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REMEDIAL ACTION PLAN

BB&T Site
1103 West Club Boulevard
Durham, Durham County, North Carolina

DSCA SITE NO 32-0013

Petitioner:
Branch Banking & Trust Company
P.O. Box 1255
Durham, North Carolina 27102

Prepared for:
State of North Carolina
Department of Environment and Natural Resources
Division of Waste Management
Superfund Section
Dry-Cleaning Solvent Cleanup Act Program
1646 Mail Service Center
Raleigh, NC 27699-1646

Prepared by:
Withers & Ravenel, Inc.
111 MacKenan Drive
Cary, North Carolina 27511
(919) 469-3340

Discovery Date:	*September, 1993*
Release Quantity:	*Unknown*
Latitude:	*N 36° 00' 59.7"*
Longitude:	*W 78° 54' 38.8"*

Laura Powers, P.E.
Project Engineer

LAURA B. POWERS ENGINEER 33173 SEAL PROFESSIONAL NORTH CAROLINA 4/12/12

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April 12, 2012

Mr. Billy Meyer
State of North Carolina
Department of Environmental and Natural Resources
Division of Waste Management, Superfund Section
1646 Mail Service Center
Raleigh, NC 27699-1646

RE: Remedial Action Plan
BB&T Site
1103 West Club Blvd.
Durham, Durham County, North Carolina
Withers & Ravenel Project No. 02060496.32
DSCA Site Identification No. 32-0013

Dear Mr. Meyer:

Withers & Ravenel Inc. (W&R) is pleased to submit the enclosed Remedial Action Plan (RAP) for the above referenced site. The purpose of this RAP is to evaluate remedial alternatives and select that alternative this is best suited to meet remedial goals. The RAP also describes how the remediation will be implemented, monitored and documented.

If you have any questions or require additional information, please do not hesitate to contact us at (919) 469-3340.

Sincerely,
WITHERS & RAVENEL, Inc.

Laura Powers, P.E.
Project Engineer

C. Chan Bryant, P.E.
Senior Engineer – DSCA Contract Manager

Table of Contents

Figures

Appendices

1.0 Introduction

Withers & Ravenel (W&R) has prepared this Remedial Action Plan (RAP) for the "BB&T Site" on behalf of the North Carolina Dry-Cleaning Solvent Cleanup Act (DSCA) Program. The former dry-cleaning facility was located at 1103 West Club Boulevard, at the southeast corner of West Club Boulevard and Watts Street in Durham, Durham County, North Carolina (**Figures 1 & 2**). The site is referenced by the DSCA Program as DSCA# 32-0013. This Remedial Action Plan is intended to comply with the requirements of DSCA (N.C.G.S. 143-215.104A *et seqs*) and 15A NCAC 02S .0507 "Remedial Action Plan".

1.1 Current DSCA Petitioner

The site was admitted to the DSCA Program and the Assessment and Remediation Agreement was executed on October 10, 2006. A former property owner, Branch Banking & Trust Company (BB&T), completed the application for entry into the DSCA program and remains the current petitioner for participation in the DSCA program.

1.2 Current Property Owner

BB&T sold the property to the current owner, Liduvina Garcia of 201 Cedar Avenue, Gathersburg, Maryland, on December 14, 2006. A deed is on file at the Durham County Courthouse (Book 5455, Page 948-951) that acknowledges this transfer of the property.

1.3 Objectives of the RAP

W&R has completed this Remedial Action Plan to outline the steps for remediation of the source area contamination resulting from former dry-cleaning activities at the subject site. Due to indoor air quality risk for commercial and residential receptors in the vicinity of the groundwater tetrachloroethene (PCE) plume, clean up goals are based on remediating groundwater and soil concentrations to levels estimated to be protective of indoor air quality. The Remedial Action Plan will demonstrate that excavation of the PCE impacted soil and injection of a commercially available remediation substrate, Adventus EHC®, into the shallow groundwater aquifer is the most appropriate strategy to be used to achieve the remediation goals established for the property.

2.0 Summary of Facility-Site Assessment Data

Environmental assessment activities have been completed for the facility site both by consulting firms working for previous property owners as well as the DSCA program contractors. Figures showing the well, boring and samples locations for each media are attached to this report. The following paragraphs summarize the assessment data collected for the facility site from discovery to date.

2.1 Release Discovery Information

The release of dry cleaning solvents at this facility was first discovered during the removal of a 1,200-gallon heating oil underground storage tank (UST) in 1993. The UST was located near the southeast corner of the existing building. A petroleum-release incident has been documented for this site by the North Carolina Division of Waste Management (NCDWM) UST Section as UST Incident No. 11348. Previous assessment reports for this incident that are on file with NCDWM UST Section are:

- Tank Removal Report (October 13, 1993) ERC, Inc.
- Report for Soil Boring Investigation (October 19, 1993) ERC, Inc.
- Soil and Monitoring Well Installation Report (October 29, 1993) ERC, Inc.
- Report for Monitoring, Deep Profile, and Recovery Well Installations (December 9, 1993) ERC, Inc.
- Phase I Limited Site Assessment Report (August 18, 2004) TerraQuest

According to the first two ERC reports, laboratory analysis of two soil samples collected from below the former UST identified concentrations of PCE ranging from 1.2 to 2.0 mg/kg, trichloroethene (TCE) ranging from 0.0024 to 0.0032 mg/kg, and cis-1,2-dichloroethene ranging from 0.0046 to 0.0086 mg/kg, as well as various petroleum-related compounds. The reported PCE concentrations exceed the Soil Remediation Goal (SRG) of 0.48 mg/kg established for PCE by the Inactive Hazardous Sites Branch (IHSB).

Four shallow Type II monitoring wells (MW-1 through MW-4), one Type III vertical delineation well (DW-1), and one recovery well (RW-1) were subsequently installed at the site by ERC in October and November 1993. The Type II wells were reportedly installed to an average depth of 30 feet below land surface (bls) with a 15-foot screen interval, while the Type III well was installed to a depth of 40 feet bls with a 5-foot screen interval. The recovery well was reportedly installed to a depth of 44.5 feet and was screened to a height of 3 feet above static water level. Laboratory analysis of groundwater samples collected from these wells indicated the presence of PCE in all of the samples, with concentrations ranging from 95 µg/L (MW-4) to 5,500 µg/L (MW-1). A PCE concentration of 680 µg/L was detected in the sample

collected from DW-1. Additionally, trichloroethene (TCE) and 1,1,2-trichloroethane were identified at concentrations exceeding the established North Carolina Groundwater Standards in the samples collected from wells MW-1 and DW-1. These two compounds were also identified at lower concentrations in the groundwater samples collected from the other wells.

2.2 DSCA Assessment Activities For Facility Site

The DSCA program has completed several phases of investigation to determine the extent of soil, groundwater and soil vapor impact created by the release of dry cleaning solvents from the facility. The following paragraphs describe the assessment data for soil, groundwater, soil vapor and indoor air impacts.

2.2.1 Soil Assessment

Soil assessment activities completed at the site from 2006 through August 2011 indicate two PCE soil plumes have comingled on the southern portion of the source property and extend southward onto the adjacent property. The area that exhibited the highest and most widespread PCE concentrations was termed the primary source area, and likely coincides with the former locations of the dry cleaning equipment and waste solvent handling or storage areas. The primary source area is located in the southwest corner of the former building and the outside area immediately east and south of the former building. The secondary source area is located in the southeastern property corner, and is believed to have been the former location of trash dumpsters used for filter disposal. A common release scenario is for PCE in filters to leak from the dumpster and enter the surface and subsurface soils and ultimately groundwater. Based upon the laboratory analytical results, PCE impacts to the soil have been vertically and horizontally delineated based on the DSCA Soil Concentrations Protective of Groundwater (SCPG) of 0.0342 mg/kg. PCE soil concentrations detected below the SCPG are not considered to contribute to the future degradation of groundwater quality. **Figure 3** shows soil boring locations and PCE analytical results.

2.2.2 Groundwater Assessment

Groundwater assessment activities since 2006 include the installation and sampling of 30 monitoring wells across the site and surrounding vicinity to better define the vertical and horizontal extent of the contaminant distribution in groundwater. In August 2009, twenty Geoprobe soil borings for collection of groundwater samples from temporary monitoring wells installed within the shallow aquifer system to delineate the source areas on subject site.

The analytical results suggest that the tetrachloroethylene (PCE) plume has migrated off site in the shallow aquifer system, and vertically into bedrock. The PCE plume is identified as PCE concentrations that exceed the 15A NCAC 2L standard of 0.0007 mg/L, which is considered protective as a drinking water source in N.C. The PCE plume is horizontally delineated in the southern, eastern and western direction, but additional delineation is needed across W. Club Blvd to the north and northwest. **Figure 4** shows the most recent analytical results for PCE at each monitoring well location and the PCE plume.

As a general rule, DSCA considers dissolved PCE concentrations above 15 mg/L or 10% of the solubility of PCE in groundwater as indicative of the presence of dense non-aqueous phase liquid (DNAPL). While DNAPL has not been identified at the site, PCE concentrations in source area shallow wells have been detected as high as 130 mg/L which is very close to the 150 mg/L solubility of PCE.

Comparison of the data sets for on-site monitoring wells indicates that PCE concentrations outside the source areas (MW-2/2R and MW-3/3R) have decreased since the Fall of 1993. However, PCE concentrations in the source area (MW-1/1R and MW-4/4R) have increased over the same time period. The increase in PCE concentrations in the source areas (MW-1/1R) over time indicate soil contamination in the source areas is likely leaching into the groundwater. The general absence of PCE degradation products within the groundwater samples and analytical results of geochemical parameters suggests that conditions are not favorable for reductive dechlorination by natural processes without augmentation.

2.2.3 Soil Vapor Assessment

W&R completed soil vapor sampling at the former BB&T property in 2009. Fifty-four soil vapor points were installed and sampled on the site and in the surrounding vicinity to delineate the extent of the soil vapor impact by PCE. W&R collected soil vapor samples using one-liter summa canisters for analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride by method TO-15. The PCE soil vapor plume was identified based on concentrations of PCE in the soil vapor that exceed the Inactive Hazardous Sites Branch (IHSB) Residential Acceptable Soil Vapor Concentration for Vapor Intrusion Screening Level of 41 ug/m^3. Based on analytical results the PCE soil vapor plume was considered delineated in the southern, eastern, and western direction. Soil vapor assessment was not completed across W. Club Blvd to the north and northwest due to the location of the expansive roadway and general parking lots of the adjacent shopping center and

a lack of receptors to drive the delineation further. Figure 5 shows soil vapor point locations and PCE and TCE analytical results.

2.2.4 Indoor Air Assessment

BB&T Site

W&R completed indoor air sampling at the former BB&T property on April 3, 2009. Two indoor air samples (IA-1 and IA-2) were collected using six-liter summa canisters for analyses of tetrachloroethylene (PCE), trichloroethylene (TCE), cis 1,2 dichloroethylene (DCE), trans 1,2 DCE, and vinyl chloride (VC) by EPA Method TO15. Analytical results of the indoor air samples indicated the presence of PCE at concentrations ranging from 2,712 ug/m^3 to 3,051 ug/m^3.

The collected indoor air data for PCE, and contaminant exposure scenario to occupants of the former Word of Faith Church on the BB&T site, were evaluated by a Superfund Section toxicologist. The recommendation was made to the DSCA program that the building not be used until adequate mitigation/evaluation was conducted. DSCA staff met with the Church's pastor and discussed the recommendation that the building not be occupied. Because the pastor indicated that the church intended to continue to occupy the building, the toxicologist's recommendation was forwarded (via email) to the appropriate city and county agencies in Durham. The DSCA program also notified the property owner of the recommendation through verbal communication.

On May 12, 2009 the City of Durham Department of Neighborhood Improvement Services, condemned the building as unsafe and notified the property owner in a letter with the same date. A Notice was placed on the front door, by the city, indicating that the building was condemned. Based on a review of mitigation options for the indoor air risk in the building, the Interim Risk Management Plan (IRMP) finalized in April 2011 recommended the demolition of the building and land use restrictions (LUR) for the subject property (see Section 4.4). After a 30-day public review of the IRMP, which included a public meeting with DSCA officials, the building was demolished in July 2011.

Adjacent Properties

Based on the results of the soil vapor assessment and with permission of property owners, W&R collected indoor air samples from the Biscuitville restaurant, the Triangle Family Church, and six residential properties. The indoor air samples were collected over a time period that represents the typical exposure for the occupants of the structure.

Residential structures were sampled over a 24-hour period, and the commercial structures were typically sampled over an 8-hour period. Concentrations detected in the samples were applied to the DSCA Risk Calculator worksheets to calculate an Individual Excess Lifetime Cancer Risk (IELCR) and Hazard Index (HI) for the appropriate exposure unit (i.e. residential or commercial). Three of the eight properties were identified with IELCR that exceeded 1 in 10,000 (or $1x10^{-4}$). The three properties were identified as:

- 1414 Watts St (Triangle Family Church)
- 1421 Dollar St. (Residence)
- 1419 Dollar St. (Residence)

Mitigation in the form of sub-slab depressurization has been initiated at the Triangle Family Church. Post mitigation monitoring has indicated that levels of PCE in indoor air have varied with time, and the IELCR has remained less than 1 in 10,000 (or $1x10^{-4}$) based on the typical occupancy by the church members (10.5 hours per week exposure time). Semi-annual monitoring of indoor air will continue at the facility while remediation of the source area is completed.

Mitigation in the form of the placement of a vapor barrier product in the crawl space of the residences at 1419 and 1421 Dollar Avenue was completed because the IECLR initially exceeded $1.00\ x10^{-4}$. Post mitigation monitoring has indicated that levels of PCE in indoor air have varied with time, and have remained at levels that result in an IELCR between 1 in 100,000 ($1.00\ x10^{-5}$) and 1 in 1,000,000 ($1.00\ x10^{-6}$). Semi-annual monitoring of indoor air will continue at the residences until soil vapor concentrations on these properties are reduced through remedial actions at the source.

In addition to indoor air sampling, outdoor (ambient) air samples were also collected to establish background concentrations. Analysis of the background samples indicates all detected compounds within acceptable concentrations. **Figure 5** illustrates all buildings and residences sampled for indoor air exposure, and properties mitigated based on a corresponding IELCR that initially exceeded 1 in 10,000 ($1.00\ x10^{-4}$). **Figures 6A** through **6C** show indoor air sample locations and historical analytical results for the above mentioned properties identified with IELCR that initially exceeded 1 in 10,000 ($1.00\ x10^{-4}$).

2.2.5 Surface Water Assessment

In June 2010, W&R collected five surface water samples from the eastern and northern tributaries to Ellerbe Creek for analysis of volatile organics by EPA Method 8260. Analytical results indicate only methyl

tert-butyl ether (MTBE) was detected in one of the five samples. All other targeted compounds were below laboratory detection limits. MTBE is typically related to petroleum contamination from gasoline and not a result of dry-cleaning activities at the subject site. Based on the analytical results, the tetrachloroethylene (PCE) groundwater plume did not appear to be discharging to the tributaries to Ellerbe Creek.

2.3 Contaminant Fate and Transport

Assessment activities completed to date indicate that a release of perchloroethylene (PCE or perc) to the subsurface occurred when dry-cleaning activities were conducted on the subject property from approximately 1963 through 1975. Concentrations of PCE detected in the vadose zone and capillary fringe soils indicate that PCE continues to leach from those soils into the underlying groundwater. Based on water levels gauged in November 2009, groundwater flow through the source area is towards the northeast with an average hydraulic gradient of approximately 0.026 feet/foot. Corresponding groundwater elevations for the area surrounding the BB&T property suggests that groundwater flow is to the north northwest. The low hydraulic conductivity of the soils and underlying aquifer and correspondingly slow groundwater flow velocity has limited the downgradient migration of PCE within groundwater over the past 45 years. However, the absence of PCE daughter products in soil and groundwater samples, and a lack of favorable geochemical conditions suggest that chemical degradation processes are minimal or are not occurring at the site at this time. Therefore, it does not appear that natural biodegradation or abiotic degradation processes are able to produce noticeable decreases of PCE concentrations within soil or groundwater beneath the site without altering subsurface groundwater conditions. However, volatilization of PCE within the subsurface is occurring as evident by the detection of appreciable concentrations of PCE within samples of soil vapor collected from the site.

Descriptions of soil and rock samples obtained from the site and a detailed geologic map of the vicinity suggest that a Jurassic-aged diabase sill occurs beneath the western portion of the site. The diabase sill contacts older Triassic-aged sedimentary rock located in the eastern portion of the site. Competent diabase rock occurs at a depth of approximately 45 feet in the western portion of the site while competent sedimentary rock occurs at a depth of approximately 65 feet in the eastern portion of the site. The unconsolidated aquifer and soil located above these rocks are the weathered-in-place remnants of the underlying parent rocks. Results of in-situ hydraulic conductivity tests indicate that the permeability of the weathered diabase and Triassic rocks is relatively low and within the same order of magnitude. However, the high concentrations of PCE dissolved within groundwater have saturated the pore spaces of these weathered materials (the unconsolidated

aquifer), at or near the ground water table. PCE is also absorbed within the unsaturated soil material above the water table where the release of contamination occurred. PCE has volatilized from both the contaminated soil and groundwater (near the water table) and has resulted in relatively high concentrations of PCE vapors as observed in soil vapor monitoring points (**Figure 5**). PCE vapors have migrated through the soil by diffusion (i.e. from areas of high concentration to areas of low concentration) and advective flow caused by differential pressures across the soil. This has resulted in PCE vapor migration throughout the subsurface and into the building formerly located on the subject property, nearby residences, and other surrounding buildings as observed through soil gas and indoor air sampling performed by DSCA (**Figure 5**).

Although PCE within groundwater has generally migrated to the north over the years (primarily by advective flow, diffusion, and dispersion), detectable concentrations of PCE have not been identified in groundwater samples collected from locations greater than 400 feet to the north of the source area. This is likely due to the measured low hydraulic conductivity of the natural geologic materials that underlie the area. Given the relatively short distance that PCE has migrated in groundwater over the past 45 years (approximately 400 feet), the distance to tributaries of Ellerbe Creek located approximately 1,000 feet further to the north, and the absence of detectable PCE observed in five surface water samples taken from Ellerbe Creek in 2011, detectable concentrations of PCE are not expected to reach these tributaries through groundwater migration in the foreseeable future.

Additionally, the low hydraulic conductivity of the Jurassic and Triassic-aged geologic materials in the Durham area makes them unsuitable as a reliable source of groundwater for private or commercial wells. This is the likely reason that no private or commercial water supply wells have been identified in the vicinity of the site.

3.0 Risk-Based Clean Up Goals

The results of the Tier 1 and 2 risk assessments for the subject property indicate the demolition of the building on the property and the Land-use Restrictions (LURs) recorded at the property lowered the on-site cumulative Individual Excess Lifetime Cancer Risk (IELCR) to within DSCA's allowable risk levels.

Based on the current and future use of the surrounding properties, inhalation of indoor air vapors is the primary exposure pathway for risk assessment purposes. Although mitigation techniques implemented at off-site residential and commercial adjacent properties (1414 Watts St., 1421 Dollar St., and 1419 Dollar St.) lower the indoor air inhalation exposure risk for these receptors, remediation of the soil vapor PCE plume is needed to establish a permanent reduction in PCE vapor intrusion into residences in the surrounding neighborhood.

Soil vapors accumulate in the subsurface from the volatilization of the contaminants in the soil and groundwater. Source area PCE concentrations in the soil and groundwater media are sufficiently high enough that continued volatilization is expected and will likely result in soil vapors that pose an increased likelihood of exposure to PCE vapors inside adjacent properties where vapor intrusion potential exists. Therefore, clean up goals are based on remediating PCE in groundwater and soil to concentrations that will not volatilize at a rate which continues to serve as a source of PCE soil vapors that exceed the target IELCR for the vapor intrusion pathway discussed below. Using volatilization and attenuation factors, soil and groundwater risk-based clean up goals were then calculated to be 2.1 mg/Kg and 2,500 ug/L, respectively, based on a target IELCR of 1 in 100,000 (or $1x10^{-5}$). An attenuation factor was determined averaging the analytical data for indoor air and near-slab soil vapor PCE concentrations from adjacent properties of concern. Volatilization factors for the soil and groundwater PCE plumes were derived from the site-specific volumetric air and water contents, soil bulk density, chemical -specific soil-water sorption coefficient, and Henry's Law constant for PCE. The risk-based clean up goal calculations are provided in **Appendix B**.

The objective of this RAP is to remove a large mass of source soil and groundwater PCE contamination to levels that are expected to result in a reduction in soil gas PCE concentrations. This reduction in PCE concentrations in soil gas should reduce vapor intrusion of PCE into structures in the vicinity of the site. Because the groundwater and soil clean-up goals are based on theoretical volatilization rates, success of the remedial activities will measured based on monitoring of PCE soil gas and indoor air concentrations, which will be compared against screening levels defined by DSCA (see Section 7.0).

4.0 Summary of On-Site Remedial Action Activities

The following paragraphs describe the preliminary source removal activities completed at the BB&T Site.

4.1 Aggressive Fluid Vapor Recovery Event

On February 11 and 12, 2009 an aggressive fluid vapor recovery (AFVR) event was completed at the site. This process uses a vacuum pump to remove soil vapor, contaminated groundwater and any non-aqueous phase product (NAPL) from the subsurface at contaminated sites. This typically is implemented by using tanker trucks with integrated vacuum pumps.

In order to evaluate the effectiveness of source area reductions in groundwater concentrations at the site, AFVR events were completed on two consecutive days at the site. The first day focused on well MW-1R and the second day focused on well MW-5R. The vacuum applied to each well was approximately 28-in Hg. The vacuum was maintained for 8 hours for each

well. A total of 25 gallons of contaminated groundwater was recovered on each day of the AFVR event.

Groundwater samples were collected on February 28th, 2009 from wells MW-1R and MW-5R to evaluate the effectiveness of AFVR event in reducing source area groundwater concentrations of PCE. While the AFVR process did not remove a large quantity of contaminated groundwater, a substantial quantity of vapors was removed, and consequently some volatile organic compound (VOC) mass was removed during the AFVR event. Analysis of groundwater samples collected after the AFVR event did not reveal significant concentration reductions for PCE and its daughter products in groundwater at most of the locations sampled. For example, prior to the AFVR event approximately 130 mg/L of PCE was reported for well MW-1R. After the AFVR event, the PCE concentration in the groundwater sample from this location was approximately 110 mg/L.

Upon review of this data, W&R determined that AFVR was not an applicable short term remediation strategy for source contaminant removal and improvement of indoor air conditions.

4.2 Soil Vapor Extraction Pilot Testing

W&R conducted a soil vapor extraction (SVE) pilot test at vapor extraction wells VE-1, VE-2, and VE-3 on August 10, 2011. All three vapor extraction wells are 2-inch diameter wells installed at the site with a screen interval of 5 to 20 feet below land surface. The three extraction wells are installed in the source area in order to allow for monitoring of the vadose zone radius of influence. A full round of site groundwater levels, vacuum/pressure readings, and VOCs in headspace were collected at all on-site monitoring wells and soil vapor points.

W&R utilized a portable Roots 42U blower capable of 16 inches of mercury (in.-HG) and 291 cubic feet per minute (CFM) to perform the test. The SVE pilot test was conducted at each of the three vapor extraction wells by applying 5 in.-HG, 10 in.-HG, and 15 in.-HG of vacuum to the well head. During the test vacuum/pressure, VOCs in headspace, and effluent VOCs were periodically monitored. The test yielded a maximum well flow of 14 standard cubic feet per minute (SCFM) and maximum effluent volatile organic compounds of 1470 parts per million (ppm). Minimal induced vacuum or reductions in headspace VOCs were observed in the adjacent network of observation wells monitored during the pilot test.

The failure to identify a significant induced vacuum radius of influence (ROI) around the perimeter of the pilot test wells suggested that SVE would not be expected to be effective in reducing soil vapor. As such, implementation of soil vapor extraction was not considered an appropriate remedial approach for remediation of contaminants in soil and soil vapor, however, application

of vacuum recovery of sub slab vapor and soil vapor in the soils around the foundation of the building may have merit due to the increased permeability typical of those settings.

4.3 On-site Building Condemnation and Demolition

On May 12, 2009 the City of Durham Department of Neighborhood Improvement Services, condemned the building as unsafe and notified the property owner in a letter with the same date. A Notice was placed on the front door, by the city, indicating that the building was condemned. Based on a review of mitigation options for the indoor air risk in the building, the Interim Risk Management Plan (IRMP) finalized in April 2011 recommended the demolition of the building and land use restrictions (LUR) for the subject property (see Section 4.4). After a 30-day public review of the IRMP, which included a public meeting with DSCA officials, the building was demolished in July 2011.

4.4 Current Land Use Restrictions (LUR)

A risk assessment was performed for the subject (source) property and used in determining an appropriate interim remedy to address the risks associated with the property at that time. The interim remedy selected and documented in the April 2011 Interim Risk Management Plan (IRMP) included: documentation of specific Land-use Restrictions (LURs) followed by plans to demolish the building located on the property. LURs were implemented for the source property to ensure that land-use conditions will be maintained and monitored until the land-use restrictions are no longer required. The LURs are documented in a Notice of Dry-Cleaning Solvent Remediation (NDCSR) and a plat showing the locations and types of dry-cleaning solvent contamination on the property, and are filed with the Durham County Register of Deeds Office. The locations of dry-cleaning solvent contamination are where contaminants have been detected above unrestrictive use standards. A copy of the executed NDCSR, plat and legal description for the source property is enclosed in **Appendix F**. The former BB&T building was also demolished in accordance with the IRMP and documented in a "Building Demolition Report" dated September 24, 2011. A "site map" of the current property, post-demolition, is included in Figure 4.

The NDCSR from the IRMP contains a clause which requires the property owner to submit a notarized "Annual DSCA Land-use Restrictions Certification" to the North Carolina Department of Environment and Natural Resources certifying that the NDCSR remains recorded with the Register of Deeds and that land-use conditions have not changed. Documents relating to this site will be maintained by the North Carolina Department of Environment and Natural Resources and available for public access.

The land-use restrictions (LURs) specified in the NDCSR apply to the source property and prohibit site activities that could create unacceptable exposure to contaminated soil, groundwater, or vapor, and are intended to be temporary, but shall remain in force in perpetuity unless superseded or canceled by the Secretary of the North Carolina Department of Environment and Natural Resources. These restrictions include limiting the site usage to parking, landscape areas or walkways; prohibiting alteration, disturbance or removal of existing soil, landscape and contours; and prohibiting the use of any surface or underground water at the site without the approval of the North Carolina Department of Environment and Natural Resources. LURs are deemed to provide long term reliability as they are to be recorded in the Register of Deeds and are to be observed by all owners of the property unless superseded or canceled by the Secretary of the North Carolina Department of Environment and Natural Resources.

5.0 Evaluation of Remedial Measures

Reduction in PCE vapor concentrations present in the soil gas surrounding the area of PCE impacted soil and groundwater will likely lower the potential for the soil vapors entering the indoor air for the buildings adjacent to the BB&T site. Reduction of PCE vapor concentrations can be achieved by reducing the concentrations of PCE in soil and groundwater such that they will no longer produce concentrations that impact indoor air quality.

W&R considered several technologies to meet the desired remediation goals for this property. The following paragraphs describe each of the technologies considered for this effort.

5.1 Vacuum Based Remediation Technologies

As discussed in Section 4.0 of this report, vacuum based remediation technologies were evaluated through short term pilot tests at the facility. The results of the pilot tests suggested that based on low permeability and hydraulic conductivity of the Jurassic and Triassic-aged geologic materials beneath the site, induced vacuum technologies such as soil vapor extraction (SVE) and multiphase extraction (MPE) are not considered appropriate due to the limited radius of influence of the induced vacuum observed in the subsurface relative to the extraction point.

The pilot tests showed the ability to create a significant vacuum on an individual well, however, the permeability of the surrounding soils did not allow the vacuum to be transmitted out and away from the extraction well. Therefore, the recovery of elevated concentrations of PCE in the soil vapor that have migrated away from the BB&T site would be incomplete. As such, implementation of soil vapor extraction was not considered an appropriate remedial approach for remediation of soil gas or absorbed PCE in the unsaturated soils at the site. Cost estimates were not obtained for the vacuum based technologies.

Application of vacuum recovery of sub slab vapor and/or soil vapors in the soils around the foundations of the adjacent buildings or within the backfill material of an excavation are considered to have merit due to the increased permeability typical of those settings.

5.2 Electrical Resistance Heating

Electrical resistance heating (ERH) is an in-situ electrical heating technology that applies electricity into the ground through electrodes installed vertically in the subsurface. ERH enhances the recovery of soil contaminated with volatile organic compounds such as PCE by heating the contaminants, which volatilizes the compound from liquid phase to vapor phase. As ERH dries the

soil, it also creates a source of steam that strips contaminants from the soils. A soil vapor extraction system is applied to the treated area to extract the generated PCE contaminated soil vapors from the subsurface. Cost considered for this technology include installation of the electrodes, electrical consumption by the system, power control unit, and installation of a vapor treatment system at the site. A copy of the cost proposal provided by the ERH vendor is attached in **Appendix C**.

While ERH is expected to provide a successful reduction in PCE concentrations in soil and groundwater at the site, controlling the accumulation of PCE contaminated soil vapors that will be generated is an issue due to the low permeability of the soils beneath the site as illustrated by the pilot tests used for the vacuum based remediation technologies. Based on the existing soil vapor intrusion problems in adjacent properties and the remedial goal of reducing PCE soil vapor concentrations, ERH is not considered an appropriate remedial technology for the site.

5.3 Enhanced In-Situ Chemical Reduction (ISCR)

In-Situ Chemical Reduction (ISCR) causes in place chemical breakdown of chlorinated hydrocarbons in groundwater. ISCR involves addition of catalysts or amendments to groundwater to cause chemically reducing reactions to occur. The reactions cause chlorinated hydrocarbons to be either chemically reduced and thereby destroyed, or chemically changed into harmless byproducts.

A commonly used chemical reducing agent is zero valent iron (ZVI), which when exposed to water causes the generation of hydrogen and chemically reducing conditions that are conducive to chemical reduction of chlorinated hydrocarbons. EHC® is a patented product that is comprised of micron-sized particles of organic carbon and ZVI, which when mixed with water can be injected into the subsurface to promote both enhanced bioremediation and ISCR. Application of EHC® is expected to create conditions in the subsurface that are both reducing and anoxic, and suitable for ISCR to take place. EHC® is reported to remain active in the subsurface for at least five years in most settings.

EHC® is a non-hazardous substance that is delivered to remediation sites in powdered forms that can be safely handled and applied by trained professionals. Introduction of substances into the subsurface to remediate contaminants in groundwater in-situ involves the use of Class 5 injection wells or Geoprobe® injection points, and therefore must be permitted under the Underground Injection Control (IUC) program through the NC Division of Water Quality Aquifer Protection Section. For this project temporary

Geoprobe direct push injection points are proposed to deliver the media to the subsurface.

Minimal land disturbance would be anticipated if a Geoprobe® is used to inject EHC®. The in-situ technology also does not involve removal of source material or use of heavy equipment. Recent pilot studies completed by W&R demonstrate that strongly reducing conditions are established rapidly following injection of the product, and reduction of chlorinated COC concentrations by as much as 70% over a three month period, and over 95% over a one year period are documented at similar sites. A cost estimate for this technology is included in **Appendix C**.

5.4 Pneumatic Fracturing with ISCR & Soil Vapor Extraction

Pneumatic Fracturing can be described as a process whereby a gas, such as nitrogen, is injected into the subsurface at pressures exceeding the natural in-situ pressures (i.e. overburden pressure, cohesive stresses, etc.) and at flow volumes exceeding the natural permeability of the formation. The result is the enhancement of existing fractures and planes of weakness (for example, bedding planes) and the propagation of a dense fracture network surrounding the injection well. In turn, this fracture network enhances the overall effective bulk permeability of the formation thus allowing the selected in-situ treatment approach to work more effectively. In geological formations of semi-low permeability, PF is very effective in reducing geologic heterogeneities and minimizing channelization or preferential pathways of the injected treatment material. Once created, fracture networks have shown to last in excess of six years.

