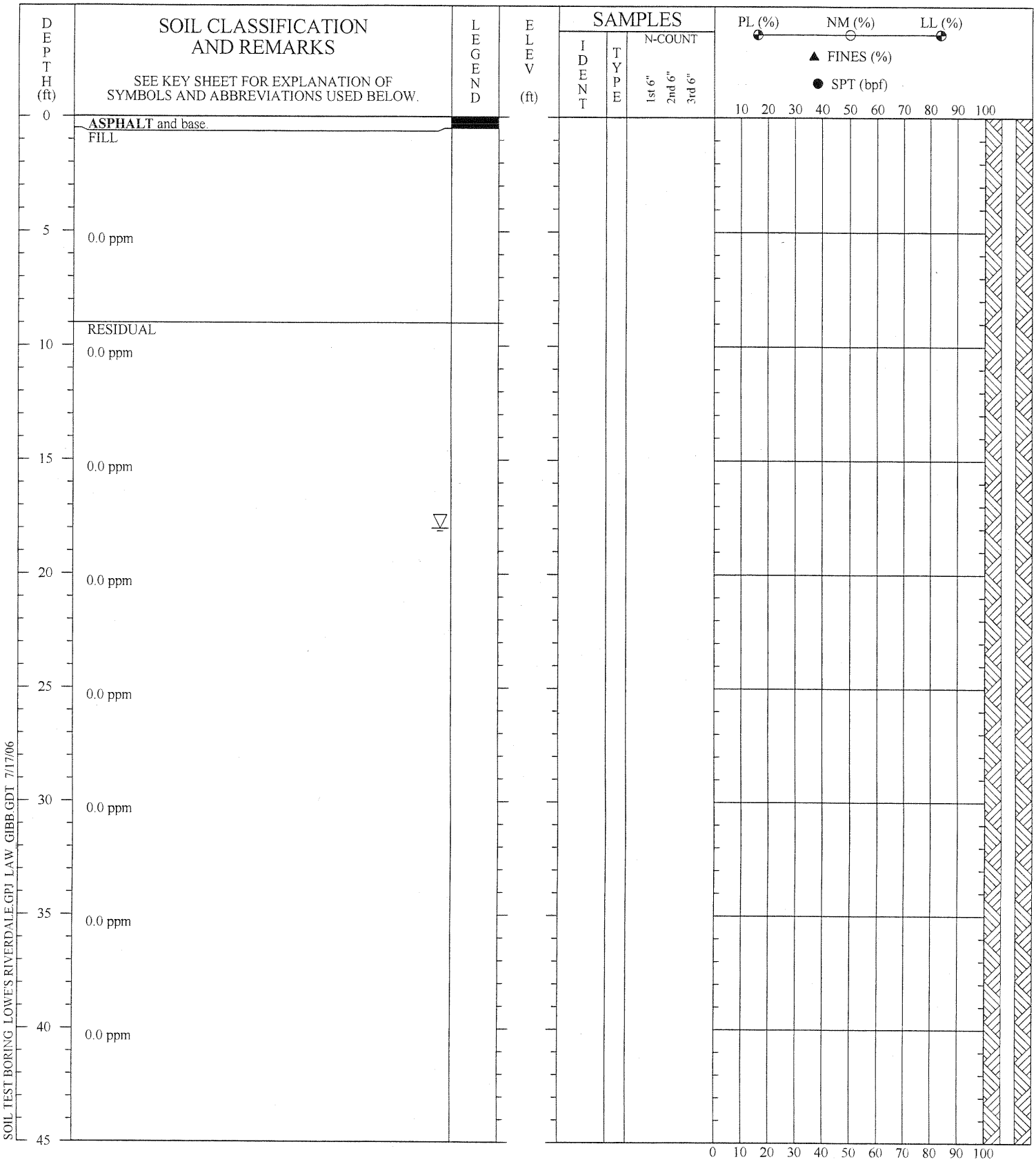
DRILLER:	MACTEC
EQUIPMENT:	Truck Mounted Rig
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	10 ft. screen, slot size 0.001 inches, DTW-21.34, TD-27.00

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: EW-7
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 13, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

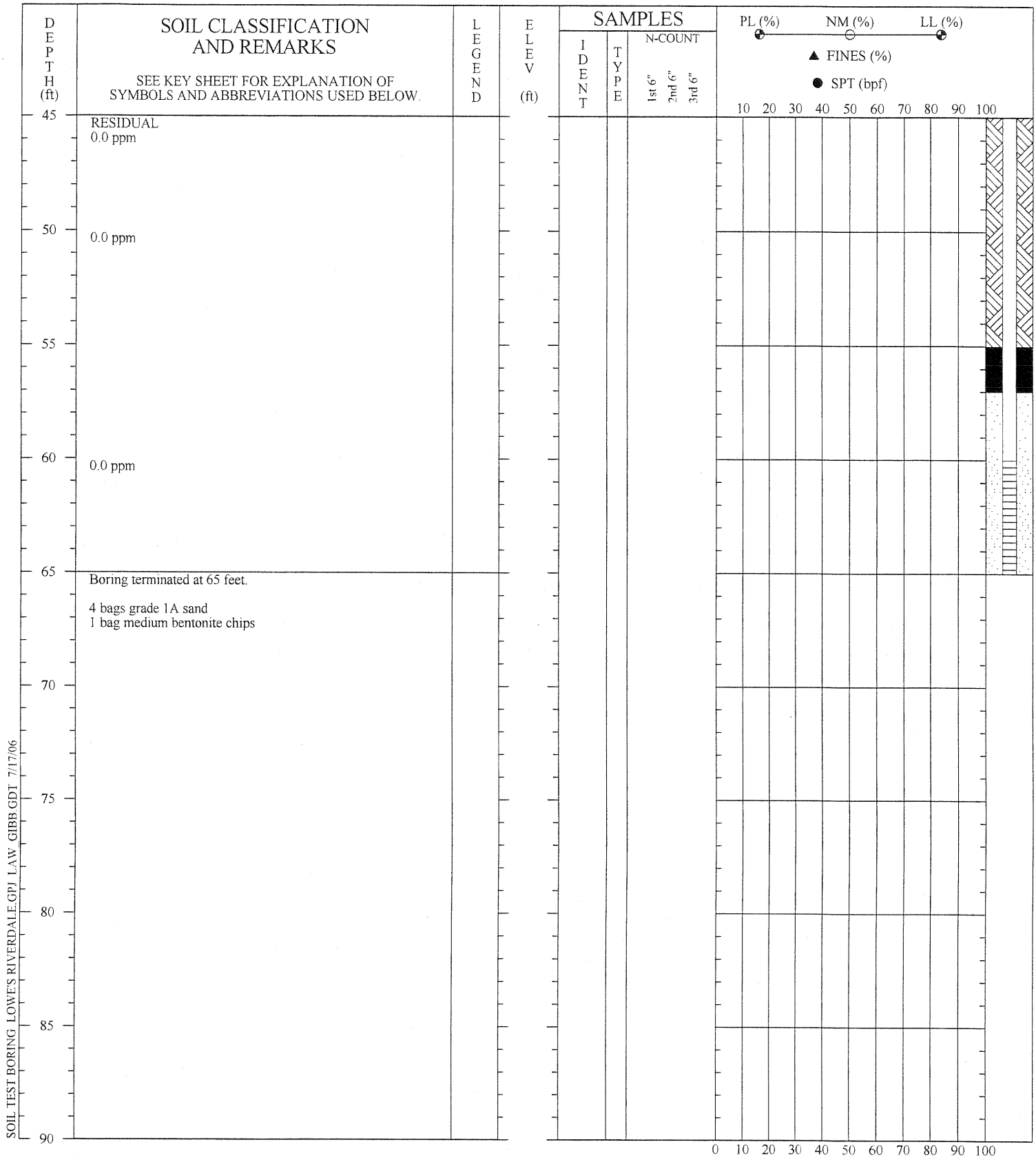
DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	5 ft. screen, slot size 0.001 inches, DTW-17.20, TD-60.10

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: DW-1
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 14, 2006
PROJECT NO.: 6305-05-0303

MACTEC



SOIL TEST BORING LOWE'S RIVERDALE.GPJ LAW_GIBB.GDT 7/17/06

DRILLER:	MACTEC
EQUIPMENT:	CME 75
METHOD:	Hollow Stem Auger
HOLE DIA.:	6.25 inches
REMARKS:	5 ft. screen, slot size 0.001 inches, DTW-17.20, TD-60.10

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

SOIL TEST BORING RECORD

BORING NO.: DW-1
PROJECT: Lowe's - Riverdale
LOCATION: Riverdale, Georgia
DRILLED: June 14, 2006
PROJECT NO.: 6305-05-0303

MACTEC

APPENDIX E

SOIL AND GROUNDWATER BACKGROUND CALCULATIONS

BACKGROUND SOIL CONCENTRATIONS
LOWE'S HOME IMPROVEMENT CENTER
RIVERDALE, GEORGIA
MACTEC PROJECT NO. 6305-05-0303

Original Data		
Barium	**Chromium**	**Lead**
55.8	9.06	43.1
8.96	8.26	41.4
37.1	26.4	34.8
25.2	4.68	23
126	7.83	22.8
21.4	3.77	18.3
5.97	8.9	18.1
116	6.06	16.3
125	4.19	15.5
42.5	19.6	13.9
3.67	4.72	12
72.2	13	11.9
67.7	60.4	11.6
84.8	4.16	11.6
31.3	14.4	11.4
56.1	5.54	10.9
3.57	6.17	10.7
65.2	2.18	10.5
38.4	30	10.2
15.5	5.94	10.1
138	10.5	9.87
31	16.3	9.45
11.1	46.1	9.29
8.45	2.61	9.28
81	2.22	9.1
108	3.05	9.01
36.1	14.6	8.66
55.3	2.43	8.59
109	13	8.48
25.7	15.3	8.14
32.9	2.6	8.08
12.7	3.42	7.9
42.1	18.4	7.08
21.8	2.14	6.84
16.6	21.5	6.48
3.85	12.2	6.19
5.9	9.59	5.56
71.4	2.18	5.19
4.45	2.14	4.61
121	1.72	4.36
98.2	9.59	4.29
25.7	4.39	4.09
4.59	4.77	4.08
		3.67

Log10 Data		
logBa	**logCr**	**logPb**
1.746634	0.957128	1.634477
0.952308	0.91698	1.617
1.569374	1.421604	1.541579
1.401401	0.670246	1.361728
2.100371	0.893762	1.357935
1.330414	0.576341	1.262451
0.775974	0.94939	1.257679
2.064458	0.782473	1.212188
2.09691	0.622214	1.190332
1.628389	1.292256	1.143015
0.564666	0.673942	1.079181
1.858537	1.113943	1.075547
1.830589	1.781037	1.064458
1.928396	0.619093	1.064458
1.495544	1.1 i8362	1.056905
1.748963	0.74351	1.037426
0.552668	0.790285	1.029384
1.814248	0.338456	1.021189
1.584331	1.477121	1.0086
1.190332	0.773786	1.004321
2.139879	1.021189	0.994317
1.491362	1.212188	0.975432
1.045323	1.663701	0.968016
0.926857	0.416641	0.967548
1.908485	0.346353	0.959041
2.033424	0.4843	0.954725
1.557507	1.164353	0.937518
1.742725	0.385606	0.933993
2.037426	1.113943	0.928396
1.409933	1.184691	0.910624
1.517196	0.414973	0.907411
1.103804	0.534026	0.897627
1.624282	1.264818	0.850033
1.338456	0.330414	0.835056
1.220108	1.332438	0.811575
0.585461	1.08636	0.791691
0.770852	0.981819	0.745075
1.853698	0.338456	0.715167
0.64836	0.330414	0.663701
2.082785	0.235528	0.639486
1.992111	0.981819	0.632457
1.409933	0.642465	0.611723
0.661813	0.678518	0.61066
		0.564666

max	2.139879	1.781037	1.634477
min	0.552668	0.235528	0.564666
mean	1.472937	0.853417	0.996041
SD	0.486715	0.391424	0.254711
n	43	43	44
K	2.092	2.092	2.092
UTL*	2.491144	1.672277	1.528896
UTL_antilog**	**309.8447**	**47.01937**	**33.79839**

* Upper tolerance limit calculated using method from "Statistical Analysis of Ground-Water Monitoring Data att RCRA Facilities, Intrim Final Guidance, April 1989" Section 5.3. UTL = mean + K * SD

** Since original data was log-transformed, results have to be anti-logged to determine actual concentrations.

Data minus MW-1,MW-2,B4, B5, TW-25, MW-3

	Original Data			Log10 Data		
	Barium	Chromium	Lead	logBa	logCr	logPb
TW-11	0.136	0.01	0.0543	-0.866461	-2	-1.2652
TW-11	0.057	0.01	0.01	-1.244125	-2	-2
TW-17	0.0764	0.01	0.01	-1.116907	-2	-2
TW-20	0.0237	0.01	0.01	-1.625252	-2	-2
TW-23	0.038	0.01	0.01	-1.420216	-2	-2
TW-24	0.0221	0.01	0.01	-1.655608	-2	-2
TW-25						
TW-26	0.0543	0.01	0.01	-1.2652	-2	-2
TW-27	0.112	0.01	0.01	-0.950782	-2	-2
TW-28	0.02	0.01	0.01	-1.69897	-2	-2
TW-29	0.0631	0.01	0.01	-1.199971	-2	-2
TW-30	0.02	0.01	0.01	-1.69897	-2	-2
TW-34	0.02	0.01	0.01	-1.69897	-2	-2
TW-35	0.139	0.01	0.01	-0.856985	-2	-2
TW-36	0.0544	0.01	0.01	-1.264401	-2	-2
EW-1	0.0218	0.01	0.01	-1.661544	-2	-2
EW-2	0.0569	0.01	0.01	-1.244888	-2	-2
EW-3	0.0368	0.01	0.01	-1.434152	-2	-2
EW-4	0.02	0.01	0.01	-1.69897	-2	-2
EW-5	0.0306	0.01	0.01	-1.514279	-2	-2
EW-6	0.02	0.0122	0.01	-1.69897	-1.91364	-2
EW-7	0.02	0.01	0.01	-1.69897	-2	-2
DW-1	0.02	0.01	0.01	-1.69897	-2	-2

	Barium	Chromium	Lead
max	-0.856985	-1.91364	-1.2652
min	-1.69897	-2	-2
mean	-1.418798	-1.996075	-1.9666
SD	0.293048	0.018412	0.15666
n	22	22	22
K	2.35	2.35	2.35
UTL*	-0.730136	-1.952806	-1.598449
UTL_antil	**0.18615**	**0.011148**	**0.025209**

* Upper tolerance limit calculated using method from "Statistical Analysis of
** Since original data was log-transformed, results have to be anti-logged to

Background Calculations for Nickel Copper and Zinc in Groundwater

Combining guidance from ""Statistical Analysis of Ground-water Monitoring Data at RCRA Facilities – Interim Final Guidance" April 1989 and "Statistical Analysis of Ground-water Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance" July 1992, the following decisions will lead to an acceptable statistical analysis of sample values being tested for exceedances.