The benefits of ISCR were discussed in Section 5.3 of this report. Pneumatic fracturing was considered for this site to enhance the delivery of EHC or zero valent iron (ZVI) or other reducing substrate to the low permeability formation and to increase the permeability of the formation to allow increased vacuum radius of influence for vacuum based technologies to recover soil gas.

Pneumatic fracturing quotes were obtained for completion of pilot testing at the site with use of ZVI and EHC. Given the cost for pneumatic fracturing quotes, coupled with the concern that the increased permeability created by the fracturing could cause the soil vapor migration to increase this remedial application was not recommended as a remediation alternative. A cost estimate for this technology is included in **Appendix C**.

5.5 Excavation of Soil Impacted With PCE & Application of Substrate To Open Excavation To Enhance ISCR

W&R considered alternatives to allow excavation of the PCE impacted soil at the property. Two primary alternatives were considered for removal of the impacted soil. The first involved an excavation to a depth of 30 feet below existing property grade with significant shoring of the south facing excavation wall abutting the Triangle Family Church building. While this excavation plan was aggressive it was considered neither cost effective due to the high cost of shoring nor safe due to the near 30 foot high vertical cuts that would have resulted on the east, west and south sidewalls.

The second excavation alternative included the completion of an excavation to a depth of 25 feet below land surface with all sidewalls constructed on 1 to 1 slope. This excavation alternative will remove approximately 2,800 cubic yards (3560 tons) of soil with PCE concentrations above the risk-based clean up goal of 2.1 mg/kg. The proposed 25 foot completion depth will remove contaminated soils within the vadose zone and capillary fringe.

A consulting geotechnical professional engineer provided slope stability calculations for the 1 to 1 slopes and based on the relatively low factor of safety that resulted on the south wall, the engineer recommended consideration of underpinning of the foundation of the Triangle Family Church building. The underpinning was recommended to prevent the brick masonry exterior of the building from cracking in the event that some movement of the soils along the southern face of the excavation moved during the completion of the 1 to 1 sloped cut to 25 feet below land surface. Cost estimates were obtained for underpinning the building wall facing the south excavation.

Upon completion of the excavation to 25 feet, a commercial remediation substrate, DARAMEND (a controlled-release carbon and zero valent iron substrate) produced by Adventus, will be mixed with gravel used to backfill the bottom 10 feet of the excavation to provide contact with the shallow groundwater impacted with PCE. Like EHC, DARAMEND is a mixture of zero valent iron and carbon that promotes the insitu chemical reduction (ISCR) of chlorinated hydrocarbons through the creation of reducing and anoxic conditions in the subsurface.

5.6 Recommended Remediation Strategy

Based on the remediation alternatives considered for the remedial goals established in this plan, W&R has recommended the following combination of the alternatives to achieve the stated remedial goals (the sequence of injection versus excavation will be determined by the DSCA program):

A) Excavate PCE impacted soils with concentrations of PCE greater than 2.1 mg/Kg, where excavation can be achieved, while providing an appropriate level of protection for the foundation of the Triangle Family Church building;

B) Prior to backfilling the excavation place Adventus-DARAMEND remediation substrate into the bottom 10 feet of the excavation backfill to enhance the conditions required to produce an environment for in-situ chemical reduction;

C) Construct passive soil vents in the backfilled excavation to relieve any positive pressure in the backfilled excavation relative to atmospheric pressure changes so that soil vapor pressure gradients do not result in further migration of the soil vapor plume with time;

D) Replace all disturbed surfaces on the BB&T site with a layer of asphalt pavement

E) Inject Adventus EHC into the shallow groundwater aquifer to promote in-situ chemical reduction (ISCR) of the PCE.

The technical details for each step will be described in Section 6 of this report. The monitoring plan for soil vapor and groundwater will be described in Section 7 of this report. Cost estimates for Implementation of the plan will be outlined in Section 9 of this report.

6.0 Remedial Plan

The following paragraphs represent the procedures to be followed in the completion of remediation activities on the property. As previously mentioned, the order of the work may change dependent on DSCA review.

6.1 Excavation of Soil with Application of Adventus DARAMEND

6.1.1 Installation of Helical Piers Beneath The Triangle Family Church Building

Due to the close proximity of the adjacent building on the adjoining southern property and the excavation depth, helical piers will be required to ensure geotechnical stability beneath the building's foundation. Helical piers will be installed to a depth of 42 feet bls by a subcontractor on six foot centers along the northern exterior wall of the building.

W&R estimates that approximately 16 piers will be installed. The piers will be connected to anchor plates and brackets that are bolted to the foundation of the Triangle Family Church Building. The piers will serve to support the building in the event of a minor movement of the soil beneath the northern exterior wall of the building.

At each pier location a small excavation will be completed to expose the foundation of the building for connection of the anchor plates and bracket assembly. Any soil generated by the construction of the piers that is suspected to contain contamination will be placed in roll-off containers and characterized under NC Division of Waste Management's Hazardous Waste Section's "Contained in Policy" to determine if the levels of VOCs will allow the material to be handled as a non-hazardous versus a hazardous waste. Costs for installation of the piers are included in **Appendix C**. A W&R representative will be on-site during the helical pier installation to provide health and safety guidance and monitor ambient air concentrations along the perimeter of the property.

6.1.2 Concrete, Brick Footings, and Asphalt Removal and Disposal

A portion of the concrete building pad, brick footings, and asphalt parking lot will be removed from the footprint of the excavation and placed in 12 lined roll-off containers. Samples of the material in each roll-off container will be collected and submitted for analysis of volatile organic compounds (VOCs) by EPA Method 8260.

Analytical results will be used to characterize the excavated material. The analytical results will be provided to the NC Division of Waste Management's Hazardous Waste Section for comparison to the department's "Contained in Policy" to determine if the levels of VOCs will allow the material to be handled as a non-hazardous versus a hazardous waste. For the purposes of cost estimation, W&R included the costs for disposal of the material at a Subtitle D landfill as a non-hazardous waste. Cost estimates for the debris disposal are included in **Appendix C**. Options for disposal of the debris if characterized as hazardous waste are shown in Section 6.1.4.

6.1.3 Pre Excavation Activities

Fence Construction

A temporary construction fence will be installed around the perimeter of the BB&T site and will remain in place until the excavation, backfilling and paving operations are complete and the results of post excavation and backfilling ambient air quality sampling are complete. Fencing will be removed after completion of paving of the parking lot. Privacy screening will be installed in the fence to restrict view into the property. "No Trespassing" and "Danger – Open Excavation" signs (written in English and Spanish) will be placed on the exterior side of the fence at a rate of 1 sign per every 25 feet. The color of these signs will contrast the privacy screening.

Points of ingress and egress for the property will be off W. Club Boulevard and Watts Street. Cost estimates for the fence construction are included in **Appendix C**.

Subsurface Utility Location

Prior to excavation activities all subsurface utilities will be located on the subject property and adjacent property. The natural gas line that traverses the excavation area at the edge of the excavation will be cut and capped.

Monitoring Well Abandonment

All groundwater and soil vapor monitoring wells within the excavation footprint will be properly abandoned in accordance with North Carolina Division of Water Quality regulations.

6.1.4 Excavation and Disposal of the PCE impacted Soils

Initial Characterization & Handling of Soils

Soils will first be excavated within the south side of the proposed excavation zone for placement in lined roll off boxes to be staged on-site. Grab samples of soils within each lined roll off box will be collected for analyses of VOCs by EPA Method 8260. The analytical results will be provided to the NC Division of Waste Management's Hazardous Waste Section for comparison to the departments "Contained in Policy" to determine if the levels of VOCs will allow the material to be handled as a non-hazardous versus a hazardous waste. W&R anticipates that once the Hazardous Waste Section is satisfied that the characterization data indicates that the concentrations of PCE in the excavated soil are within the Contained In Policy limits, they will be directly excavated and placed into trucks for transport to a permitted soil treatment facility in Winston Salem, North Carolina.

Based on information provided by the selected soil remediation contractor, the soil will be handled as follows:

Material	PCE Concentration	Disposal Destination
Brick/Asphalt Concrete	< 14 mg/Kg	Subtitle D Landfill
Brick/Asphalt Concrete	14 mg/Kg to 60 mg/Kg	Subtitle C Landfill
Soil	<14 mg/Kg	EVO Facility
Soil	14 mg/Kg to 60 mg/Kg	Subtitle C Landfill
Soil	> 60 mg/Kg	Incineration

For the purposes of our cost estimation we have included the costs for disposal of the majority of the material at the EVO treatment facility in Winston Salem North Carolina as a non-hazardous waste. A smaller portion has been estimated to be classified as hazardous for cost estimating purposes. Cost estimates are included in **Appendix C**.

Excavation Procedures

The top of the slope of the excavation will begin at a line parallel to the alignment of the south exterior wall of the Triangle Family Church building and offset to the south approximately 8 linear feet. The anticipated top of ground footprint of the excavation will be approximately 6,325 square feet. The layout of the excavation is shown on **Figure 7**. The excavation contractor will extend a ramp out of

the north wall of the excavation as needed to allow trucks to be safely loaded with soil and/or deliver and place backfill.

The proposed final depth of the excavation will be approximately 25 feet below the existing property grade. Each sidewall of the excavation will be constructed with a slope of 1 to 1. The depth to groundwater at the subject property has been observed at depths of 16 to 25 feet during the investigation period. The final depth of the excavation may be less than 25 feet if the soil and sidewall stability is compromised by the presence of groundwater with depth.

Backfill Procedures

Upon completion of the excavation, backfill will be delivered and placed by the contractor as follows:

- No. 57 washed stone will be placed in the bottom 10 feet of the excavation from an anticipated depth of 15 to 25 feet below land surface. The stone will be tracked in place in 3 foot lifts using the trackhoe to encourage settlement during this process.
- Upon placement of the No. 57 stone, a layer of geotechnical fabric will be applied over the surface of the stone.
- Clean soil will then be placed in the excavation and compacted on 0.5 lifts using a vibratory tamper from the top of stone elevation to within 8 inches of the final property grade. The soil will be compacted to 98% of maximum dry density with compaction monitored by a third party geotechnical engineer.
- Clean ABC stone will then be placed in the excavation to a depth of 2-inches below the final property grade and compacted to 98% of maximum dry density.

Placement of Adventus DARAMEND During Backfilling

Adventus Corporation was supplied with site specific soil and groundwater data collected during this investigation and determined that 11,300 pounds of Adventus DARAMEND, a commercial product that incorporates zero-valent iron and carbon, should be mixed in the portion of the backfill where groundwater is expected to occur in order to enhance subsurface conditions to produce reducing conditions necessary for the in-situ chemical reduction (ISCR) of the PCE groundwater plume. W&R anticipates that based on the site conditions this material should be applied as follows:

- Place initial 18-inch lift of No. 57 stone in excavation;

- Place 5,650 pounds (or 113 50-pound bags) over the surface of the 18-inch lift of stone and mix with trackhoe to incorporate into stone.
- Track stone into place with trackhoe;
- Repeat for second 18-inch lift of No. 57 stone with mixing of additional 113 bags of DARAMEND to complete the product incorporation into the backfill.

6.2 Injection of Adventus EHC

Adventus Corporation was supplied with site specific soil and groundwater data collected during this investigation and determined that the quantity of Adventus EHC®, a commercial product that incorporates zero-valent iron and carbon, should be placed in the upper portion of the shallow aquifer to produce reducing conditions necessary for the in-situ chemical reduction (ISCR) of the PCE groundwater plume. The EHC will be applied to the subsurface in the following arrangement:

- Up to 38 initial Geoprobe injection points will be advanced on approximate 12 foot centers over the area of groundwater consistent with the location of the highest concentrations of PCE in groundwater (believed to be representative of dense non-aqueous phase liquids (DNAPL)). The 12 foot spacing was derived by W&R using an anticipated radius of EHC distribution of 6 feet from each Geoprobe point see **Figure 8**).
- Based on this spacing, approximately 602 pounds of EHC will be placed in the subsurface per point. Using the design slurry mix provided by Adventus this will include the placement of 220 gallons of slurry per point (602 pounds EHC + 181 gallons of water). The typical distribution of EHC will be 40 pounds per vertical foot. The total mass of EHC to be introduced for the source area will be 22,900 pounds (or 458 @ 50 lb bags). W&R increased the recommended number of borings to include the placement of 14 additional borings beneath the western portion of the excavation that encompasses the 15 mg/L PCE contour line in groundwater.
- The depth of placement will vary dependent on the location of the borings relative to the proposed excavation zone. Injection points centered beneath the deepest portion of the excavation will have the EHC slurry delivered over a depth of 28 to 35 feet below the existing property grade. The remaining areas with have EHC placed at depths ranging from 20 to 35 feet below the existing property grade.

6.3 Subsurface Vapor Control

The expected in-situ chemical reduction that will occur as a result of the introduction of EHC via injection will produce hydrogen gas as a by-product of the PCE degradation. In order to promote the venting of the gas to surface, W&R proposes to use passive venting to prevent a pressure gradient within the stone filled portion of the soil excavation.

Four passive soil vapor vents will be installed within the footprint of the excavation using a hollow stem auger drill rig following completion of the soil excavation activities. The vents will be constructed of 2-inch schedule 40 PVC pipe with 5-foot of screen, and installed to a depth of 18 feet bls. Approximately 3 feet of the screen shall be placed within the No. 57 stone backfill of the excavation. The balance of the vent will be constructed to near the surface in similar fashion to a groundwater monitoring well, and connected to a 2-inch schedule 40 PVC pipe that ties into a manifold system located on the southwestern corner of the property. The manifold system will contain sampling points, and vent to a 12-foot galvanized steel pipe above ground surface. The location and a schematic of the vents and manifold system are provided in **Figure 9**.

6.4 Protection of Health & Safety of Adjacent Residential and Business Communities

The excavation process is expected to be completed within a four to five week period following preparation of the initial site work. Injection should be completed within a similar four week period. DSCA will provide notification to the Trinity Park Neighborhood Association, Durham Area Transit Authority and contiguous property owners of the scheduled dates of the excavation and injection events. DSCA has required the development of the following work practices to ensure the protection of the health and safety of the surrounding community members during this work.

6.4.1 Limitation of Pedestrian Access to Property

A temporary six-foot chain link security fence with privacy screening will be erected along the perimeter of the property to restrict pedestrian and vehicular access during the excavation activities. Sidewalks along W. Club Boulevard will remain open and will not limit use of the Durham Transit Authority (DATA) bus stop near the property. Proper signage warning against trespassing will be placed along the fence.

6.4.2 Public Notification

At least two weeks prior to the scheduled remedial activities, all residents within and contiguous to the contamination plume, as well as TPNA, DATA, and interested parties that have provided contact

information, will be notified of the dates of the remedial activities, which will also be posted on the DSCA website (http://ncdenr.gov/web/wm/dsca/bbt_updates). In addition, notices will be posted adjacent to the bus stop. Prior to the remedial activities, questions regarding the Remedial Action Plan can be directed to Billy Meyer at 919-707-8366.

DSCA will post a schedule along with biweekly updates on the status of the remediation on its website at www.ncdsca.org, and e-mail the update to interested parties that have provided contact information. The biweekly status updates will include an updated schedule and descriptions of conditions encountered during the bi-weekly reporting period. These updates will begin two weeks after excavation activities commence at the subject property.

6.4.3 Traffic Control

Flagmen will be used to direct vehicular and pedestrian traffic along the W. Club Blvd entrance to the property as trucks enter and leave the property.

6.4.4 Vapor Monitoring Plan

During the helical pier construction and excavation, DSCA's contractor will monitor wind speed and direction and in turn screen air at the subject property boundaries for concentrations of volatile organic compounds (VOCs) every 15 minutes. W&R will use an organic vapor analyzer to monitor the level of volatile organic compounds in the ambient air at the property boundaries. W&R will use a TVA 1000 Organic Vapor Analyzer PID/FID or equivalent for monitoring VOCs in outdoor air. Accuracy of the FID is ±25% of reading or ±2.5 ppm, whichever is greater, from 1.0 to 10,000 ppm. A second instrument to be used for the outdoor vapor monitoring is the direct-reading Dräger Chip Measurement System (CMS) with detection capabilities of 5 to 150 ppm for PCE, 5 to 100 ppm for TCE and 0.3 to 10 ppm for Vinyl Chloride. The monitoring will be conducted in accordance with the following monitoring protocol:

1) Background ambient air readings will be collected using the organic vapor analyzer on the day prior to the initiation of the concrete slab, brick foundation and pavement removal near each property boundary;

2) During the initial site work, ambient air readings will be collected at the property boundaries on a daily basis to determine the contribution of the volatile organic compound

readings from the operation of the diesel operated machinery to be used on the project;

3) Vapor readings at each property boundary will be monitored throughout each workday during the active excavation portion of the project. The monitoring will be completed on a frequency necessary to determine that vapor concentrations are consistently below the site specific target action level of 10% of the permissible exposure limit of 100 parts per million for PCE established by the Occupational Safety and Health Administration (OSHA).

4) In the instance where ambient readings show an increase in ambient air greater than 10 parts per million over background for over a half hour (or 2 consecutive readings)., then the DSCA contractor will notify residents to limit their time outdoors to minimize exposure to vapors associated with the work, and the National Institute for Occupational Safety and Health (NIOSH) guidance will be applied. W&R will also immediately notify DATA so that a DATA dispatcher can notify both the incoming and outgoing buses to use alternative bus stops. Riders waiting at the bus stops on either side of W. Club Blvd will be directed to the alternative bus stops by W&R personnel. Normal service of the outgoing and incoming buses will resume once PCE vapors dissipate to less than 10 ppm along the perimeter of the property.

5) Should sustained ambient air readings be detected work will be halted and physical barriers (tarps, plastic sheeting, vapor control foam) to cover emitting surfaces such as temporary storage piles and the open excavation faces will be implemented and maintained until other vapor control measures are employed. Workers on site will wear respirators until vapor concentrations are below the OSHA permissible exposure limit as required by the subcontractor's health and safety plan.

6) Upon completion of the paving activities, an ambient air sample will be collected on the property to confirm that the level of PCE in outdoor air is less than the N.C. Division of Air Quality's Acceptable Ambient Levels, or AALs. For PCE, the AAL is 190 ug/m^3. Fencing around the property will remain in place until the AALs are confirmed to be below 190 ug/m^3.

6.4.5 Noise Control

The DSCA contractor will require that work be conducted at the property between the hours of 7 am and 6 pm during business days. During those hours noise typical of excavation equipment, saws,

grinders, trackhoes, and dump trucks (including back up alarms) is to be expected.

7.0 Post Remedial Action Monitoring Plan

7.1 Soil Vapor Monitoring Plan

The soil vapor monitoring plan will provide analytical data to determine the success of the remedial plan, and identify any changes in PCE soil vapor concentrations on the adjacent properties after the injection event. A soil vapor monitoring event will be completed on select soil vapor wells at a minimum of 2 weeks prior to injection and excavation activities. Soil vapor samples will be collected using a 1-Liter summa canister for analysis of tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride by EPA Method TO-15.

Following completion of the excavation, two nested pair of soil vapor monitoring wells will be installed along the southern (SV-55 and SV-56) property line of the subject property (see **Figure 10**). The 15 nested soil vapor wells to be screened and then sampled are shown on the attached **Figure 11** and will include:

- Onsite – SV-55, SV-56, SV-8 & SV-17
- West of site – SV-49 & SV-50
- South of site – SV-27 & SV-28
- East of Site – SV-36, SV-29, SV-18, SV-20, SV-19, SV-21, SV-25, SV-43

Two weeks following completion of the injection, the network of soil vapor probes will be sampled to monitor for changes in PCE concentrations and related daughter products as well as measuring of the subsurface pressure relative to atmospheric pressure. In addition, vapor off-gassing from the vents constructed within the backfilled excavation will be monitored during each sampling event. Additional monitoring events will occur on a monthly basis for approximately 3 months after the injection.

The results of each monitoring event will be reviewed to evaluate the effectiveness of the remediation. Changes to the monitoring plan will be made if necessary to ensure the protection of the surrounding community if necessary. If vapor monitoring data for the vents in the excavation backfill indicates an unacceptable hazard exists, immediate steps will be taken to mitigate that condition at that time.

The schedule for soil vapor monitoring following the initial 90 days will be determined based on the results of the soil vapor results collected as part of this plan and the related discussion and consultation with DSCA staff.

7.2 Groundwater Monitoring Plan

The groundwater monitoring plan will provide analytical data to determine the success of soil source removal and behavior of the PCE plume in the source area. All monitoring wells within the footprint of the excavation will be properly abandoned in accordance with NC DENR DWQ regulations prior to excavation. Three pairs of wells (MW-21S&I through MW-23S&I), which include one well screened across the water table and one well screened on top of rock) will be installed after the excavation activities (see **Figure 12**).

Select groundwater monitoring wells (**Figure 13**) will be sampled for analysis of VOCs by EPA Method 8260 prior to remedial activities. Groundwater monitoring events for these select wells will be completed in conjunction with the soil vapor monitoring on a monthly basis for 3 months after the injection event. In order to satisfy anticipated requirements of the Underground Injection Control (UIC) Program, the monitoring will also include monitored natural attenuation (MNA) parameters, which include pH, temperature, dissolved oxygen (DO), electrical conductivity (EC), oxygen reduction potential (ORP), methane, ethane, and ethene, will be analyzed in samples collected from the wells described below:

- Onsite – MW-3r, MW-3i, MW-4r, MW-4i, MW-21i, MW-21s, MW-22i, MW-22s, MW-23i, & MW-23s
- West of site – MW-10
- South of site – MW-18
- East of Site –MW-14i, MW-14s, MW-16i, & MW-16s

Note: r – denotes replacement shallow screened well;
s – denotes shallow screened monitoring well;
i – denotes well screened just above rock.

7.3 Indoor Air Monitoring Plan

Indoor air will be monitored at the three adjacent structures with observed vapor intrusion (1414 Watts St., 1421 Dollar St., and 1419 Dollar St.) at an increased frequency during completion of the remedial action.

1419 and 1421 Dollar Street

Two 24-hour summa canister samples will be collected from the two residences (1419 and 1421 Dollar St) on a monthly basis for three months starting one month after the injection event. The samples will be submitted for laboratory analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride by EPA Method TO-15. During each event one ambient air sample will be collected as well. Fifteen days after the initial 24-hour indoor air samples are collected, two Radiello 30-day samples will also be deployed at each

residence for analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. These 30-day Radiello samples will be deployed and collected on a continuous monthly for 90 days.

1414 Watts Street

Two 3-hour summa canister samples will be collected from the church during church service on a monthly basis for three months starting one month after the injection event. The samples will be submitted for laboratory analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride by EPA Method TO-15. The schedule for indoor air monitoring following the initial 90 days will be determined based on the results of the indoor air results collected at each property as part of this plan and the related discussion and consultation with DSCA staff.

7.4 Contingency Plan to be Implemented If Indoor Air Concentrations Increase Post Injection

Should analytical data indicate the concentrations of PCE in indoor air have increased to levels above the 1 $x10^{-4}$ carcinogenic risk for the occupants of the residential and church buildings, then increased levels of mitigation will be completed at the respective building to include the addition of more extensive sub-slab depressurization beneath the slab of the Triangle Family Church and/or the application of sub-membrane depressurization at the homes on 1419 and 1421 Dollar Avenue.

Any change in mitigation will include a corresponding change in indoor air sampling frequency and duration to adequately protect human health.

8.0 Protection of Ecological Receptors

W&R completed a Level 1 Ecological Risk Assessment for the site in accordance with the DSCA Program's NCRBCA guidance. The results of the evaluation indicate that the release does not pose an unacceptable ecological risk. Based on the purpose of the RAP, surficial soils are to be excavated, during which time stormwater runoff and access to the exposed soils will be controlled. The completed Level 1 Ecological Risk Assessment Checklists A and B and associated attachments are included in **Appendix A**.

9.0 Estimated Cost For RAP Implementation

W&R has obtained cost estimates from qualified vendors for completion of the field activities described in Section 6 and 7 of this report. The following table summarizes the costs associated with the selected remedial strategy. The vendor proposals are included in **Appendix C**. W&R's supporting calculations are included in **Appendix D**.

Vendor – Subcontracted Task	Estimated Cost
Installation of Piers – Triangle Family Church	$42,210.00
Abandonment of Groundwater Monitoring Wells	$2,199.00
Removal & Disposal of Brick, Concrete & Pavement (360 tons)	$33,237.00
Excavation & Disposal of Contaminated Soil (3550 tons as Non-Hazardous)	$179,345.00
Delivery, Placement, Backfill, Compaction of Stone & Clean Earth	$95,525.00
Purchase & Delivery of DARAMEND	$7,150.00
Labor & Equipment to Mix DARAMEND	$2,000.00
Placement & Removal of Security Fence, Utility Location, Sanitary Facilities, Haybales for Erosion Control, Etc.	$5,155.00
Clean Lot, Replacement of Asphalt Pavement	$56,000.00
Construction of Soil Vents	$5,950.00
Purchase, & Delivery of EHC	$57,960.00
Injection of EHC	$42,000.00
Replacement of Soil Vapor Well	$1,250.00
Replacement of Groundwater Monitoring Wells	$11,825.00
Total Capital Costs (With 10% Avg. Markup)	**$595,987.00**

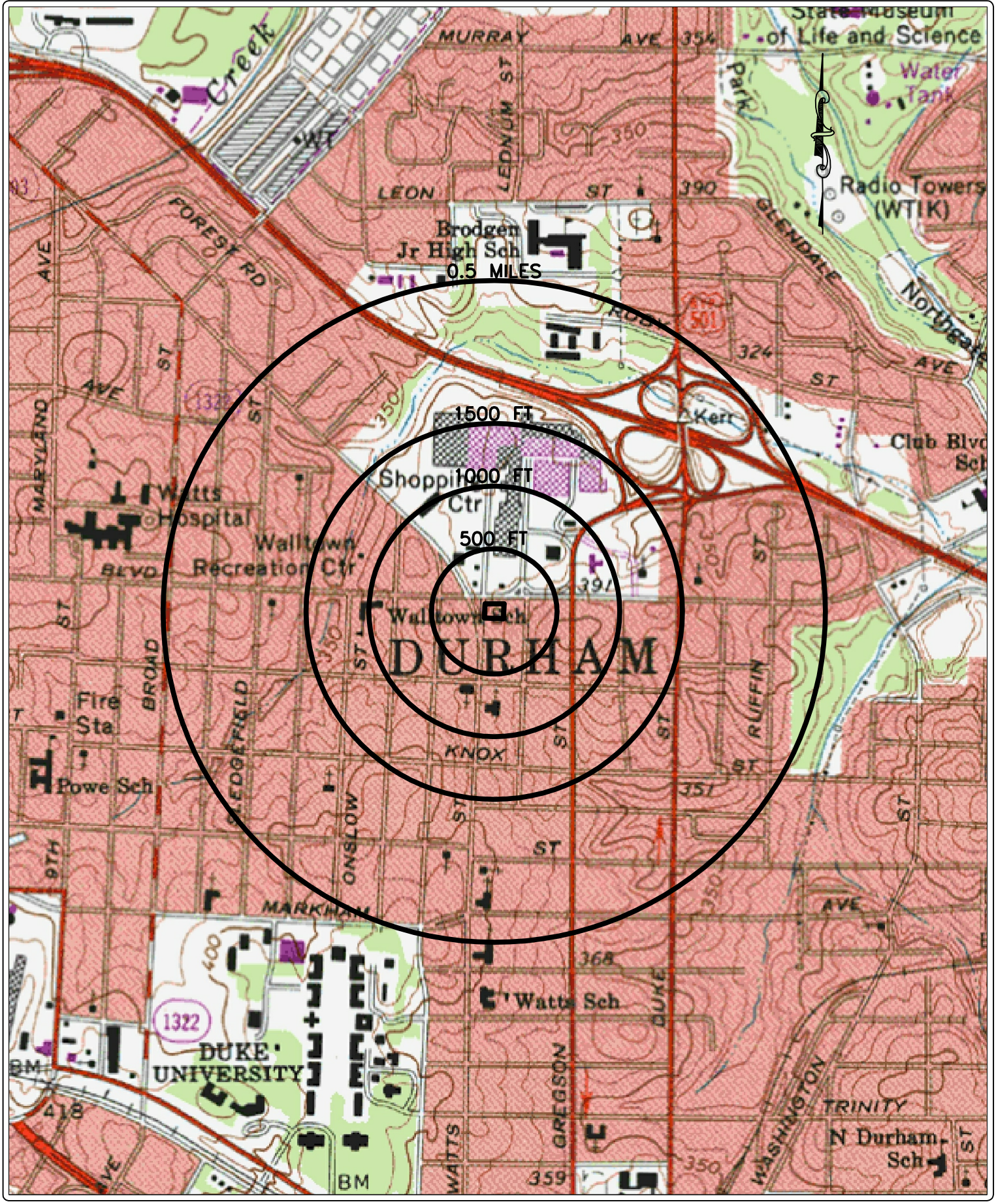
W&R has prepared cost estimates for the coordination, field supervision, vapor monitoring, groundwater monitoring, indoor air monitoring and reporting described in Section 6 and 7 of this report. The following table summarizes the costs associated with the selected remedial strategy. W&R's supporting calculations are included in **Appendix D**.

DSCA Contractor Tasks + Laboratory + Investigation Derived Waste Disposal	Schedule	Estimated Cost
Preparation of RAP		$11,474.00
Coordination & Supervision of Installation of Piers – Triangle Family Church	1 Week	$5,230.00
Coordination & Supervision of Abandonment of Groundwater Monitoring Wells	1 Day	$760.00
Field Supervision / Coordination of Removal & Disposal of Brick, Concrete & Pavement (360 tons)	2 Days (24 Rush Samples)	$8,888.40
Field Supervision / Coordination of Excavation & Disposal of Contaminated Soil (3550 tons)	2 Weeks (10 Days)	$23,425.80
Field Supervision / Coordination of Delivery, Placement, Backfill, Compaction of Stone & Clean Earth	2 Weeks	$10,650.00
Purchase & Delivery of DARAMEND		$1,065.00
Field Supervision / Coordination of Labor & Equipment to Mix DARAMEND	2 Days (During Backfilling)	$2,460.00
Field Supervision / Coordination of Placement & Removal of Security Fence, Utility Location, Sanitary Facilities, Haybales for Erosion Control, Etc.	2 Days	$2,460.00
Field Supervision / Coordination of Clean Lot, Replacement of Asphalt Pavement	2 Days	$2,460.00
Field Supervision / Coordination of Construction of Soil Vents	1 Day	$3,311.00
Injection Permit Application		$4,686.00
Field Supervision / Coordination of Purchase, & Delivery of EHC	1 Day	$1,065.00
Field Supervision / Coordination of Injection of EHC	3 Weeks	$27,686.00
Field Supervision / Coordination of Replacement of Soil Vapor & Groundwater Monitoring Wells	5 Days	$9,413.00

DSCA Contractor Tasks + Laboratory + Investigation Derived Waste Disposal	Schedule	Estimated Cost
Implementation of Soil Vapor Monitoring & Indoor Air Sampling	Monitoring Complete 90 Days Post Injection of EHC	$40,432.00
Completion of Pre & Post Injection Groundwater Sampling	Monitoring Complete 30 Days Post Injection of EHC	$51,195.00
Total DSCA Contractor Cost		**$206,661.20**

The total estimated cost of the remedial effort proposed in this plan is $802,648.20.