1. Is the proportion of non-detected values greater than 90%? (If so, use Wilcoxon Rank Sum test to compare against a background set, or Poisson Limits for comparison to a single value limit such as a regulatory value)

2. Is the proportion of non-detected values between 50% and 90%? (If so, use Wilcoxon Rank Sum test to compare against a background set, or Nonparametric Limits for comparison to a single value limit such as a regulatory value)

3. Is the proportion of non-detected values between 15% and 50%? (If so, use Wilcoxon Rank Sum test to compare against a background set, or use Cohen's or Aitchison's adjustments to mean/SD and Parametric limits (Cohen assumes analyte all samples at some concentration while Aitchison assumes analyte is absent in ND samples, but both assume normal/lognormal distributions) for comparison to a single value limit such as a regulatory value)

4. Is the proportion of non-detected values between 0% and 15%? (If so, ½ of the reporting limit for ND values and use ANOVA or t test to compare against a background set, or use Parametric limits for comparison to a single value limit such as a regulatory value)

5. If there are no NDs use ANOVA or t test to compare against a background set, or use Parametric limits for comparison to a single value limit such as a regulatory value

Nickel

Only two of the four analytes under consideration have ND values (nickel 100%, copper 22.2%) (See table 1). Since there are no detected values for nickel in the background data set, it is prudent to assume that any analysis that exceeds the reporting limit of 0.01 mg/L is not representative of background.

Copper

Copper is a naturally-occurring metal in soils in Georgia, so it is appropriate to use Cohen's adjustments rather than Aitchison's.

Copper does not fail a Shapiro-Wilks test for normality. It is assumed to be normally distributed.

Mean of detected values (xbar) = 0.003071
Variance of detected values (S^2_d) = 1.259E-06
Number of detected values (m) = 7
Number of total values (n) = 9
Detection Limit (DL) = 0.01

Then

$$h = (n-m)/n = (9-7)/9 = 2/9 = 0.2222$$
$$\gamma = S^2_d/(xbar-DL)^2 = 0.026223$$

$$\lambda \text{ (from table A-5 in Addendum)} = 0.25$$

$$Xadj = xbar-\lambda(xbar-DL) = 0.004803$$
$$SDadj = SQRT(S^2_d + \lambda(xbar-DL)^2) = 0.003642$$

Upper Tolerance limit = Xadj + 3.031* SDadj = 0.004803+3.031*0.003642 = **0.015842 mg/L**

Zinc

Zinc fails a Shapiro-Wilks test for normality but does not fail the same test for lognormality. It is assumed to be lognormally distributed

Zinc is a naturally-occurring metal in soils in Georgia, so it is appropriate to use Cohen's adjustments rather than Aitchison's.

Zinc analyses are log10 transformed, then after calculating the adjusted mean and standard deviation, a tolerance limit is calculated and back-transformed by an antilog transform.

Zinc

(data are log10 transformed)
Mean of values (X) = -2.069
Variance of values (S^2) = 0.1004
Number of detected values (m) = 9
Number of total values (n) = 9
Detection Limit (DL) = 0.02

Then

Upper Tolerance limit = X + 3.031* S = -2.069 + 3.031*sqrt(0.1004) = -1.1086

Antilog transforming:

Upper Tolerance limit = 10^( ) = **0.07788 mg/L**

Well_ID	date	param	t_value	stat_value	ND_Flag	valqual	MDL	RL
EW-2	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-2	4/30/2007	Barium	0.0299	0.0299			0.0016	0.02
EW-2	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-2	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-2	4/30/2007	Copper	0.0041	0.0041		J	0.0017	0.01
EW-2	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
EW-2	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-2	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-2	4/30/2007	Silver	0.0007	0.0007		J	0.0004	0.01
EW-2	4/30/2007	Zinc	0.0272	0.0272			0.0033	0.02
EW-2	4/30/2007	Mercury	0.00005	0.00005		J	0.00004	0.0002
EW-3	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-3	4/30/2007	Barium	0.0364	0.0364			0.0016	0.02
EW-3	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-3	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-3	4/30/2007	Copper	0.0028	0.0028		J	0.0017	0.01
EW-3	4/30/2007	Lead	0.0039	0.0039		J	0.0036	0.01
EW-3	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-3	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-3	4/30/2007	Silver	BRL	0.005	ND		0.0004	0.01
EW-3	4/30/2007	Zinc	0.0034	0.0034		J	0.0033	0.02
EW-3	4/30/2007	Mercury	0.00006	0.00006		J	0.00004	0.0002
EW-4	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-4	4/30/2007	Barium	0.0371	0.0371			0.0016	0.02
EW-4	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-4	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-4	4/30/2007	Copper	0.003	0.003		J	0.0017	0.01
EW-4	4/30/2007	Lead	0.0042	0.0042		J	0.0036	0.01
EW-4	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-4	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-4	4/30/2007	Silver	BRL	0.005	ND		0.0004	0.01
EW-4	4/30/2007	Zinc	0.0052	0.0052		J	0.0033	0.02
EW-4	4/30/2007	Mercury	BRL	0.0001	ND		0.00004	0.0002
EW-5	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-5	4/30/2007	Barium	0.0087	0.0087		J	0.0016	0.02
EW-5	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-5	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-5	4/30/2007	Copper	0.0021	0.0021		J	0.0017	0.01
EW-5	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
EW-5	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-5	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-5	4/30/2007	Silver	0.0008	0.0008		J	0.0004	0.01
EW-5	4/30/2007	Zinc	0.0056	0.0056		J	0.0033	0.02
EW-5	4/30/2007	Mercury	BRL	0.0001	ND		0.00004	0.0002
DW-1	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
DW-1	4/30/2007	Barium	0.0191	0.0191		J	0.0016	0.02
DW-1	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
DW-1	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
DW-1	4/30/2007	Copper	BRL	0.005	ND		0.0017	0.01
DW-1	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
DW-1	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02

DW-1	4/30/2007	Selenium	0.0064	0.0064		J	0.0059	0.02
DW-1	4/30/2007	Silver	BRL	0.005	ND		0.0004	0.01
DW-1	4/30/2007	Zinc	0.0229	0.0229			0.0033	0.02
DW-1	4/30/2007	Mercury	BRL	0.0001	ND		0.00004	0.0002
EW-6	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-6	4/30/2007	Barium	0.0519	0.0519			0.0016	0.02
EW-6	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-6	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-6	4/30/2007	Copper	0.005	0.005		J	0.0017	0.01
EW-6	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
EW-6	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-6	4/30/2007	Selenium	0.007	0.007		J	0.0059	0.02
EW-6	4/30/2007	Silver	BRL	0.005	ND		0.0004	0.01
EW-6	4/30/2007	Zinc	0.0145	0.0145		J	0.0033	0.02
EW-6	4/30/2007	Mercury	BRL	0.0001	ND		0.00004	0.0002
EW-7	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-7	4/30/2007	Barium	0.0268	0.0268			0.0016	0.02
EW-7	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-7	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-7	4/30/2007	Copper	0.0018	0.0018		J	0.0017	0.01
EW-7	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
EW-7	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-7	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-7	4/30/2007	Silver	0.0005	0.0005		J	0.0004	0.01
EW-7	4/30/2007	Zinc	0.0088	0.0088		J	0.0033	0.02
EW-7	4/30/2007	Mercury	BRL	0.0001	ND		0.00004	0.0002
EW-8	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-8	4/30/2007	Barium	0.0118	0.0118		J	0.0016	0.02
EW-8	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-8	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-8	4/30/2007	Copper	BRL	0.005	ND		0.0017	0.01
EW-8	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
EW-8	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-8	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-8	4/30/2007	Silver	BRL	0.005	ND		0.0004	0.01
EW-8	4/30/2007	Zinc	0.006	0.006		J	0.0033	0.02
EW-8	4/30/2007	Mercury	0.00026	0.00026			0.00004	0.0002
EW-8A	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-8A	4/30/2007	Barium	0.0175	0.0175		J	0.0016	0.02
EW-8A	4/30/2007	Cadmium	BRL	0.0025	ND		0.0026	0.005
EW-8A	4/30/2007	Chromium	BRL	0.005	ND		0.0077	0.01
EW-8A	4/30/2007	Copper	0.0027	0.0027		J	0.0017	0.01
EW-8A	4/30/2007	Lead	BRL	0.005	ND		0.0036	0.01
EW-8A	4/30/2007	Nickel	BRL	0.01	ND		0.0034	0.02
EW-8A	4/30/2007	Selenium	BRL	0.01	ND		0.0059	0.02
EW-8A	4/30/2007	Silver	BRL	0.005	ND		0.0004	0.01
EW-8A	4/30/2007	Zinc	0.0051	0.0051		J	0.0033	0.02
EW-8A	4/30/2007	Mercury	0.00045	0.00045			0.00004	0.0002
EW-9	4/30/2007	Arsenic	BRL	0.025	ND		0.0033	0.05
EW-9	4/30/2007	Barium	0.178	0.178			0.0016	0.02
EW-9	4/30/2007	Cadmium	0.0993	0.0993			0.0026	0.005
EW-9	4/30/2007	Chromium	0.0145	0.0145			0.0077	0.01

EW-9	4/30/2007	Copper		1.41	1.41		0.0017	0.01
EW-9	4/30/2007	Lead		0.481	0.481		0.0036	0.01
EW-9	4/30/2007	Nickel		0.135	0.135		0.0034	0.02
EW-9	4/30/2007	Selenium	BRL		0.01	ND	0.0059	0.02
EW-9	4/30/2007	Silver	BRL		0.005	ND	0.0004	0.01
EW-9	4/30/2007	Zinc		5.4	5.4		0.0033	0.02
EW-9	4/30/2007	Mercury	BRL		0.0001	ND	0.00004	0.0002
EW-10	4/30/2007	Arsenic	BRL		0.025	ND	0.0033	0.05
EW-10	4/30/2007	Barium		0.271	0.271		0.0016	0.02
EW-10	4/30/2007	Cadmium		0.0054	0.0054		0.0026	0.005
EW-10	4/30/2007	Chromium	BRL		0.005	ND	0.0077	0.01
EW-10	4/30/2007	Copper		0.0404	0.0404		0.0017	0.01
EW-10	4/30/2007	Lead		0.289	0.289		0.0036	0.01
EW-10	4/30/2007	Nickel		0.0152	0.0152	J	0.0034	0.02
EW-10	4/30/2007	Selenium		0.0159	0.0159	J	0.0059	0.02
EW-10	4/30/2007	Silver	BRL		0.005	ND	0.0004	0.01
EW-10	4/30/2007	Zinc		3.19	3.19		0.0033	0.02
EW-10	4/30/2007	Mercury	BRL		0.0001	ND	0.00004	0.0002
EW-11	4/30/2007	Arsenic	BRL		0.025	ND	0.0033	0.05
EW-11	4/30/2007	Barium		0.0396	0.0396		0.0016	0.02
EW-11	4/30/2007	Cadmium	BRL		0.0025	ND	0.0026	0.005
EW-11	4/30/2007	Chromium	BRL		0.005	ND	0.0077	0.01
EW-11	4/30/2007	Copper		0.0064	0.0064	J	0.0017	0.01
EW-11	4/30/2007	Lead	BRL		0.005	ND	0.0036	0.01
EW-11	4/30/2007	Nickel	BRL		0.01	ND	0.0034	0.02
EW-11	4/30/2007	Selenium	BRL		0.01	ND	0.0059	0.02
EW-11	4/30/2007	Silver	BRL		0.005	ND	0.0004	0.01
EW-11	4/30/2007	Zinc		0.0108	0.0108	J	0.0033	0.02
EW-11	4/30/2007	Mercury	BRL		0.0001	ND	0.00004	0.0002
Ew-11Dup	4/30/2007	Arsenic	BRL		0.025	ND	0.0033	0.05
Ew-11Dup	4/30/2007	Barium		0.0386	0.0386		0.0016	0.02
Ew-11Dup	4/30/2007	Cadmium	BRL		0.0025	ND	0.0026	0.005
Ew-11Dup	4/30/2007	Chromium	BRL		0.005	ND	0.0077	0.01
Ew-11Dup	4/30/2007	Copper		0.0067	0.0067	J	0.0017	0.01
Ew-11Dup	4/30/2007	Lead	BRL		0.005	ND	0.0036	0.01
Ew-11Dup	4/30/2007	Nickel	BRL		0.01	ND	0.0034	0.02
Ew-11Dup	4/30/2007	Selenium	BRL		0.01	ND	0.0059	0.02
Ew-11Dup	4/30/2007	Silver		0.0005	0.0005	J	0.0004	0.01
Ew-11Dup	4/30/2007	Zinc		0.0149	0.0149	J	0.0033	0.02
Ew-11Dup	4/30/2007	Mercury	BRL		0.0001	ND	0.00004	0.0002