FIGURES



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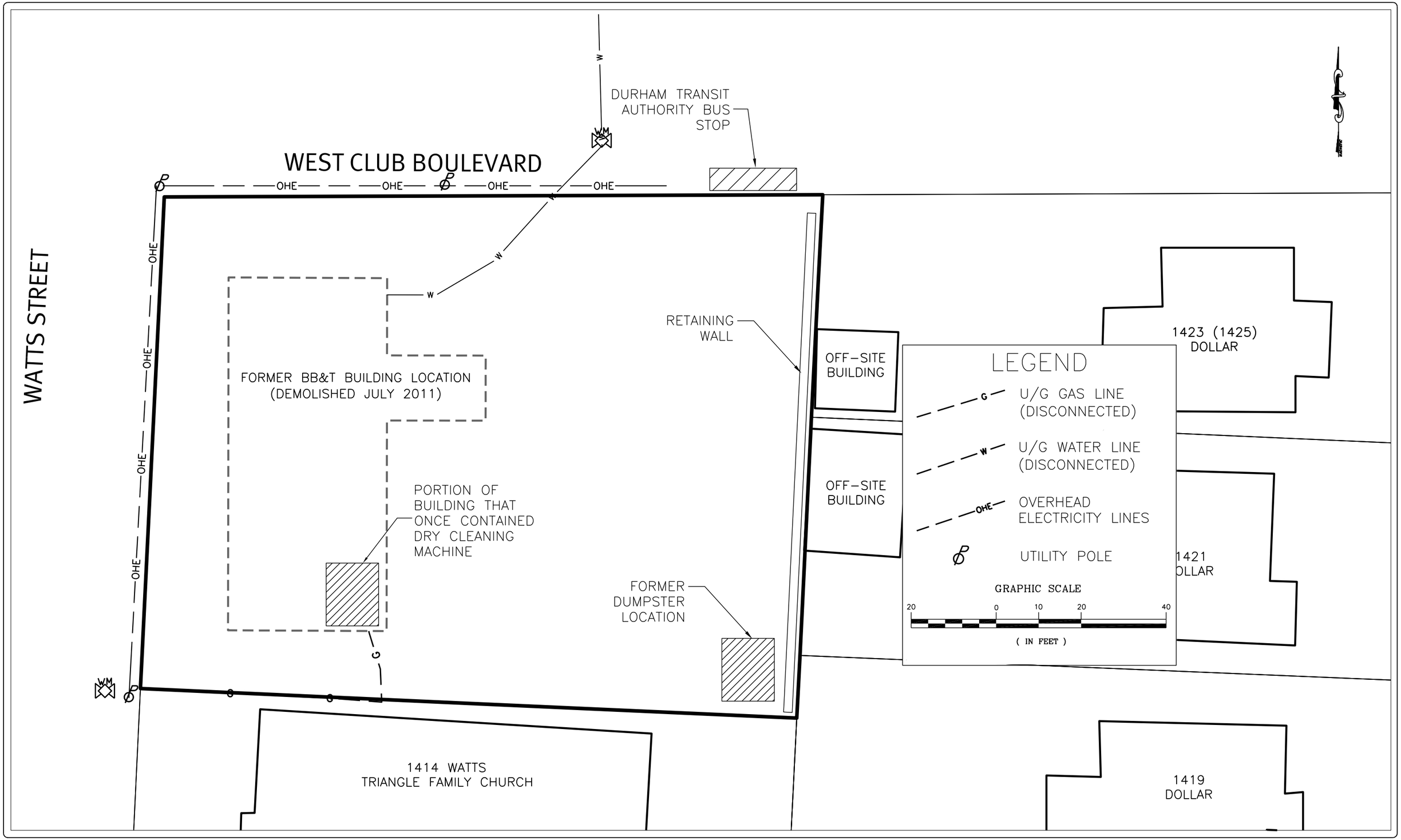
FORMER BB&T SITE
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

SITE LOCATION MAP

DRAWN BY:	SCALE:	FIGURE NO.
WRP	1"=1000'	1
APPROVED BY:	DATE:	JOB NO:
LP	4/7/11	2060496.32

K:\06\06-0490\060496.32-DSCA #32-0013 FORMER BB&T\CAD\RAP FIGURES.DWG 10/20/2011 4:13 PM PERRY, ROSS 1:0.4297



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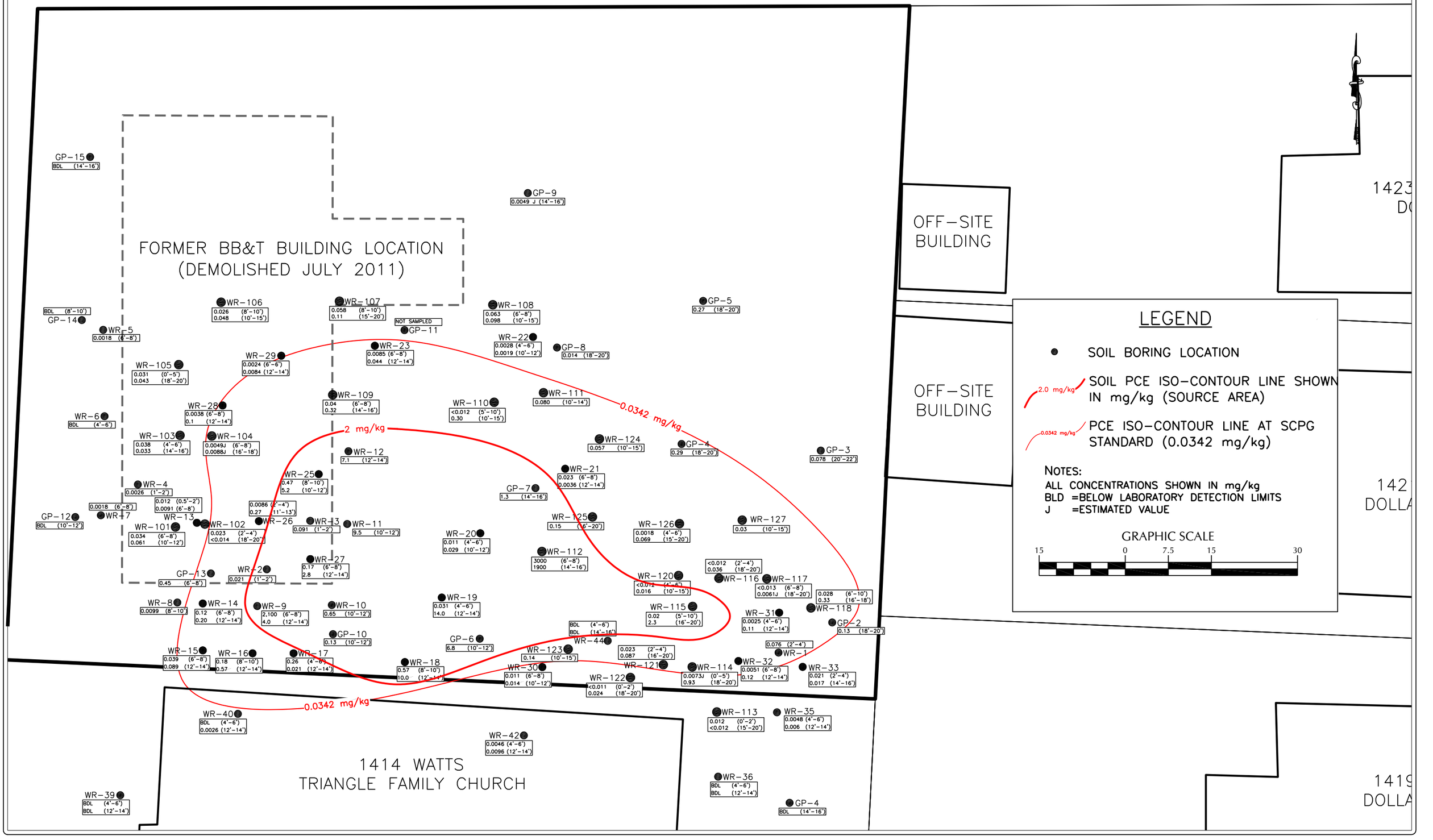
Revisions			
No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

SITE MAP

Drawn By: WRP	Scale: 1"=20'
Checked By: CB	Date: 10/14/2010

Job No. 2060496.32
Sheet No. 2



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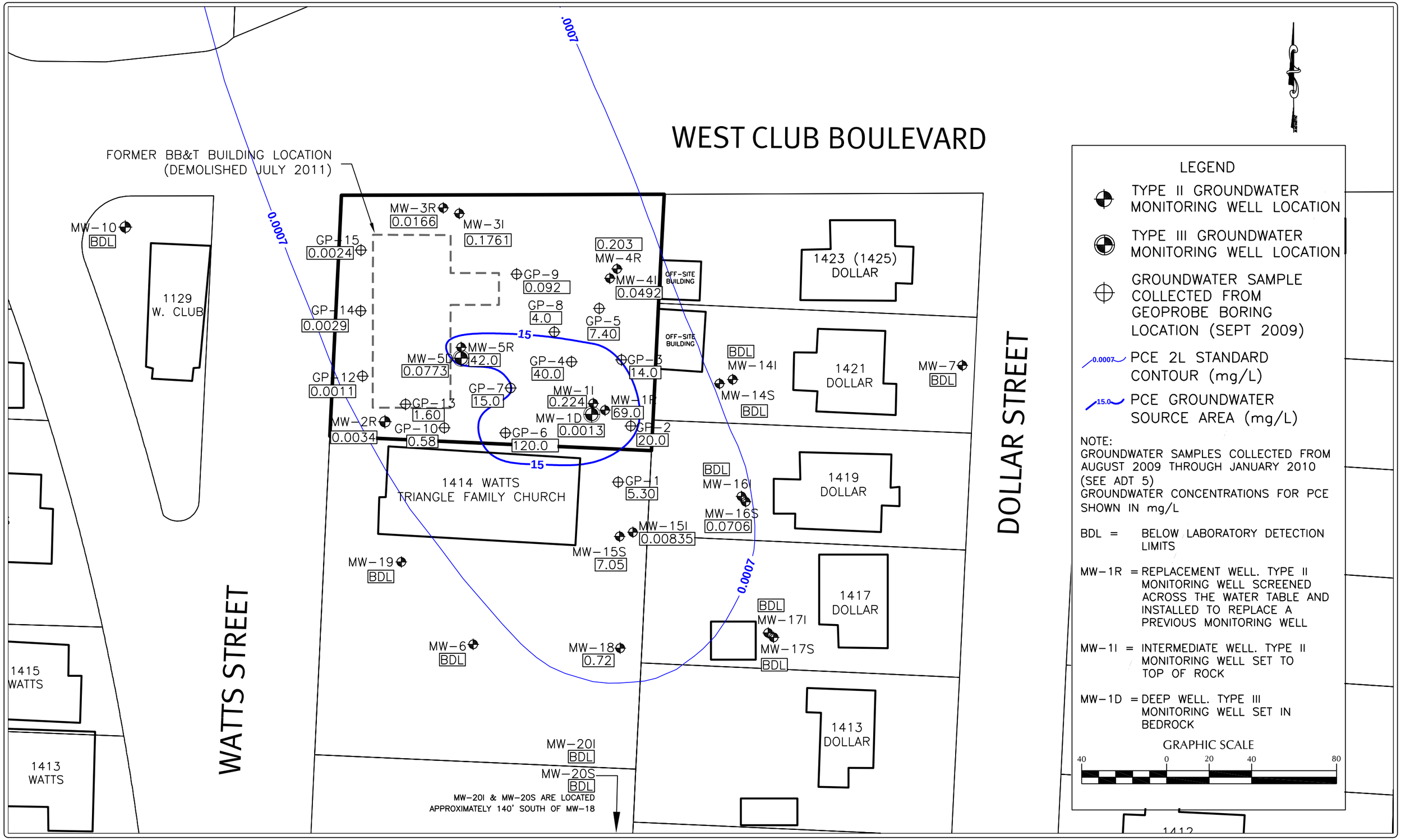
BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

SOIL BORING LOCATIONS & IMPACT MAP

Drawn By: WRP	Scale: 1"=15'
Checked By: LP	Date: 9/8/11

Job No. 2060496.32
Sheet No. 3



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No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

GROUNDWATER SAMPLE LOCATIONS & GROUNDWATER IMPACT MAP

Drawn By	Scale
WRP	1"=40'
Checked By	Date
LP	10/14/11

Job No.	
206496.32	
Sheet No.	
4	

S:\AUTOCAD\BLOCKS\ENVIRONMENTAL TITLE\ENV-TITLE-11X17L.DWG ---- JOHNSON, CHRISTOPHER 1:0.4297

WEST CLUB BOULEVARD

FORMER BB&T BUILDING LOCATION
(DEMOLISHED JULY 2011)

WATTS STREET

DOLLAR STREET

1129 W. CLUB

1414 WATTS
TRIANGLE FAMILY CHURCH

1423 (1425) DOLLAR
1422 DOLLAR
1421 DOLLAR
1420 DOLLAR
1419 DOLLAR
1418 DOLLAR
1417 DOLLAR
1416 DOLLAR
1414 DOLLAR
1413 DOLLAR
1412 DOLLAR
1411 DOLLAR
1410 DOLLAR
1409 DOLLAR
1408 DOLLAR
1407

1417 WATTS
1415 WATTS
1413 WATTS
1410 WATTS

OFF-SITE BUILDING

NO ACCESS GRANTED / OBTAINED

NO ACCESS GRANTED FOR INDOOR AIR

SV-1 SHALLOW PCE= 8.81 TCE= 0.25
SV-2 SHALLOW PCE= 3,460 TCE= BDL
SV-3 SHALLOW PCE= 197 TCE= 2.31
SV-4 SHALLOW PCE= 57.0 TCE= BDL
SV-5 SHALLOW PCE= 1,900 TCE= BDL
SV-6 SHALLOW PCE= 19.7 TCE= BDL
SV-7 SHALLOW PCE= 3,050 TCE= BDL
SV-8 SHALLOW PCE= 2,580 TCE= BDL
SV-9 SHALLOW PCE= 7.42 TCE= BDL
SV-10 SHALLOW PCE= 7.19 TCE= BDL
SV-11 SHALLOW PCE= 0.40 TCE= BDL
SV-12 SHALLOW PCE= 29,177 TCE= 1.15
SV-13 SHALLOW PCE= 1,378 TCE= 0.475
SV-14 SHALLOW PCE= 227 TCE= 0.042
SV-15 SHALLOW PCE= 1,027 TCE= 0.047J
SV-16 SHALLOW PCE= 205 TCE= BDL
SV-17 SHALLOW PCE= 28.8 TCE= BDL
SV-18 *SHALLOW (5/29/09) PCE= 105 TCE= 0.0113 *SHALLOW (11/17/09) PCE=21.42 TCE=BDL
SV-19 SHALLOW PCE= 3.91 TCE= BDL
SV-20 SHALLOW PCE= 257 TCE= BDL DEEP PCE=0.786 TCE=BDL
SV-21 SHALLOW PCE= 79.3 TCE= BDL DEEP PCE=19.5 TCE=BDL
SV-22 NOT SAMPLED
SV-23 (NS)
SV-24 NOT SAMPLED
SV-25 NOT SAMPLED
SV-26 SHALLOW PCE= 0.316 TCE= 0.00169 J DEEP PCE=0.339 TCE=BDL
SV-27 SHALLOW PCE= 413 TCE= 0.0602 J DEEP PCE=290 TCE=0.115 J
SV-28 SHALLOW NOT SAMPLED DEEP PCE=0.0123 TCE=0.0004 J
SV-29 SHALLOW PCE= 2190 TCE= BDL DEEP PCE=1460 TCE=BDL
SV-30 SHALLOW PCE= 317 TCE= BDL DEEP PCE= 569 TCE= 0.226
SV-31 (NS)
SV-32 (NS)
SV-33 SHALLOW PCE=39.5 TCE=BDL
SV-34 SHALLOW PCE= 0.617 TCE= BDL DEEP PCE= 0.0312 TCE= BDL
SV-35 SHALLOW PCE= 8.99 TCE= BDL DEEP PCE=28.2 TCE=BDL
SV-36 SHALLOW PCE= 463 TCE= 0.0272 J DEEP PCE=303 TCE=0.0741 J
SV-37 SHALLOW PCE= 8.24 TCE= 0.00228 J DEEP PCE=3.32 TCE=0.00148 J
SV-38 SHALLOW PCE= 0.00218 J TCE= 0.00080 J DEEP PCE=0.00155 J TCE=0.00131 J
SV-39 SHALLOW PCE= 0.00159 J TCE= 0.00639 J DEEP PCE= 0.0170 TCE=0.00671 J
SV-40 SHALLOW PCE= 0.00304 J TCE= 0.00543 J DEEP PCE=0.00132 J TCE=0.00586 J
SV-41 SHALLOW PCE= 0.00237 J TCE= 0.00254 J DEEP PCE=0.00237 J TCE=0.000897 J
SV-42 SHALLOW PCE= 0.0021 J TCE= BDL DEEP PCE= 0.00191 J TCE= BDL
SV-43 SHALLOW PCE= 1.87 TCE= 0.000725 J DEEP PCE=0.00111 J TCE=BDL
SV-44 SHALLOW PCE= 0.0194 J TCE= 0.00219 J DEEP PCE=0.820 TCE=BDL
SV-45 SHALLOW PCE= 0.0125 TCE= BDL DEEP PCE=0.0186 J TCE=BDL
SV-46 SHALLOW PCE= 0.00148 J TCE= BDL DEEP PCE=0.00170 J TCE=BDL
SV-47 SHALLOW PCE= 0.0160 J TCE= BDL
SV-48 SHALLOW PCE= 0.0332 J TCE= BDL DEEP PCE=0.00332 J TCE=BDL
SV-49 SHALLOW PCE= 0.0237 TCE= 0.00816 DEEP PCE=0.000485 J TCE=BDL
SV-50 SHALLOW PCE= 0.00963 J TCE= BDL
SV-51 SHALLOW PCE= 13.57 TCE= BDL DEEP PCE= 20.62 TCE=BDL
SV-52 SHALLOW PCE= BDL TCE= BDL DEEP PCE=0.00585 J TCE=BDL
SV-53 NOT SAMPLED
SV-54 SHALLOW PCE= BDL TCE= BDL DEEP PCE=BDL TCE=BDL

10
100
1,000
10,000
0.041

LEGEND

- SV — SOIL VAPOR SAMPLE LOCATION
- 10 — PCE ISO-CONTOUR LINE SHOWN IN mg/m^3
- FORMER DRY-CLEANING FACILITY (DEMOLISHED JULY 2011)
- STRUCTURES UNDER MITIGATION AND MONITORING DUE TO INITIAL INDOOR AIR PCE CONCENTRATIONS.
- STRUCTURES WITH ACCEPTABLE INDOOR AIR PCE CONCENTRATIONS

NOTES:
SOIL VAPOR CONCENTRATIONS FOR PCE AND TCE SHOWN IN mg/m^3

*SOIL VAPOR WELL SV-18 SAMPLED TWICE (5/29/09 & 11/17/09)

BDL=BELOW LABORATORY DETECTION LIMITS
J=ESTIMATED VALUE BY LABORATORY CONCENTRATION BELOW REPORTING LIMITS

GRAPHIC SCALE
50 0 25 50 100

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No.	Description	Date	By

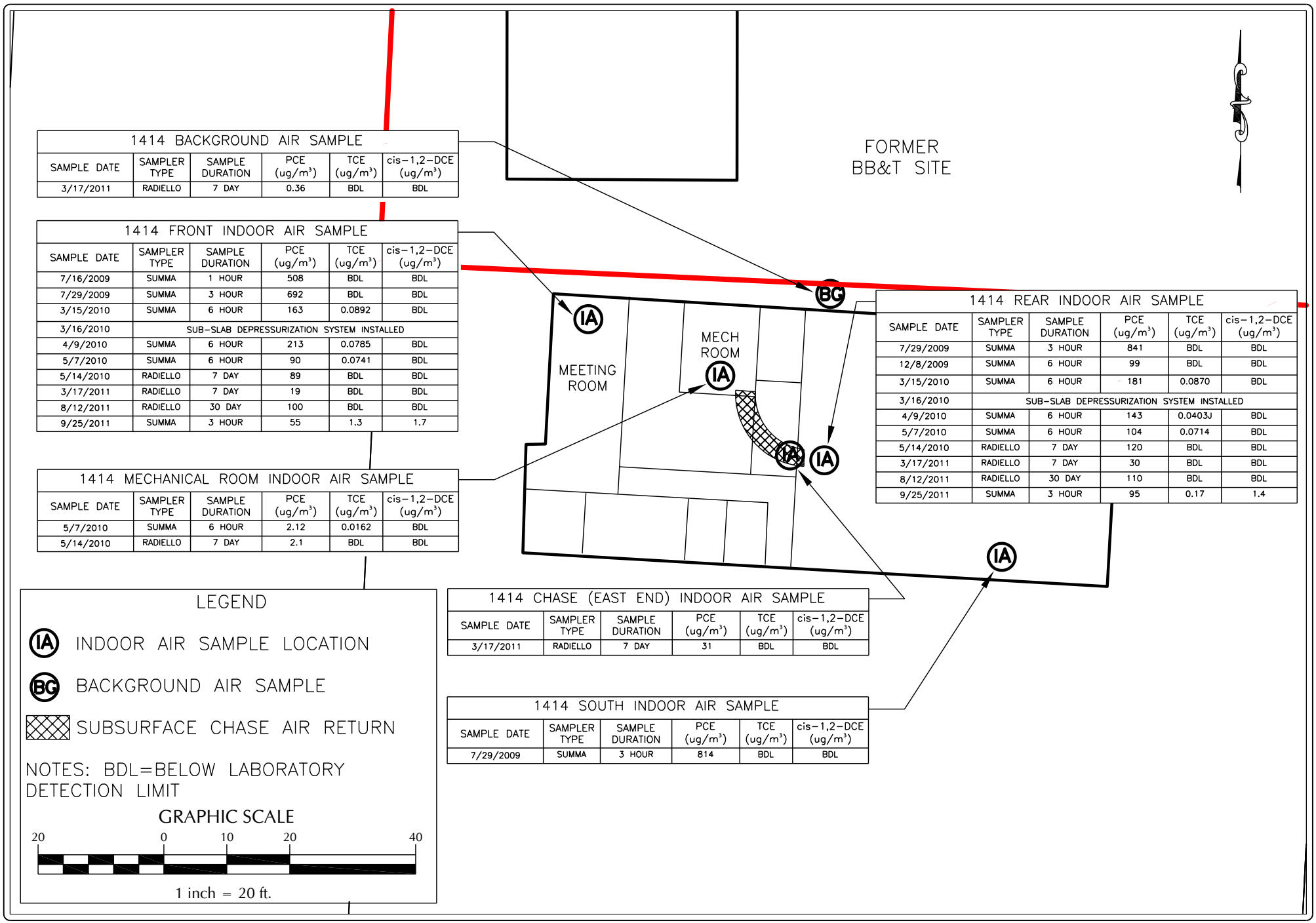
BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

SOIL VAPOR IMPACT &
INDOOR AIR IMPACT MAP

Drawn By	Scale
WRP	1"=50'
Checked By	Date
LP	4/3/11

Job No. 206496.32
Sheet No. 5

S:\AUTOCAD\BLOCKS\ENVIRONMENTAL TITLE\ENV-TITLE-11X17L.DWG ---- JOHNSON, CHRISTOPHER 1:0.4297



1414 BACKGROUND AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
3/17/2011	RADIELLO	7 DAY	0.36	BDL	BDL

1414 FRONT INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
7/16/2009	SUMMA	1 HOUR	508	BDL	BDL
7/29/2009	SUMMA	3 HOUR	692	BDL	BDL
3/15/2010	SUMMA	6 HOUR	163	0.0892	BDL
3/16/2010	SUB-SLAB DEPRESSURIZATION SYSTEM INSTALLED				
4/9/2010	SUMMA	6 HOUR	213	0.0785	BDL
5/7/2010	SUMMA	6 HOUR	90	0.0741	BDL
5/14/2010	RADIELLO	7 DAY	89	BDL	BDL
3/17/2011	RADIELLO	7 DAY	19	BDL	BDL
8/12/2011	RADIELLO	30 DAY	100	BDL	BDL
9/25/2011	SUMMA	3 HOUR	55	1.3	1.7

1414 MECHANICAL ROOM INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
5/7/2010	SUMMA	6 HOUR	2.12	0.0162	BDL
5/14/2010	RADIELLO	7 DAY	2.1	BDL	BDL

1414 REAR INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
7/29/2009	SUMMA	3 HOUR	841	BDL	BDL
12/8/2009	SUMMA	6 HOUR	99	BDL	BDL
3/15/2010	SUMMA	6 HOUR	181	0.0870	BDL
3/16/2010	SUB-SLAB DEPRESSURIZATION SYSTEM INSTALLED				
4/9/2010	SUMMA	6 HOUR	143	0.0403J	BDL
5/7/2010	SUMMA	6 HOUR	104	0.0714	BDL
5/14/2010	RADIELLO	7 DAY	120	BDL	BDL
3/17/2011	RADIELLO	7 DAY	30	BDL	BDL
8/12/2011	RADIELLO	30 DAY	110	BDL	BDL
9/25/2011	SUMMA	3 HOUR	95	0.17	1.4

1414 CHASE (EAST END) INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
3/17/2011	RADIELLO	7 DAY	31	BDL	BDL

1414 SOUTH INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
7/29/2009	SUMMA	3 HOUR	814	BDL	BDL

LEGEND

IA INDOOR AIR SAMPLE LOCATION

BG BACKGROUND AIR SAMPLE

SUBSURFACE CHASE AIR RETURN

NOTES: BDL=BELOW LABORATORY DETECTION LIMIT

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

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No.	Description	Date

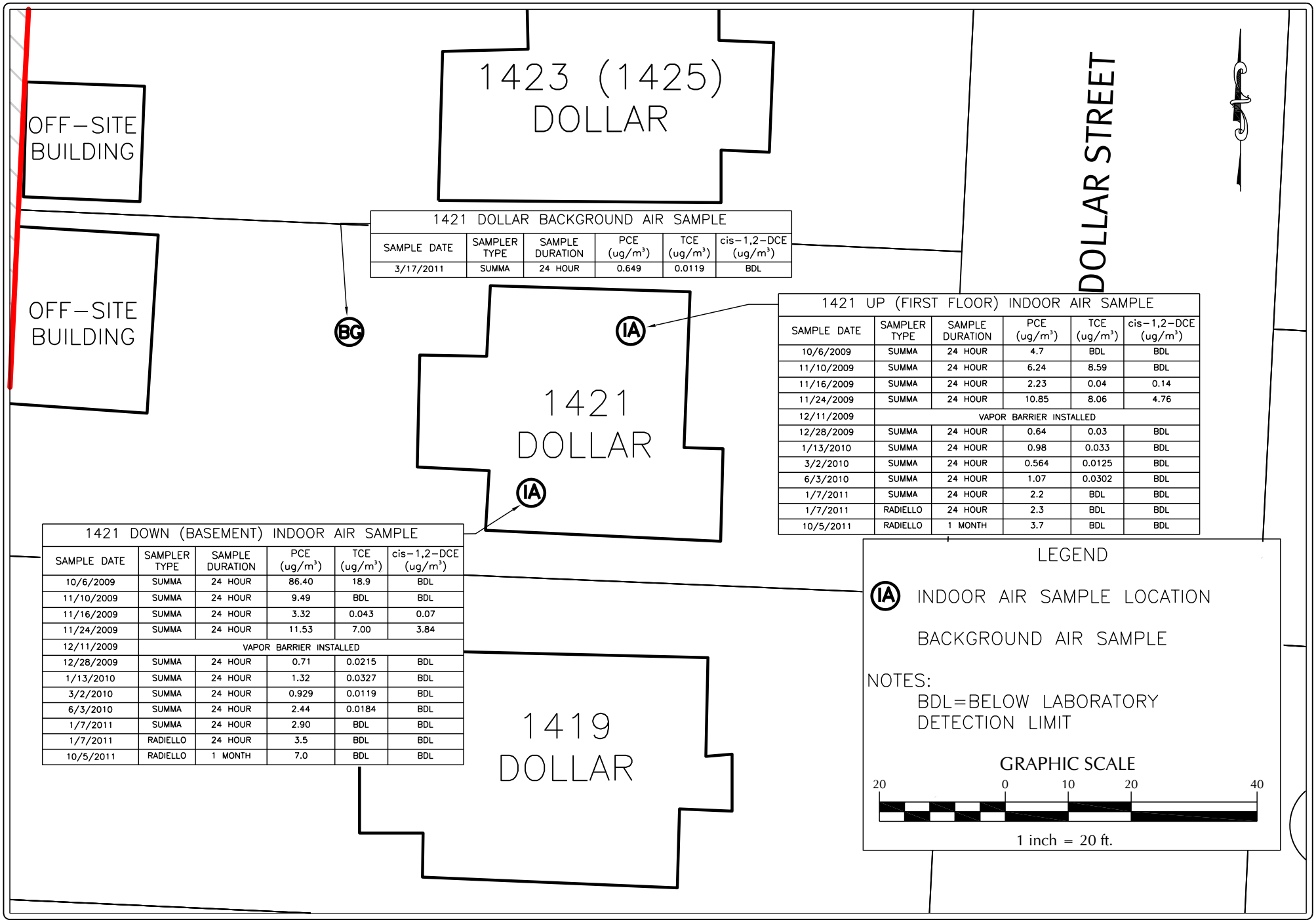
FORMER BB&T SITE
1103 WEST CLUB BLVD
DURHAM, NORTH CARLOINA

1414 WATTS
INDOOR AIR SAMPLE LOCATIONS MAP

Drawn By	Scale
WRP	1"=20'
Checked By	Date
LP	10/18/11

Job No. 2060496.32
Sheet No. 6A

K:\06\06-0490\060496.32-DSCA #32-0013 FORMER BB&T\CAD\FORMER BB&T 2011 BASEMAP (CURRENT 9-21-11).FDWG.DWG 12/30/2011 9:18 AM POWERS, LAURA 1:1



1421 DOLLAR BACKGROUND AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
3/17/2011	SUMMA	24 HOUR	0.649	0.0119	BDL

1421 UP (FIRST FLOOR) INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
10/6/2009	SUMMA	24 HOUR	4.7	BDL	BDL
11/10/2009	SUMMA	24 HOUR	6.24	8.59	BDL
11/16/2009	SUMMA	24 HOUR	2.23	0.04	0.14
11/24/2009	SUMMA	24 HOUR	10.85	8.06	4.76
12/11/2009	VAPOR BARRIER INSTALLED				
12/28/2009	SUMMA	24 HOUR	0.64	0.03	BDL
1/13/2010	SUMMA	24 HOUR	0.98	0.033	BDL
3/2/2010	SUMMA	24 HOUR	0.564	0.0125	BDL
6/3/2010	SUMMA	24 HOUR	1.07	0.0302	BDL
1/7/2011	SUMMA	24 HOUR	2.2	BDL	BDL
1/7/2011	RADIELLO	24 HOUR	2.3	BDL	BDL
10/5/2011	RADIELLO	1 MONTH	3.7	BDL	BDL

1421 DOWN (BASEMENT) INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
10/6/2009	SUMMA	24 HOUR	86.40	18.9	BDL
11/10/2009	SUMMA	24 HOUR	9.49	BDL	BDL
11/16/2009	SUMMA	24 HOUR	3.32	0.043	0.07
11/24/2009	SUMMA	24 HOUR	11.53	7.00	3.84
12/11/2009	VAPOR BARRIER INSTALLED				
12/28/2009	SUMMA	24 HOUR	0.71	0.0215	BDL
1/13/2010	SUMMA	24 HOUR	1.32	0.0327	BDL
3/2/2010	SUMMA	24 HOUR	0.929	0.0119	BDL
6/3/2010	SUMMA	24 HOUR	2.44	0.0184	BDL
1/7/2011	SUMMA	24 HOUR	2.90	BDL	BDL
1/7/2011	RADIELLO	24 HOUR	3.5	BDL	BDL
10/5/2011	RADIELLO	1 MONTH	7.0	BDL	BDL