APPENDIX F

RISK REDUCTION STANDARD CALCULATIONS

SUMMARY
SOIL RRS

SUBSTANCE	Type 1 Soil RRS (mg/kg)	Type 2 Soil RRS (mg/kg)	Type 3 Subsurface Soil RRS (mg/kg)	Type 3 Surface Soil RRS (mg/kg)	IW Type 4 Soil RRS (mg/kg) (a)
Metals					
Arsenic	2.0E+01	5.8E+00	4.1E+01	3.8E+01	5.8E+00
Barium	1.0E+03	2.6E+03	1.0E+03	1.0E+03	1.7E+04
Cadmium	2.0E+00	1.2E+01	3.9E+01	3.9E+01	7.7E+01
Chromium	1.0E+02	3.8E+01	1.2E+03	1.2E+03	1.2E+02
Copper	1.0E+02	3.1E+03	1.5E+03	1.5E+03	3.5E+04
Lead	7.5E+01	2.7E+02	4.0E+02	4.0E+02	2.7E+02
Mercury	5.0E-01	4.9E+00	1.7E+01	1.7E+01	3.2E+01
Nickel	5.0E+01	4.1E+02	4.2E+02	4.2E+02	2.7E+03
Selenium	2.0E+00	8.1E+00	3.6E+01	3.6E+01	1.0E+02
Zinc	1.0E+02	5.8E+03	2.8E+03	2.8E+03	3.8E+04
Volatile Organic Compounds (VOCs)					
1,2,4-Trimethylbenzene	5.0E-01	7.4E+00	5.0E-01	5.0E-01	2.6E+01
1,3,5-Trimethylbenzene	5.0E-01	1.7E+00	5.0E-01	5.0E-01	5.8E+00
Acetone	4.0E+02	6.0E+01	4.0E+02	4.0E+02	3.9E+02
Benzene	5.0E-01	1.4E-01	5.0E-01	5.0E-01	2.5E-01
Benzene (mid-point)	5.0E-01	1.4E-01	5.0E-01	5.0E-01	2.6E-01
n-Butylbenzene	5.0E-01	7.0E+02	5.0E-01	5.0E-01	4.6E+03
Chloroform	3.7E+00	2.0E+00	1.0E+01	4.7E+00	2.0E+00
cis-1,2-Dichloroethene	5.3E-01	2.9E+00	5.3E-01	5.3E-01	1.9E+01
Cyclohexane	5.0E-01	2.9E+02	5.0E-01	5.0E-01	1.4E+03
Diisopropyl ether	5.0E-01	1.9E+00	5.0E-01	5.0E-01	9.2E+00
Ethylbenzene	7.0E+01	1.0E+02	7.0E+01	7.0E+01	3.4E+02
Isopropylbenzene	2.2E+01	2.6E+01	2.2E+01	2.2E+01	1.3E+02
Methylcyclohexane	5.0E-01	1.6E+03	5.0E-01	5.0E-01	8.1E+03
MTBE	5.0E-01	5.1E-01	5.0E-01	5.0E-01	9.3E-01
n-Propylbenzene	5.0E-01	7.0E+02	5.0E-01	5.0E-01	4.6E+03
Tetrachloroethene	5.0E-01	3.4E-01	5.0E-01	5.0E-01	3.4E-01
Toluene	1.0E+02	7.7E+01	1.0E+02	1.0E+02	4.0E+02
Xylenes	1.0E+03	2.2E+02	1.0E+03	1.0E+03	1.1E+03
Polycyclic Aromatic Hydrocarbons (PAHs)					
Naphthalene	1.0E+02	1.6E+01	1.0E+02	1.0E+02	1.6E+01

IW Industrial Worker
RRS Risk Reduction Standard
ND No Data

Prepared by: MKB 3/15/06
Checked by: LMS 7/5/06

Table 1
Type 1 through Type 4 Ground Water RRS, mg/L

Parameter	Chronic Reference Dose Oral (RfDo) (mg/kg/day)	Chronic Reference Dose Inhalation (RfDi) (mg/kg/day)	Cancer Slope Factor Oral (SFo) (mg/kg/day)-1	Cancer Slope Factor Inhalation (SFi) (mg/kg/day)-1	Weight of Evidence	Source for Chronic RfDs and SFs	Type 1/ Type3 Groundwater RRS (mg/L) (a)		Type 2 Standard Adult Noncarcinogenic (mg/L) (b)	Type 2 Standard Adult Carcinogenic (mg/L) (c)	Type 2 Standard Child Noncarcinogenic (mg/L) (b)	Type 2 Standard Child Carcinogenic (mg/L) (c)	Type 2 Overall RRS (mg/L) (d)	Overall Residential RRS (mg/L) (e)	Type 4 (mg/L) Industrial Worker Noncarcinogenic (mg/L) (b)	Type 4 (mg/L) Industrial Worker Carcinogenic (mg/L) (c)	Type 4 Overall RRS (mg/L) (f)	Overall Nonresidential RRS (mg/L) (g)
Metals																		
Arsenic	3.00E-04	ND	1.50E+00	1.51E+01 *	A	IRIS	1.00E-02		1.10E-02	5.68E-04	4.69E-03	1.22E-03	5.68E-04	1.00E-02	3.07E-02	1.91E-03	1.91E-03	1.00E-02
Barium	2.00E-01	1.4.E-04 *	ND	ND	D	IRIS	2.00E+00		7.30E+00	ND	3.13E+00	ND	3.13E+00	3.13E+00	2.04E+01	ND	2.04E+01	2.04E+01
Cadimum	5.00E-04	ND	ND	6.3E+00 *	B1	IRIS	5.00E-03		1.83E-02	ND	7.82E-03	ND	7.82E-03	7.82E-03	5.11E-02	ND	5.11E-02	5.11E-02
Chromium	3.00E-03	3.00E-05 *	ND	NA	B1	IRIS	1.00E-01		1.10E-01	NA	4.69E-02	NA	4.69E-02	1.00E-01	3.07E-01	NA	3.07E-01	3.07E-01
Copper	4.00E-02	ND	ND	ND	D	HEAST	1.30E+00		1.46E+00	ND	6.26E-01	ND	6.26E-01	1.30E+00	4.09E+00	ND	4.09E+00	4.09E+00
Lead	ND	ND	ND	ND	B2	IRIS	1.50E-02		ND	ND	ND	ND	ND	1.50E-02	ND	ND	ND	1.50E-02
Mercury	3.00E-04	8.60E-05 *	ND	ND	C	IRIS	2.00E-03		1.10E-02	ND	4.69E-03	ND	4.69E-03	4.69E-03	3.07E-02	ND	3.07E-02	3.07E-02
Nickel	2.00E-02	ND	ND	ND	ND	IRIS	1.00E-01		7.30E-01	ND	3.13E-01	ND	3.13E-01	3.13E-01	2.04E+00	ND	2.04E+00	2.04E+00
Selenium	5.00E-03	ND	ND	ND	D	IRIS	5.00E-02		1.83E-01	ND	7.82E-02	ND	7.82E-02	7.82E-02	5.11E-01	ND	5.11E-01	5.11E-01
Zinc	3.00E-01	ND	ND	ND	D	IRIS	2.00E+00		1.10E+01	ND	4.69E+00	ND	4.69E+00	4.69E+00	3.07E+01	ND	3.07E+01	3.07E+01
Volatile Organic Compounds (VOCs)																		
1,2,4-Trimethylbenzene	5.00E-02	1.70E-03	ND	ND	D	PPRTV	5.00E-03	RL	1.23E-02	ND	3.53E-03	ND	3.53E-03	5.00E-03	1.73E-02	ND	1.73E-02	1.73E-02
1,3,5-Trimethylbenzene	5.00E-02	1.70E-03	ND	ND	D	PPRTV	5.00E-03	RL	1.23E-02	ND	3.53E-03	ND	3.53E-03	5.00E-03	1.73E-02	ND	1.73E-02	1.73E-02
Acetone	9.00E-01	ND	ND	ND	D	IRIS	4.00E+00		3.29E+01	ND	1.41E+01	ND	1.41E+01	1.41E+01	9.20E+01	ND	9.20E+01	9.20E+01
Benzene	4.00E-03	8.60E-03	5.50E-02	2.70E-02	A	IRIS	5.00E-03		4.39E-02	4.48E-03	1.39E-02	7.09E-03	4.48E-03	5.00E-03	7.23E-02	8.80E-03	8.80E-03	8.80E-03
Benzene (mid-point)	4.00E-03	8.60E-03	3.50E-02	2.70E-02	A	IRIS	5.00E-03		4.39E-02	5.01E-03	1.39E-02	7.68E-03	5.01E-03	5.01E-03	7.23E-02	9.38E-03	9.38E-03	9.38E-03
n-Butylbenzene	4.00E-02	ND	ND	ND	D	NCEA	5.00E-03	RL	1.46E+00	ND	6.26E-01	ND	6.26E-01	6.26E-01	4.09E+00	ND	4.09E+00	4.09E+00
Chloroform	1.00E-02	1.40E-02	ND	8.10E-02	B2	IRIS, NCEA	1.00E-01		7.98E-02	2.10E-03	2.46E-02	3.00E-03	2.10E-03	1.00E-01	1.26E-01	3.53E-03	3.53E-03	1.00E-01
cis-1,2-Dichloroethene	1.00E-02	ND	ND	ND	D	PPRTV	5.00E-03	RL	3.65E-01	ND	1.56E-01	ND	1.56E-01	1.56E-01	1.02E+00	ND	1.02E+00	1.02E+00
Cyclohexane	ND	1.70E+00	ND	ND	NA	IRIS	5.00E-03	RL	1.24E+01	ND	3.55E+00	ND	3.55E+00	3.55E+00	1.74E+01	ND	1.74E+01	1.74E+01
Diisopropyl ether	ND	1.10E-01	ND	ND	D	PPRTV	5.00E-03	RL	8.03E-01	ND	2.29E-01	ND	2.29E-01	2.29E-01	1.12E+00	ND	1.12E+00	1.12E+00
Ethylbenzne	1.00E-01	2.90E-01	ND	ND	D	IRIS	7.00E-01		1.34E+00	ND	4.36E-01	ND	4.36E-01	7.00E-01	2.30E+00	ND	2.30E+00	2.30E+00
Isopropylbenzene	1.00E-01	1.10E-01	ND	ND	ND	ND	5.00E-03	RL	6.58E-01	ND	2.00E-01	ND	2.00E-01	2.00E-01	1.01E+00	ND	1.01E+00	1.01E+00
Methylcyclohexane	ND	8.60E-01	ND	ND	NA	HEAST	5.00E-03	RL	6.28E+00	ND	1.79E+00	ND	1.79E+00	1.79E+00	8.79E+00	ND	8.79E+00	8.79E+00
Methyl tert-butyl ether (MTBE)	ND	8.60E-01	1.80E-03	1.80E-03	ND	IRIS, Cal EPA	5.00E-03	RL	6.28E+00	7.89E-02	1.79E+00	1.19E-01	7.89E-02	7.89E-02	8.79E+00	1.45E-01	1.45E-01	1.45E-01
n-Propylbenzene	4.00E-02	ND	ND	ND	D	NCEA	5.00E-03	RL	1.46E+00	ND	6.26E-01	ND	6.26E-01	6.26E-01	4.09E+00	ND	4.09E+00	4.09E+00
Tetrachloroethene	1.00E-02	1.00E-02	5.40E-01	2.10E-02	B-C2	IRIS, Cal EPA	5.00E-03		6.08E-02	1.32E-03	1.84E-02	2.62E-03	1.32E-03	5.00E-03	9.29E-02	3.82E-03	3.82E-03	5.00E-03
Toluene	8.00E-02	1.40E+00	ND	ND	D	IRIS	1.00E+00		2.27E+00	ND	8.76E-01	ND	8.76E-01	1.00E+00	5.20E+00	ND	5.20E+00	5.20E+00
Xylenes, mixed	2.00E-01	2.90E-02	ND	ND	D	IRIS	1.00E+01		2.06E-01	ND	5.93E-02	ND	5.93E-02	1.00E+01	2.92E-01	ND	2.92E-01	1.00E+01
Polycyclic Aromatic Hydrocarbons (PAHs)																		
Naphthalene	2.00E-02	8.60E-04	ND	ND	C	IRIS	2.00E-02		6.22E-03	ND	1.78E-03	ND	1.78E-03	2.00E-02	8.75E-03	ND	8.75E-03	2.00E-02

Notes:

(a) Value from Appendix III, Table 1 of the *Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Hazardous Site Reponse, Chapter 319-3-19*.
For those constituents not listed, the reporting limit (RL) used as the Type 1/3 RRS.

(b) $$\frac{THi \times BW \times ATn \times 365days/year}{EF \times ED \times [(1/RfDi \times K \times IRa) + (1/RfDo \times IRw)]}$$

(c) $$\frac{TR \times BW \times ATc \times 365days/year}{EF \times ED \times [(SFi \times K \times IRa) + (SFo \times IRw)]}$$

(d) Value is the mimimum of the Type 2 Standard noncarcinogenic and carcinogenic concentration calculations.
(e) Value is the maximum concentration of the Type 1/3 Groundwater RRS and the Overall Type 2 RRS
(f) Value is the minimum of the Type 4 noncarcinogenic and carcinogenic concentration calculations.
(g) Value is the maximum concentration of the overall residential RRS and the overall Type 4 RRS
* Inorganics are not volatile during showering and the inhalation pathway is not applicable.