LEGEND

(IA) INDOOR AIR SAMPLE LOCATION

BACKGROUND AIR SAMPLE

NOTES:
BDL=BELOW LABORATORY DETECTION LIMIT

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

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No.	Description	Date

FORMER BB&T SITE
1103 WEST CLUB BLVD
DURHAM, NORTH CARLOINA

1421 DOLLAR
INDOOR AIR RESULTS

Drawn By	Scale
WRP	1"=20'
Checked By	Date
LP	11/11/10

Job No. 2060496.32
Sheet No. 6B

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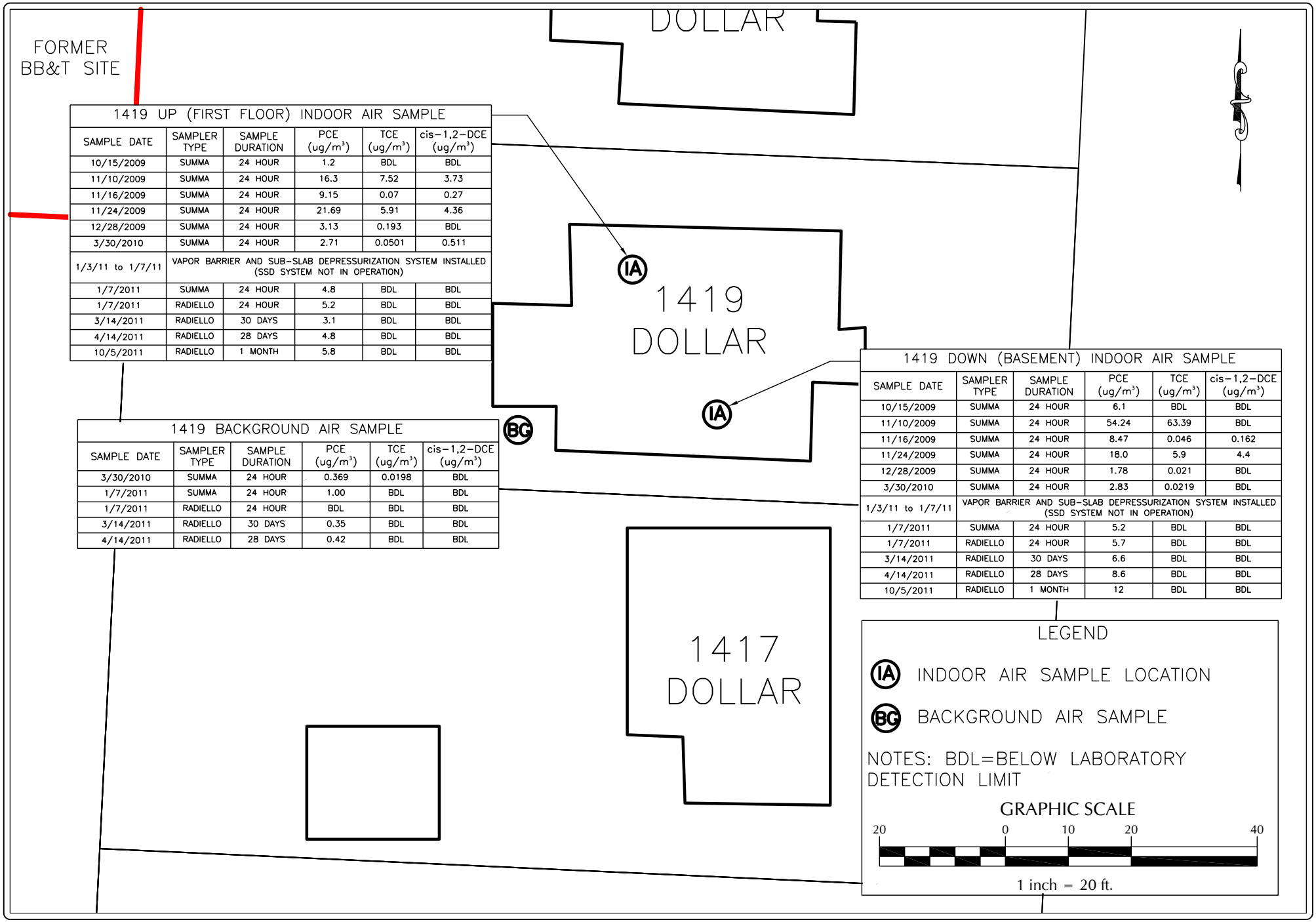

1419 UP (FIRST FLOOR) INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
10/15/2009	SUMMA	24 HOUR	1.2	BDL	BDL
11/10/2009	SUMMA	24 HOUR	16.3	7.52	3.73
11/16/2009	SUMMA	24 HOUR	9.15	0.07	0.27
11/24/2009	SUMMA	24 HOUR	21.69	5.91	4.36
12/28/2009	SUMMA	24 HOUR	3.13	0.193	BDL
3/30/2010	SUMMA	24 HOUR	2.71	0.0501	0.511
1/3/11 to 1/7/11	VAPOR BARRIER AND SUB-SLAB DEPRESSURIZATION SYSTEM INSTALLED (SSD SYSTEM NOT IN OPERATION)				
1/7/2011	SUMMA	24 HOUR	4.8	BDL	BDL
1/7/2011	RADIELLO	24 HOUR	5.2	BDL	BDL
3/14/2011	RADIELLO	30 DAYS	3.1	BDL	BDL
4/14/2011	RADIELLO	28 DAYS	4.8	BDL	BDL
10/5/2011	RADIELLO	1 MONTH	5.8	BDL	BDL

1419 BACKGROUND AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
3/30/2010	SUMMA	24 HOUR	0.369	0.0198	BDL
1/7/2011	SUMMA	24 HOUR	1.00	BDL	BDL
1/7/2011	RADIELLO	24 HOUR	BDL	BDL	BDL
3/14/2011	RADIELLO	30 DAYS	0.35	BDL	BDL
4/14/2011	RADIELLO	28 DAYS	0.42	BDL	BDL

1419 DOWN (BASEMENT) INDOOR AIR SAMPLE

SAMPLE DATE	SAMPLER TYPE	SAMPLE DURATION	PCE (ug/m^3)	TCE (ug/m^3)	cis-1,2-DCE (ug/m^3)
10/15/2009	SUMMA	24 HOUR	6.1	BDL	BDL
11/10/2009	SUMMA	24 HOUR	54.24	63.39	BDL
11/16/2009	SUMMA	24 HOUR	8.47	0.046	0.162
11/24/2009	SUMMA	24 HOUR	18.0	5.9	4.4
12/28/2009	SUMMA	24 HOUR	1.78	0.021	BDL
3/30/2010	SUMMA	24 HOUR	2.83	0.0219	BDL
1/3/11 to 1/7/11	VAPOR BARRIER AND SUB-SLAB DEPRESSURIZATION SYSTEM INSTALLED (SSD SYSTEM NOT IN OPERATION)				
1/7/2011	SUMMA	24 HOUR	5.2	BDL	BDL
1/7/2011	RADIELLO	24 HOUR	5.7	BDL	BDL
3/14/2011	RADIELLO	30 DAYS	6.6	BDL	BDL
4/14/2011	RADIELLO	28 DAYS	8.6	BDL	BDL
10/5/2011	RADIELLO	1 MONTH	12	BDL	BDL

LEGEND

IA INDOOR AIR SAMPLE LOCATION

BG BACKGROUND AIR SAMPLE

NOTES: BDL=BELOW LABORATORY DETECTION LIMIT

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

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No.	Description	Date

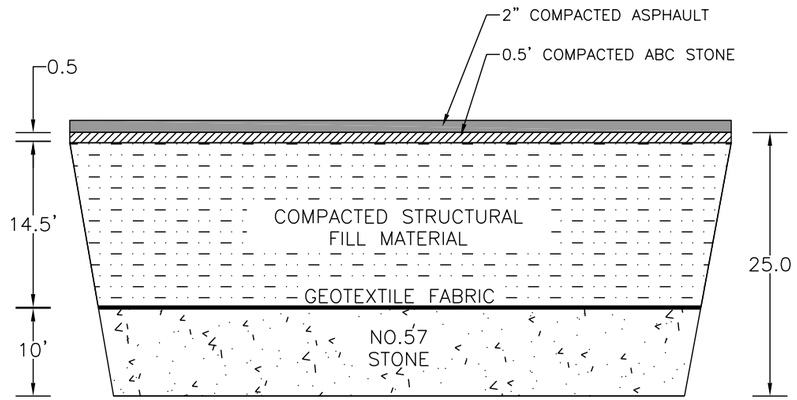
FORMER BB&T SITE
1103 WEST CLUB BLVD
DURHAM, NORTH CARLOINA

1419 DOLLAR
INDOOR AIR RESULTS

Drawn By	Scale
WRP	1"=20'
Checked By	Date
LP	11/10/11

Job No. 2060496.32
Sheet No. 6C

K:\06\06-0490\060496.32-DSCA #32-0013 FORMER BB&T\CAD\FORMER BB&T 2011 BASEMAP (CURRENT 9-21-11).FDWG.DWG 12/30/2011 9:12 AM POWERS, LAURA 1:1



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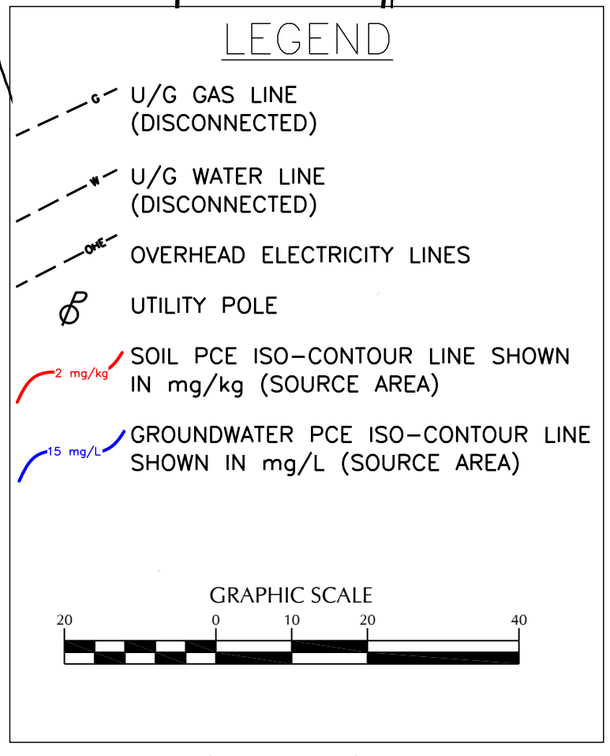

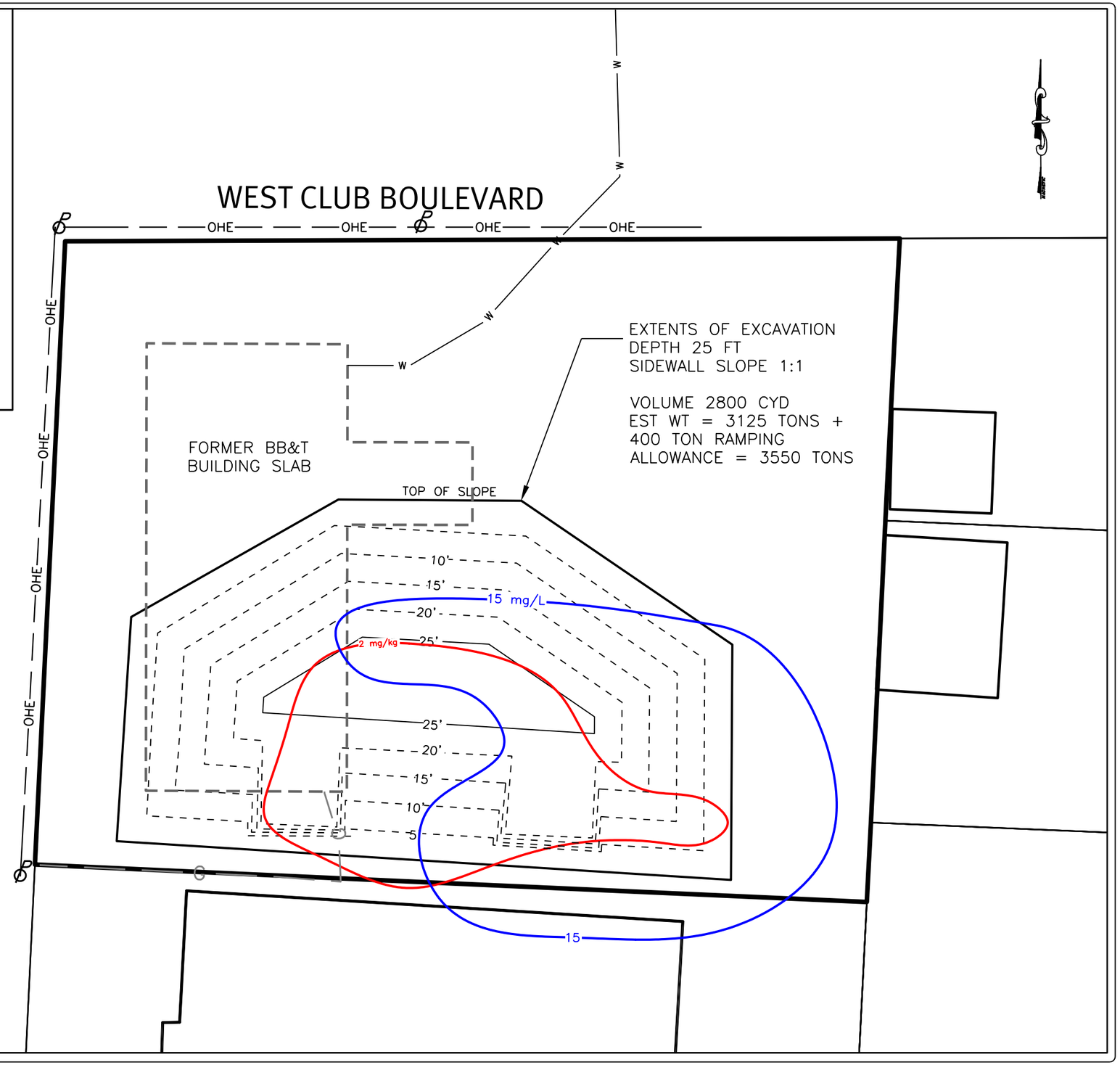

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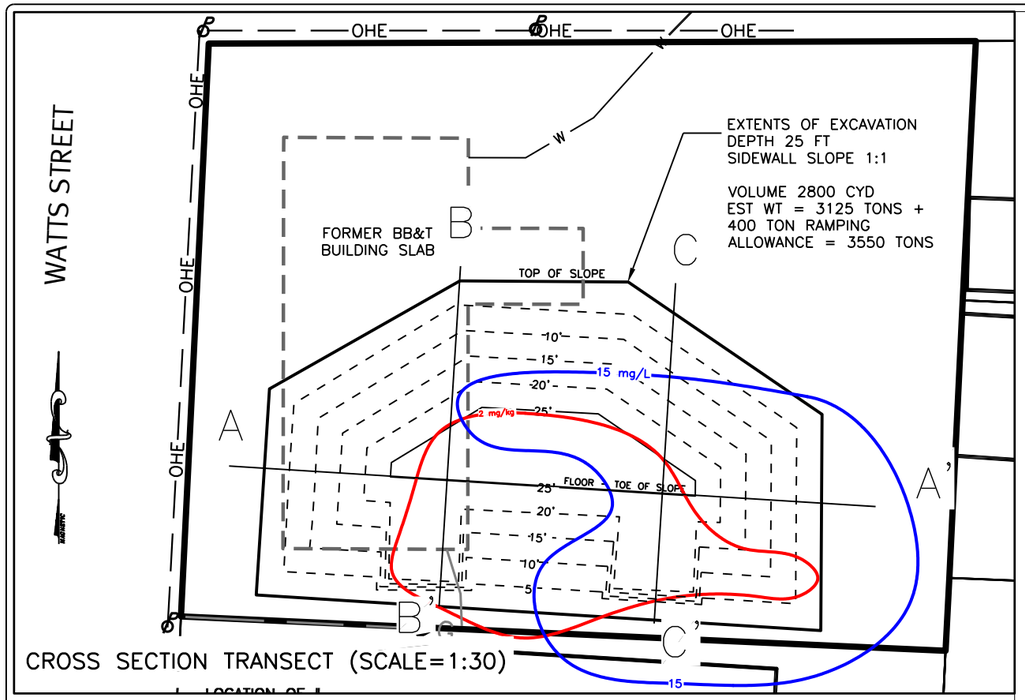
Revisions			
No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED EXTENTS OF EXCAVATION MAP

Drawn By	Scale
WRP	1"=20'
Checked By	Date
CB	10/14/2010

Job No. 2060496.32
Sheet No. 7



CROSS SECTION TRANSECT (SCALE=1:30)

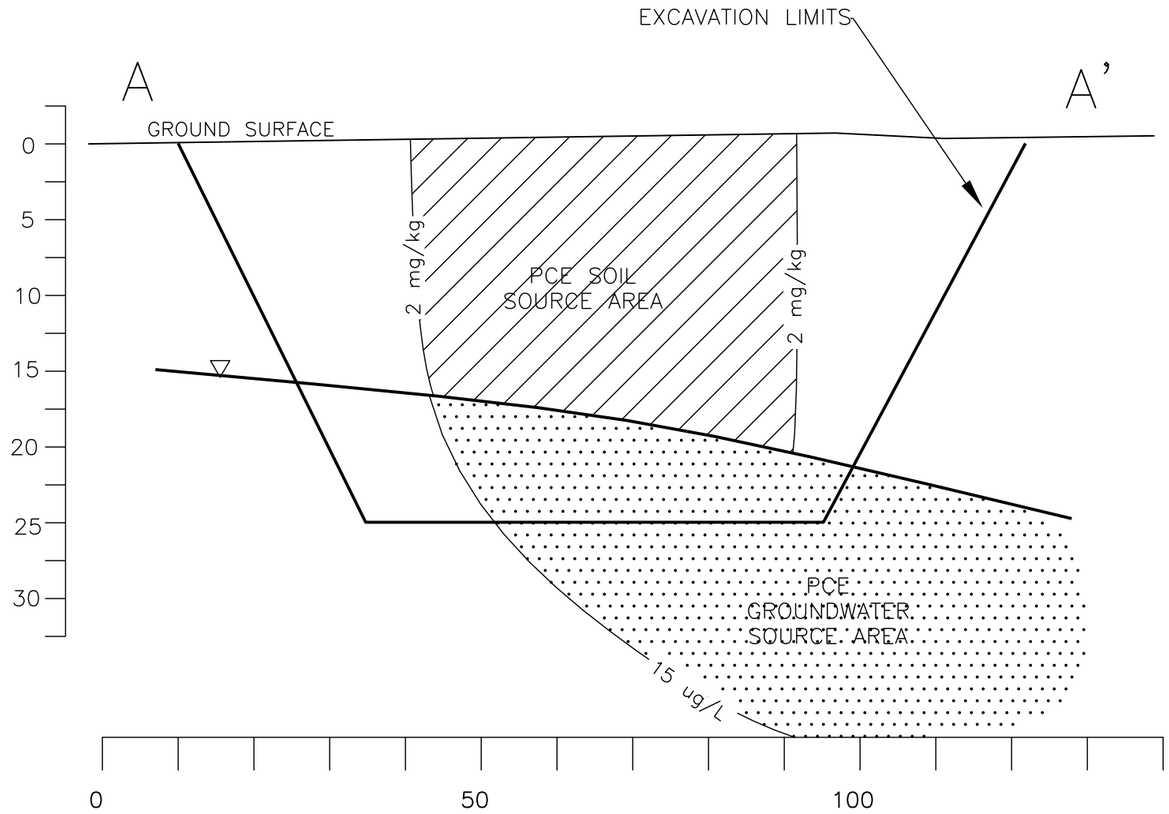
LEGEND

- U/G GAS LINE (DISCONNECTED)
- U/G WATER LINE (DISCONNECTED)
- OVERHEAD ELECTRICITY LINES
- UTILITY POLE
- SOIL PCE ISO-CONTOUR LINE SHOWN IN mg/kg (SOURCE AREA) — 2 mg/kg
- GROUNDWATER PCE ISO-CONTOUR LINE SHOWN IN mg/L (SOURCE AREA) — 15 mg/L
- CROSS SECTION TRANSECT — A, A'

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)



CROSS SECTION A–A'

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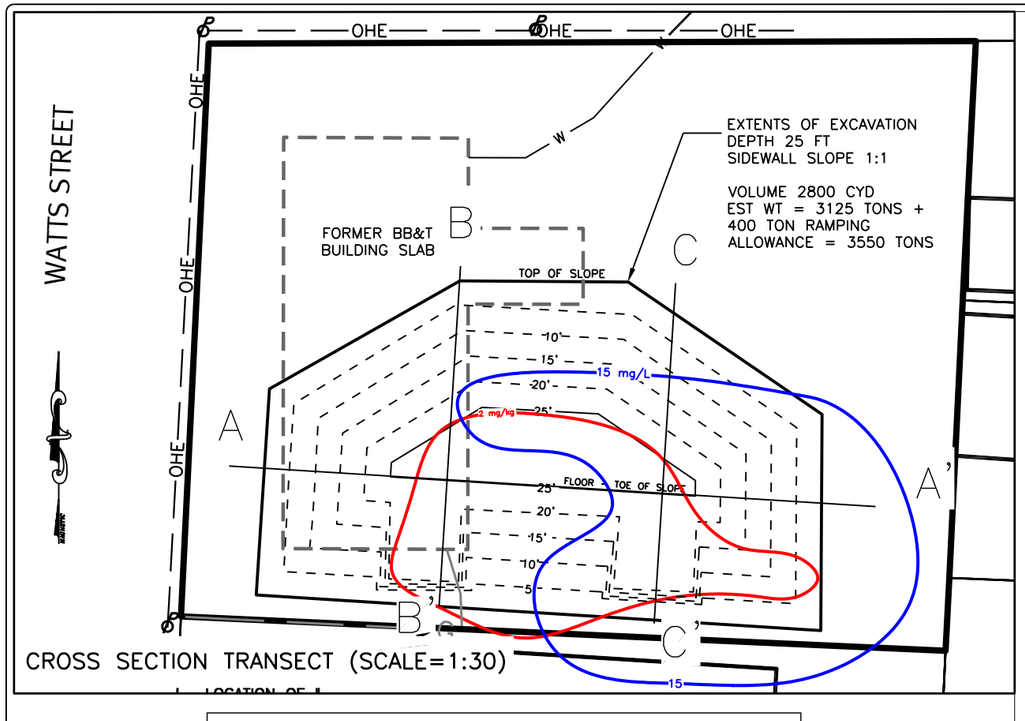
Revisions			
No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

EXCAVATION CROSS SECTION A–A'

Drawn By: LP	Scale: VERT: 1"=10' HORZ: 1"=20'
Checked By: CB	Date: 1/4/2012

Job No. 2060496.32
Sheet No. 7A



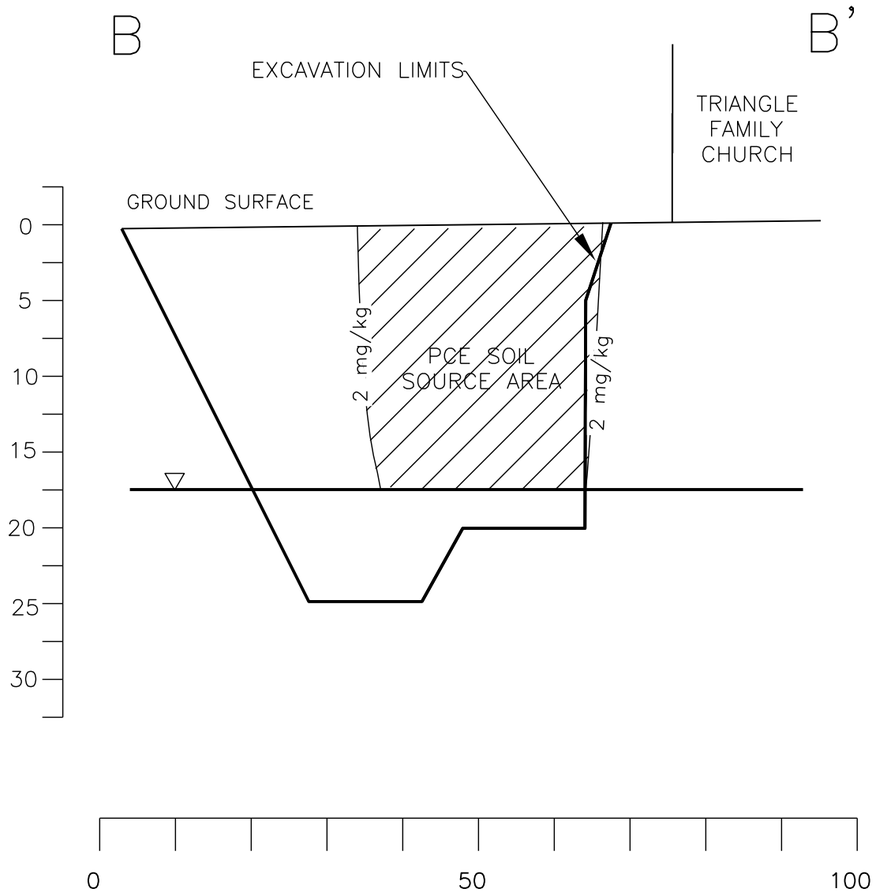
LEGEND

- U/G GAS LINE (DISCONNECTED)
- U/G WATER LINE (DISCONNECTED)
- OVERHEAD ELECTRICITY LINES
- UTILITY POLE
- SOIL PCE ISO-CONTOUR LINE SHOWN IN mg/kg (SOURCE AREA)
- GROUNDWATER PCE ISO-CONTOUR LINE SHOWN IN mg/L (SOURCE AREA)
- CROSS SECTION TRANSECT

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)



CROSS SECTION B-B'

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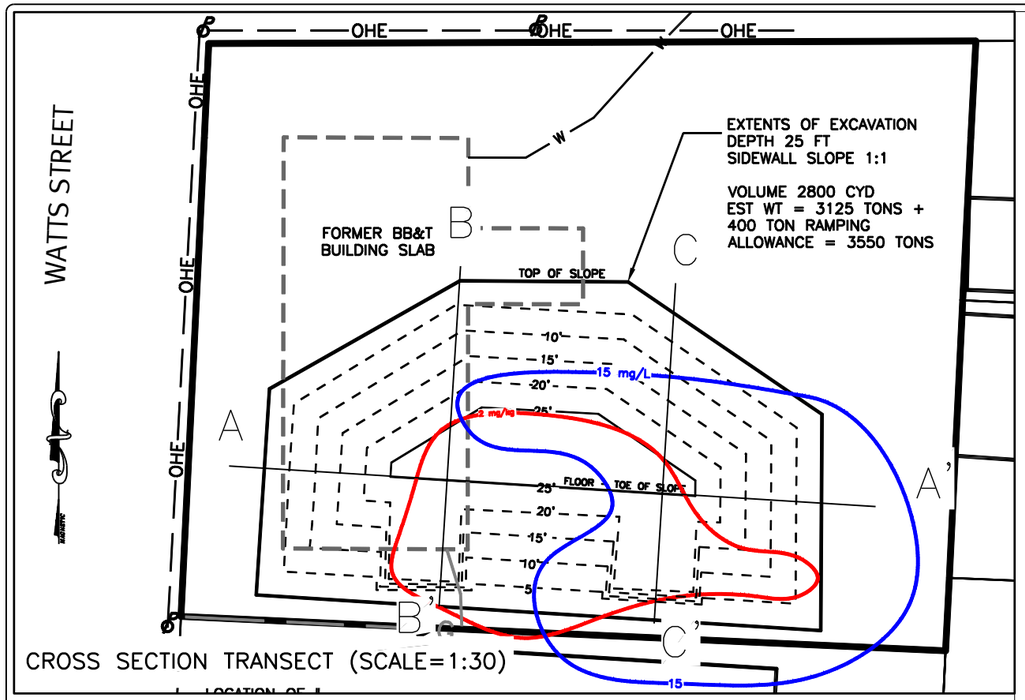
Revisions			
No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

EXCAVATION CROSS SECTION B-B'

Drawn By: LP	Scale: VERT: 1"=10' HORZ: 1"=20'
Checked By: CB	Date: 1/4/2012

Job No. 2060496.32
Sheet No. 7B



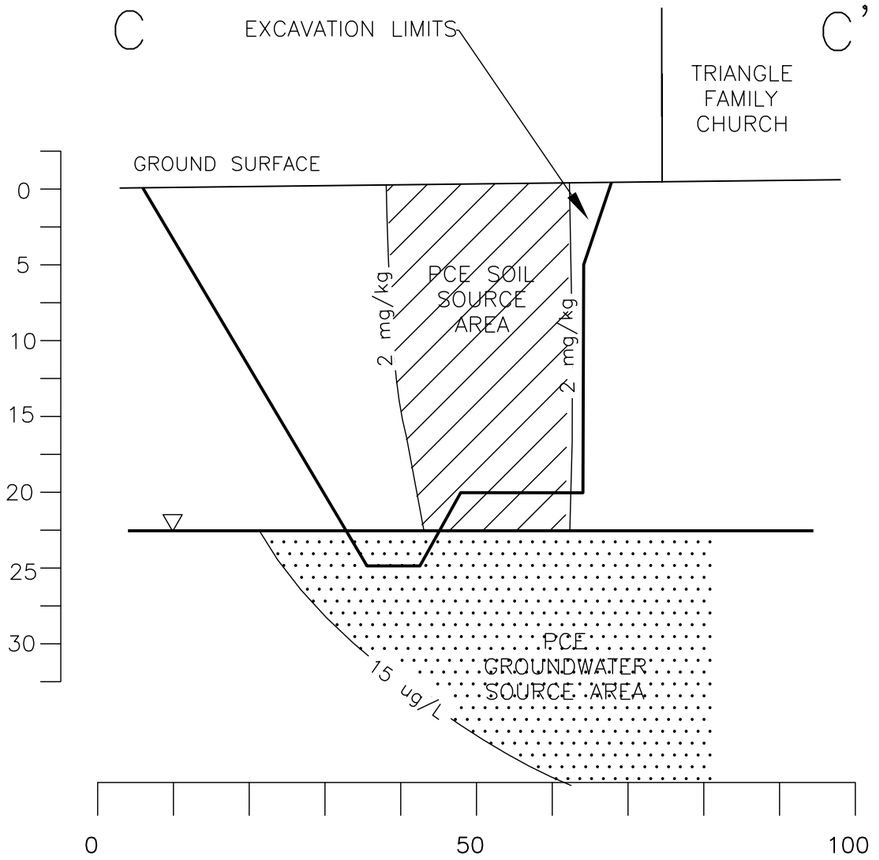
LEGEND

- U/G GAS LINE (DISCONNECTED)
- U/G WATER LINE (DISCONNECTED)
- OVERHEAD ELECTRICITY LINES
- UTILITY POLE
- 4 mg/kg — SOIL PCE ISO-CONTOUR LINE SHOWN IN mg/kg (SOURCE AREA)
- 15 mg/L — GROUNDWATER PCE ISO-CONTOUR LINE SHOWN IN mg/L (SOURCE AREA)
- A — A' CROSS SECTION TRANSECT

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)



CROSS SECTION C–C'

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Revisions

No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

EXCAVATION CROSS SECTION C–C'

Drawn By	Scale
LP	VERT: 1"=10' HORZ: 1"=20'
Checked By	Date
CB	1/4/2012

Job No. 2060496.32
Sheet No. 7C

WEST CLUB BOULEVARD

WATTS STREET

351

353

355

357

FORMER BB&T BUILDING SLAB

EXTENTS OF EXCAVATION

TOP OF SLOPE

10'

15'

15 mg/L

20'

25'

FLOOR - TOE OF SLOPE

LEGEND

- INJECTION POINT LOCATION WITH 5' RADIUS OF INFLUENCE
- 15 mg/L — GROUNDWATER PCE ISO-CONTOUR LINE SHOWN IN mg/L (SOURCE AREA)
- GROUNDWATER ELEVATION CONTOUR
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOTES:

GROUNDWATER ELEVATIONS ARBITRARY TO 100' BENCHMARK.