IRIS	Integrated Risk Information System, USEPA
HEAST	Health Effects Assessment Summary Table FY1997, USEPA
NCEA	National Center for Environmental Assessment, USEPA.
PPRTV	Provisional Peer Reviewed Toxicity Values, USEPA
CalEPA	California Environmental Protection Agency
GaEPD	Georgia Environmental Protection Division
RfD	Reference Dose
SF	Cancer Slope Factor
ND	Not Determined/Not Available.
RRS	Risk Reduction Standard
RL	Reporting Limit

Prepared by: MKB 3/6/06
Checked by: LMS 7/5/06

Table 2
Type 1 and 3 Soil Calculations, mg/kg

PARAMETER	Volatilization Factor (m^3/kg)	HSRA Type 1 Soil Criteria (mg/kg) (a)	HSRA Appendix I Value (mg/kg) (b)	Type 1 Groundwater RRS (mg/L) (c)		Type 1 GW RRS x 100 (mg/kg)	Number 1 (mg/kg) (d)	Risk-Based Residential Type 1 Noncarcinogenic (mg/kg) (e)	Risk-Based Residential Type 1 Carcinogenic (mg/kg) (f)	Risk-Based Soil Type 1 RRS (mg/kg) (g)	Overall Type 1 RRS (mg/kg) (h)	Risk-Based Nonresidential Type 3 Noncarcinogenic (mg/kg) (e)	Risk-Based Nonresidential Type 3 Carcinogenic (mg/kg) (f)	Risk-Based Soil Type 3 RRS (mg/kg) (g)	Subsurface Soil Type 3 RRS (mg/kg) (i)	Surface Soil Type 3 RRS (mg/kg) (j)
Metals																
Arsenic	0.0E+00	2.0E+01	4.1E+01	1.00E-02		1.00E+00	4.1E+01	1.9E+02	9.96E+00	1.0E+01	2.0E+01	6.E+02	3.81E+01	3.8E+01	4.1E+01	3.8E+01
Barium	0.0E+00	1.0E+03	5.0E+02	2.00E+00		2.00E+02	5.0E+02	1.2E+05	ND	1.2E+05	1.0E+03	4.E+05	ND	3.6E+05	1.0E+03	1.0E+03
Cadmium	0.0E+00	2.0E+00	3.9E+01	5.00E-03		5.00E-01	3.9E+01	3.2E+02	8.35E+04	3.2E+02	2.0E+00	1.0E+03	1.05E+05	1.0E+03	3.9E+01	3.9E+01
Chromium	0.0E+00	1.0E+02	1.2E+03	1.00E-01		1.00E+01	1.2E+03	1.9E+03	1.25E+04	1.9E+03	1.0E+02	6.E+03	1.58E+04	6.1E+03	1.2E+03	1.2E+03
Copper	0.0E+00	1.0E+02	1.5E+03	1.30E+00		1.30E+02	1.5E+03	2.6E+04	ND	2.6E+04	1.0E+02	8.E+04	ND	8.2E+04	1.5E+03	1.5E+03
Lead	0.0E+00	7.5E+01	4.0E+02	1.50E-02		1.50E+00	4.0E+02	ND	ND	ND	7.5E+01	ND	ND	ND	4.0E+02	4.0E+02
Mercury	0.0E+00	5.0E-01	1.7E+01	2.00E-03		2.00E-01	1.7E+01	1.9E+02	ND	1.9E+02	5.0E-01	6.E+02	ND	6.1E+02	1.7E+01	1.7E+01
Nickel	0.0E+00	5.0E+01	4.2E+02	1.00E-01		1.00E+01	4.2E+02	1.3E+04	ND	1.3E+04	5.0E+01	4.E+04	ND	4.1E+04	4.2E+02	4.2E+02
Selenium	0.0E+00	2.0E+00	3.6E+01	5.00E-02		5.00E+00	3.6E+01	3.2E+03	ND	3.2E+03	2.0E+00	1.E+04	ND	1.0E+04	3.6E+01	3.6E+01
Zinc	0.0E+00	1.0E+02	2.8E+03	2.00E+00		2.00E+02	2.8E+03	1.9E+05	ND	1.9E+05	1.0E+02	6.E+05	ND	6.1E+05	2.8E+03	2.8E+03
Volatile Organic Compounds (VOCs)																
1,2,4-Trimethylbenzene	2.48E+04	ND	ND	5.00E-03	RL	5.00E-01	5.0E-01	2.0E+02	ND	2.0E+02	5.0E-01	2.E+02	ND	2.2E+02	5.0E-01	5.0E-01
1,3,5-Trimethylbenzene	1.00E+04	ND	ND	5.00E-03	RL	5.00E-01	5.0E-01	8.3E+01	ND	8.3E+01	5.0E-01	9.E+01	ND	8.7E+01	5.0E-01	5.0E-01
Acetone	2.88E+03	ND	2.7E+00	4.00E+00		4.00E+02	4.0E+02	5.8E+05	ND	5.8E+05	4.0E+02	2.E+06	ND	1.8E+06	4.0E+02	4.0E+02
Benzene	2.87E+03	ND	2.00E-02	5.00E-03		5.00E-01	5.0E-01	1.1E+02	1.16E+01	1.2E+01	5.0E-01	1.E+02	1.50E+01	1.5E+01	5.0E-01	5.0E-01
Benzene (mid-point)	2.87E+03	ND	2.00E-02	5.00E-03		5.00E-01	5.0E-01	1.1E+02	1.17E+01	1.2E+01	5.0E-01	1.E+02	1.51E+01	1.5E+01	5.0E-01	5.0E-01
n-Butylbenzene	1.43E+04	ND	ND	5.00E-03	RL	5.00E-01	5.0E-01	2.6E+04	ND	2.6E+04	5.0E-01	8.E+04	ND	8.2E+04	5.0E-01	5.0E-01
Chloroform	2.67E+03	ND	6.80E-01	1.00E-01		1.00E+01	1.0E+01	1.8E+02	3.74E+00	3.7E+00	3.7E+00	2.E+02	4.72E+00	4.7E+00	1.0E+01	4.7E+00
cis-1,2-Dichloroethene	2.84E+03	ND	5.3E-01	5.0E-03	RL	5.00E-01	5.3E-01	6.4E+03	ND	6.4E+03	5.3E-01	2.0E+04	ND	2.0E+04	5.3E-01	5.3E-01
Cyclohexane	6.84E+02	ND	3.1E-02	5.0E-03	RL	5.00E-01	5.0E-01	5.7E+03	ND	5.7E+03	5.0E-01	6.E+03	ND	5.9E+03	5.0E-01	5.0E-01
Diisopropyl ether	1.94E+03	ND	ND	5.0E-03	RL	5.00E-01	5.0E-01	1.0E+03	ND	1.0E+03	5.0E-01	1.E+03	ND	1.1E+03	5.0E-01	5.0E-01
Ethylbenzene	6.58E+03	ND	2.00E+01	7.00E-01		7.00E+01	7.0E+01	8.1E+03	ND	8.1E+03	7.0E+01	9.E+03	ND	9.3E+03	7.0E+01	7.0E+01
Isopropylbenzene	2.31E+02	ND	2.19E+01	5.00E-03	RL	5.00E-01	2.2E+01	1.2E+02	ND	1.2E+02	2.2E+01	1.E+02	ND	1.3E+02	2.2E+01	2.2E+01
Methylcyclohexane	2.19E+03	ND	ND	5.0E-03	RL	5.00E-01	5.0E-01	9.2E+03	ND	9.2E+03	5.0E-01	1.E+04	ND	9.6E+03	5.0E-01	5.0E-01
MTBE	2.95E+03	ND	ND	5.00E-03	RL	5.00E-01	5.0E-01	1.2E+04	1.82E+02	1.8E+02	5.0E-01	1.3E+04	2.33E+02	2.3E+02	5.0E-01	5.0E-01
n-Propylbenzene	1.43E+04	ND	ND	5.00E-03	RL	5.00E-01	5.0E-01	2.6E+04	ND	2.6E+04	5.0E-01	8.E+04	ND	8.2E+04	5.0E-01	5.0E-01
Tetrachloroethene	2.82E+03	ND	1.80E-01	5.00E-03		5.00E-01	5.0E-01	1.3E+02	9.83E+00	9.8E+00	5.0E-01	1.E+02	1.63E+01	1.6E+01	5.0E-01	5.0E-01
Toluene	4.70E+03	ND	1.44E+01	1.00E+00		1.00E+02	1.0E+02	2.0E+04	ND	2.0E+04	1.0E+02	3.E+04	ND	2.8E+04	1.0E+02	1.0E+02
Xylenes	7.21E+03	ND	2.00E+01	1.00E+01		1.00E+03	1.0E+03	1.0E+03	ND	1.0E+03	1.0E+03	1.E+03	ND	1.1E+03	1.0E+03	1.0E+03
Polycyclic Aromatic Hydrocarbons (PAHs)																
Naphthalene	7.07E+04	ND	1.0E+02	2.0E-02		2.00E+00	1.0E+02	2.9E+02	ND	2.9E+02	1.0E+02	3.E+02	ND	3.1E+02	1.0E+02	1.0E+02

Notes:

(a) Table 2, Appendix III of HSRA regulations

(b) Appendix I of HSRA regulations. Value is the soil concentration that triggers notification requirements.

(c) Table 1, Appendix III of HSRA regulations. For those substances not listed, reporting limit used as the Type 1 groundwater RRS.

(d) Value is the highest of the Appendix I value and the groundwater RRS x 100.

(e) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/K + 1/PEF) \times InhR) + (1/RfDo \times IRs)]}$$

(f) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/K + 1/PEF) \times InhR) + (SFo \times IRs)]}$$

(g) Minimun of noncarcinogenic and carcinogenic concentrations.

(h) Minimum concentration of Number 1 and Type 1 RRS.

(i) Maxiumm concentration of Number 1 and HSRA Type 1 Soil Criteria.

(j) Minimum concentration of the risk-based soil Type 3 RRS and the subsurface soil Type 3 RRS.

RL Reporting Limit

RRS Risk Reduction Standard

GW Groundwater

ND Not Determined

PREPARED/DATE: MKB 2/20/06
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Table 3
Type 2 Soil Calculations, mg/kg

PARAMETER	Volatilization Factor (m^3/kg)	Residential Soil Leaching Criteria (mg/kg) (a)	Residential Child - Type 2 Noncarcinogenic (mg/kg) (b)	Residential Child - Type 2 Carcinogenic (mg/kg) (c)	Child - Type 2 RRS (mg/kg) (d)	Residential Adult - Type 2 Noncarcinogenic (mg/kg) (b)	Residential Adult - Type 2 Carcinogenic (mg/kg) (c)	Adult - Type 2 RRS (mg/kg) (d)	Overall Type 2 RRS (mg/kg) (e)
Metals									
Arsenic	0.0E+00	5.8E+00	2.3E+01	6.1E+00	6.1E+00	2.2E+02	1.1E+01	1.1E+01	5.8E+00
Barium	0.0E+00	2.6E+03	1.5E+04	ND	1.5E+04	1.4E+05	ND	1.4E+05	2.6E+03
Cadmium	0.0E+00	1.2E+01	3.9E+01	8.9E+04	3.9E+01	3.7E+02	6.3E+04	3.7E+02	1.2E+01
Chromium	0.0E+00	3.8E+01	2.3E+02	1.3E+04	2.3E+02	2.2E+03	9.4E+03	2.2E+03	3.8E+01
Copper	0.0E+00	1.1E+04	3.1E+03	ND	3.1E+03	2.9E+04	ND	2.9E+04	3.1E+03
Lead	0.0E+00	2.7E+02	ND	ND	ND	ND	ND	ND	2.7E+02
Mercury	0.0E+00	4.9E+00	2.3E+01	ND	2.3E+01	2.2E+02	ND	2.2E+02	4.9E+00
Nickel	0.0E+00	4.1E+02	1.6E+03	ND	1.6E+03	1.5E+04	ND	1.5E+04	4.1E+02
Selenium	0.0E+00	8.1E+00	3.9E+02	ND	3.9E+02	3.7E+03	ND	3.7E+03	8.1E+00
Zinc	0.0E+00	5.8E+03	2.3E+04	ND	2.3E+04	2.2E+05	ND	2.2E+05	5.8E+03
Volatile Organic Compounds (VOCs)									
1,2,4-Trimethylbenzene	2.48E+04	7.4E+00	4.4E+01	ND	4.4E+01	1.5E+02	ND	1.5E+02	7.4E+00
1,3,5-Trimethylbenzene	1.00E+04	1.7E+00	1.8E+01	ND	1.8E+01	6.2E+01	ND	6.2E+01	1.7E+00
Acetone	2.88E+03	6.0E+01	7.0E+04	ND	7.0E+04	6.6E+05	ND	6.6E+05	6.0E+01
Benzene	2.87E+03	1.4E-01	2.4E+01	1.2E+01	1.2E+01	8.7E+01	8.8E+00	8.8E+00	1.4E-01
Benzene (mid-point)	2.87E+03	1.4E-01	2.4E+01	1.2E+01	1.2E+01	8.7E+01	8.9E+00	8.9E+00	1.4E-01
n-Butylbenzene	1.43E+04	7.0E+02	3.1E+03	ND	3.1E+03	2.9E+04	ND	2.9E+04	7.0E+02
Chloroform	2.67E+03	2.0E+00	3.7E+01	4.0E+00	4.0E+00	1.3E+02	2.8E+00	2.8E+00	2.0E+00
cis-1,2-Dichloroethene	2.84E+03	2.9E+00	7.8E+02	ND	7.8E+02	7.3E+03	ND	7.3E+03	2.9E+00
Cyclohexane	6.84E+02	2.9E+02	1.2E+03	ND	1.2E+03	4.2E+03	ND	4.2E+03	2.9E+02
Diisopropyl ether	1.94E+03	1.9E+00	2.2E+02	ND	2.2E+02	7.8E+02	ND	7.8E+02	1.9E+00
Ethylbenzene	6.58E+03	1.0E+02	1.6E+03	ND	1.6E+03	6.4E+03	ND	6.4E+03	1.0E+02
Isopropylbenzene	2.31E+02	3.5E+01	2.6E+01	ND	2.6E+01	9.2E+01	ND	9.2E+01	2.6E+01
Methylcyclohexane	2.19E+03	1.6E+03	2.0E+03	ND	2.0E+03	6.9E+03	ND	6.9E+03	1.6E+03
MTBE	2.95E+03	5.1E-01	2.6E+03	1.9E+02	1.9E+02	9.3E+03	1.4E+02	1.4E+02	5.1E-01
n-Propylbenzene	1.43E+04	7.0E+02	3.1E+03	ND	3.1E+03	2.9E+04	ND	2.9E+04	7.0E+02
Tetrachloroethene	2.82E+03	3.4E-01	2.8E+01	8.3E+00	8.3E+00	1.0E+02	8.4E+00	8.4E+00	3.4E-01
Toluene	4.70E+03	7.7E+01	3.3E+03	ND	3.3E+03	1.7E+04	ND	1.7E+04	7.7E+01
Xylenes	7.21E+03	1.6E+03	2.2E+02	ND	2.2E+02	7.6E+02	ND	7.6E+02	2.2E+02
Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	7.07E+04	1.6E+01	6.1E+01	ND	6.1E+01	2.2E+02	ND	2.2E+02	1.6E+01

Notes:

(a) From Table A-7

(b) $$\frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/K + 1/PEF) \times InhR) + (1/RfDo \times IRs)]}$$

(c) $$\frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/K + 1/PEF) \times IRa) + (SFo \times IRw)]}$$

(d) Minimum concentration of the noncarcinogenic and carcinogenic values.

(e) Minimum concentration of the Child Type 2 RRS, Adult Type 2 RRS, and the residential soil leaching criteria.

NC Noncarcinogen
C Carcinogen
RRS Risk Reduction Standard
GW Groundwater
ND Not Determined

PREPARED/DATE: MKB 2/20/06
CHECKED/DATE: LMS 7/5/06

Table 4
Type 4 Soil Calculations, mg/kg

SUBSTANCE	Volatilization Factor (m^3/kg)	Type 4 Leaching Criteria (mg/kg) (a)	Construction Worker Type 4 Noncarcinogenic	Construction Worker Type 4 Carcinogenic	Construction Worker Type 4 RRS	CW Type 4 Soil RRS (mg/kg) (b)	Industrial Worker Type 4 Noncarcinogenic	Industrial Worker Type 4 Carcinogenic	Industrial Worker Type 4 RRS	Industrial Type 4 Soil RRS (mg/kg) (c)
Metals										
Arsenic	0.0E+00	5.8E+00	1.9E+02	2.9E+02	1.9E+02	5.8E+00	6.1E+02	3.8E+01	3.8E+01	5.8E+00
Barium	0.0E+00	1.7E+04	1.2E+05	ND	1.2E+05	1.7E+04	3.6E+05	ND	3.6E+05	1.7E+04
Cadmium	0.0E+00	7.7E+01	3.1E+02	5.3E+06	3.1E+02	7.7E+01	1.0E+03	1.1E+05	1.0E+03	7.7E+01
Chromium	0.0E+00	1.2E+02	1.9E+03	7.9E+05	1.9E+03	1.2E+02	6.1E+03	1.6E+04	6.1E+03	1.2E+02
Copper	0.0E+00	3.5E+04	2.5E+04	ND	2.5E+04	2.5E+04	8.2E+04	ND	8.2E+04	3.5E+04
Lead	0.0E+00	2.7E+02	9.0E+02	ND	9.0E+02	2.7E+02	9.0E+02	ND	9.0E+02	2.7E+02
Mercury	0.0E+00	3.2E+01	1.9E+02	ND	1.9E+02	3.2E+01	6.1E+02	ND	6.1E+02	3.2E+01
Nickel	0.0E+00	2.7E+03	1.2E+04	ND	1.2E+04	2.7E+03	4.1E+04	ND	4.1E+04	2.7E+03
Selenium	0.0E+00	1.0E+02	3.1E+03	ND	3.1E+03	1.0E+02	1.0E+04	ND	1.0E+04	1.0E+02
Zinc	0.0E+00	3.8E+04	1.9E+05	ND	1.9E+05	3.8E+04	6.1E+05	ND	6.1E+05	3.8E+04
Volatile Organic Compounds (VOCs)										
1,2,4-Trimethylbenzene	2.48E+04	2.6E+01	4.3E+02	ND	4.3E+02	2.6E+01	2.2E+02	ND	2.2E+02	2.6E+01
1,3,5-Trimethylbenzene	1.00E+04	5.8E+00	1.7E+02	ND	1.7E+02	5.8E+00	8.7E+01	ND	8.7E+01	5.8E+00
Acetone	2.88E+03	3.9E+02	5.6E+05	ND	5.6E+05	3.9E+02	1.8E+06	ND	1.8E+06	3.9E+02
Benzene	2.87E+03	2.5E-01	2.3E+02	6.9E+02	2.3E+02	2.5E-01	1.2E+02	1.5E+01	1.5E+01	2.5E-01
Benzene (mid-point)	2.87E+03	2.6E-01	2.3E+02	7.2E+02	2.3E+02	2.6E-01	1.2E+02	1.5E+01	1.5E+01	2.6E-01
n-Butylbenzene	1.43E+04	4.6E+03	2.5E+04	ND	2.5E+04	4.6E+03	8.2E+04	ND	8.2E+04	4.6E+03
Chloroform	2.67E+03	2.0E+00	3.6E+02	2.4E+02	2.4E+02	2.0E+00	1.9E+02	4.7E+00	4.7E+00	2.0E+00
cis-1,2-Dichloroethene	2.84E+03	1.9E+01	6.2E+03	ND	6.2E+03	1.9E+01	2.0E+04	ND	2.0E+04	1.9E+01
Cyclohexane	6.84E+02	1.4E+03	1.2E+04	ND	1.2E+04	1.4E+03	5.9E+03	ND	5.9E+03	1.4E+03
Diisopropyl ether	1.94E+03	9.2E+00	2.2E+03	ND	2.2E+03	9.2E+00	1.1E+03	ND	1.1E+03	9.2E+00
Ethylbenzene	6.58E+03	3.4E+02	1.5E+04	ND	1.5E+04	3.4E+02	9.3E+03	ND	9.3E+03	3.4E+02
Isopropylbenzene	2.31E+02	1.8E+02	2.6E+02	ND	2.6E+02	1.8E+02	1.3E+02	ND	1.3E+02	1.3E+02
Methylcyclohexane	2.19E+03	8.1E+03	1.9E+04	ND	1.9E+04	8.1E+03	9.6E+03	ND	9.6E+03	8.1E+03
MTBE	2.95E+03	9.3E-01	2.6E+04	1.1E+04	1.1E+04	9.3E-01	1.3E+04	2.3E+02	2.3E+02	9.3E-01
n-Propylbenzene	1.43E+04	4.6E+03	2.5E+04	ND	2.5E+04	4.6E+03	8.2E+04	ND	8.2E+04	4.6E+03
Tetrachloroethene	2.82E+03	3.4E-01	2.8E+02	4.4E+02	2.8E+02	3.4E-01	1.4E+02	1.6E+01	1.6E+01	3.4E-01
Toluene	4.70E+03	4.0E+02	2.9E+04	ND	2.9E+04	4.0E+02	2.8E+04	ND	2.8E+04	4.0E+02
Xylenes	7.21E+03	1.6E+03	2.1E+03	ND	2.1E+03	1.6E+03	1.1E+03	ND	1.1E+03	1.1E+03
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	7.07E+04	1.6E+01	5.9E+02	ND	5.9E+02	1.6E+01	3.1E+02	ND	3.1E+02	1.6E+01

Notes:

(a) Based on the higher of Type 1, Type 2, or Type 4 (industrial worker) ground-water RRS, but no greater than 100,000 mg/kg.
(b) Lower of Type 4 Leaching Criteria and Construction Worker soil RRS.
(c) Lower of Type 4 Leaching Criteria and Industrial Worker soil RRS.

NC Noncarcinogen
C Carcinogen
RRS Risk Reduction Standard
GW Groundwater
ND Not Determined

PREPARED/DATE: MKB 2/20/06
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Table 5
Exposure Parameters for Soil and Ground Water

Exposure Parameters for Type 4 Soil	Construction Worker	Industrial Worker	Units
Hazard Index	1	1	
Target Risk	1E-05	1E-05	
Body Weight	70	70	kg
Averaging Time, Carcinogen	70	70	years
Averaging Time, Noncarcinogen	1(a)	25	years
Exposure Duration	1 (a)	25	years
Exposure Frequency	125 (a)	250	days/yr
Soil Ingestion Rate	330 (b)	50	mg/day
Air Inhalation Rate	20	20	m^3/day
PEF	4.63E+09	4.63E+09	m^3/kg
CF	1E-06	1E-06	kg/mg

Exposure Parameters for Type 2 Soil:	Residential Child	Residential Adult	Units
Hazard Index	1	1	
Target Risk	1E-05	1E-05	
Body Weight	15	70	kg
Averaging Time, Carcinogen	70	70	years
Averaging Time, Noncarcinogen	6	30	years
Exposure Duration	6	30	years
Exposure Frequency	350	350	days/yr
Soil Ingestion Rate	200	100	mg/day
Air Inhalation Rate	15	20	m^3/day
PEF	4.63E+09	4.63E+09	m^3/kg
CF	1E-06	1E-06	kg/mg

Exposure Parameters for Type 1 and Type 3 Soils:	Residential Type 1	Nonresidential Type 3	Units
Hazard Index	1	1	
Target Risk	1.E-05	1E-05	
Body Weight	70	70	kg
Averaging Time, Carcinogen	70	70	years
Averaging Time, Noncarcinogen	30	25	years
Exposure Duration	30	25	years
Exposure Frequency	350	250	days/yr
Soil Ingestion Rate	114	50	mg/day
Air Inhalation Rate	15	20	m^3/day
PEF	4.63E+09	4.63E+09	m^3/kg
CF	1E-06	1E-06	kg/mg

Exposure Parameters for Type 4 Ground Water	Industrial Worker	Construction Worker	Units
Hazard Index	1	1	
Target Risk	1E-05 1E-04	1E-05 (Class A and B); 1E-04 (Class C)	
Body Weight	70	70	kg
Averaging Time, Carcinogen	70	70	years
Averaging Time, Noncarcinogen	25	1(a)	years
Exposure Duration	25	1 (a)	years
Exposure Frequency	250	125 (a)	day/year
Water Ingestion Rate	1	0.08 (c)	L/day
Air Inhalation Rate	20	20	m^3/day
Volatilization Factor = 0.0005 x 1000 L/m3 =	0.5	0.5	L/m3

Exposure Parameters for Type 2 Ground Water:	Residential Child	Residential Adult	Units
Hazard Index	1	1	
Target Risk	1E-05 1E-04	1E-05 (Class A and B); 1E-04 (Class C)	
Body Weight	15	70	kg
Averaging Time, Carcinogen	70	70	years
Averaging Time, Noncarcinogen	6	30	years
Exposure Duration	6	30	years
Exposure Frequency	350	350	day/year
Water Ingestion Rate	1	2	L/day
Air Inhalation Rate	15	20	m^3/day
Volatilization Factor = 0.0005 x 1000 L/m3 =	0.5	0.5	L/m3

(a) Soil-intrusive construction work assumed to occur for a 6-month period - Site-specific assumption.
i.e., work days = 125 days and exposure duration = 1 year; AT = ED x 365 days
(b) Soil ingestion rate for construction worker, Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, USEPA, December 2002
(c) USEPA Region 4 Human Health Risk Assessment Bulletins, May 2000, incidental ingestion of surface water during wading, 0.01 L/hour x 8 hour workday.

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Table 6
Toxicity Values

PARAMETER	Chronic Reference Dose		Cancer Slope Factor			
	Oral (RfDo) (mg/kg/day)	Inhalation (RfDi) (mg/kg/day)	Oral (SFo) (mg/kg/day)-1	Inhalation (SFi) (mg/kg/day)-1	Weight of Evidence	Source for Chronic RfDs and SFs
Metals						
Arsenic	3.00E-04	ND	1.50E+00	1.51E+01	A	IRIS
Barium	2.00E-01	1.40E-04	ND	ND	D	IRIS
Cadmium	5.00E-04	ND	ND	6.30E+00	B1	IRIS
Chromium	3.00E-03	3.00E-05	ND	4.20E+01	B1	IRIS
Copper	4.00E-02	ND	ND	ND	D	HEAST
Lead	ND	ND	ND	ND	B2	IRIS
Mercury	3.00E-04	8.60E-05	ND	ND	C	IRIS
Nickel	2.00E-02	ND	ND	ND	ND	IRIS
Selenium	5.00E-03	ND	ND	ND	D	IRIS
Zinc	3.00E-01	ND	ND	ND	D	IRIS
Volatile Organic Compounds (VOCs)						
1,2,4-Trimethylbenzene	5.00E-02	1.70E-03	ND	ND	D	PPRTV
1,3,5-Trimethylbenzene	5.00E-02	1.70E-03	ND	ND	D	PPRTV
Acetone	9.00E-01	ND	ND	ND	NA	IRIS
Benzene	4.00E-03	8.60E-03	5.50E-02	2.70E-02	A	IRIS
Benzene (mid-point)	4.00E-03	8.60E-03	3.50E-02	2.70E-02	A	IRIS
n-Butylbenzene	4.00E-02	ND	ND	ND	D	NCEA
Chloroform	1.00E-02	1.40E-02	ND	8.10E-02	B2	IRIS, NCEA
cis-1,2-Dichloroethene	1.00E-02	ND	ND	ND	D	PPRTV
Cyclohexane	ND	1.70E+00	ND	ND	NA	IRIS
Diisopropyl ether	ND	1.10E-01	ND	ND	D	PPRTV
Ethylbenzene	1.00E-01	2.90E-01	ND	ND	D	IRIS
Isopropylbenzene	1.00E-01	1.10E-01	ND	ND	ND	ND
Methylcyclohexane	ND	8.60E-01	ND	ND	NA	HEAST
MTBE	ND	8.60E-01	1.80E-03	1.80E-03	D	IRIS, Cal EPA
n-Propylbenzene	4.00E-02	ND	ND	ND	D	NCEA
Tetrachloroethene	1.00E-02	1.00E-02	5.40E-01	2.10E-02	B-C2	IRIS, Cal EPA
Toluene	8.00E-02	1.40E+00	ND	ND	D	IRIS
Xylenes	2.00E-01	2.90E-02	ND	ND	D	IRIS
Polycyclic Aromatic Hydrocarbons (PAHs)						
Naphthalene	2.00E-02	8.60E-04	ND	ND	C	IRIS

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Table 7
Soil to Ground water Leachability