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)

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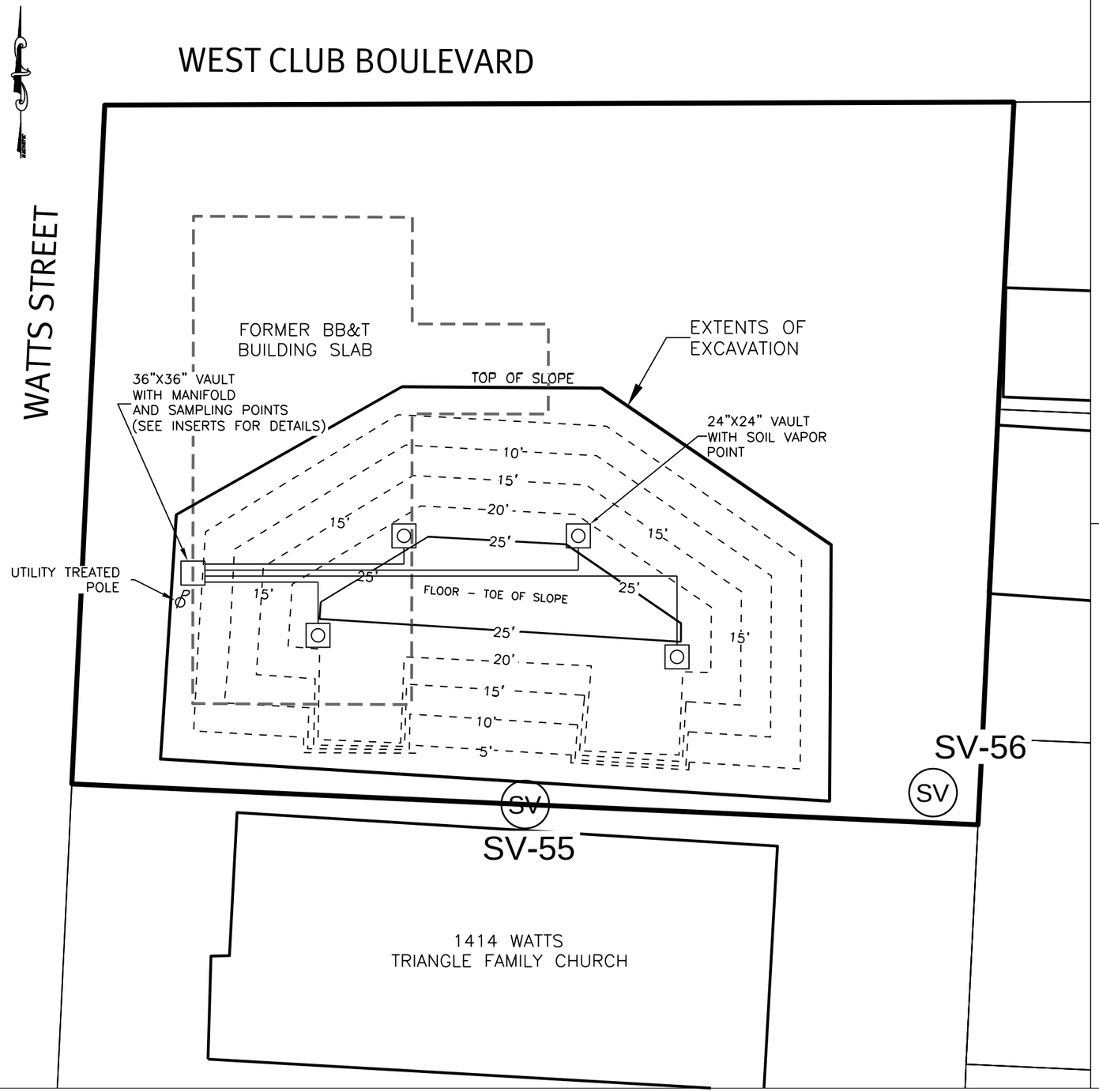
No.	Description	Date	By

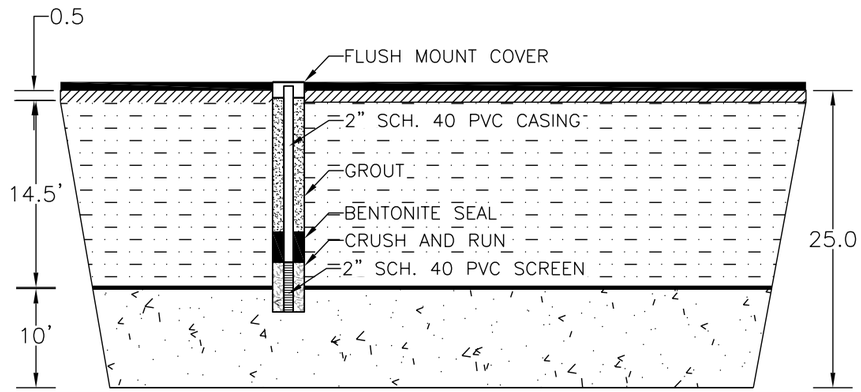
BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED INJECTION POINTS LOCATION MAP

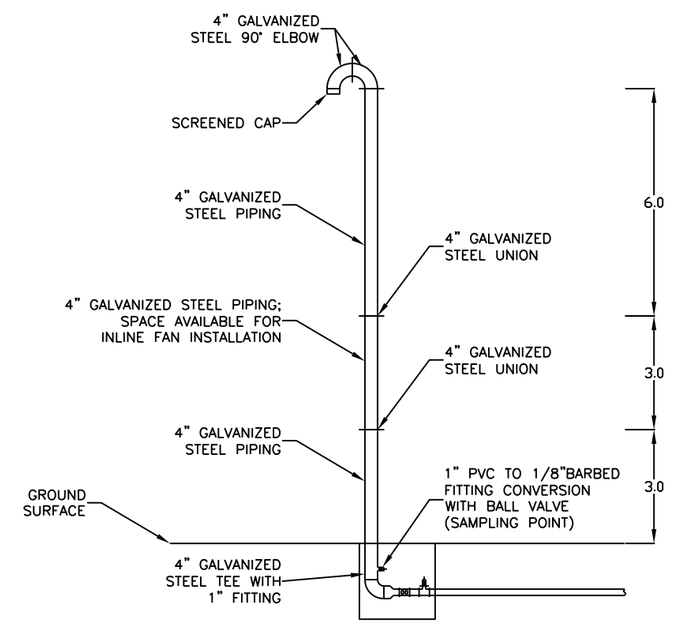
Drawn By	WRP
Checked By	CB
Scale	1"=20'
Date	10/20/2010

Job No. 2060496.32
Sheet No. 8





SVE WELL INSTALLATION DETAILS: NTS



NOTE: DRAFT – PRELIMINARY PLAN, NOT FOR CONSTRUCTION PURPOSES

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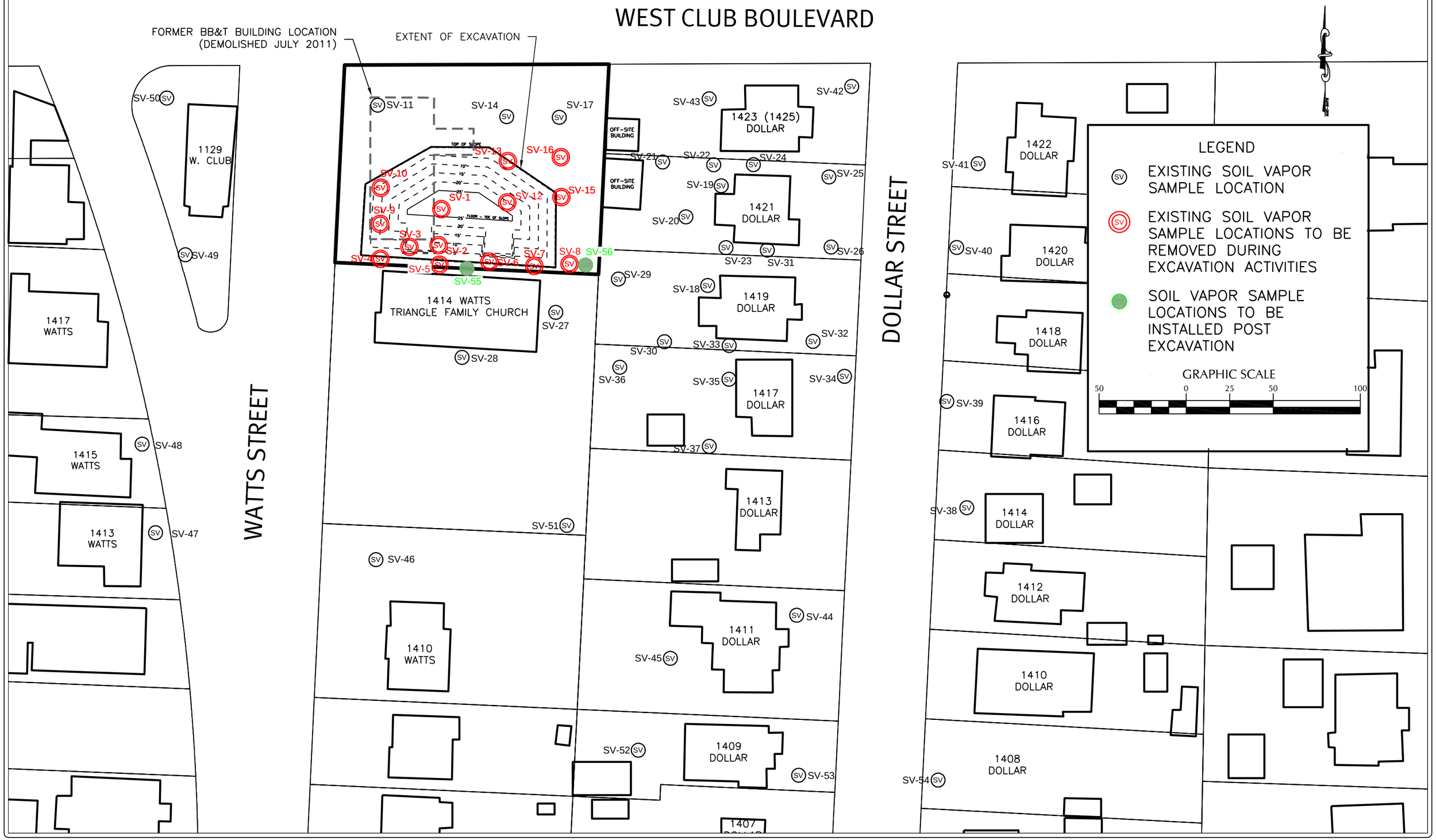
No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED VENT LAYOUT MAP

Drawn By	Scale
WRP	1"=20'
Checked By	Date
CB	2/29/12

Job No.	
2060496.32	
Sheet No.	
9	



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No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED ON-SITE NEW SOIL VAPOR WELL LOCATIONS MAP

Drawn By: WRP	Scale: 1"=50'
Checked By: LP	Date: 10/22/11
Job No.: 206496.32	
Sheet No.: 10	

S:\AUTOCAD\BLOCKS\ENVIRONMENTAL TITLE\ENV-TITLE-11X17L.DWG ---- JOHNSON, CHRISTOPHER 1:0.4297

WEST CLUB BOULEVARD

FORMER BB&T BUILDING LOCATION
(DEMOLISHED JULY 2011)

EXTENT OF EXCAVATION

WATTS STREET

DOLLAR STREET

1129
W. CLUB

1417
WATTS

1415
WATTS

1413
WATTS

1414 WATTS
TRIANGLE FAMILY CHURCH

1410
WATTS

1423 (1425)
DOLLAR

1422
DOLLAR

1421
DOLLAR

1420
DOLLAR

1419
DOLLAR

1418
DOLLAR

1417
DOLLAR

1416
DOLLAR

1414
DOLLAR

1413
DOLLAR

1412
DOLLAR

1411
DOLLAR

1410
DOLLAR

1409
DOLLAR

1408
DOLLAR

1407

OFF-SITE BUILDING

OFF-SITE BUILDING

SV-1 SV-2 SV-3 SV-4 SV-5 SV-6 SV-7 SV-8 SV-9 SV-10 SV-11 SV-12 SV-13 SV-14 SV-15 SV-16 SV-17 SV-18 SV-19 SV-20 SV-21 SV-22 SV-23 SV-24 SV-25 SV-26 SV-27 SV-28 SV-29 SV-30 SV-31 SV-32 SV-33 SV-34 SV-35 SV-36 SV-37 SV-38 SV-39 SV-40 SV-41 SV-42 SV-43 SV-44 SV-45 SV-46 SV-47 SV-48 SV-49 SV-50 SV-51 SV-52 SV-53 SV-54 SV-55

0.041

10

100

1,000

10,000

100 or more

LEGEND

SOIL VAPOR SAMPLE LOCATIONS TO BE SCREENED BY PPB-RAE. ANALYTICAL SAMPLES TO BE COLLECTED BASED ON HIGHEST VOC MEASUREMENTS POST EHC INJECTION

SOIL VAPOR SAMPLE LOCATIONS NOT SCHEDULED TO BE SAMPLED

PCE ISO-CONTOUR LINE SHOWN IN mg/m^3

GRAPHIC SCALE

100 0 25 50 100

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Revisions			
No.	Description	Date	By

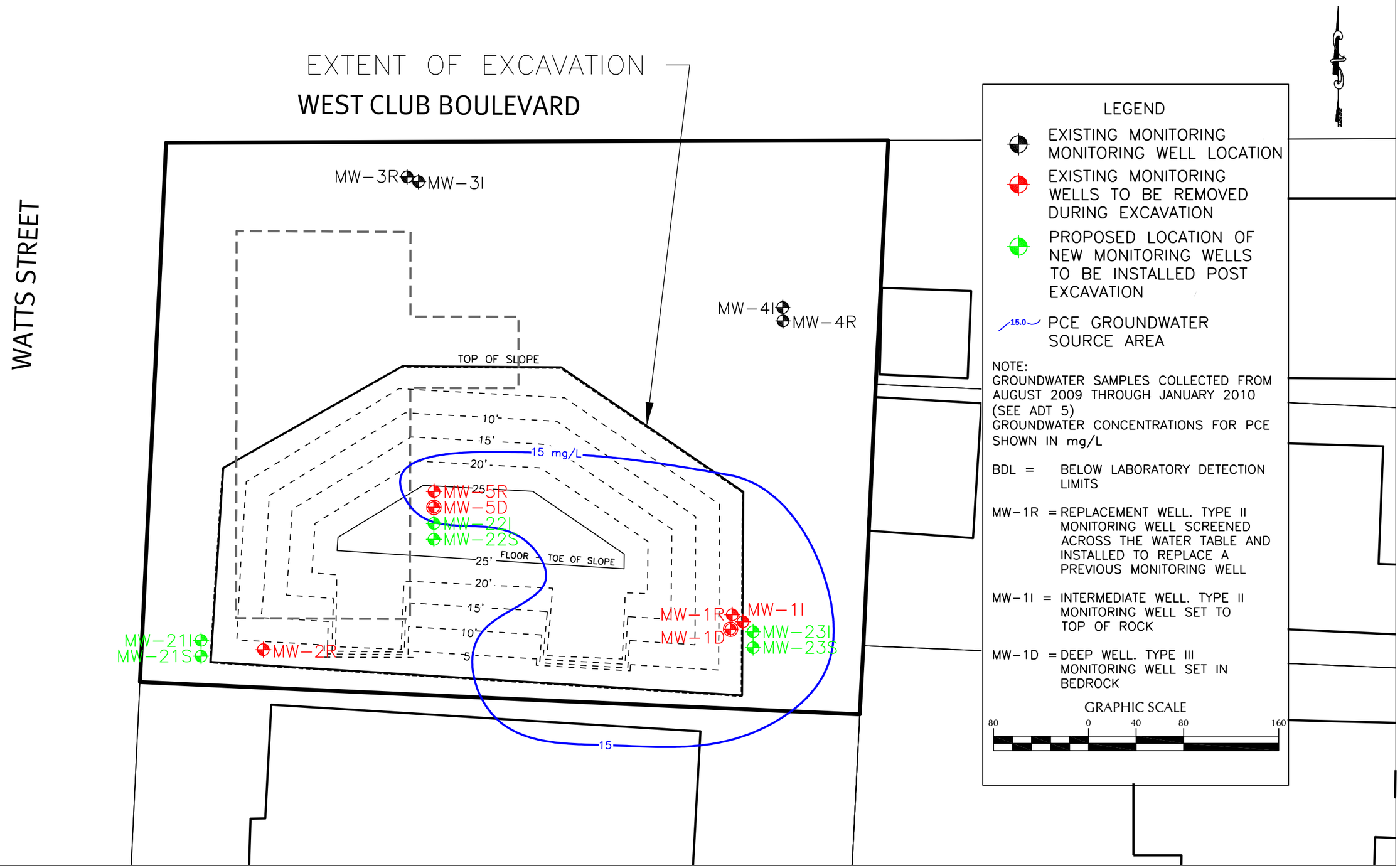
BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED SOIL VAPOR MONITORING PLAN MAP

Drawn By: WRP	Scale: 1"=50'
Checked By: LP	Date: 11/1/11

Job No. 206496.32
Sheet No. 11

S:\AUTOCAD\BLOCKS\ENVIRONMENTAL TITLE\ENV-TITLE-11X17L.DWG ---- JOHNSON, CHRISTOPHER 1:0.4297



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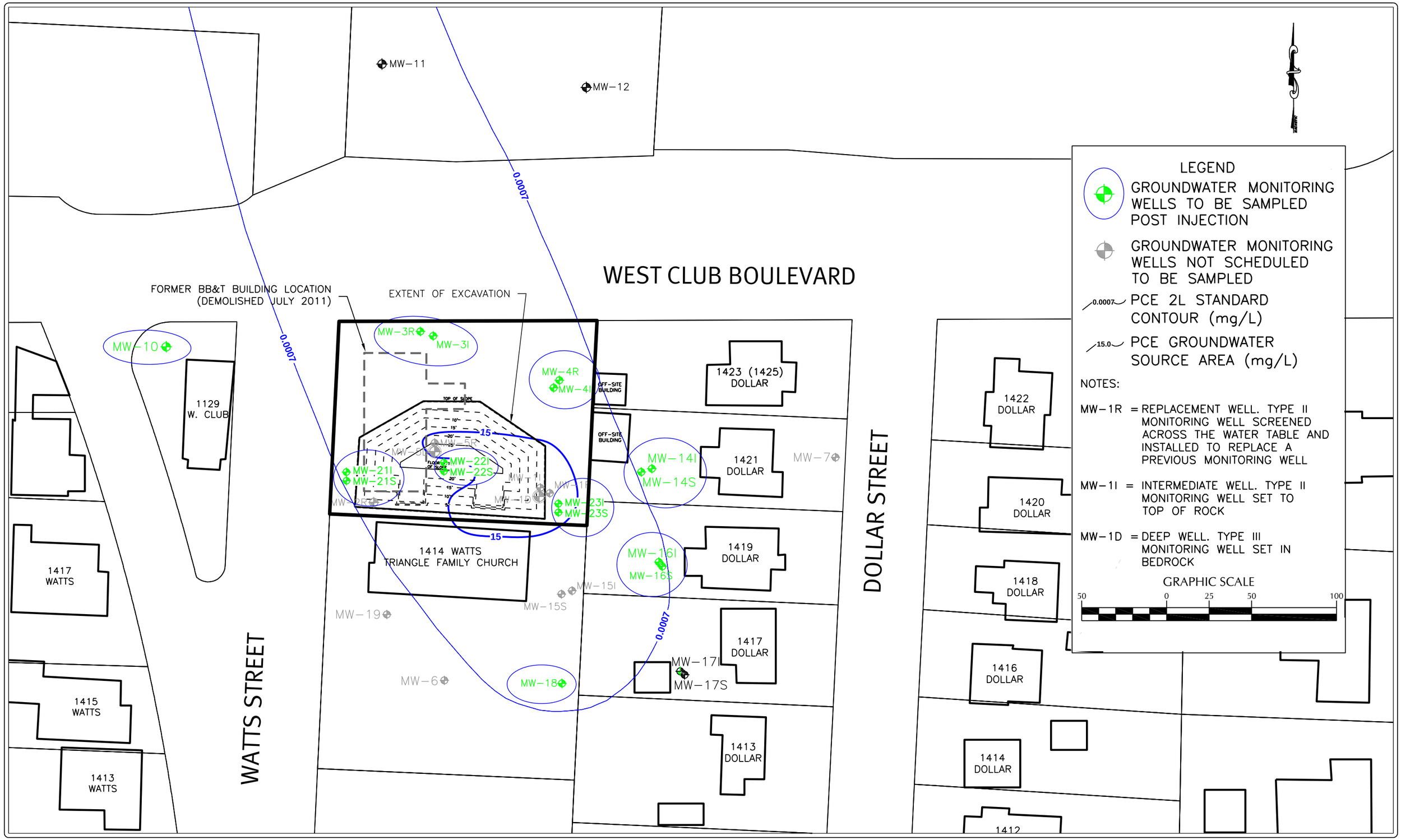
Revisions			
No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED ON-SITE NEW MONITORING WELL LOCATIONS MAP

Drawn By: WRP	Scale: 1"=20'
Checked By: CB	Date: 10/20/2010

Job No. 2060496.32
Sheet No. 12



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Revisions

No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

PROPOSED GROUNDWATER MONITORING PLAN MAP

Drawn By	Scale
WRP	1"=50'
Checked By	Date
LP	11/1/11

Job No. 206496.32
Sheet No. 13

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APPENDICES

APPENDIX A

ECOLOGICAL RISK SPREADSHEETS

Appendix A.
Level 1 Ecological Risk Assessment
Checklist A for Potential Receptors and Habitat

1. Are there any navigable water bodies or tributaries to a navigable water body on or within the one-half mile of the site?
   No, according to the USGS Quad map for Northwest Durham, no navigable bodies of water are located within a half mile of the site.

2. Are there any water bodies anywhere on or within the one-half mile of the site?
   Yes, according to the USGS Quad map for Northwest Durham, an unnamed tributary to Ellerbe Creek runs in circular arc to the west, northwest, north, and northeast of the site approximately 1,300 to 5,900 feet from the source area.

3. Are there any wetland areas such as marshes or swamps on or within one-half mile of the site?
   According to the Federal Wetland Inventory System, freshwater forested/shrub wetlands are located 1,500 feet northwest and 1,900 north of the site along the unnamed tributary to Ellerbe Creek.

4. Are there any sensitive environmental areas on or within one-half mile of the site?
   According to the NC Natural Heritage Program Virtual Workroom, no natural communities were identified within 2 miles of the site.

5. Are there any areas on or within one-half mile of the site owned or used by local tribes?
   No areas have been identified within a half mile of the site to be owned or used by local tribes.

6. Are there any habitat, foraging area or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species on or within one-half mile of the site?
   According to the NC Natural Heritage Program Virtual Workroom online species list, the Brachythecium rotaeanum (Rota's Feather Moss), Dicranella varia (Variable Fork Moss), Hexalectris spicata (Crested Coralroot), Panicum flexile(Wiry Panic Grass), Plagiochila ludoviciana(A Liverwort), and Thermopsis mollis (Appalachian Golden-banner) were identified as a species of special concern by the state, and located within 2 miles of the site. No, wilderness areas or wildlife refuges within one-half mile of the site based on the USFWS online databases.

7. Are there any breeding, roosting or feeding areas by migratory bird species on or within one-half mile of the site?
   The Migratory Bird Treat Act (MBTA) was developed to help reduce potential migratory bird strikes with aircraft, wind turbines, and towers. Many species of birds are protected that are common to the United States, Canada, and Mexico. Therefore, many species of birds in Durham County (e.g Canadian Goose, Mourning Dove) are likely to be within one-half mile of the site.

8. Are there any ecologically, recreationally or commercially important species on or within one-half mile of the site?
   Based on site observations and desktop review, no ecological and recreational species are likely to be present within one-half mile of the site. No commercially important species were observed within one-half mile of the site.

9. Are there any threatened and/or endangered species (plant or animal) on or within one-half mile of the site?
   According to the NC Natural Heritage Program Virtual Workroom online species list, no endangered or threatened species were identified within 2 miles of the site.

Appendix A.
Level 1 Ecological Risk Assessment
Checklist B for Potential Exposure Pathways

1A. Can chemicals associated with the site leach, dissolve, or otherwise migrate to groundwater?
Yes. The primary constituents of concern for the site are tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), chloroform, xylenes, chlorobenzene, and 1,1,1,2-tetrachloroethane. Based on published references [Environmental Protection Agency (EPA) and United States Agency for Toxic Substance and Disease Registry (ATSDR)], these constituents are leachable to groundwater and soluble in groundwater. Groundwater assessment activities have determined impacts to the groundwater have migrated off site.

1B. Are chemicals associated with the site mobile in groundwater?
Yes. Chemical mobility is primarily influenced by the chemical solubility and soil-water partition coefficient (Fetter, 1988). Based on these values, the constituents of concern are mobile in groundwater.

1C. Does groundwater from the site discharge to ecological receptor habitat?
Potential ecological receptor habitats identified in the site vicinity include surface water features and wetlands located between 1300 and 5900 feet from the subject site. According to analytical results for samples collected from the unnamed tributary to Ellerbe Creek, no constituents of concern were detected in the surface water body.

Question 1. Could chemicals associated with the site reach ecological receptors through groundwater?
Groundwater assessment activities have determined impacts to the groundwater have migrated off site. Analyses of surface water samples collected from the unnamed tributary to Ellerbe Creek indicate no constituents of concern were detected in the surface water body.

2A. Are chemicals present in surface soils on the site?
No. Impacted soils identified on the site are capped by either concrete slab or asphalt paving.

2B. Can chemicals be leached from or be transported by erosion of surface soils on the site?
No. No exposed surficial soils are impacted by the chlorinated solvents.

Question 2. Could chemicals associated with the site reach ecological receptors through runoff or erosion?
No. Surficial soils are impacted, but will be excavated. Access to the exposed soils during excavation and stormwater runoff will be controlled. The site will be paved with asphalt after the excavation.

3A. Are chemicals present in surface soil or on the surface of the ground?
Yes. Surficial soils, which are currently beneath pavement, are impacted, but will be excavated. Access to the exposed soils during excavation and stormwater runoff will be controlled. The site will be paved with asphalt after the excavation.

3B. Are potential ecological receptors on the site?
No potential ecological receptors have been identified on the site.

Question 3. Could chemicals associated with the site reach ecological receptors through direct contact?
No. No ecological receptors are likely to be present in the area of the soil plume. Surficial and subsurface soils are impacted, but will be excavated. Access to the exposed soils during excavation and stormwater runoff will be controlled. The site will be paved with asphalt after the excavation.

4A. Are chemicals on the site volatile?
Yes. Chlorinated solvents are considered volatile organic compounds.

4B. Could chemicals on the site be transported in air as dust or particulate matter?
No. Surficial soils do not appear to be impacted and furthermore the area is paved.

Question 4. Could chemicals associated with the site reach ecological receptors through inhalation of volatilized chemicals or adhered chemicals to dust in ambient air or in subsurface burrows?
No ecological receptors have been identified within the area of impacted soils on the site.

5A. Is Non-Aqueous Phase Liquid (NAPL) present at the site?
Yes. DNAPL appears to be present based on the most recent PCE concentrations of 42 to 78 mg/L in the groundwater on site.

5B. Is NAPL migrating?
No. Based on analytical results from the surrounding monitoring wells, DNAPL does not appear to be migrating off the site.

5C. Could NAPL discharge occur where ecological receptors are found?
No. DNAPL does not appear to be migrating off the site to ecological receptors. Analytical results from surface water sampling completed at the closest tributary indicate no contaminants associated with the site are detectable.

Question 5. Could chemicals associated with the site reach ecological receptors through migration of NAPL?
No. DNAPL does not appear to be migrating off the site to ecological receptors.

6A. Are chemicals present in surface and shallow subsurface soils or on the surface of the ground?

Yes. Concentrations of PCE are present in subsurface soils but are located beneath the building or asphalt parking lot and will be excavated. Access to the exposed soils during excavation and stormwater runoff will be controlled. The site will be paved with asphalt after the excavation.

6B. Are chemicals found in soil on the site taken up by plants growing on the site?
No. All impacted soils are located beneath the building slab and not exposed. Vegetation is not expected to grow during excavation activities. The site will be covered with asphalt pavement after the excavation.

6C. Do potential ecological receptors on or near the site feed on plants (e.g., grasses, shrubs, forbs, trees, etc.) found on the site?
No. It is possible that migratory birds could be present in the site vicinity, but no vegetation is present in the area of impacted soils.

6D. Do chemicals found on the site bioaccumulate?
No. Based on published references (ATSDR), PCE and its breakdown products do not significantly bioaccumulate.

Question 6. Could chemicals associated with the site reach ecological receptors through direct ingestion of soil, plants, animals or contaminants?
No. Surficial soils are impacted, but will be excavated. Access to the exposed soils during excavation and stormwater runoff will be controlled. The site will be paved with asphalt after the excavation.

APPENDIX B

RISK-BASED CLEAN UP GOAL CALCULATIONS

DSCA ID 32-0013
1103 W Club Blvd
Durham, NC

Completed By : Laura Powers, P.E.
Date: 11/1/2011

Subsurface Soil Concentration Protective of Indoor Vapor Inhalation

Based on acceptable carcinogenic target risk (TR) of 1 in 100,000 (or 1x10 $^{-5}$) for a residential receptor

Chemical Specific Parameters:

$[PCE]_{ia}$ =	0.0215		(Average indoor air PCE concentration from Drey & Gilligan's residences, mg/m^3)
$[PCE]_{sv}$ =	10		(Average near-slab soil vapor PCE concentration from Drey & Gilligan's residences, mg/m^3)
$RBTL_{ai}$ =	0.0041		(Risk-based target level for indoor inhalation of air at TR=1x10^{-5}, mg/m^3-air)
H =	0.754		(Henry's Law Constant, L-water/L-air)
K_{oc} =	155		(Organic Carbon Adsorption Coefficient, cm^3/g)
K_{sv} =	f_{ocv} x K_{oc}	= 0.202	(Soil-water sorption coefficient in vadose zone, cm^3/g)

Geotechnical Parameters (Site-specific):

ρ_s =	0.9833	(Dry soil bulk density, g-soil/cm^3-soil)
θ_{ws} =	0.6	(Volumetric water content in vadose zone soil, cm^3-water/cm^3-soil)
θ_{as} =	0.02	(Volumetric air content in vadose zone soil, cm^3-air/cm^3-soil)
f_{ocv} =	0.0013	(Fractional Organic Carbon Content, g-C/g-soil)

Volatilization rate: (from subsurface soil to soil vapor)

$$VR_{ss} = \frac{H \times \rho_s}{[\theta_{ws}+(K_{sv} \times \rho_s) + (H \times \theta_{as})]} = 0.912$$

Attenuation Factor: (based on average attenuation factor from both Gilligan and Drey residences)

$$\alpha = \frac{[PCE]_{ia}}{[PCE]_{sv}} = 0.00215$$

Volatilization factor from subsurface soil to indoor air (mg/m^3 - air / mg/kg - soil):

$$VF_{sesp} = VR_{ss} \times \alpha = 0.00196$$

Risk-based target level for indoor inhalation of vapors from subsurface soils (mg/kg-soil):

$$RBTL_{si} = \frac{RBTL_{ai}}{VF_{sesp}} = \frac{0.0041}{0.00196} = \mathbf{2.1\ \frac{mg}{kg}}$$

DSCA ID 32-0013
1103 W Club Blvd
Durham, NC

Completed By : Laura Powers, P.E.
Date: 11/1/2011

Groundwater Concentration Protective of Indoor Vapor Inhalation

Based on acceptable carcinogenic risk of 1 in 100,000 (or $1x10^{-5}$) for a residential receptor

Chemical Specific Parameters:

$[PCE]_{ia}$ = 0.0215 (Average indoor air PCE concentration from Drey & Gilligan's residences, mg/m^3)

$[PCE]_{sv}$ = 10 (Average near-slab soil vapor PCE concentration from Drey & Gilligan's residences, mg/m^3)

$RBTL_{ai}$ = 0.0041 (Risk-based target level for indoor inhalation of air at TR=$1x10^{-5}$, mg/m^3-air)

H = 0.754 (Henry's Law Constant, L-water/L-air)

Volatilization rate: (from groundwater to soil vapor)

$VR_{gw} = H = 0.754$

Attenuation Factor: (based on average attenuation factor from both Gilligan and Drey residences)

$$\alpha = \frac{[PCE]_{ia}}{[PCE]_{sv}} = 0.00215$$

Volatilization factor from groundwater to indoor air (mg/m^3 - air / mg/L - water):

$VF_{wesp} = VR_{gw} \times \alpha = 0.00162$

Risk-based target level for indoor inhalation of vapors from groundwater (mg/L-water):

$$RBTL_{wi} = \frac{RBTL_{ai}}{VF_{wesp}} = \frac{0.0041}{0.00162} \sim 2.5 \ \frac{mg}{L} = \boxed{\mathbf{2{,}500 \ \frac{\mu g}{L}}}$$

APPENDIX C

COST ESTIMATES REMEDIATION TECHNOLOGIES

SECTION 00300

BID FORM

TO: Withers & Ravenel, Inc.
111 MacKenan Drive
Cary, North Carolina 27511

BID FOR: EXCAVATION & DISPOSAL OF DRYCLEANING SOLVENT IMPACTED SOIL
BB&T SITE
1103 W. CLUB BLVD
DURHAM, NORTH CAROLINA

BID FROM: Evo Corporation
1703 Vargrave Street
Winston-Salem, NC 27107
336-725-5844

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents, including the plans and specifications attached and incorporated herein, for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

2. Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders. This Bid will remain subject to acceptance for ninety (90) days after the day of Bid opening. Bidder will sign and submit the agreement with other documents required by the Bidding Requirements within five days after the date of Withers & Ravenel's Notice of Award.