	K_d (a) (L/kg)	K_{oc} (b) (L/kg)	Source	$Ø_w$	Øa	H' (unitless)	Øw+Øa*H'/ρ_b	Groundwater Type 1/3 RRS (mg/L) (c)	Groundwater Type 1/3 RRS x 20 (Cw) (mg/L)	Pathway Type 1/3 Soil Screening Level (Cs) (mg/kg) (d)
Metals/Inorganics										
Arsenic	2.90E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	1.0E-02	2.0E-01	5.8E+00
Barium	4.10E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	2.0E+00	4.0E+01	1.6E+03
Cadmium	7.50E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	5.0E-03	1.0E-01	7.5E+00
Chromium	1.90E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	1.0E-01	2.0E+00	3.8E+01
Copper	4.30E+02	NA	SCDM	0.3	0.13	0.00E+00	0.20000	1.3E+00	2.6E+01	1.1E+04
Lead	9.00E+02	NA	SCDM	0.3	0.13	0.00E+00	0.20000	1.5E-02	3.0E-01	2.7E+02
Mercury	5.20E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	2.0E-03	4.0E-02	2.1E+00
Nickel	6.50E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	1.0E-01	2.0E+00	1.3E+02
Selenium	5.00E+00	NA	SSG	0.3	0.13	0.00E+00	0.20000	5.0E-02	1.0E+00	5.2E+00
Zinc	6.20E+01	NA	SSG	0.3	0.13	0.00E+00	0.20000	2.0E+00	4.0E+01	2.5E+03
Volatile Organic Compounds (VOCs)										
1,2,4-Trimethylbenzene	7.40E+01	3.70E+03	Region 9	0.3	0.13	2.30E-01	0.2199	5.0E-03	1.0E-01	7.4E+00
1,3,5-Trimethylbenzene	1.64E+01	8.20E+02	Region 9	0.3	0.13	3.20E-01	0.2277	5.0E-03	1.0E-01	1.7E+00
Acetone	1.15E-02	5.75E-01	SSG	0.3	0.13	1.59E-03	0.20014	4.0E+00	8.0E+01	1.7E+01
Benzene	1.18E+00	5.89E+01	SSG	0.3	0.13	2.28E-01	0.21976	5.0E-03	1.0E-01	1.4E-01
Benzene (mid-point)	1.18E+00	5.89E+01	SSG	0.3	0.13	2.28E-01	0.21976	5.0E-03	1.0E-01	1.4E-01
n-Butylbenzene	5.60E+01	2.80E+03	Region 9	0.3	0.13	5.40E-01	0.24680	5.0E-03	1.0E-01	5.6E+00
Chloroform	7.96E-01	3.98E+01	SSG	0.3	0.13	1.50E-01	0.21300	1.0E-01	2.0E+00	2.0E+00
cis-1,2-Dichloroethene	7.10E-01	3.55E+01	SSG	0.3	0.13	1.67E-01	0.21447	5.0E-03	1.0E-01	9.2E-02
Cyclohexane	3.20E+00	1.60E+02	Region 9	0.3	0.13	8.20E+00	0.91067	5.0E-03	1.0E-01	4.1E-01
Diisopropyl ether	2.10E-01	1.05E+01	ORNL	0.3	0.13	2.42E-02	0.20210	5.0E-03	1.0E-01	4.1E-02
Ethylbenzene	7.26E+00	3.63E+02	SSG	0.3	0.13	3.23E-01	0.2280	7.0E-01	1.4E+01	1.0E+02
Isopropylbenzene	4.40E+00	2.20E+02	Region 9	0.3	0.13	4.90E+01	4.4467	5.0E-03	1.0E-01	8.8E-01
Methylcyclohexane	4.40E+01	2.20E+03	Region 9	0.3	0.13	1.80E+01	1.7600	5.0E-03	1.0E-01	4.6E+00
MTBE	1.20E-01	6.00E+00	Region 9	0.3	0.13	2.42E-02	0.20210	5.0E-03	1.0E-01	3.2E-02
n-Propylbenzene	5.60E+01	2.80E+03	Region 9	0.3	0.13	5.40E-01	0.24680	5.0E-03	1.0E-01	5.6E+00
Tetrachloroethene	3.10E+00	1.55E+02	SSG	0.3	0.13	7.54E-01	0.26535	5.0E-03	1.0E-01	3.4E-01
Toluene	3.64E+00	1.82E+02	SSG	0.3	0.13	2.72E-01	0.22357	1.0E+00	2.0E+01	7.7E+01
Xylenes	7.72E+00	3.86E+02	SSG AV	0.3	0.13	2.76E-01	0.22392	1.0E+01	2.0E+02	1.6E+03
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	4.00E+01	2.00E+03	SSG	0.3	0.13	1.98E-02	0.2017	2.0E-02	4.0E-01	1.6E+01

Notes:

(a) For Inorganics/metals: Kd values taken from USEPA, Soil Screening Guidance: Technical Background Document, EPA/540/R95/129, May 1996, unless otherwise indicated.
For all other constituents, Kd = Koc * foc where foc equal 0.02 (Georgia EPD HSRA Rules)
(b) Values taken from USEPA, Soil Screening Guidance: Technical Background Document, EPA/540/R95/129, May 1996, unless otherwise indicated.
(c) Value from Appendix III, Table 1 of the *Rules of the Georgia Department of Natural Resources, Environmental Protection Division, Hazardous Site Reponse, Chapter 319-3-19*.
For those constituents not listed, the reporting limit (RL) used as the Type 1/3 RRS.
(d) [Kd + (Øw+Øa*H'/ρb)] *Cw
(e) From Table 1.
(f) Value is the maxium soil screening Level (Cs) of Pathway 1/3 and Pathway 2.
(g) Value is the maxium soil screening Level (Cs) of Pathway 1/3, Pathway 2, and Pathway 4.
(h) Type 1/Type 3 based value higher than Type 4 based values.
(i) If value greater than 100,000 mg/kg, 100,000 mg/kg used as surrogate.

Equation - Leaching value = Cw [Kd + (θw + θaH')/ρb]
SSG Soil Screening Guidance (US Environmental Protection Agency, 1996)
SCDM Superfund Chemical Data Matrix (US Environmental Protection Agency, 2004)
Region 9 Value from chemical parameter table, USEPA Region 9 Preliminary Remediation Goals Table.
NA Not Applicable
Kd Soil-Water Partition Coefficient (L/kg)
Koc Soil organic carbon-water partition coefficient (L/kg)
foc Organic carbon content of soil (kg/kg)
Øw Water-filled soil porosity = 0.3 (L/L)
Øa Air-filled soil porosity = 0.13 (L/L)
H' Dimensionless Henry Law Constant (HLC x 41) (unitless)
ρb Dry soil bulk density = 1.5 kg/L
RRS Risk Reduction Standard
Cw Target Leachate Concentration (mg/L)
Cs Screening Level in soil (mg/kg)

PREPARED/DATE: MKB 2/20/06
CHECKED/DATE: LMS 7/5//06

Table 7
Soil to Ground water Leachability

	Groundwater Type 2 RRS (mg/L) (e)	Groundwater Type 2 RRS x 20 (Cw) (mg/L)	Pathway Type 2 Soil Screening Level (Cs) (mg/kg) (d)	Residential Soil Screening Level (Cs) (mg/kg) (f)	Groundwater Type 4 RRS (mg/L) (e)	Groundwater Type 4 RRS x 20 (Cw) (mg/L)	Pathway Type 4 Soil Screening Level (Cs) (mg/kg) (d)	Non-Residential Soil Screening Level (Cs) (mg/kg)) (g)	
Metals/Inorganics									
Arsenic	5.7E-04	1.1E-02	3.3E-01	5.8E+00	1.9E-03	3.8E-02	1.1E+00	5.8E+00	(h)
Barium	3.1E+00	6.3E+01	2.6E+03	2.6E+03	2.0E+01	4.1E+02	1.7E+04	1.7E+04	
Cadmium	7.8E-03	1.6E-01	1.2E+01	1.2E+01	5.1E-02	1.0E+00	7.7E+01	7.7E+01	
Chromium	4.7E-02	9.4E-01	1.8E+01	3.8E+01	3.1E-01	6.1E+00	1.2E+02	1.2E+02	
Copper	6.3E-01	1.3E+01	5.4E+03	1.1E+04	4.1E+00	8.2E+01	3.5E+04	3.5E+04	
Lead	ND	ND	ND	2.7E+02	ND	ND	ND	2.7E+02	
Mercury	4.7E-03	9.4E-02	4.9E+00	4.9E+00	3.1E-02	6.1E-01	3.2E+01	3.2E+01	
Nickel	3.1E-01	6.3E+00	4.1E+02	4.1E+02	2.0E+00	4.1E+01	2.7E+03	2.7E+03	
Selenium	7.8E-02	1.6E+00	8.1E+00	8.1E+00	5.1E-01	1.0E+01	1.0E+02	1.0E+02	
Zinc	4.7E+00	9.4E+01	5.8E+03	5.8E+03	3.1E+01	6.1E+02	3.8E+04	3.8E+04	
Volatile Organic Compounds (VOCs)									
1,2,4-Trimethylbenzene	3.5E-03	7.1E-02	5.2E+00	7.4E+00	1.7E-02	3.5E-01	2.6E+01	2.6E+01	
1,3,5-Trimethylbenzene	3.5E-03	7.1E-02	1.2E+00	1.7E+00	1.7E-02	3.5E-01	5.8E+00	5.8E+00	
Acetone	1.4E+01	2.8E+02	6.0E+01	6.0E+01	9.2E+01	1.8E+03	3.9E+02	3.9E+02	
Benzene	4.5E-03	9.0E-02	1.3E-01	1.4E-01	8.8E-03	1.8E-01	2.5E-01	2.5E-01	
Benzene (mid-point)	5.0E-03	1.0E-01	1.4E-01	1.4E-01	9.4E-03	1.9E-01	2.6E-01	2.6E-01	
n-Butylbenzene	6.3E-01	1.3E+01	7.0E+02	7.0E+02	4.1E+00	8.2E+01	4.6E+03	4.6E+03	
Chloroform	2.1E-03	4.2E-02	4.2E-02	2.0E+00	3.5E-03	7.1E-02	7.1E-02	2.0E+00	(h)
cis-1,2-Dichloroethene	1.6E-01	3.1E+00	2.9E+00	2.9E+00	1.0E+00	2.0E+01	1.9E+01	1.9E+01	
Cyclohexane	3.6E+00	7.1E+01	2.9E+02	2.9E+02	1.7E+01	3.5E+02	1.4E+03	1.4E+03	
Diisopropyl ether	2.3E-01	4.6E+00	1.9E+00	1.9E+00	1.1E+00	2.2E+01	9.2E+00	9.2E+00	
Ethylbenzene	4.3E-01	8.6E+00	6.4E+01	1.0E+02	2.3E+00	4.6E+01	3.4E+02	3.4E+02	
Isopropylbenzene	2.0E-01	4.0E+00	3.5E+01	3.5E+01	1.0E+00	2.0E+01	1.8E+02	1.8E+02	
Methylcyclohexane	1.8E+00	3.6E+01	1.6E+03	1.6E+03	8.8E+00	1.8E+02	8.1E+03	8.1E+03	
MTBE	7.9E-02	1.6E+00	5.1E-01	5.1E-01	1.4E-01	2.9E+00	9.3E-01	9.3E-01	
n-Propylbenzene	6.3E-01	1.3E+01	7.0E+02	7.0E+02	4.1E+00	8.2E+01	4.6E+03	4.6E+03	
Tetrachloroethene	1.3E-03	2.6E-02	8.9E-02	3.4E-01	3.8E-03	7.6E-02	2.6E-01	3.4E-01	(h)
Toluene	8.8E-01	1.8E+01	6.8E+01	7.7E+01	5.2E+00	1.0E+02	4.0E+02	4.0E+02	
Xylenes	5.9E-02	1.2E+00	9.4E+00	1.6E+03	2.9E-01	5.8E+00	4.6E+01	1.6E+03	(h)
Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	1.8E-03	3.6E-02	1.4E+00	1.6E+01	8.8E-03	1.8E-01	7.1E+00	1.6E+01	(h)

For Inorganics/metals: Kd values taken from USEPA, Soil Screening C
For all other constituents, Kd = Koc * foc where foc equal 0.02 (Georg
Values taken from USEPA, Soil Screening Guidance: Technical Backg
Value from Appendix III, Table 1 of the *Rules of the Georgia Departm*
For those constituents not listed, the reporting limit (RL) used as the Ty
[Kd + (Øw+Øa*H'/ρb)] *Cw
From Table 1.
Value is the maxium soil screening Level (Cs) of Pathway 1/3 and Path
Value is the maxium soil screening Level (Cs) of Pathway 1/3, Pathwa
Type 1/Type 3 based value higher than Type 4 based values.
If value greater than 100,000 mg/kg, 100,000 mg/kg used as surrogate.