3. In submitting this Bid, Bidder represents, as set forth in the Agreement, that:

   (a) Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number
_____	_____
_____	_____
_____	_____

   (b) Bidder has become familiar with the nature and extent of the Bidding Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the Work.

   (c) Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, and studies that pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance, or furnishing of the Work as Bidder considers necessary for the performance or

furnishing of the Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Bidding Documents, and no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by Bidder for such purposes.

(d) Bidder has reviewed and checked all information and data shown or indicated on the Bidding Documents with respect to existing Underground Facilities at the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, or similar information or data in respect of said Underground Facilities are or will be required by Bidder in order to perform and furnish the Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Bidding Documents.

(e) Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Bidding Documents.

(f) Bidder has given Withers & Ravenel written notice of all conflicts, error, or discrepancies that it has discovered in the Bidding Documents and the written resolution thereof by Withers & Ravenel is acceptable to Bidder.

(g) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Withers & Ravenel.

(h) Upon Withers & Ravenel's request, Bidder shall supply specifications for all proposed equipment. Withers & Ravenel reserves the right to reject any "equal" equipment or materials that do not meet the specifications of the documents herein.

(i) Bidder shall be responsible for obtaining all permits and complying with all related federal, state, and local codes.

4. Bidder will complete the Work for the total specified price developed using the following unit prices: (the final invoice will reflect this format and payment will be based on the actual quantities).

Item	Description	Unit	Estimated Quantity	Unit Price	Total Price
1	Mobilization and Demobilization	LS	1	$ 800.00	$ 800.00
1A	Private Utility Location	LS	1	$ 795.00	$ 795.00
1B	Portable Toilet	4	Week	$ 31.25	$ 125.00
1C	6' Security Fence with Wind Screen & Locking Gates	400	LF	$ 5.40	$ 2160.00
1D	Roll of 6 mil Black Plastic (20 x 100)	Ea	5	$ 125.00	$ 625.00
1E	Roll of Haybales for Erosion Control at Driveway Exits & Curb Cuts	Ea	25	$ 6.00	$ 150.00
1F	Cost for ancillary equipment: traffic control, power, lighting, portable ventilation	LS	1	$ 500.00	$ 500.00
Demolition Phase Work – Cost to Excavate & Dispose of Pavement, Brick Footer & Concrete Slab					
2	Concrete Breaker	Day	2	$ 895.00 / Day	$ 1790.00
2A	Pavement Saw	Day	2	$ 395.00 / Day	$ 790.00
3A	Cost to Excavate & Place Existing **Asphalt Pavement** into Roll Off Containers	Sq. Foot /Tons	6300 /70	$ 0.14 / Sq Ft	$ 882.00
3B	Cost to Excavate & Place Existing 6" **Concrete Pad** into Roll Off Containers	Sq. Foot /Tons	1200 / 50	$ 0.50 / Sq Ft	$ 600.00
4	Cost to Excavate & Place Existing 110' of 2x3' **Brick Footer** into Roll Off Containers	Cubic Feet /Tons	660 / 60	$ 1.09 / Cubic Ft	$ 720.00

5	Cost to Excavate & Direct Load Existing 2" Asphalt Pavement	Sq. Foot /Tons	2100 /30	$ 0.12 / Sq Ft	$ 255.00
6	Cost to Excavate & Direct Load Existing 6" Concrete Slab	Sq. Foot /Tons	1500 /70	$ 0.40 / Sq Ft	$ 600.00
7	Cost to Excavate & Direct Load 120' of 2x3' Brick Footer	Cubic Feet /Tons	720 /60	$ 0.71 / Cubic Ft	$ 510.00
8	Drop Charge For Roll Off Containers	2 Per Trip	6	$ 425.00 / Trip	$ 2,550.00
* 9	Daily Rental for Roll Off Containers	Days	84	$ 15.00 / Day	$ 1260.00
10	Liners for Roll Off Containers	Liners	12	$ 65.00 / Liner	$ 780.00
11	Transport & Dispose of concrete, brick and asphalt as Non-Hazardous Waste at Subtitle D Landfill in Roll Off Container	Tons	200	$ 62.50 / Ton	$ 12,500.00
12	Transport Dispose of concrete, brick and asphalt as Non-Hazardous Waste at Subtitle D Landfill Via Direct Load	Tons	160	$ 62.50 / Ton	$ 10,000.00
* 9 Roll off Rental 12 boxes for 7 days				Subtotal Demolition Phase Work	$ 33,237.00
Excavation Phase Work					
13	Excavate and place soil within lined roll off boxes (initial 18 boxes)	Tons	270	$ 12.00 / Ton	$ 3,240.00
14	Excavate and direct (live) load soil into trucks	Tons	3280	$ 8.50 / Ton	$ 27,880.00
15	Drop Charge For Roll Off Containers	2 Per Trip	3	$ 425.00 / Trip	$ 1,275.00
* 16	Daily Rental for Roll Off Containers	Days	252	$ 15.00 / Day	$ 3,780.00

17	Liners for Roll Off Containers	Liners	18	$ 65.00 / Liner	$ 1,170.00
18	Transport & Disposal of Non-Hazardous Contaminated Soil in Truck	Tons	3280	$ 40.00 / Ton	$ 131,200.00
19	Transport & Disposal of Non-Hazardous Contaminated Soil in Roll Off Container	Tons	270	$ 40.00 / Ton	$ 10,800.00
*16 Roll Off Rental - 18 boxes for 14 days.				Subtotal Excavation Phase Work	$ 179,345.00
Backfill Phase Work					
20	Delivery & placement of clean compacted No. 57 Stone in excavation.	Tons	800	$ 18.95 / Ton	$ 15,160.00
21	Delivery & Placement of Geotextile Fabric over Washed Stone	Sq Ft	2500	$ 0.09 / Sq Ft	$ 225.00
22	Delivery & placement of clean compacted earth fill in excavation	Tons	3300	$ 9.95 / Ton	$ 32,835.00
23	Delivery & placement of clean compacted ABC stone in excavation and beneath paved areas.	Tons	800	$ 15.95 / Ton	$ 12,760.00
24	Place & Compact Backfill & Stone	Tons	4900	$ 7.05 / Ton	$ 34,545.00
				Subtotal Backfill Phase Work	$ 95,525.00
Restoration Phase Work					
25	Cleaning Lot & Containerization of Residuals (Dust & Dirt)	LS	1	$ 1,000.00	$ 1,000.00
26	Delivery & Placement of Compacted Asphalt Pavement (2" Thickness)	Sq Ft	11,000	$ 5.00 / Sq Ft	$ 55,000.00

				Subtotal Restoration Phase Work	$ 56,000.00
				TOTAL BASE BID	$ 369,262.00
Three hundred sixty nine thousand two hundred sixty two & 0%/00 BASE BID (written out)					
Alternate Tasks (Outside Base Bid)					
26	Transport & Dispose of concrete, brick and asphalt as Hazardous Waste at Subtitle C Landfill (<60 PPM – PCE)	Ton	If Needed	$ 781.00 / Ton Notes: Plus 295.00 Approval Fee	Disposal of Concrete & Brick is priced by the cubic yard by the Disposal Facility. The per ton price has been estimated as close as possible.
27	Transport & Dispose of soil as Hazardous Waste at Subtitle C Landfill (<60 PPM – PCE)	Ton	If Needed	$ 401.00 / Ton Notes: Plus 295.00 Approval Fee	
28	Transport & Dispose of soil as Hazardous Waste For Incineration (>60 PPM – PCE)	Ton	If Needed	$ 930.00 / Ton Notes: Plus 295.00 Approval Fee	
29	Transport & Dispose of clean Asphalt, Brick & Concrete & Local Recycling Facility (Landfill)	Ton	If Needed	$ 25.00 / Ton Notes:	

The quantities estimated above are provided as a basis for comparing bids. OWNER reserves the right to delete items and change quantities.

Bidder must show certificate of disposal and certified weight tickets that reflect gross, net and tare weight of each load.

5. Bidder agrees to mobilize within two (2) calendar months after execution of contract with Owner. Bidder agrees that the installation of the system will be substantially complete on or before three (3) calendar months after Notice to Proceed.

6. The following documents are attached to and made a part of this Bid (Submit only upon award of contract):

   (a) Current insurance certificate

   (b) A tabulation of Subcontractors, Suppliers, and other persons and organizations required to be identified in this Bid.

   (c) Copies of current employee OSHA training certificates: Hazwopper, Excavation & Trenching

   (d) **A preliminary progress schedule for the work.**

7. Communications concerning this Bid shall be addressed to:

Ms. Laura Powers, P.E.
Withers & Ravenel, Inc.
111 MacKenan Drive
Cary, NC 27511
(919) 469-3340
Fax (919) 535-4545

8. The terms used in this Bid have the meanings assigned to them in the Bid Package. The signer certifies that they have the authorization to sign and commit resources of the firm.

SUBMITTED on October 11, 2011.

BIDDER is: (Complete as Appropriate)

An Individual

_____
(Name)

Doing business as: _____
(Firm Name)

A Partnership

_____
(Firm Name)

_____
(General Partner)

Corporation

Evo Corporation
(Corporation Name)

North Carolina
(State of Incorporation)

SUBMITTED on October 11, 2011.

By: _____
(Signature)

Tony Disher, President
(Printed Name and Title)

(Seal, if Corporation)

Business address: 1703 Vargrave Street
Winston-Salem, NC 27107

Phone No.: 336-725-5844

Subscribed and sworn to before me this 11th day of October, 2011.

OFFICIAL SEAL
EDITH D BASINGER
NOTARY PUBLIC - NORTH CAROLINA
FORSYTH COUNTY
MY COMMISSION EXPIRES
05/15/2015

Edith Basinger
(Notary Public)

My Commission Expires: 05/15/2015

END OF SECTION 00300

ADVENTUS
Proven Soil, Sediment, and Groundwater Remediation Technologies

Via Email: lpowers@withersravenel.com

September 27, 2011

EHC®
The Original Injectable ISCR Reagent for Groundwater Applications

Ms. Laura Powers, P.E.
Withers & Ravenel
111 MacKenan Drive
Cary, NC 27511
Phone: (919) 469-3340

Subject: Revision 1 Treatment of CVOCs using EHC® ISCR Technology
Former Dry Cleaning Facility – Durham, North Carolina
Adventus Proposal No. AAI11-440

Dear Ms. Powers:

Please find herewith a conceptual remedial design and cost estimate for employing EHC® and DARAMEND® *in situ* chemical reduction (ISCR) technology to remove chlorinated volatile organic compounds (CVOCs) from soil and groundwater at the above referenced site (the Site). The cost estimate includes EHC/DARAMEND amendments and delivery (estimated); Adventus on-site field support for the initiation of the project is presented as a recommended option.

In developing this proposal, Adventus recognizes that we may have received potentially sensitive data and confidential information. Since our inception, Adventus has always maintained client files in confidence and we will preserve the confidentiality of sensitive data and confidential information received in developing our proposal.

ISCR TECHNOLOGY BACKGROUND

EHC® is the original, patented combination of controlled-release carbon and zero valent iron (ZVI) particles used for stimulating *in situ* chemical reduction (ISCR) of otherwise persistent organic compounds in groundwater. Variations of these materials have been used to treat over 9,000,000 tons of soil/sediment impacted by recalcitrant compounds as part of the company's DARAMEND® bioremediation technology. Both EHC and DARAMEND are proven, established technologies that have been used at hundreds of sites to date throughout the world. he technologies have been accepted and many Federal, State (including North Carolina), and regional regulatory authorities within the USA/Canada (**Figure 1a**) Europe (**Figure 1b**) and other places around the world.

Figure 1a. Adventus Projects - Americas
5 Provinces, 48 States > 2,000 projects

Figure 1b. Adventus Projects – "Europe"
17 Countries ca. 100 projects

EHC is available as a **solid or liquid** material that can be easily injected into the subsurface environment in a variety of ways, based on site-specific designs. Application methods include direct mixing, hydraulic fracturing, pneumatic fracturing, and injection of slurries or liquids. Direct placement in trenches and excavations are also reliable application methods.

The DARAMEND technology has often been applied to excavated soil in engineered treatment cells (**Figure 2**), during *in situ* land treatment process (**Figure 3**), and as backfill in excavated areas (**Figures 4 and 5**). In all cases, the amendments are blended into the soil using various pieces of equipment (**Figure 6)**. For land-farming applications, a specially designed rotary tiller is preferred with an effective penetration depth of 60 cm. Tilling serves to homogenize and aerate the amended soil. Deeper soil impacts may also be treated *in situ* using deep soil mixing equipment.

DARAMEND is typically mixed thoroughly into the soil at the beginning of treatment. Water content is a critical process parameter and is adjusted using agricultural irrigation equipment. Temperature is also an important process control parameter, with temperatures of 20^{o}C being ideal for optimum process performance. The pH should be maintained between 6 and 8 via incorporation of pH controlling agents, if necessary.

Figure 2. DARAMEND Engineered BioPile Treatment (Joliet Arsenal – Illinois).

Figure 3. DARAMEND® *in situ* treatment (upper 60 cm of soil using conventional agricultural machinery with specialized tiller).

Figure 4. DARAMEND application as excavation backfill.

Figure 5. DARAMEND application as excavation backfill.

Figure 6. DARAMEND direct soil mixing.

Following placement of EHC/DARAMEND into the subsurface environment, a number of physical, chemical and microbiological processes combine to create very strong reducing conditions that stimulate rapid and complete dechlorination of organic solvents and other recalcitrant compounds. First, the organic component of EHC/DARAMEND (fibrous organic material) is nutrient rich, **hydrophilic** and has high surface area; thus, it is an ideal support for growth of bacteria in the groundwater environment. As they grow on EHC/DARAMEND particle surfaces, indigenous heterotrophic bacteria consume dissolved oxygen thereby reducing the redox potential in groundwater. In addition, as the bacteria grow on the organic particles, they ferment carbon and release a variety of volatile fatty acids (acetic, propionic, butyric) which diffuse from the site of fermentation into the groundwater plume and serve as electron donors for other bacteria, including dehalogenators and halorespiring species. Finally, the small ZVI particles (<5 to 45 μm) provide substantial reactive surface area that stimulates direct chemical dechlorination and an additional drop in the redox potential of the groundwater via chemical oxygen scavenging.

These physical, chemical and biological processes combine to create an extremely reduced environment that stimulates chemical and microbiological dechlorination of otherwise persistent compounds. Redox potentials as low as –550 mV are commonly observed in groundwater after EHC/DARAMEND application. At these Eh levels, many organic constituents of interest (COI) are thermodynamically unstable, and they will readily degrade via pathways more typical of physical destruction processes (minimum production and no accumulation of typically recognized biodegradation intermediates such as DCE for TCE). Hence, the ISCR technology is

microbiologically based in that we rely on indigenous microbes to biodegrade the EHC carbon (refined plant materials), but we do not require the presence or activity of special or otherwise unique bacteria for complete and effective remediation.

The type of amendment used for a given site depends, in part, on the construction method employed to emplace the material into the subsurface. If a direct mixing or direct placement method is used, the standard slow release, solid EHC material would likely be utilized. If an injection method is used, however, a combination of fast and slow release EHC may be preferred. If the material is to be placed through an existing well network, a water-soluble, aqueous formulation, EHC-L®, may be utilized.

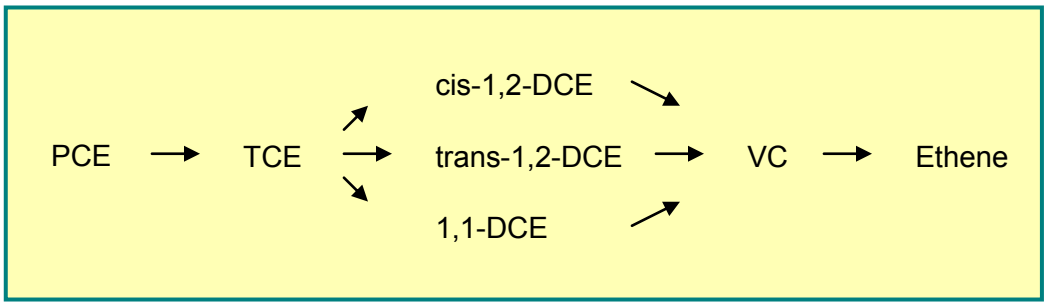
In either event, the fibrous organic carbon and ZVI or other reduced metal that comprises the slow release EHC/ DARAMEND will remain in the location where it is injected. It will not only treat COI that migrates into the treated area, but it will also have a 'halo' or 'zone of influence' of low redox conditions that will extend beyond its physical space, greatly increasing its effectiveness. **Figure 7** shows how EHC injection creates a wide zone of influence outside of its immediate location. The native soil color is the yellow visible on the right hand side of the core. The orange discoloration is due to the low redox conditions created by the EHC, which became apparent after exposure to the air for 2 hours.

Figure 7: Photograph of a soil core, from 30 ft to 33 ft bgs, showing a 1-inch EHC seam.

MODE OF ACTION – ISCR FOR CVOCs

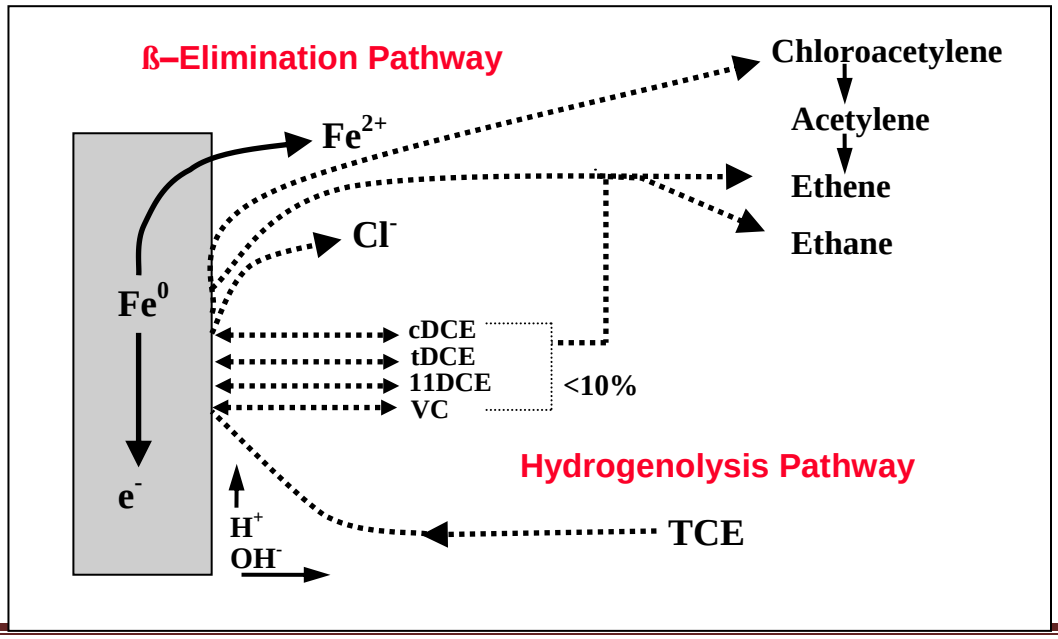
It is critical to understand that the processes of COI destruction under ISCR conditions are different from the typical pathways. The primary COIs in the Site groundwater are PCE/TCE and the recognized daughter products of reductive dehalogenation reactions that occur under normal anaerobic conditions (**Figure 8**).

Figure 8: PCE /TCE Degradation Schematic – Sequential Reductive Dehalogenation under Typical Anaerobic Conditions.



Under ISCR conditions (Eh <-550 mV), these pathways are avoided and terminal destruction / mineralization proceeds along the lines of the recognized *beta*-elimination pathways (**Figure 9**). These differences have been described by various experts in the field of biotransformation processes (*e.g.*, Dr. John Wilson, US EPA as reported in the AFCEE Technology Transfer Seminar, 2003; Dr. Mark Ferry, MPCAA; J, Szecsody and J. Fruchter *et al*., Battelle Pacific Northwest National Laboratory).

Figure 9: PCE /TCE Degradation Schematic – Representative Reactions for Mineralization under ISCR Conditions.



CASE STUDIES

EHC treatment has effectively removed a range of CVOCs under full-scale field conditions without generation of potentially problematic catabolites (**Appendix A**):

- EHC for source area treatment in clayey lithology (PCE and catabolites), Former dry cleaner, Oregon
- EHC-M for isolated hotspot treatment (TCE and Cr(VI)), NW USA
- EHC for source area mass reduction (TCE, TCA and catabolites), Cherry Point, North Carolina
- EHC for complete plume treatment using multiple reactive barriers (CF, TCE and OCPs), Confidential site, Southeast USA
- EHC injection PRB for plume management (CT, CF), confidential site, Kansas
- EHC injection PRB for plume management (cis-DCE and VC), confidential site, Ohio
- EHC trench PRB and excavation backfill (PCE and daughters), confidential site, Texas
- EHC-G applied via hydraulic fracturing into partially weathered rock, confidential site, Manufacturing facility, North Carolina
- EHC-G applied via hydraulic fracturing at a former Atlas Missile Site in Colorado using angular ZVI.

EHC and DARAMEND have been accepted by the State of North Carolina and many other regulatory agencies. The product is made in the USA and supplied in 50 lb bags as a powder which can be mixed with soil or slurried in water. Installation techniques vary widely depending on the application. For example, the powder can be mixed with soil and placed at the bottom of an excavation where prior soil removal had been conducted. A slurry can be made and the mixture can be injected into the subsurface using techniques such as direct injection through GeoProbe rods or hydraulic fracturing.

POTENTIAL ADVANTAGES OF USING EHC ISCR TECHNOLOGY

The patented combination of controlled-release organic carbon plus ZVI uniquely yields ISCR conditions which give EHC/DARAMEND powerful technical advantages over other materials that provide only carbon (*i.e.*, emulsified oils, molasses or lactate-based substrates) or only ZVI. These include:

- **Health and Safety**. Safe handling and easy application with no bulky or hazardous material disposal issues;
- **Minimal Methane Production**. The presence of ZVI and the complex, controlled-release carbon source help minimize production of potentially problematic fermentation end-products, such as methane;

- **Buffering Capacity***. Provision of substantial pH buffering capacity (i.e., different EHC products are designed to release alkalinity, acidity or to maintain a neutral pH). In contrast, the addition of conventional organic substrates (e.g., emulsified oils, molasses or lactate-based materials) to promote COI biodegradation can lead to aquifer acidification*;
- **Predictable Performance**. EHC/DARAMEND uniquely integrated chemical and microbiological degradation processes which allows treatment to proceed at a predictable rate;
- **Constructability**. EHC/DARAMEND are easily and quickly apllied using conventional construction technologies;
- **No Mobilization of Contaminants.** Optimal volume of EHC slurry is injected **without need for extensive water flushing**, avoiding potential displacement and mobilization issues;
- **Accelerated Site Closure** due to the ability of the EHC/DARAMEND system to rapidly remove COI mass via a combination of biogeochemical degradation processes **without relying on physical sorption / sequestration as a major "removal" mechanism, ala oils;**
- **ISCR**. Combined chemical and biological oxygen scavenging facilitates rapid oxygen consumption and establishment of reduced Eh; Generation of significantly lowered reducing conditions usually eliminates any requirement for specialty microorganisms or inoculants;
- **No Dead-End Intermediates**. Rapid COI removal without accumulation of potentially problematic catabolites, such as *cis* DCE from TCE or chloroform (CF) from carbon tetrachloride (CT) (see Dolfing *et al*, 2008; Liu *et al*., 2000)
- **Applicability**. Demonstrated effective on a wide range of COI, including chlorinated solvents, Freons, pesticides, perchlorate and other energetic compounds (explosives);
- **Longevity with no Rebound**. EHC/ DARAMEND remains active in the environmental for 12 to 60 months hence COI rebound phenomena are not observed (rebound is common when using readily biodegradable, liquid substrates);
- **Complete Technology.** Provision of major, minor and micronutrients that are essential to the activity of fastidious anaerobic bacteria involved in recognized dechlorination reactions;
- **Facilitates Natural Attenuation Processes**. For all the reasons summarized above, EHC/ DARAMEND enhances the natural biological processes. Other technologies may offer short term COI reduction via sorption reactions, etc. but they can alter the environmental conditions such that natural attenuation mechanisms are adversely influenced; and
- **Simultaneous Immobilization of Heavy Metals.** EHC/ DARAMEND will not mobilize arsenic and can simultaneously immobilize many other heavy metals, which may be present as other potential COIs.

UNDERSTANDING SITE CONDITIONS AND GOALS

There site is a former dry cleaning facility located in Durham, NC. Depth to groundwater ranges from 20 to 25 ft bgs. The aquifer is high porosity silty sand that flows at ca 1 ft/day. Soil and groundwater at the Site are impacted by PCE at concentrations generally <10 mg/kg for soil and < 70 mg/L for groundwater. There is no evidence of catabolites resulting from natural attenuation processes. The geochemistry is oxic (ORP + 55 mV, DO = 2.5 mg/L, nitrate = 2.17 mg/L and sulfate = 24.13 mg/L) and slightly acidic, with a pH ca. 5.8.

CONCEPTUAL REMEDIAL DESIGNS

The EHC/DARAMEND ISCR technologies have been effectively employed at myriad sites to more effectively treat the COIs present at the Site. DARAMEND may be applied to the suspected source areas to remove COI residuals without the accumulation of dead-end, problematic catabolites. In addition, EHC can be added to the groundwater to facilitate rapid and complete removal of groundwater COIs.

Tentative remedial actions include excavation of impacted soil from the suspected source area to a depth of 20 ft bgs (**Figure 10a**). The two excavated area will measure *ca*. 65 ft x 40 ft. In situ treatment of groundwater containing PCE < 15 ppm will also be addressed (**Figure 10b**).

Figure 10a: Area for Excavation (Red Square).

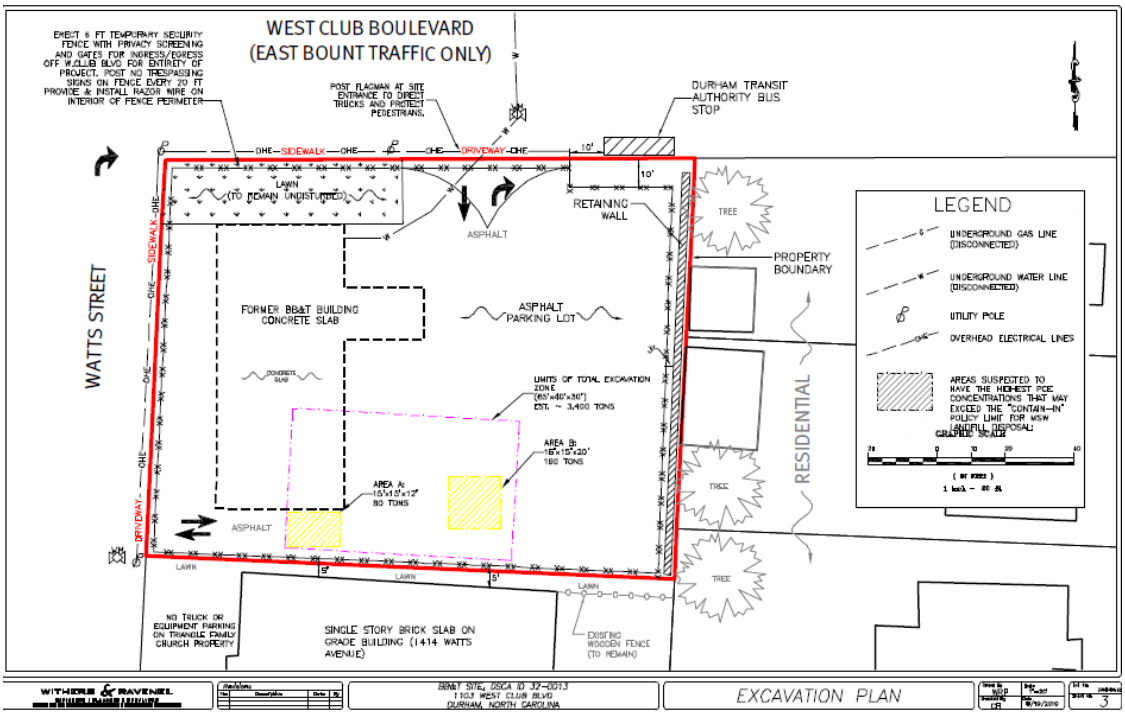
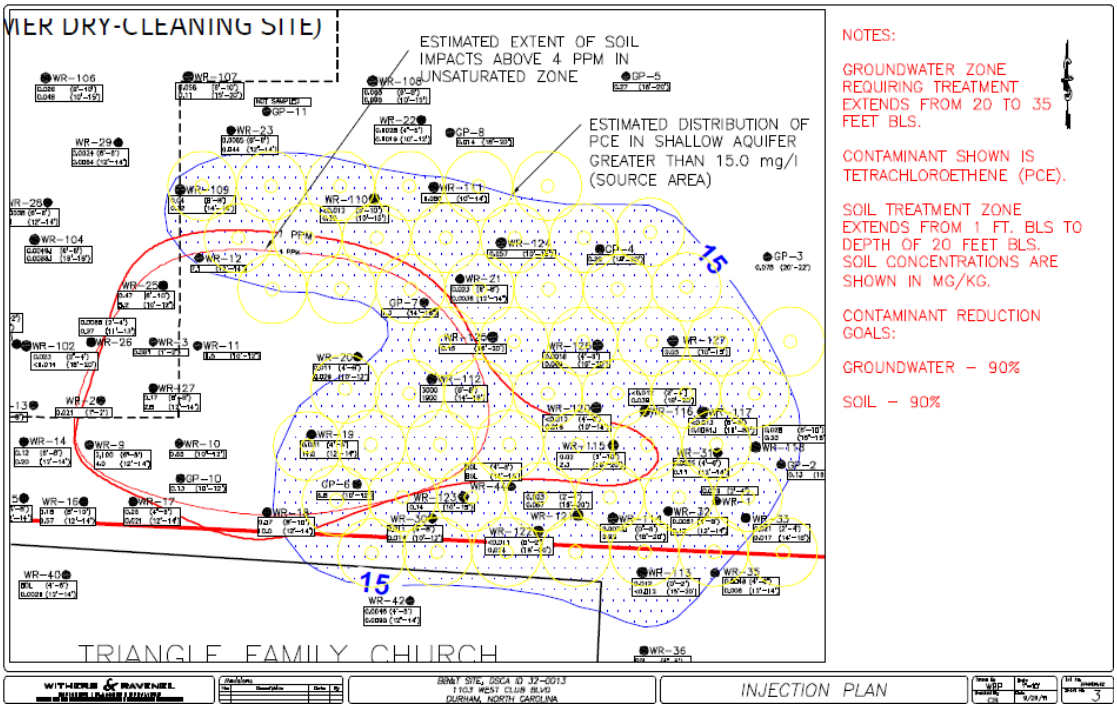


Figure 10b: Area for *In Situ* Groundwater Treatment



OPTION 1 - DARAMEND FOR EXCAVATION BACKFILL

To help remove PCE residuals and help meet the groundwater remedial goals, DARAMEND will be added to the base of the excavation at a loading rate of 2% of the soil mass in the targeted area. Using an assumed soil dry bulk density of 110 lbs/ft3 (34% porosity) this yields a requisite 11,200 lbs of DARAMEND for the two areas (**Table 1**). The dry amendment will be physically mixed into the bottom 2 feet (from 20 to 22 ft bgs). The DARAMEND amendment is easily added proportionally to the backfill as it is emplaced into the open excavation (**Figure 11**).

Table 1. Reductive DARAMEND Requirements for Base of Excavation Areas

	Value	Unit
Treatment Area Dimensions:		
Length of treatment zone	64	ft
Width of treatment zone	40	ft
Depth to top of treatment zone	20	ft
Depth to bottom of treatment zone	22	ft
Treatment zone thickness	2	ft
Treatment zone volume	5,120	ft3
Mass of soil in treatment zone	282	U.S. tons
Reductive DARAMEND mass calculations:		
Percentage DARAMEND by soil mass	2.00%	
Mass of DARAMEND required	11,300	lbs

Figure 11. Application of ISCR Reagent to Backfill material.

OPTION 2 - DARAMEND FOR PRE-TREATMENT OF EXCAVATED SOIL

An estimated 270 tons of soil from the excavated area will contain ca. 3,000 ppm PCE. The PCE impacted soil will be placed in a container on site and pre-treated with 3% Daramend (**Table 2**) over a 2 to 3 week period to reduce the concentration of PCE to levels < ca. 14 ppm to allow for subsequent disposal as non-hazardous waste.

Table 2. Reductive DARAMEND Requirements for Base of Excavation Areas

	Value	Unit
Mass of soil in treatment zone	270	U.S. tons
Percentage DARAMEND by soil mass	3%	
Mass of DARAMEND required	16,200	lbs

OPTION 3 - EHC FOR GROUNDWATER TREATMENT

EHC can be injected throughout the non-excavated 15 ppm PCE plume area which measures *ca*. 70 ft long x 50 ft wide x 15 ft deep (from 20 to 35 ft bgs). Considering groundwater geochemical conditions, EHC will be applied at an average loading rate of 0.25% to soil mass. This yields a requisite 14,450 lbs of EHC which can be applied via 24 injection points spaced ca. 12 feet apart throughout the targeted area (**Table 3**). It should be noted that the presence of any existing buildings, infrastructure or wells may need to be considered during grid-type injections.

Table 3: EHC mass requirements and injection details for groundwater treatment.

	Value	Unit
Treatment Area Dimensions:		
Length of treatment zone	70	ft
Width of treatment zone	50	ft
Depth to top of treatment zone	20	ft
Depth to bottom of treatment zone	35	ft
Treatment zone thickness	15	ft
Treatment zone volume	52,500	ft3
Mass of soil in treatment zone	2,888	U.S. tons
Estimated total porosity	34%	
Volume pore space	17,593	ft3
EHC mass calculations:		
Percentage EHC by soil mass	0.25%	
Mass of EHC required	14,450	lbs
Preparation of EHC Slurry:		
Percent solids in slurry (can be altered)	29%	
Volume water required	4,337	U.S. gallons
Slurry volume to inject	5,270	U.S. gallons
Injection details:		
Injection spacing	12	ft
Number of injection points	24	points
Mass EHC per point	602	lbs
Water volume per point	181	U.S. gallons
Slurry volume per point	220	U.S. gallons
Mass EHC vertical distribution	40	lbs/ vertical ft
Application rates for reference:		
Slurry volume to pore space volume	4.0%	
EHC concentration in groundwater	0.8	lbs/ft3
Optional Hole Blok for filling boreholes:		
Mass Hole Blok required, assuming 2" diameter bores	1,450	lbs

TABLE 3 NOTES: If the estimated amount of slurry per point is problematic, the dimensions, mass requirements, mixing and other injection details presented above can be readily modified in the field based on site specific conditions (for example, the density of the slurry can be changed

to modify the total injection volume or the injection layout/number of injection points could be altered depending on recommendations from the contractor).

OPTIONAL USE OF INOCULANTS FOR RAPID DCE DEGRADATION

The absence of DCE on site indicates that the naturally occurring microbial population may be catabolically limited and that the remedial process might benefit from the addition of inoculants with known abilities to rapidly biodegrade DCE and related compounds. Conventional ERD applications using simple hrcs, oils etc will predictably exacerbate this problem. Although not typically required for ISCR as defined above, inoculants have been useful for these situations. Therefore once favorable redox conditions (ORP < -75 mV, DO <0.2 mg/L, pH between 6.5 and 7.5) have been attained following EHC addition, dehalococcoides (DHC) cultures can be added if DCE is still present at high concentrations.

The DHC inoculant will contain at least 1x10E10 cfu/ml of live bacteria including high numbers of dehalococcoides species with known abilities to biodegrade DCE. The target density of DHC cells in the treated aquifer area will be 2x10E6 cfu/ml. A total of 20 L of inoculum are required for groundwater treatment area.

OPTIONAL USE OF REACTIVE BOREHOLE SEALANT

It is very important to effectively seal the DPT bore holes, and HoleBlok+ provides an excellent, reactive sealant to enhance overall remedial performance which should be prescribed for the injection contractor. A total of 1,450 lbs of HoleBlok+ would be required. More information on the HoleBlok+ product is located on our website at the following link:
http://www.adventusgroup.com/pdfs/HoleBlok/HoleBlok%20-%20Test%20Report%202.pdf

RECOMMENDED AQUIFER BUFFERING SCREENING

For ISCR to be most effective, aquifer pH needs to be near neutral and may therefore require adjustment using supplemental ZVI and/or one of several alkaline buffering agents such as $CaCO_3$-based solid materials (*e.g.*, pulverized limestone or dolomite powders) or liquid buffers such as solutions of $Ca(OH)_2$, $Mg(OH)_2$, or $NaHCO_3$. To better evaluate the type and amount of buffered required a site-specific laboratory buffering test could be conducted which would involve a titration of a slurry of site soil and groundwater with selected reagents. A potential procedure for testing of solid $CaCO_3$ involves buffer dosing in 0.25% (to soil mass) increments from 1% to 2% in 1:4 soil to water slurries and an equilibration time of 1 day. The solid buffer testing is performed in separate batches for each dose. For testing liquid buffers [*e.g.* saturated solutions of $Ca(OH)_2$ or $Mg(OH)_2$], a standard titration test would be performed, whereby increments of a liquid buffer is added periodically to a soil-water slurry. Adventus' laboratory can complete this testing.

DISTRIBUTION OF RESPONSIBILITIES

For field scale work at the Site, Adventus will provide environmental biotechnology and design support. It is our intention and understanding that WITHERS & RAVENEL (Client) will be responsible for remedial construction, permitting, performance monitoring and reporting. The distribution of responsibilities envisioned is as follows:

1. Adventus will provide and arrange delivery of EHC/DARAMEND to the Site.
2. Client will be responsible for remedial construction contracting.
3. It is highly recommended that Adventus personnel be on site during project start-up to support Client's field staff.
4. Adventus will provide data interpretation to Client, upon request.
5. Adventus will provide technical writing support to Client, upon request.
6. Client will provide manpower for receiving shipments, monitoring treatment performance and collecting samples.
7. Client will maintain overall project responsibility, and will maintain all client contact and control of the Site.
8. Client will be responsible for all health and safety, permitting and approvals, sampling and analytical costs along with all data management and reporting costs.

COST ESTIMATE

Adventus material and delivery costs for the proposed treatment systems are presented below (**Table 4**). These costs include EHC / DARAMEND and estimated delivery to the Site. Adventus oversight, labor and travel are presented as highly recommended options. These costs do not include the remedial construction or services assigned to WHITERS & RAVENEL.

Table 5: Material mass requirements and cost (USD)

COST ITEM	Excavation Area	Excavated Soil	Groundwater Treatment	Unit
EHC Mass	--	--	14,450	lb
EHC Unit Price[1]	--	--	$2.40	$/lb
EHC Cost	--	--	$34,680	$
DARAMEND Mass	11,300	16,200	--	lb
DARAMEND Unit Price[1]	$0.50	$0.50	--	$/lb

DARAMEND Cost	$5,650	$8,100	--	$
Shipping Estimate[2]	$1,500	$1,750	$1,750	$
Recommended Adventus technical support, field oversight and travel (2 to 3 days on site)[3]	($ 1,500)	($ 1,500)	($ 1,500)	$
OPTIONAL Inoculum	--	--	(20)	L
OPTIONAL Inoculum Cost - $115/L (excluding delivery)	--	--	($2,490)	$
OPTIONAL Hole Blok[4]	--	--	(1,500)	lb
OPTIONAL Hole Blok Cost @ $35 / 50 lb bag excluding delivery	--	--	($1,110)	$
TOTAL COST	**$7,150**	**$9,850**	**$36,430**	**$**

1) Price valid for 45 days. Volume discount applied based on 15,000 lbs EHC and assumes payment within 45 days. Any applicable taxes not included. Please provide a copy of your tax exempt certificate or resale tax number when placing your order.
2) Shipping rate provided is an estimate. Standard delivery time can vary from 1-3 weeks from time of order, depending upon volume. Expedited transport can be arranged at extra cost. Unless requested otherwise, costs assume standard ground transport via truck, with no need for a lift gate or pallet jack.
3) Field oversight is presented as a recommended option and not included in the total cost. The Adventus performance warranty (below) is predicated on our oversight to verify material emplacement conditions. If additional field oversight is desired, it can be provided on a time and expense basis.
4) Reactive HoleBlok (ZVI amended) is presented as a recommended option for filling injection boreholes, and is not included in the total cost. Borehole diameter of 2 inches assumed.

Adventus will provide copies of our patents and written, full indemnification backed by insurance coverage to Client and the end-user / client from any lawsuits purporting patent infringement or other technology violations.

Adventus warrants the performance of its technology. In the event that the prescribed EHC injections do not yield at least 80% reduction in overall COI concentrations in groundwater within the treatment zone within 9 to 12 months, then we will provide an equivalent amount of material at 50% of the listed price (plus delivery costs). Adventus' field installation oversight would also be provided at no cost. This performance guarantee requires that a representative from Adventus is on site for the initiation of the project and that the injections are conducted according with Adventus' recommendations.

On behalf of Adventus Americas Inc., we thank you for your interest in our products and technologies. Please contact either me at jim.mueller@adventusgroup.com (815 235-3503) if you have any questions regarding this proposal.

Yours truly,

Adventus Americas Inc.

via e-mail

Jim Mueller, Ph.D.
Director / Remedial Solutions & Strategies

cc: Josephine Molin – Adventus

Former BB&T Cleaners - Durham, NC Remediation Parameters

www.thermalrs.com

		Soil Only > 4 mg/kg	Soil & GW	GW Only > 15 mg/l
Electrical Resistance Heating Treatment Area:	5,150 sq. ft	1,050	800	3,300
Average Shallow Extent of ERH:	13.2 ft	1	1	20
Average Deep Extent of ERH:	31.9 ft	20	35	35
Typical Depth to Groundwater:	20 ft			
Treatment Volume:	3,600 cu. yd	700	1,000	1,800
Assumed Total Organic Carbon Content of Soil:	0.75%	0.75%	0.75%	0.75%
Number of Electrodes:	23	5	4	14
Electrode Boring Diameter (in.):		12	12	12
Average Distance Between Electrodes:	16.3 ft	16	16	16.5
Avg. Total Depth of Electrodes:	32.5 ft	20	36	36
Avg. Depth to Top of Electrode Conductive Zone:	14.6 ft	3	3	22
Number of Co-located Vapor Recovery Wells:	23	5	4	14
Number of Temperature Monitoring Points:	5 (avg. 5 sensors each)			
Is a New Insulating Surface Cap Required?	yes, 36% coverage	yes	yes	no

Controlling Contaminant:	PCE	
Average Clean-up Percent:	90%	
Assumed VOC Mass:	1,500 lb	This VOC mass is based on an assumed average conc. of 153 mg/kg.
Vapor Recovery Air Flow Rate:	240 scfm using a 20-hp vapor recovery blower	
Condensate Production Rate:	1.3 gpm	
Vapor Treatment Method:	carbon	
Assumed Activated Carbon Required:	7,000 lb	
Power Control Unit (PCU) Capacity:	500 kW	
Average Electrical Heating Power Input:	279 kW	
Total Heating Treatment Time:	79 - 105 days	
Design Remediation Energy (kWh):	590,000	An additional 40,000 kWh is used by surface equipment.
Assumed Number of Confirmatory Borings:	5	With 4 soil samples per boring. Budget for 32 total confirmatory samples.

The above remediation parameters are estimated +/- 20%. Final parameters will be determined during system design.

Budgetary (+/- 20%) Standard Fixed Price for Former BB&T Cleaners - Durham, NC

Price Charged by TRS Group	Price	Percent	
Design, Work Plans, Permits:	$43,000	6%	
Electrode Materials Mobilization:	$102,000	14%	Payment due before starting field work.
Subsurface Installation:	$41,000	6%	
Surface Installation and Start-up:	$124,000	17%	
Remediation System Operation:	$170,000	24%	
Demobilization and Final Report:	$38,000	5%	
Total TRS Price	**$518,000**	**73%**	Based on payment terms of net 30 days.

The above cost estimate is valid for 30 days from 09/27/2011.

Estimated Costs by Others	Cost	Percent	
Drilling and Soil Sampling:	$86,000	12%	assumes $56 per ft
Drill Cuttings and Waste Disposal:	$9,000	1%	assumes $300 per ton
Electrical Permit and Utility Connection to PCU:	$15,000	2%	This is an assumed cost.
Electrical Energy Usage:	$50,000	7%	assumes $0.08 per kWh
Carbon Usage, Transportation & Regeneration:	$19,000	3%	assumes $2.70 per lb
Condensate Disposal:	$0	0%	condensate disposal by TRS
Other Operational Costs:	$12,000	2%	includes vapor sampling
Total Estimated Costs by Others	**$191,000**	**27%**	

carbon neutral info

Total Remediation Cost: **$709,000** **$197 per cu. yd**

Go Carbon Neutral (No Net CO_2), Add: **$4,100** **1%** ***Ask us how!***

"Costs by Others" are conservatively high. TRS recommends using site knowledge or getting quotes.

Prepared for Chan Bryant, 919-535-5202, cbryant@withersravenel.com

Some Included Items for Remediation of Former BB&T Cleaners - Durham, NC

Design, Work Plans, Permits:	TRS Scope	Shared Scope	Scope by Others	Estimated Cost by Others (included above)
Design or "Kick-off" Meeting	□	■	□	
Work Plan	□	■	□	
Health and Safety Plan	□	■	□	
QA/QC Plan	□	□	□	
Sample Analysis Plan	□	□	□	
Air Permit	□	■	□	
Sewer Discharge Permit	□	■	□	
Regulatory Negotiations and Client Interface	□	□	■	difficult for TRS to estimate
Subsurface Installation:				
Pre-installation Building Structural Survey	□	□	■	$2,520
Electrode Materials and Well Screen	■	□	□	
Drilling Subcontractor for Electrodes	□	□	■	$41,940 for 748 ft
Drilling Subcontractor for VR Wells	□	□	□	co-located with electrodes
Drilling Subcontractor for TMPs	□	□	■	$4,040 for 145 ft
Drilling Subcontractor for New MWs	□	□	□	
Abandonment/Replacement of Existing PVC Wells	□	□	■	difficult for TRS to estimate
Concrete Coring	□	□	■	$3,230 for 28 cores.
Utility Locator Survey	□	□	■	$1,120
Installation (pre-ERH) Soil Sample Analysis	□	□	■	$5,000 for 20 samples.
Drill Cutting Disposal	□	□	■	$9,000 for 30 tons
Drill Cutting Disposal Labor	□	□	■	$1,170
Forklift or Skid-Steer for Drilling	□	□	■	$720
Photoionization Detector for Drilling	□	□	■	$1,040
Boring Logs and Report	□	□	■	$1,170
TRS On-Site Electrode Installation Supervision	■	□	□	assumes 12 work days of drilling
Traffic-rated Well Vaults and Installation	□	□	□	
Trenching and Restoration	□	□	□	
New Insulating Surface Cap	■	□	□	
Biological Amendment and Addition	□	□	□	
Surface Installation and Start-up:				
Surface Remediation Equipment Mobilization	■	□	□	
Crane to Offload/Position Equipment	■	□	□	
Perimeter Fence and Security System	■	□	□	
Vapor Recovery Piping	■	□	□	
Steam Condenser	■	□	□	
20 hp VR Blower	■	□	□	
Granular Activated Carbon and Regeneration	□	□	■	$19,000 for 7,000 lb
0 scfm Chlorinated VOC Oxidizer	□	□	□	
Oil-Water Separator	□	□	□	not required
Equipment Sound Wall	■	□	□	
Electrical Permit and Utility Connection to PCU	□	□	■	assumed to be $15,000
Telephone Connection to PCU	■	□	□	
Garden Hose Connection to Condenser	■	□	□	
Remediation System Operation:				
ERH Control and Temperature Monitoring	■	□	□	
Vapor Sampling and Analysis	□	□	■	$4,442 for 15 samples.
Condensate/Discharge Sampling and Analysis	□	□	■	$1,397 for 5 samples.
Sampling Labor and Operational Checks	□	□	■	$6,916 for 70 hours.
Groundwater Sampling and Analysis	□	□	■	difficult for TRS to estimate
Electricity Usage	□	□	■	$50,000 for 630,000 kWh.
Offset for Carbon Dioxide Emissions	□	□	□	
Water/Condensate Disposal	■	□	□	
Separate Phase Product Disposal	□	□	□	none expected
Demobilization and Final Report:				
Drilling Subcontractor for Confirmatory Borings	□	□	■	$7,120 for 256 ft
Soil Sample Analysis	□	□	■	$8,000 for 32 samples.
Well Abandonment	□	□	■	$4,170 for 23 wells.
Demobilize Surface Equipment	■	□	□	
Final Report	□	■	□	

APPENDIX D

COST ESTIMATE FOR IMPLEMENTATION OF SELECTED REMEDIAL STRATEGY

BB&T Site

Atlantic Foundation Underpinning Cost

Type 2875 Helical Piers		
Length of TFC South Exterior Wall:	111	ft
Spacing For Piers	6	ft
No Piers	19	piers
Total Depth of Pier	50	ft
Cost Per Pier	$ 950.00	(first 21 feet)
Cost Each Addl Foot	$ 20.00	(each addl ft)
Cost Per Pier	$ 1,530.00	ea
Total Cost	$ 29,070.00	(Total Cost)
Allowance For Moving AC & Fence	$ 1,500.00	
Cost for Mob	$ 500.00	
Cost to Seed & Straw	$ 500.00	
	$ 31,570.00	Total Adjusted Cost

Type 3-1/2" Piers		
Length of TFC South Exterior Wall:	111	ft
Spacing For Piers	6	ft
No Piers	19	piers
Total Depth of Pier	50	ft
Cost Per Pier	$ 1,220.00	(first 21 feet)
Cost Each Addl Foot	$ 30.00	(each addl ft)
Cost Per Pier	$ 2,090.00	ea
Total Cost	$ 39,710.00	(Total Cost)
Allowance For Moving AC & Fence	$ 1,500.00	
Cost for Mob	$ 500.00	
Cost to Seed & Straw	$ 500.00	
	$ 42,210.00	Total Adjusted Cost

BB&T Site

Subcontract Remediation Vendor / Contractor Cost Estimates

Task: Well Abandonments			
Driller Mobilization			$ 350.00
	Ft	*Cost / Ft*	
No. Ft Well Casing	266.5	$ 6.00	$ 1,599.00
Abandonment Logs			$ 250.00
Total Abandonment Cost			$ 2,199.00

Task: Soil Vent Installations			
Driller Mobilization			$ 350.00
	Ft	*Cost / Ft*	
2" Vents	80	$ 45.00	$ 3,600.00
Vaults & Baroballs			$ 2,000.00
	No.	*Unit Cost*	
Vaults	4	250	$ 1,000.00
BaroBalls	4	250	$ 1,000.00
Total Soil Vent Cost			$ 5,950.00

Task: Purchase & Ship Adventus EHC		
Mass Per Hole	602	lbs
No Holes	38	
Total EHC Mass	22900	lbs
Cost Per PD	$ 2.40	
Total Cost	$ 54,960.00	
Shipping Est	$ 3,000.00	
Total Cost + Shipping	$ 57,960.00	

Task: EHC Injection			
38 Borings - 16 Days			$ -
	Days	*Cost/Day*	
Injections	16	$ 2,500.00	$ 40,000.00
			$ 2,000.00
	No.	*Unit Cost*	
Hydrant Meter	4	125	$ 500.00
Boring Abandonment	4	250	$ 1,500.00
Total Soil Vent Cost			$ 42,000.00

Task: Soil Vapor Well Installations			
Driller Mobilization			$ 350.00
	Ft	*Cost / Ft*	
2" Vents	20	$ 45.00	$ 900.00
Total Soil Vent Cost			$ 1,250.00

Task: Monitoring Well Replacements			
Driller Mobilization			$ 350.00
	Ft	*Cost / Ft*	
No. Ft Well Casing	255	$ 45.00	$ 11,475.00
Total Well Replacement Cost			$ 11,825.00

DSCA CONTRACTOR COST ESTIMATE

SITE: BB&T Site — **Prepared By:** C. Bryant

DSCA #: 32-0013 — **Date:** 10/28/2011

Preparation of RAP — $11,474.00

G. Report Preparation

Personnel	Units		$/Unit		Total	Personnel	Units		$/Unit		Total
Principal Level	8	X	122.00	=	$976.00	Word Processor	4		42.50	=	$170.00
Project Level	40	X	85.00	=	$3,400.00			X		=	$0.00
Staff Level	80	X	75.00	=	$6,000.00			X		=	$0.00
CAD Level	16	X	58.00	=	$928.00			X		=	$0.00

G. Total Report Preparation — **$11,474.00**

Section G Description: ***Report Preparation:*** Preparation of assessment report for soil sampling results and groundwater monitoring sampling event.

Coordination of Installation of Piers – Triangle Family Church — $5,230.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	8	X	75.00	0%	=	$600.00	**Small Items**	5	X	20.00	0%	=	$100.00
Project	16	X	85.00	0%	=	$1,360.00	**PID/FID**	0	X	110.00	0%	=	$0.00
Tech	34	X	60.00	0%	=	$2,040.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**		X	0.00	0%	=	$0.00
Staff	2	X	75.00	0%	=	$150.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	2	X	85.00	0%	=	$170.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	10.0	X	60.00	0%	=	$600.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	redox meter rental	0	X	75.00	0%	=	$0.00
Number of Trips to Site	7							0		0.00	0%	=	$0.00
Total Mileage	420	X	0.500	0%	=	$210.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	**Subtotal Subcontracted**		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	**Subcontractor Markup %**			15%		=	$0.00

E. Total Field Work — **$5,230.00**

Section E Description:
Daily supervision of Pier Installation - 1 Week

Coordination of Abandonment of Groundwater Monitoring Wells — $760.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	0	X	75.00	0%	=	$0.00	**Small Items**	1	X	20.00	0%	=	$20.00
Project	2	X	85.00	0%	=	$170.00	**PID/FID**	0	X	110.00	0%	=	$0.00
Tech	8	X	60.00	0%	=	$480.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**		X	0.00	0%	=	$0.00
Staff	0	X	75.00	0%	=	$0.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	1.0	X	60.00	0%	=	$60.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	redox meter rental	0	X	75.00	0%	=	$0.00
Number of Trips to Site	1							0		0.00	0%	=	$0.00
Total Mileage	60	X	0.500	0%	=	$30.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	**Subtotal Subcontracted**		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	**Subcontractor Markup %**			15%		=	$0.00

E. Total Field Work — **$760.00**

Field Supervision / Coordination of Removal & Disposal of Brick, Concrete & Pavement (360 tons) — $8,888.40

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	20	X	75.00	0%	=	$1,500.00	**Small Items**	2	X	20.00	0%	=	$40.00
Project	4	X	85.00	0%	=	$340.00	**PID/FID**	2	X	110.00	0%	=	$220.00
Tech	0	X	60.00	0%	=	$0.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**		X	0.00	0%	=	$0.00
Staff	4	X	75.00	0%	=	$300.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	redox meter rental	0	X	75.00	0%	=	$0.00
Number of Trips to Site	2							0		0.00	0%	=	$0.00
Total Mileage	120	X	0.500	0%	=	$60.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	**Subtotal Subcontracted**		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	**Subcontractor Markup %**			15%		=	$0.00

E. Total Field Work — **$2,460.00**

F. Analytical (12 Roll Off Boxes)

Type	# of Samples		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
8260	0		165.00	100%	=	$0.00	Radiellos	28		35.00	100%	=	$980.00
	0	X	100.00	100%	=	$0.00	MNA Laboratory Test	0		0.00	100%	=	$0.00
8260 - soil 24 Hr Rush	24	X	186.00	100%	=	$4,464.00		0		0.00	100%	=	$0.00
8260 - water 24 hr Rush	0	X	186.00	100%	=	$0.00		0		0.00	100%	=	$0.00
TCLP	0	X	0.00	0%	=	$0.00	**Shipping**	4	X	100.00	100%	=	$400.00
	No. of Days		**$/Day**				**Subtotal Subcontracted**		=	$5,844.00			
On-Site Mobile Lab	0	X	1,612.50	100%	=	$0.00	**Subcontractor Markup %**			10%		=	$584.40

F. Total Analytical — **$6,428.40**

Section F Description:
See Above

DSCA CONTRACTOR COST ESTIMATE

SITE: BB&T Site — **Prepared By:** C. Bryant

DSCA #: 32-0013 — **Date:** 10/28/2011

Field Supervision / Coordination of Excavation & Disposal of Contaminated Soil (3550 tons) — $23,425.80

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	100	X	75.00	0%	=	$7,500.00	Small Items	10	X	20.00	0%	=	$200.00
Project	16	X	85.00	0%	=	$1,360.00	PID/FID	10	X	110.00	0%	=	$1,100.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers		X	0.00	0%	=	$0.00
Staff	10	X	75.00	0%	=	$750.00	QRAE	10	X	75.00	0%	=	$750.00
Project	4	X	85.00	0%	=	$340.00	Draegger CMS	1	X	350.00	100%	=	$350.00
Tech	0.0	X	60.00	0%	=	$0.00	Draegger Cards	1	X	350.00	100%	=	$350.00
		X		0%	=	$0.00		0	X	75.00	0%	=	$0.00
Number of Trips to Site	12							0		0.00	0%	=	$0.00
Total Mileage	720	X	0.500	0%	=	$360.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	Subtotal Subcontracted		=	$700.00			
Surveying (sub only)		X		0%	=	$0.00	Subcontractor Markup %			15%		=	$105.00

E. Total Field Work — **$13,165.00**

F. Analytical

Type	# of Samples		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
8260	24		93.00	100%	=	$2,232.00	Radiellos	0		35.00	100%	=	$0.00
	0	X	100.00	100%	=	$0.00	MNA Laboratory Test	0		0.00	100%	=	$0.00
8260 - soil 24 Hr Rush	36	X	186.00	100%	=	$6,696.00		0		0.00	100%	=	$0.00
8260 - water 24 hr Rush	0	X	186.00	100%	=	$0.00		0		0.00	100%	=	$0.00
TCLP	0	X	0.00	0%	=	$0.00	Shipping	4	X	100.00	100%	=	$400.00
	No. of Days		$/Day				Subtotal Subcontracted		=	$9,328.00			
On-Site Mobile Lab	0	X	1,612.50	100%	=	$0.00	Subcontractor Markup %			10%		=	$932.80

F. Total Analytical — **$10,260.80**

Section F Description:
See Above

Field Supervision / Coordination of Delivery, Placement, Backfill, Compaction of Stone & Clean Earth — $10,650.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	80	X	75.00	0%	=	$6,000.00	Small Items	7	X	20.00	0%	=	$140.00
Project	16	X	85.00	0%	=	$1,360.00	PID/FID	7	X	110.00	0%	=	$770.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers		X	0.00	0%	=	$0.00
Staff	10	X	75.00	0%	=	$750.00	QRAE	7	X	75.00	0%	=	$525.00
Project	0	X	85.00	0%	=	$0.00	Draegger CMS	1	X	350.00	100%	=	$350.00
Tech	0.0	X	60.00	0%	=	$0.00	Draegger Cards	1	X	350.00	100%	=	$350.00
		X		0%	=	$0.00		0	X	75.00	0%	=	$0.00
Number of Trips to Site	10							0		0.00	0%	=	$0.00
Total Mileage	600	X	0.500	0%	=	$300.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	Subtotal Subcontracted		=	$700.00			
Surveying (sub only)		X		0%	=	$0.00	Subcontractor Markup %			15%		=	$105.00

E. Total Field Work — **$10,650.00**

Purchase & Delivery of DARAMEND — $1,065.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	8	X	75.00	0%	=	$600.00	Small Items	1	X	20.00	0%	=	$20.00
Project	4	X	85.00	0%	=	$340.00	PID/FID	0	X	110.00	0%	=	$0.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers		X	0.00	0%	=	$0.00
Staff	1	X	75.00	0%	=	$75.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	DARAMEND	1	X	0.00	100%	=	$0.00
Number of Trips to Site	1							0		0.00	0%	=	$0.00
Total Mileage	60	X	0.500	0%	=	$30.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	Subtotal Subcontracted		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	Subcontractor Markup %			15%		=	$0.00

E. Total Field Work — **$1,065.00**

Field Supervision / Coordination of Labor & Equipment to Mix DARAMEND — $2,460.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	20	X	75.00	0%	=	$1,500.00	Small Items	2	X	20.00	0%	=	$40.00
Project	4	X	85.00	0%	=	$340.00	PID/FID	2	X	110.00	0%	=	$220.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers		X	0.00	0%	=	$0.00
Staff	4	X	75.00	0%	=	$300.00		0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00		0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00		0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00		0	X	75.00	0%	=	$0.00
Number of Trips to Site	2							0		0.00	0%	=	$0.00
Total Mileage	120	X	0.500	0%	=	$60.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	Subtotal Subcontracted		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	Subcontractor Markup %			15%		=	$0.00

E. Total Field Work — **$2,460.00**

DSCA CONTRACTOR COST ESTIMATE

SITE: BB&T Site — **Prepared By:** C. Bryant

DSCA #: 32-0013 — **Date:** 10/28/2011

Field Supervision / Coordination of Placement & Removal of Security Fence, Utility Location, Sanitary Facilities, Haybales for Erosion Control, Etc. — $2,460.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	20	X	75.00	0%	=	$1,500.00	Small Items	2	X	20.00	0%	=	$40.00
Project	4	X	85.00	0%	=	$340.00	PID/FID	2	X	110.00	0%	=	$220.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers		X	0.00	0%	=	$0.00
Staff	4	X	75.00	0%	=	$300.00		0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00		0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00		0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00		0	X	75.00	0%	=	$0.00
Number of Trips to Site	2							0		0.00	0%	=	$0.00
Total Mileage	120	X	0.500	0%	=	$60.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	Subtotal Subcontracted		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	Subcontractor Markup %			15%		=	$0.00

E. Total Field Work — **$2,460.00**

Field Supervision / Coordination of Clean Lot, Replacement of Asphalt Pavement — $2,460.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	20	X	75.00	0%	=	$1,500.00	Small Items	2	X	20.00	0%	=	$40.00
Project	4	X	85.00	0%	=	$340.00	PID/FID	2	X	110.00	0%	=	$220.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers		X	0.00	0%	=	$0.00
Staff	4	X	75.00	0%	=	$300.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	redox meter rental	0	X	75.00	0%	=	$0.00
Number of Trips to Site	2							0		0.00	0%	=	$0.00
Total Mileage	120	X	0.500	0%	=	$60.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	Subtotal Subcontracted		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	Subcontractor Markup %			15%		=	$0.00

E. Total Field Work — **$2,460.00**

Field Supervision / Coordination of Construction of Soil Vents — $3,311.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	12	X	75.00	0%	=	$900.00	Small Items	1	X	20.00	0%	=	$20.00
Project	4	X	85.00	0%	=	$340.00	PID/FID	1	X	110.00	0%	=	$110.00
Tech	0	X	60.00	0%	=	$0.00	Drums (not by driller)	0	X	40.00	0%	=	$0.00
	0	X	0.00	0%	=	$0.00	Water Level Indicator	0	X	25.00	0%	=	$0.00
Travel							Disposable Bailers	0	X	0.00	0%	=	$0.00
Staff	2	X	75.00	0%	=	$150.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00	pump tubing	0	X	0.25	0%	=	$0.00
	0	X	0.00	0%	=	$0.00	redox meter rental	0	X	75.00	0%	=	$0.00
Number of Trips to Site	1							0			0%	=	$0.00
Total Mileage	60	X	0.500	0%	=	$30.00		0	X	0.00	0%	=	$0.00
Per Diem	0	X	0.00	0%	=	$0.00	Subtotal Subcontracted		=	$0.00			
Surveying (sub only)	0	X	0.00	0%	=	$0.00	Subcontractor Markup %			15%		=	$0.00

E. Total Field Work — **$1,550.00**

Section E Description:
W&R will supervise the installation of 4 soil vents.