Equation - Leaching value = Cw [Kd + (θw + θaH')/ρb]
Soil Screening Guidance (US Environmental Protection Agency, 1996)
Superfund Chemical Data Matrix (US Environmental Protection Agen
Value from chemical parameter table, USEPA Region 9 Preliminary R
Not Applicable
Soil-Water Partition Coefficient (L/kg)
Soil organic carbon-water partition coefficient (L/kg)
Organic carbon content of soil (kg/kg)
Water-filled soil porosity = 0.3 (L/L)
Air-filled soil porosity = 0.13 (L/L)
Dimensionless Henry Law Constant (HLC x 41) (unitless)
Dry soil bulk density = 1.5 kg/L
Risk Reduction Standard
Target Leachate Concentration (mg/L)
Screening Level in soil (mg/kg)

PREPARED/DATE: MKB 2/20/06
CHECKED/DATE: LMS 7/5//06

SUMMARY
SOIL RRS

SUBSTANCE	Type 1 Soil RRS (mg/kg)	Type 2 Soil RRS (mg/kg)	Type 3 Subsurface Soil RRS (mg/kg)	Type 3 Surface Soil RRS (mg/kg)	IW Type 4 Soil RRS (mg/kg) (a)
Metals					
Arsenic	2.0E+01	5.8E+00	4.1E+01	3.8E+01	5.8E+00
Barium	1.0E+03	2.6E+03	1.0E+03	1.0E+03	1.7E+04
Cadmium	2.0E+00	1.2E+01	3.9E+01	3.9E+01	7.7E+01
Chromium	1.0E+02	3.8E+01	1.2E+03	1.2E+03	1.2E+02
Copper	1.0E+02	3.1E+03	1.5E+03	1.5E+03	3.5E+04
Lead	7.5E+01	2.7E+02	4.0E+02	4.0E+02	2.7E+02
Mercury	5.0E-01	4.9E+00	1.7E+01	1.7E+01	3.2E+01
Nickel	5.0E+01	4.1E+02	4.2E+02	4.2E+02	2.7E+03
Selenium	2.0E+00	8.1E+00	3.6E+01	3.6E+01	1.0E+02
Zinc	1.0E+02	5.8E+03	2.8E+03	2.8E+03	3.8E+04
Volatile Organic Compounds (VOCs)					
1,2,4-Trimethylbenzene	5.0E-01	7.4E+00	5.0E-01	5.0E-01	2.6E+01
1,3,5-Trimethylbenzene	5.0E-01	1.7E+00	5.0E-01	5.0E-01	5.8E+00
Acetone	4.0E+02	6.0E+01	4.0E+02	4.0E+02	3.9E+02
Benzene	5.0E-01	1.4E-01	5.0E-01	5.0E-01	2.5E-01
Benzene (mid-point)	5.0E-01	1.4E-01	5.0E-01	5.0E-01	2.6E-01
n-Butylbenzene	5.0E-01	7.0E+02	5.0E-01	5.0E-01	4.6E+03
Chloroform	3.7E+00	2.0E+00	1.0E+01	4.7E+00	2.0E+00
cis-1,2-Dichloroethene	5.3E-01	2.9E+00	5.3E-01	5.3E-01	1.9E+01
Cyclohexane	5.0E-01	2.9E+02	5.0E-01	5.0E-01	1.4E+03
Diisopropyl ether	5.0E-01	1.9E+00	5.0E-01	5.0E-01	9.2E+00
Ethylbenzene	7.0E+01	1.0E+02	7.0E+01	7.0E+01	3.4E+02
Isopropylbenzene	2.2E+01	2.6E+01	2.2E+01	2.2E+01	1.3E+02
Methylcyclohexane	5.0E-01	1.6E+03	5.0E-01	5.0E-01	8.1E+03
MTBE	5.0E-01	5.1E-01	5.0E-01	5.0E-01	9.3E-01
n-Propylbenzene	5.0E-01	7.0E+02	5.0E-01	5.0E-01	4.6E+03
Tetrachloroethene	5.0E-01	3.4E-01	5.0E-01	5.0E-01	3.4E-01
Toluene	1.0E+02	7.7E+01	1.0E+02	1.0E+02	4.0E+02
Xylenes	1.0E+03	2.2E+02	1.0E+03	1.0E+03	1.1E+03
Polycyclic Aromatic Hydrocarbons (PAHs)					
Naphthalene	1.0E+02	1.6E+01	1.0E+02	1.0E+02	1.6E+01

IW Industrial Worker
RRS Risk Reduction Standard
ND No Data

Prepared by: MKB 3/15/06
Checked by: LMS 7/5/06

APPENDIX H

GA-EPD CORRESPONDENCE

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Dr., Suite 1462 East, Atlanta, Georgia 30334
Noel Holcomb, Commissioner
Environmental Protection Division
Carol A. Couch, Ph.D., Director
Hazardous Sites Response Program
404/657-8600

November 21, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
Hughes & Hughes Properties, Inc.
1225 Hwy 138 SW
Riverdale, GA 30896

RE: Delisting from Hazardous Site Inventory
Parcel 019, Proposed Lowe's Home Improvement Warehouse
7494 Highway 85, Riverdale, Clayton County
HSI Site Number: 10808

Dear Sir or Madam:

In July 2005, the Environmental Protection Division (EPD) evaluated the above referenced site to determine whether a release exceeding a reportable quantity had occurred. Based upon the information available to EPD at the time this evaluation was done, specifically the Release Notification provided to the EPD by Morris, Manning & Martin, dated June 29, 2005, it was determined that a release exceeding a reportable quantity had occurred at this site. In its initial review of the site, EPD noted that the distance to the nearest well or spring used as a drinking water source was less than one-half mile from the site. Consequently, the notification was scored as such and the release received a Reportable Quantity Screening Method (RQSM) score of 16.26 for the groundwater pathway that exceeded the reportable quantity threshold of 10 for that pathway. Therefore, the site was listed on the Hazardous Site Inventory (HSI) on July 22, 2005.

EPD received correspondences from Morris, Manning & Martin dated August 9, 2005 and October 18, 2005 requesting the revisiting of the original determination concerning the distance to the nearest drinking water well and the delisting of the site. Subsequent research by EPD determined that the nearest well is between one and two miles from the site, which results in a score of 6.5 for the groundwater pathway. Therefore, EPD has determined that a reportable quantity did not exist at the time of listing. The site will be delisted from the HSI pursuant to Rules for Hazardous Site Response § 391-3-19.05(4)(a).

EPD is not required to provide notice to the public of the removal of a site from the HSI when that removal is made pursuant to Rule 391-3-19-.05(4)(a). If you wish to provide such notice, you are not restrained from doing so by the Hazardous Site Response Act, or Rules promulgated pursuant thereto. However, if the language of your planned public notice includes interpretation of the site removal that implies that EPD would concur with that interpretation, I would ask that you allow EPD the opportunity to review and comment on such language prior to publication.

If you have any questions, please contact Ms. Regina Campbell at (404) 657-8600.

Sincerely,

Mark Smith

Mark Smith, Chief
Hazardous Waste Management Branch

c: Gerald L. Pouncey, Morris, Manning & Martin

File: HSI 10808
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APPENDIX J

XRF SCREENING PROCEDURES

Soil Screening by X-Ray Fluorescence

Soil samples were collected in three areas of the Site where previous soil testing had identified potentially elevated metals concentrations in soil. Sampling grids were laid out in each of the three areas of concern measuring 100 x 100 feet. Samples were collected on 20-foot centers for a total of 36 sampling locations per area. At each location, soil samples from three depth intervals, 3-6", 12-15" and 21-24", were collected in Ziploc bags for screening using a hand-held X-ray fluorescence (XRF) unit..

The XRF detector used for the field screening of soil samples was a NITON Model XLt 700 which utilizes x-ray tube excitation. Each time the unit is started it was internally calibrated. The unit is also recalibrated annually by the manufacturer.

The sampling method employed involved collected a sample of approximately eight ounces of soil from the designated depth and placing in a sealed plastic bag. If possible, the sample was crushed using hand pressure and mixed to homogenize the material. We note that due to the cohesive nature of many of the soil samples, thorough homogenization was not always possible. The instrument was then placed firmly against the bag and engaged for an approximate 120 second exposure period.

The detection limits for the various metals vary depending upon soil matrix and exposure duration. Detection limits published by NITON for this instrument are outlined below. The values presented represent expected detection limits based on a 120 second exposure duration with either a standard reference material (SRM) soil matrix (lower limit) or sand matrix (upper limit). Actual detection limits measured will vary depending upon the site specific-soil matrix encountered.

Element	Expected Instrument Detection Limit Range
Arsenic	8-15 mg/kg
Cadmium	45-65 mg/kg
Chromium	40-45 mg/kg
Lead	12-20 mg/kg
Mercury	8-12 mg/kg
Selenium	3-15 mg/kg
Silver	35-50 mg/kg

Barium was not included in the field screening as the XRF unit was not capable of detecting barium with the x-ray source employed. Barium is known to be a naturally occurring element in Site soils but was not suspected of being part of a release at the Site.

The detection limits observed by MACTEC during our field screening were generally within the ranges outlined above for arsenic, lead, mercury and selenium. The detection limits observed for cadmium and silver were generally somewhat lower than the published values (approximately 22-30 mg/kg for cadmium and 24-28 mg/kg for silver) while that of chromium was generally higher (typically 90-100 mg/kg).

APPENDIX K

FIELD SAMPLING RECORDS

JOB NAME: Lowes - Riverdale JOB No. ______

FIELD REPRESENTATIVE: ______ Date: 6/14/06

Well No. DW-1 Depth to Water 23.83 Depth to Bottom 66.0

	Initial	Intermediary					Final	Sample
Appearance	clear	cloudy	clear	clear				
Odor	N/A	N/A	N/A	N/A				
Temperature	21.5	22.8	26.4	19.9				
pH	7.01	7.34	7.50	6.83				
Specific Conduct. (mS/cm)	.262	.203	.160	.141				
Turbidity (NTUs)	130	999	46	7				
Gallons Removed	0	7	14	21	28	35		
			6/22	6/23				

JOB NAME: ______ JOB No. ______

FIELD REPRESENTATIVE: ______ Date: ______

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary					Final	Sample
Appearance								
Odor								
Temperature								
pH								
Specific Conduct. ( )								
Turbidity (NTUs)								
Gallons Removed	0		[illegible]	[illegible]				

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: ______ JOB No. ______

FIELD REPRESENTATIVE: ______ Date: ______

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary					Final	Sample
Appearance								
Odor								
Temperature								
pH								
Specific Conduct. ( )								
Turbidity (NTUs)								
Gallons Removed	0							

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: ______ JOB No. ______

FIELD REPRESENTATIVE: ______ Date: ______

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary					Final	Samp
Appearance								
Odor								
Temperature								
pH								
Specific Conduct. ( )								
Turbidity (NTUs)								
Gallons Removed	0							

JOB NAME: Lowes - Riverdale JOB No. _____

FIELD REPRESENTATIVE: _____ Date: 6/15/06

Well No. EW-7 Depth to Water 21.05 Depth to Bottom 27.5

	Initial	Intermediary				Final	Sample
Appearance	clear	cloudy	cloudy	cloudy	cloudy	cloudy	clear
Odor	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature	20.6	17.2	16.6	16.7	16.4	17.0	19.2
pH	5.43	4.97	4.75	4.67	4.65	4.69	5.15
Specific Conduct. (~~mS/cm~~)	.073	.035	.032	.030	.028	.027	.026
Turbidity (NTUs)	64	999	777	999	999	889	11
Gallons Removed	0	1.0	2.0	3.0	4.0	5.0	
							6/16/06

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: B. Updyke Date: 6/15/06

Well No. EW-2 Depth to Water 18.05 Depth to Bottom 20.5

	Initial	Intermediary				Final	Sample
Appearance	clear	cloudy	cloud	~~clear~~		Cloudy	clear
Odor	N/A	N/A	N/A			N/A	N/A
Temperature	22.9	18.6	17.7			17.8	20.3
pH	4.71	4.88	4.71			4.66	4.52
Specific Conduct. (~~mS/cm~~)	.073	.079	.075			.069	.12
Turbidity (NTUs)	30	748	999			700	6
Gallons Removed	0	0.34	.268	~~1.02~~		1.02	

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: 6/15/06

Well No. EW-3 Depth to Water 16.20 Depth to Bottom 20.0

	Initial	Intermediary				Final	Sample
Appearance	cloudy	cloudy	cloudy			cloudy	clear
Odor	N/A	N/A	N/A			N/A	N/A
Temperature	19.1	18.4	18.2			18.2	19.9
pH	4.96	4.93	4.79			4.65	4.56
Specific Conduct. (~~mS/cm~~)	.061	.067	.073			.067	0.064
Turbidity (NTUs)	101	999	999			681	15
Gallons Removed	0	0.7	1.4			2.1	
							6/16/06

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary				Final	Samp
Appearance							
Odor							
Temperature							
pH							
Specific Conduct. ( )							
Turbidity (NTUs)							
Gallons Removed	0						

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: Lowes - Riverdale JOB No. 6305-05-0303

FIELD REPRESENTATIVE: B. Updyke Date: 6/15/06

Well No. EW-2 Depth to Water 18.15 Depth to Bottom 20.15

	Initial	Intermediary				Final	Sample
Appearance	clear	cloudy	cloudy	cloudy	cloudy	cloudy	clear
Odor	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature	18.3	17.5	17.2	17.1	16.8	17.0	20.9
pH	4.91	4.88	4.66	4.65	4.69	4.64	4.71
Specific Conduct. (ms/cm)	0.116	0.09	0.08	0.09	0.092	0.091	.173
Turbidity (NTUs)	55	919	610	884	870	999	50
Gallons Removed	0	0.34	0.68	1.02	1.36	1.7	
							purge another 3 well vol

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: 6/15/06

Well No. EW-3 Depth to Water 16.29 Depth to Bottom 20.10

	Initial	Intermediary				Final	Sample
Appearance	Clear	cloudy	cloudy	cloudy	cloudy	cloudy	@
Odor	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature	19.4	18.2	17.0	17.6	17.6	17.9	19.1
pH	4.87	5.01	5.00	5.11	5.02	5.02	4.96
Specific Conduct. (ms/cm)	0.054	.070	.076	.095	0.07	.069	.061
Turbidity (NTUs)	112	999	999	999	999	999	101
Gallons Removed	0	0.7	1.4	2.1	2.8	3.5	
							purge another 3 well vol

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: 6/15/06

Well No. EW-4 Depth to Water 18.55 Depth to Bottom 20.10

	Initial	Intermediary				Final	Sample
Appearance	cloudy	clear					clear
Odor	N/A	N/A					N/A
Temperature	22.3	20.5					21.5
pH	6.30	5.56					5.35
Specific Conduct. (ms/cm)	.126	.091					.041
Turbidity (NTUs)	486	99					3
Gallons Removed	0	0.26	0.52	0.78	1.04	1.30	
							6/16/06

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. EW-5 Depth to Water 16.90 Depth to Bottom 23.80

	Initial	Intermediary				Final	Sampl
Appearance	cloudy	cloudy	cloudy	cloudy	cloudy	cloudy	
Odor	N/A	N/A	N/A	N/A	N/A	N/A	
Temperature	19.6	18.0	17.6	17.7	17.8	17.8	
pH	5.29	5.14	5.02	4.86	4.82	4.75	
Specific Conduct. (ms/cm)	.074	.068	.069	.074	.076	.080	
Turbidity (NTUs)	999	999	999	999	631	896	
Gallons Removed	0	1.2	2.4	3.6	4.8	6.0	

JOB NAME: Loves - Riverdale JOB No. 6305-05-030J

FIELD REPRESENTATIVE: B. Updyke Date: 6/20/06

Well No. EW-4 Depth to Water 21.15 Depth to Bottom 28.85 (8in stickup)

	Initial	Intermediary				Final	Sample
Appearance	clear	cloudy	cloudy	cloudy	cloudy	cloudy	clear
Odor	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature	22.5	22.9	23.2	23.6	22.7	23.2	22.9
pH	5.11	5.40	4.68	4.64	4.87	4.73	4.60
Specific Conduct. (mS/cm)	.093	.097	.023	.035	.049	.048	.142
Turbidity (NTUs)	22	999	964	999	999	999	23.5
Gallons Removed	0	1.3	2.6	3.9	5.2	6.5	
							6/21/06

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary				Final	Sample
Appearance							
Odor							
Temperature							
pH							
Specific Conduct. ( )							
Turbidity (NTUs)							
Gallons Removed	0						

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. ~~6/20/06~~

FIELD REPRESENTATIVE: _____ Date: 6/20/06

Well No. EW-6 Depth to Water 20.25 Depth to Bottom 28.95

	Initial	Intermediary				Final	Sample
Appearance	cloudy	cloudy	cloudy	cloudy	cloudy	cloudy	clear
Odor	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temperature	18.5	19.9	19.5	21.2	19.2	19.7	19.1
pH	11.46	11.56	11.57	11.49	11.50	11.31	10.67
Specific Conduct. (mS/cm)	.605	.734	.921	.816	.538	.587	.4129
Turbidity (NTUs)	98	999	999	111	749	89	7.23
Gallons Removed	0	1.5	3.0	4.5	6.0	7.5	
							6/20/06

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary				Final	Samp
Appearance							
Odor							
Temperature							
pH							
Specific Conduct. ( )							
Turbidity (NTUs)							
Gallons Removed	0						

JOB NAME: Lowes - Riverside JOB No. _____

FIELD REPRESENTATIVE: B. Updyke Date: 6/19/06

Well No. EW-5 Depth to Water 17.18 Depth to Bottom 23.80

	Initial	Intermediary					Final	Sample
Appearance	clear	cloudy	cloudy				cloudy	clear
Odor	N/A	N/A	N/A				N/A	N/A
Temperature	20.2	19.9	19.0				17.9	20.8
pH	4.79	4.58	4.64				4.70	5.43
Specific Conduct. (m/o)	.112	.097	.099				.090	.105
Turbidity (NTUs)	37	215	199				72.5	16.8
Gallons Removed	0	1.1	2.2				3.3	
								6/20/06

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary					Final	Sample
Appearance								
Odor								
Temperature								
pH								
Specific Conduct. ( )								
Turbidity (NTUs)								
Gallons Removed	0							

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary					Final	Sample
Appearance								
Odor								
Temperature								
pH								
Specific Conduct. ( )								
Turbidity (NTUs)								
Gallons Removed	0							

WELL DEVELOPMENT / PURGE RECORD

JOB NAME: _____ JOB No. _____

FIELD REPRESENTATIVE: _____ Date: _____

Well No. ____ Depth to Water ____ Depth to Bottom ____

	Initial	Intermediary					Final	Sampl
Appearance								
Odor								
Temperature								
pH								
Specific Conduct. ( )								
Turbidity (NTUs)								
Gallons Removed	0							

Attachment 4.4

WELL PURGING - FIELD WATER QUALITY MEASUREMENTS FORM

Location: Lowes - Riverdale

Identify Measuring Point (MP): TOC
(e.g. Top of Casing)

Well ID: DW-1

Field Sampling Personnel: B. Updyke

Depth to Screen below MP: 55.10 Top of screen 60.10 Bottom of screen

Pump Intake at (ft. below MP): 57.60

Purging Device (Pump Type): peristaltic
(e.g. Dedicated pump, peristaltic pump, bailer, bladder pump, etc.)

Date	Time 24 hr	Depth to Water Below MP ft	Purge Rate mL/min	pH pH units	Spec Cond. mS/cm	Turbidity NTUs	DO Flow cell mg/L	Temp. °C	Redox Potential mV	Cum. Volume Purged gallons	CHEMetrics DO mg/L (low)	Hach Ferrous Iron mg/L	Comments
6/26/06	1100	16.25	200	6.84	.136	5	—	20.1	—	0.25			
	1110	17.95	150	8.41	.103	1	—	19.7	—				
	1120	19.80	120	8.55	.100	3.13	—	19.4	—				used 1gmotte for turbidity
	1130	22.05	100	8.62	.099	2.23	—	19.6	—	1.0			
	1140	23.0	100	8.65	.099	1.92	—	19.9	—				
	1150	24.30	100	8.67	.099	2.56	—	19.8	—	1.5			
	1200												Sample, well Stabilized

Notes:

Note when "Stabilization " has occurred. Stabilization Criteria (achieved after a minimum of three successive readings):

±0.1 for pH
±10 mV for redox
±3% for specific cond.
±10% for DO
<20 NTUs for turbidity
NA for temperature

If stabilization does not occur within 2 hours, contact Site Manager for action.
If well goes dry prior to stabilization, stop, allow well to recharge, and collect sample.

Lowes Riverdale GA2220

10/30/06

meet with Bob Smith Store manager + Contractor to locate spots for wells. Also Lighting of lot.
Gauged 2well For DTW 15.30 +15.92

10/31/06 - 11-1-06

On site 10:00 Pm waiting For Drillers
Drillers on site 11:00 Pm
Started EW8 At 11:30 Pm (12:30 Pm Lights went off used truck lights)
At 12:30 Pm Drilled to 17' and waited For water In well to stabilize
12:30 Pm - 1:30 Am At 1:00 DTW 15.60 1:30 DTW 15.30
At 2:00 Am set well At 22.55'
~~Set~~ Sec Boring log
Cut out + Set Pad + cover
Drillers Of site 3:00 Am

EW8 DTW 1495 DTB 22.55 Developed 6.5 Gal

PH	4.43	4.37	4.26	4.26	4.27
Cond	.935	.908	.902	.902	.901
Turb	28	26.8	2.9	1.8	1.7
DO	5.82	4.77	8.84	8.68	8.84
Temp	19.80	19.19	18.59	18.61	19.13
ORP	298	324	408	413	4.13
Time	3:30	4:15	4:45	5:10	5:25

Lowes River Date 11/2/06 Sample 3 GAL

EW8	START 10:45		20' R 2' SCREEN	
DTW	15.34	15.65	15.75	15.78
PH	4.91	4.97	4.84	4.84
COND	.166	.104	.118	.119
TURB	75	27.7	0.01	0.01
DO	4.10	3.82	7.53	7.50
Temp	19.80	20.20	20.14	20.14
ORP	227	491	542	643
Time	10:50 Pm	11:00 Pm	11:30 Pm	12:00 Pm sample

Drillers onsite 10:50 Pm
1 well installed
EW10 see Boeing LOG
10' R 10' SCREEN

EW10			Develop	4 GAL
PH	3.92	392	3.90	3.90
COND	1.30	1.20	1.17	1.15
TURB	222	8.3	1.38	1.00
DO	5.37	5.62	5.94	6.06
Temp	19.42	20.57	20.68	20.68
ORP	288	299	305	310
Time	2:05	2:15	2:30	2:45

(3)

Lowes River Date 11-2-06

EW10			Purge 2.5 GAL	Sample
PH	3.88	3.89	3.89	3.89
COND	1.44	1.27	1.27	1.19
TURB	3.50	1.74	1.74	1.01
DO	5.00	3.66	3.66	3.81
TEMP	20.48	20.46	20.46	20.54
ORP	295	300	302	301
Time	3:45	4:00	4:10	4:20

DTW	15.33	DTB	20.75	4Gal Dev
EW10				
pH	3.92	3.92	3.90	3.90
cond	1.30	1.20	1.17	1.15
TURB	22.2	8.3	1.38	1.00
DO	5.37	5.62	5.94	6.06
Temp	19.42	20.57	20.68	20.68
ORP	288	299	305	310
Time	2:05	215	2:30	245
Purge 2.5				
pH	3.88	3.89	3.89	3.89
cond	1.44	1.27	1.19	1.19
TURB	350	1.74	1.25	1.01
DO	5.00	3.66	3.80	3.81
Temp	20.48	20.46	20.58	20.54
ORP	295	300	302	301
Time	3:45	400	4:10	4:20

EW8A	10'screen	10 Riser	16 7 23	11/4/06
DuraloP DTW	14.84	DTB	20.33	
pH	5.11	5.22	5.27	5.19
cond	.120	.104	.099	.095
TURB	345	225	183	20.1
DO	5.38	5.12	5.83	6.23
Temp	17.25	17.47	17.60	17.69
ORP	203	204	212	220
Time	2:30	245	300	315
EW8A	8A			
sample DTW				
pH	5.17	5.16	5.16	5.15
cond	.094	.094	.094	.093
TURB	23.1	15.0	9.1	2.2
DO	6.20	6.10	6.17	6.11
Temp	17.70	17.66	17.65	17.71
ORP	221	221	221	221
Time	4:30	445	500	515

EW 9 20's	21' R		11/4/06
15.70	22.90		
DRW	DTB		
PA 3.75	3.67	3.66	3.62
COND 2.09	2.24	2.28	2.33
TURB 6.29	350	95	28
DO 6:04	2.75	2.60	2.26
TEMP 17.65	18.45	18.73	18.46
ORP 346	349	351	354
TIME 1:30	1:45	2:00	2:15
SAMPLE			
PA 3.55	3.54	3.54	3.53
COND 2.36	2.36	2.36	2.37
TURB 20.0	16.3	9.5	1.6
DO 1.88	1.88	1.73	1.80
TEMP 18.65	18.66	18.67	18.68
ORP 355	355	354	354
TIME 3:30	345	400	4:15

11/4/06 LOWES

DRILLER ONSITE 10:30 AM

OFF 1:00 PM

EW 9 DTW	16.70	15.61	15.58	15.31	DRY
	15.70	15.55	15.51	15.27	SAMPLE

7/18/06 SHOWS BP

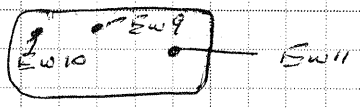
MACTEC
MACTEC Engineering and Consulting, Inc.
396 Plasters Avenue, N.E.
Atlanta, GA 30324

JOB NO. 6305050303 SHEET 1 OF -
PHASE _____ TASK 02
JOB NAME Lowes River Dale
BY GAZ20 DATE 11/22/06
CHECKED BY _____ DATE _____

11/20/06 - 11/21/06

Drilled Deep well EW11 40 53' Rock Refusal

2' Screen 51' Riser



11/21/06 - 11/22/06

Developed + Sampled well

DTW 17.96 DTB 52.50

Developed 30 GAL From well

DTW AFTER 5 GAL 18.52
10 GAL 18.61
15 GAL 18.66
20 GAL 18.66
25 GAL 18.68
30 GAL 18.92
35 GAL 18.99

Started Reading At 25 GAL

5 Drums SOIL OFF site

EW11

	Develop Readings					Sample Readings				
PH	6.22	5.94	6.40	6.20	6.05	6.03	6.03	6.03	6.02	6.03
Cond	.137	.099	.114	.116	.092	.090	.098	.088	.087	.087
TURB	236	248	180	138	100	65	47	45	12	9
DO	.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Temp	17.27	15.92	15.75	15.51	16.01	16.12	16.12	16.08	15.83	15.88
ORP	170	148	100	102	130	119	118	108	107	106
Time	0000	00:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30

Sample

APPENDIX L

CONTOUR ENGINEERING WELL CONSTRUCTION DETAILS

APPENDIX L

CONTOUR ENGINEERING WELL CONSTRUCTION DETAILS

CONTOUR ENGINEERING, LLC

Geotechnical Services • Materials Testing Services • Environmental Services

March 20, 2007

Ms. Kendal R. Jones
Vice President/Development
3632 Wheeler Road
Augusta, Georgia 30909

RE: Draft **Summary of Well installation**
Proposed Lowe's Riverdale Project
State Highway 85
Riverdale, Clayton County, Georgia
Contour Project: CE04HUL:03

Dear Ms. Jones:

As you know, Contour Engineering, LLC (Contour) completed a Draft Corrective Action Plan (CAP) on the above-referenced property on February 5, 2005. The Draft CAP methodology and findings were presented in a report and was completed for Hull Storey Retail Group.

Contour completed two subsurface assessments within the Site. A Limited Phase II ESA was completed on Parcels 015A and 018 in August 2004. The assessment involved collecting groundwater samples from two nearby, pre existing monitoring wells (MW-NE and MW-NW), the advancement of five (5) soil borings (SB-1 through SB-5) using direct push technology (DPT) for the collection of groundwater, the conversion of those temporary monitoring wells to permanent Monitoring Wells (MW-1, MW-2, and MW-3), and two rounds of groundwater sampling. A second Phase II (January 2005) involved the advancement of 30 borings (B-1 through B-30) using DPT and the conversion of 14 of those borings to shallow, temporary monitoring wells (TW-3, TW-11, TW-13, TW-17, TW-19, TW-20, and TW-23 through TW-30).

The assessment in January 2005 consisted of the installation of 14, one-inch temporary, shallow groundwater monitoring wells. The temporary wells were installed by Atlas-Geo Sampling using DPT. Temporary wells were constructed using 1-inch diameter,

schedule 40, flush threaded PVC pipe with 5-foot, 0.010 inch slotted well screen sections threaded to the solid riser pipe. Disposable gloves were worn when handling the well screens and materials to lessen the potential for cross-contamination between wells. After installing the wells, silica sand was added to the borehole annulus surrounding the wells and was extended a minimum of two feet above the top of each well screen. A bentonite seal was then formed from the top of each sand pack to surface grade by hydrating bentonite chips. The top of each PVC casing was allowed to extend approximately 0.5 - 1 foot above ground surface. The temporary wells were finished with locking caps.

The field investigation was performed under the direct supervision of a Georgia Registered Professional Geologist and/or a Georgia Registered Professional Engineer. Field sampling was conducted in accordance with the Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), revised Nov. 2001.

If you have any questions concerning this project, please contact us

Sincerely,
CONTOUR ENGINEERING, LLC

By: Steven H. Yekich

Print name: Mr. Steven H. Yekich

Title: Vice President