H. Waste Management

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Principal Level	0	X	122.00	0	=	$0.00	Transportation Fee (drums)	1	X	550.00	100%	=	$550.00
Project Level	2	X	85.00	0	=	$170.00	Roll-off Delivery fee	0		0	100%	=	$0.00
Staff Level	2	X	75.00	0	=	$150.00	Roll-off Liner	0		0	100%	=	$0.00
Fluids Disposal - drum	0	X	190.00	100%	=	$0.00	Roll-off rental	0		0	100%	=	$0.00
Fluids Disposal - bulk	0	X	0	0	=	$0.00	Roll-off transport	0		0	100%	=	$0.00
Soil Disposal - ton	0	X	0	100%	=	$0.00	Subtotal Subcontracted		=	$1,310.00			
Soil Disposal - drum	4	X	190.00	100%	=	$760.00	Subcontractor Markup %			10%		=	$131.00

H. Total Waste Management — **$1,761.00**

Section H Description:
1) Project Level time to coordinate with disposal contractor to pick up drums of drilling cuttings and decon/purge water. All material will be manifested as IDW hazardous waste (soil F listed below LDR) and transport to the Environmental Quality Subtitle C Landfill.
2) Project time to review IDW manifests and certificate of disposal documentation and forward to DSCA Project Manager.
3) Staff level time to meet with disposal contractor to sign manifests at time of waste pick-up.

Injection Permit Application — $4,686.00

G. Report Preparation

Personnel	Units		$/Unit		Total	Personnel	Units		$/Unit		Total
Principal Level	4	X	122.00	=	$488.00	Word Processor	4		42.50	=	$170.00
Project Level	10	X	85.00	=	$850.00			X		=	$0.00
Staff Level	30	X	75.00	=	$2,250.00			X		=	$0.00
CAD Level	16	X	58.00	=	$928.00			X		=	$0.00

G. Total Report Preparation — **$4,686.00**

Section G Description: ***Report Preparation:*** Preparation of EHC injection permit application

DSCA CONTRACTOR COST ESTIMATE

SITE: BB&T Site — **Prepared By:** C. Bryant

DSCA #: 32-0013 — **Date:** 10/28/2011

Field Supervision / Coordination of Purchase, & Delivery of EHC — $1,065.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	8	X	75.00	0%	=	$600.00	**Small Items**	1	X	20.00	0%	=	$20.00
Project	4	X	85.00	0%	=	$340.00	**PID/FID**	0	X	110.00	0%	=	$0.00
Tech	0	X	60.00	0%	=	$0.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**		X	0.00	0%	=	$0.00
Staff	1	X	75.00	0%	=	$75.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	0	X	85.00	0%	=	$0.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	EHC	1	X	0.00	100%	=	$0.00
Number of Trips to Site	1							0		0.00	0%	=	$0.00
Total Mileage	60	X	0.500	0%	=	$30.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	**Subtotal Subcontracted**		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	**Subcontractor Markup %**			15%		=	$0.00

E. Total Field Work — **$1,065.00**

Field Supervision / Coordination of Injection of EHC — $27,686.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	160	X	75.00	0%	=	$12,000.00	**Small Items**	16	X	20.00	0%	=	$320.00
Project	24	X	85.00	0%	=	$2,040.00	**PID/FID**	16	X	110.00	0%	=	$1,760.00
Tech	0	X	60.00	0%	=	$0.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**		X	0.00	0%	=	$0.00
Staff	16	X	75.00	0%	=	$1,200.00	QRAE	16	X	75.00	0%	=	$1,200.00
Project	6	X	85.00	0%	=	$510.00	Draegger CMS	1	X	350.00	100%	=	$350.00
Tech	0.0	X	60.00	0%	=	$0.00	Draegger Cards	1	X	350.00	100%	=	$350.00
		X		0%	=	$0.00	EHC	1	X	0.00	100%	=	$0.00
Number of Trips to Site	20							0		0.00	0%	=	$0.00
Total Mileage	1200	X	0.500	0%	=	$600.00		0	X	0.00	0%	=	$0.00
Per Diem		X		0%	=	$0.00	**Subtotal Subcontracted**		=	$700.00			
Surveying (sub only)		X		0%	=	$0.00	**Subcontractor Markup %**			15%		=	$105.00

E. Total Field Work — **$20,435.00**

G. Report Preparation

Personnel	Units		$/Unit		Total	Personnel	Units		$/Unit		Total
Principal Level	4	X	122.00	=	$488.00	Word Processor	4		42.50	=	$170.00
Project Level	10	X	85.00	=	$850.00			X		=	$0.00
Staff Level	24	X	75.00	=	$1,800.00			X		=	$0.00
CAD Level	16	X	58.00	=	$928.00			X		=	$0.00

G. Total Report Preparation — **$4,236.00**

Section G Description: ***Report Preparation:*** Post injection report to UIC

H. Waste Management

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Principal Level	0	X	122.00	0%	=	$0.00	Transportation Fee (drums)	1	X	550.00	100%	=	$550.00
Project Level	2	X	85.00	0%	=	$170.00	Roll-off Delivery fee	0		0.00	100%	=	$0.00
Staff Level	2	X	75.00	0%	=	$150.00	Roll-off Liner	0		0.00	100%	=	$0.00
Fluids Disposal - drum	0	X	190.00	100%	=	$0.00	Roll-off rental	0		0.00	100%	=	$0.00
Fluids Disposal - bulk	0	X	0.00	0%	=	$0.00	Roll-off transport	0		0.00	100%	=	$0.00
Soil Disposal - ton	0	X	0.00	100%	=	$0.00	**Subtotal Subcontracted**		=	$2,450.00			
Soil Disposal - drum	10	X	190.00	100%	=	$1,900.00	**Subcontractor Markup %**			10%		=	$245.00

H. Total Waste Management — **$3,015.00**

Section H Description:
1) Project Level time to coordinate with disposal contractor to pick up drums of drilling cuttings and decon/purge water. All material will be manifested as IDW hazardous waste (soil F listed below LDR) and transport to the Environmental Quality Subtitle C Landfill.
2) Project time to review IDW manifests and certificate of disposal documentation and forward to DSCA Project Manager.
3) Staff level time to meet with disposal contractor to sign manifests at time of waste pick-up.

DSCA CONTRACTOR COST ESTIMATE

SITE: BB&T Site — **Prepared By:** C. Bryant

DSCA #: 32-0013 — **Date:** 10/28/2011

Field Supervision / Coordination of Replacement of Groundwater Monitoring & Soil Vapor Wells — $9,413.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	50	X	75.00	0%	=	$3,750.00	**Small Items**	5	X	20.00	0%	=	$100.00
Project	8	X	85.00	0%	=	$680.00	**PID/FID**	5	X	110.00	0%	=	$550.00
Tech	0	X	60.00	0%	=	$0.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
	0	X	0.00	0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**		X	0.00	0%	=	$0.00
Staff	5	X	75.00	0%	=	$375.00	QRAE	5	X	75.00	0%	=	$375.00
Project	0	X	85.00	0%	=	$0.00	Draegger CMS	0	X	350.00	100%	=	$0.00
Tech	0.0	X	60.00	0%	=	$0.00	Draegger Cards	0	X	350.00	100%	=	$0.00
	0	X	0.00	0%	=	$0.00	EHC	0	X	0.00	100%	=	$0.00
Number of Trips to Site	5							0		0.00	0%	=	$0.00
Total Mileage	300	X	0.500	0%	=	$150.00		0	X	0.00	0%	=	$0.00
Per Diem	0	X	0.00	0%	=	$0.00	**Subtotal Subcontracted**		=	$0.00			
Surveying (sub only)		X		0%	=	$0.00	**Subcontractor Markup %**			15%		=	$0.00

E. Total Field Work — **$5,980.00**

H. Waste Management

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Principal Level	0	X	122.00	0	=	$0.00	Transportation Fee (drums)	1	X	550.00	100%	=	$550.00
Project Level	2	X	85.00	0	=	$170.00	Roll-off Delivery fee	0		0	100%	=	$0.00
Staff Level	2	X	75.00	0	=	$150.00	Roll-off Liner	0		0	100%	=	$0.00
Fluids Disposal - drum	0	X	190.00	100%	=	$0.00	Roll-off rental	0		0	100%	=	$0.00
Fluids Disposal - bulk	0	X	0	0	=	$0.00	Roll-off transport	0		0	100%	=	$0.00
Soil Disposal - ton	0	X	0	100%	=	$0.00	**Subtotal Subcontracted**		=	$2,830.00			
Soil Disposal - drum	12	X	190.00	100%	=	$2,280.00	**Subcontractor Markup %**			10%		=	$283.00

H. Total Waste Management — **$3,433.00**

Section H Description:
1) Project Level time to coordinate with disposal contractor to pick up drums of drilling cuttings and decon/purge water. All material will be manifested as IDW hazardous waste (soil F listed below LDR) and transport to the Environmental Quality Subtitle C Landfill.
2) Project time to review IDW manifests and certificate of disposal documentation and forward to DSCA Project Manager.
3) Staff level time to meet with disposal contractor to sign manifests at time of waste pick-up.

Implementation of Soil Vapor Monitoring & Indoor Air Sampling — $40,432.00

E. Field Work

Personnel	Units		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
Staff	96	X	75.00	0%	=	$7,200.00	**Small Items**	12	X	20.00	0%	=	$240.00
Project	16	X	85.00	0%	=	$1,360.00	**PID/FID**	0	X	110.00	0%	=	$0.00
Tech	96	X	60.00	0%	=	$5,760.00	**Drums (not by driller)**	0	X	40.00	0%	=	$0.00
		X		0%	=	$0.00	**Water Level Indicator**	0	X	25.00	0%	=	$0.00
Travel							**Disposable Bailers**	0	X	0.00	0%	=	$0.00
Staff	12	X	75.00	0%	=	$900.00	pH/Conductivity Meter	0	X	25.00	0%	=	$0.00
Project	1	X	85.00	0%	=	$85.00	Peristaltic Pump	0	X	50.00	0%	=	$0.00
Tech	12.0	X	60.00	0%	=	$720.00	pump tubing	0	X	0.25	0%	=	$0.00
		X		0%	=	$0.00	redox meter rental	0	X	75.00	0%	=	$0.00
Number of Trips to Site	12							0		0.00	0%	=	$0.00
Total Mileage	720	X	0.500	0%	=	$360.00		0	X	0.00	0%	=	$0.00
Per Diem	0	X	0.00	0%	=	$0.00	**Subtotal Subcontracted**		=	$0.00			
Surveying (sub only)	0	X	0.00	0%	=	$0.00	**Subcontractor Markup %**			15%		=	$0.00

E. Total Field Work — **$16,625.00**

Section E Description: Soil Vapor - 15 points + 1 Duplicate + 1 Ambient Air = 17 Samples for (2 weeks prior, 2 weeks post, 30 Days Post & 60 Days Post-Injection) - 51 samples @ TO-15
Indoor Air: 1419, 1421 & TFC - 7 samples each event for (30 days prior, 30 days post, 60 days post, 90 days post injection) - 28 samples Radiello
8 Field Days x 2 Person Crew (SV)
4 Field Days x 1 Person Crew (IA)

F. Analytical

Type	# of Samples		$/Unit	Sub		Total		Units		$/Unit	Sub		Total
TO-15 Contest	51		165.00	100%	=	$8,415.00	Radiellos	28		35.00	100%	=	$980.00
Radiellos	28	X	100.00	100%	=	$2,800.00	MNA Laboratory Test	0		0.00	100%	=	$0.00
8260 - soil 24 Hr Rush	0	X	186.00	100%	=	$0.00		0		0.00	100%	=	$0.00
8260 - water 24 hr Rush	0	X	186.00	100%	=	$0.00		0		0.00	100%	=	$0.00
TCLP	0	X	0.00	0%	=	$0.00	**Shipping**	4	X	100.00	100%	=	$400.00
	No. of Days		**$/Day**				**Subtotal Subcontracted**		=	$15,820.00			
On-Site Mobile Lab	2	X	1,612.50	100%	=	$3,225.00	**Subcontractor Markup %**			10%		=	$1,582.00

F. Total Analytical — **$17,402.00**

Section F Description:
See Above

G. Report Preparation

Personnel	Units		$/Unit		Total	Personnel	Units		$/Unit		Total
Principal Level	3	X	122.00	=	$366.00	Word Processor	6		42.50	=	$255.00
Project Level	24	X	85.00	=	$2,040.00			X		=	$0.00
Staff Level	36	X	75.00	=	$2,700.00			X		=	$0.00
CAD Level	18	X	58.00	=	$1,044.00			X		=	$0.00

G. Total Report Preparation — **$6,405.00**

Section G Description:*Report Preparation:* Preparation of 3 brief letter reports following each sampling event.

DSCA CONTRACTOR COST ESTIMATE

SITE: BB&T Site — **Prepared By:** C. Bryant

DSCA #: 32-0013 — **Date:** 10/28/2011

Completion of Pre & Post Injection Groundwater Sampling — **Monitoring Complete 30, 60 and 120 Days Post Injection of EHC** — **$51,195.00**

E. Field Work

Personnel	Units		$/Unit	Sub		Total
Staff	96	X	75.00	0%	=	$7,200.00
Project	16	X	85.00	0%	=	$1,360.00
Tech	96	X	60.00	0%	=	$5,760.00
		X		0%	=	$0.00
Travel						
Staff	12	X	75.00	0%	=	$900.00
Project	1	X	85.00	0%	=	$85.00
Tech	12.0	X	60.00	0%	=	$720.00
		X		0%	=	$0.00
Number of Trips to Site	12					
Total Mileage	720	X	0.500	0%	=	$360.00
Per Diem	0	X	0.00	0%	=	$0.00
Surveying (sub only)	0	X	0.00	0%	=	$0.00

	Units		$/Unit	Sub		Total
Small Items	12	X	20.00	0%	=	$240.00
PID/FID	0	X	110.00	0%	=	$0.00
Drums (not by driller)	8	X	40.00	0%	=	$320.00
Water Level Indicator	12	X	25.00	0%	=	$300.00
Disposable Bailers	0	X	0.00	0%	=	$0.00
pH/Conductivity Meter	12	X	25.00	0%	=	$300.00
Peristaltic Pump	12	X	50.00	0%	=	$600.00
pump tubing	1200	X	0.25	100%	=	$300.00
redox meter rental	12	X	75.00	0%	=	$900.00
	0		0.00	0%	=	$0.00
	0	X	0.00	0%	=	$0.00
Subtotal Subcontracted		=	$300.00			
Subcontractor Markup %			15%		=	$45.00

E. Total Field Work — **$19,390.00**

Section E Description: Groundwater - 16 wells + 1 Duplicate + 1 Field Blank = 18 Samples for (30 Days Post, 60 Days Post & 120 Days Post-Injection) - 54 samples @ 8260, methane, ethanae & ethene
2 Field Days x 2 Person Crew Per Event

F. Analytical

Type	# of Samples		$/Unit	Sub		Total
8260	54		165.00	100%	=	$8,910.00
Methane	54	X	100.00	100%	=	$5,400.00
Ethane / Ethene	54	X	100.00	100%	=	$5,400.00
8260 - water 24 hr Rush	0	X	186.00	100%	=	$0.00
TCLP	0	X	0.00	0%	=	$0.00
	No. of Days		**$/Day**			
On-Site Mobile Lab	0	X	1,612.50	100%	=	$0.00

	Units		$/Unit	Sub		Total
	0		35.00	100%	=	$0.00
	0		0.00	100%	=	$0.00
	0		0.00	100%	=	$0.00
	0		0.00	100%	=	$0.00
Shipping	3	X	100.00	100%	=	$300.00
Subtotal Subcontracted		=	$20,010.00			
Subcontractor Markup %			10%		=	$2,001.00

F. Total Analytical — **$22,011.00**

Section F Description:
See Above

G. Report Preparation

Personnel	Units		$/Unit		Total
Principal Level	3	X	122.00	=	$366.00
Project Level	24	X	85.00	=	$2,040.00
Staff Level	36	X	75.00	=	$2,700.00
CAD Level	18	X	58.00	=	$1,044.00

Personnel	Units		$/Unit		Total
Word Processor	6		42.50	=	$255.00
		X		=	$0.00
		X		=	$0.00
		X		=	$0.00

G. Total Report Preparation — **$6,405.00**

Section G Description:*Report Preparation:* Preparation of 3 brief letter reports following each sampling event.

H. Waste Management

Personnel	Units		$/Unit	Sub		Total
Principal Level	0	X	122.00	0%	=	$0.00
Project Level	2	X	85.00	0%	=	$170.00
Staff Level	2	X	75.00	0%	=	$150.00
Fluids Disposal - drum	6	X	190.00	100%	=	$1,140.00
Fluids Disposal - bulk	0	X	0.00	0%	=	$0.00
Soil Disposal - ton	0	X	0.00	100%	=	$0.00
Soil Disposal - drum	0	X	190.00	100%	=	$0.00

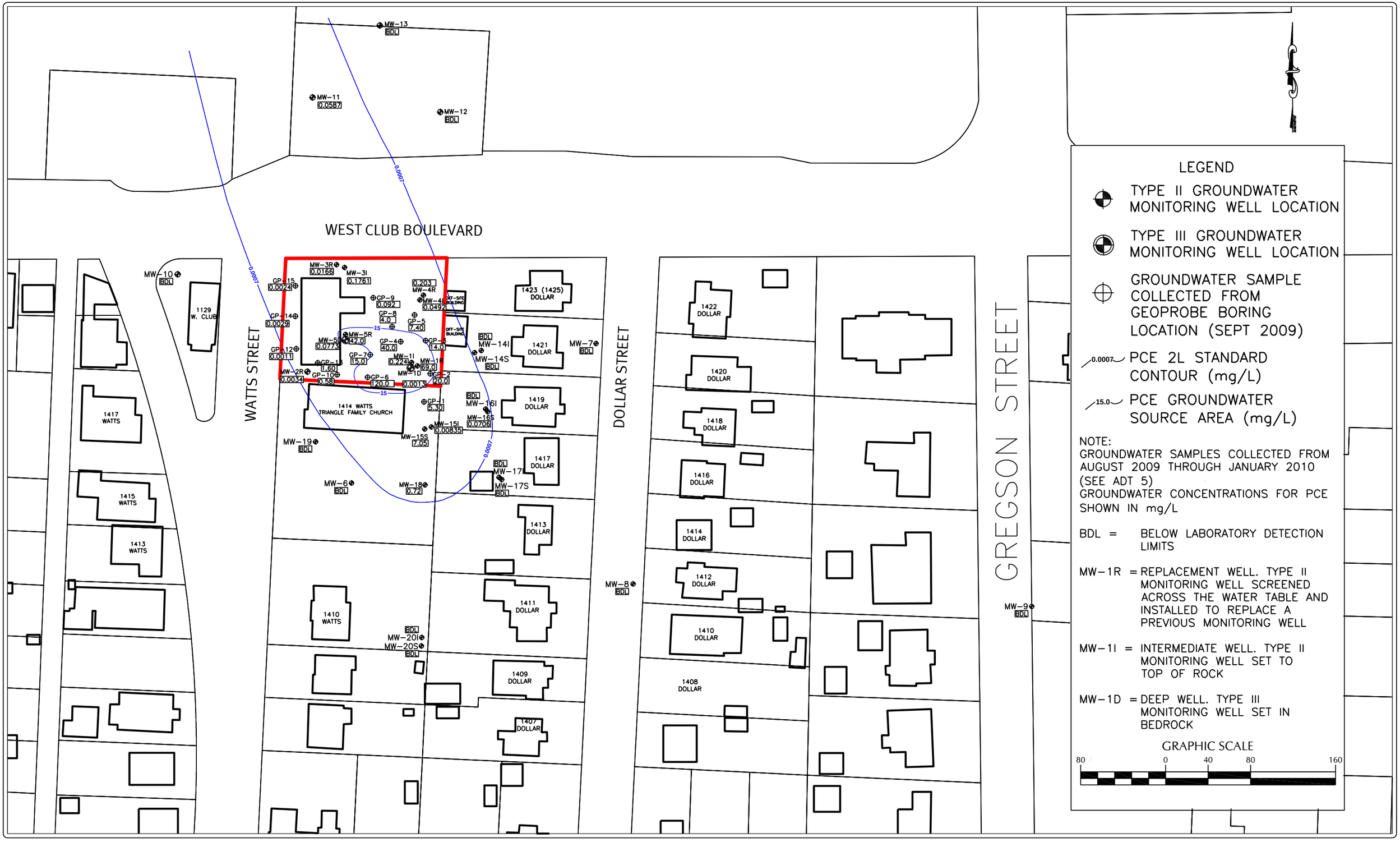
	Units		$/Unit	Sub		Total
Transportation Fee (drums)	3	X	550.00	100%	=	$1,650.00
Roll-off Delivery fee	0		0.00	100%	=	$0.00
Roll-off Liner	0		0.00	100%	=	$0.00
Roll-off rental	0		0.00	100%	=	$0.00
Roll-off transport	0		0.00	100%	=	$0.00
Subtotal Subcontracted		=	$2,790.00			
Subcontractor Markup %			10%		=	$279.00

H. Total Waste Management — **$3,389.00**

Section H Description:
1) Project Level time to coordinate with disposal contractor to pick up drums of drilling cuttings and decon/purge water. All material will be manifested as IDW hazardous waste (soil F listed below LDR) and transport to the Environmental Quality Subtitle C Landfill.
2) Project time to review IDW manifests and certificate of disposal documentation and forward to DSCA Project Manager.
3) Staff level time to meet with disposal contractor to sign manifests at time of waste pick-up.

APPENDIX E

GROUNDWATER PCE ISOCONCENTRATION MAP: AUGUST 2009 - JANUARY 2010



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Revisions

No.	Description	Date	By

BB&T SITE, DSCA ID 32-0013
1103 WEST CLUB BLVD
DURHAM, NORTH CAROLINA

GROUNDWATER PCE ISOCONCENTRATION MAP: AUGUST 2009 – JANUARY 2010

Drawn By	Scale
WRP	1"=80'
Checked By	Date
LP	4/7/11

Job No. 206496.32
APPENDIX: E

S:\AUTOCAD\BLOCKS\ENVIRONMENTAL TITLE\ENV-TITLE-11X17L.DWG ---- JOHNSON, CHRISTOPHER 1:0.4297

APPENDIX F

NOTICE OF DRY CLEANING SOLVENT REMEDIATION, PLAT & LEGAL DESCRIPTION

2011012711

FOR REGISTRATION REGISTER OF DEEDS
Willie L. Covington
DURHAM COUNTY, NC
2011 MAY 02 03:12:06 PM
BK:6714 PG:441-452 FEE:$48.00

INSTRUMENT # 2011012711

Property Owner: Liduvina Garcia
Recorded in Book 6714, Page 441
Associated plat recorded in Plat Book 187, Page 363

After recording return to:
Laura Powers
Withers & Ravenel
111 Mackenan Dr.
Cary, NC 27511

NOTICE OF DRY-CLEANING SOLVENT REMEDIATION

This documentary component of a Notice of Dry-Cleaning Solvent Remediation (NDCSR or Notice), as well as the plat component, have been filed this 2nd day of May, 2011 by Liduvina Garcia (hereinafter "Property Owner").

The Notice concerns contaminated property.

A copy of this Notice certified by the North Carolina Department of Environment and Natural Resources, or its successor in function (hereinafter "DENR") is required to be filed in the Register of Deeds' Office in the county or counties in which the land is located, pursuant to the terms of the "Agreement" between the Property Owner and DENR and consistent with the requirements of North Carolina General Statutes (hereinafter "NCGS"), Section (hereinafter "§") 143-215.104M.

This Notice is required by NCGS § 143-215.104M in order to reduce or eliminate the danger to public health or the environment posed by environmental contamination at the property (hereinafter the "DSCA Source Property") being addressed under the Dry-Cleaning Solvent Cleanup Act of 1997, Article 21A, Part 6 NCGS § 143-215.104A *et seq*, (hereinafter "DSCA"). The DSCA Source Property is located at 1103 West Club Boulevard, Durham, Durham County, North Carolina, and identified by Parcel Identification Number (PIN) 0822-15-64-4976.

Pursuant to NCGS § 143-215.104M, the Property Owner must file a certified copy of this Notice within 15 days of receipt of DENR's approval of the Notice or the effective date of the dry-cleaning solvent remediation agreement, whichever is later. Pursuant to NCGS § 143-215.104M, the copy of the Notice certified by DENR must be recorded in the grantor index under the names of the owners of the land.

The subject property encompasses one parcel of land owned by Liduvina Garcia. The parcel is located at 1103 W. Club Boulevard, Durham, Durham County, North Carolina and is approximately 0.41

acres in size. The subject property was used as a retail dry-cleaning facility from approximately 1963 to 1975. Soil and groundwater are contaminated with dry-cleaning solvents.

Attached hereto as **Exhibit A** is a reduction, to 8 1/2" x 11", of the survey plat required by NCGS § 143-215.104M. It is a plat that has been prepared and certified by a professional land surveyor and that meets the requirements of NCGS § 47-30. That plat contains the following information:

(1) The location and dimensions of the areas of potential environmental concern with respect to permanently surveyed benchmarks; and

(2) The type, location and quantity of regulated substances and contaminants known to exist on the DSCA Source Property.

Attached hereto as **Exhibit B** is a legal description of the DSCA Source Property that would be sufficient as a description of the property in an instrument of conveyance.

DSCA LAND-USE RESTRICTIONS

The restrictions are intended to be temporary, but shall remain in force in perpetuity unless superseded or canceled by the Secretary of DENR (or its successor in function), or his/her designee . Those restrictions are hereby imposed on the DSCA Source Property, and are as follows:

1. The DSCA Source Property shall be used exclusively for parking, landscape areas or walkways, and all other uses of the DSCA Source Property are prohibited except as approved in writing by DENR or its successor in function.

2. No alteration, disturbance or removal of the existing soil, landscape and contours shall occur other than erosion control measures approved by DENR or its successor in function.

3. Surface water and underground water at the DSCA Source Property may not be used for any purpose without the approval of DENR or its successor in function.

4. In January of each year, on or before January 31st, the owner of any portion of the DSCA Source Property shall submit a notarized Annual DSCA Land-use Restrictions Certification to DENR certifying that this Notice remains recorded at the Wake County Register of Deeds' office, that the Land-use Restrictions are being complied with.

5. No person conducting environmental assessment or remediation at the Site, or involved in determining compliance with applicable land-use restrictions, at the direction of, or pursuant to a permit or order issued by DENR may be denied access to the DSCA Source Property for the purpose of conducting such activities.

6. The owner of any portion of the DSCA Source Property shall cause the instrument of any sale, lease, grant, or other transfer of any interest in the property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this Notice. The failure to include such a provision shall not affect the validity or applicability of any land-use restriction in this Notice.

EASEMENT (RIGHT OF ENTRY)

The Property Owner grants and conveys to DENR, its agents, contractors, and employees, and any person performing pollution remediation activities under the direction of DENR, access at reasonable times and under reasonable security requirements to the DSCA Source Property to determine and monitor compliance with the Risk Management Plan and the land-use restrictions set forth in this NDCSR. Such investigations and actions are necessary by the Department to ensure that use, occupancy, and activities of and at the DSCA Source Property are consistent with the land-use restrictions and to ensure that the structural integrity and continued effectiveness of any engineering controls (if appropriate) described in the NDCSR are maintained. Whenever possible, at least 48 hours of advanced notice will be given to the Property Owner prior to entry. Advanced notice may not always be possible due to conditions such as response time to complaints and emergency situations.

REPRESENTATIONS AND WARRANTIES

The Property Owner hereby represents and warrants to the other signatories hereto:

i) that the Property Owner is the sole owner of the DSCA Source Property; **or** that the Property Owner has provided to DENR the names of all other persons that own an interest in or hold an encumbrance on the DSCA Source Property and have notified such persons of the Property Owner's intention to enter into this Notice;

ii) that the Property Owner has the power and authority to enter into this Notice, to grant the rights and interests herein provided and to carry out all obligations hereunder; and

iii) that this Notice will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which the Property Owner is a party or by which the Property Owner may be bound or affected.

ENFORCEMENT

The above land-use restrictions shall be enforceable without regard to lack of privity of estate or contract, lack of benefit to particular land, or lack of any property interest in particular land. The land-use restrictions shall be enforced by any owner of the DSCA Source Property. The land-use restrictions may also be enforced by DENR through the remedies provided in NCGS § 143-215.104P or by means of a civil action; by any unit of local government having jurisdiction over any part of the DSCA Source Property; and by any person eligible for liability protection under the DSCA who will lose liability protection if the restrictions are violated. Any attempt to cancel any or all of this NDCSR without the approval of the Secretary of DENR (or its successor in function), or his/her delegate, shall be subject to enforcement by DENR to the full extent of the law. Failure by any party required or authorized to enforce any of the above restrictions shall in no event be deemed a waiver of the right to do so thereafter as to the same violation or as to one occurring prior or subsequent thereto.

If a land-use restriction set out in a NDCSR required under NCGS § 143-215.104.M is violated, the owner of the contamination site at the time the land-use restriction is violated, the owner's successors and assigns, and the owner's agents who direct or contract for alteration of the contamination site in violation of a land-use restriction shall be liable for remediation of all contaminants to unrestricted use standards.

FUTURE SALES, LEASES, CONVEYANCES AND TRANSFERS

When any portion of the DSCA Source Property is sold, leased, conveyed or transferred, pursuant to NCGS § 143-215.104M the deed or other instrument of transfer shall contain in the description section, in no smaller type than that used in the body of the deed or instrument, a statement that the DSCA Source Property has been contaminated with dry-cleaning solvent and, if appropriate, cleaned up under the DSCA.

The Property Owner shall notify DENR at least fourteen (14) calendar days before the effective date of any conveyance, grant, gift, or other transfer, whole or in part, of the Property Owner's interest in the DSCA Source property. This notice shall include the name, business address and phone number of the transferee and the expected date of transfer.

GENERAL PROVISIONS

The Property Owner shall notify DENR within thirty (30) days following the Property Owner's petitioning for or filing of any document initiating a rezoning of the DSCA Source Property that would change the base zone of the DSCA Source Property.

CANCELLATION OF NDSCR

A NDSCR may, at the request of the Property Owner, be canceled by DENR after the risk to public health and the environment associated with the dry-cleaning solvent contamination and any other contaminants included in the DSCA Remediation Agreement have been eliminated as a result of remediation of the DSCA Source Property to unrestricted use standards.

OWNER SIGNATURE

IN WITNESS WHEREOF, Property Owner has caused this instrument to be duly executed this

18th day of January, 2011.

Liduvina Garcia

By: Liduvina Garcia ← SIGN HERE

name of owner

STATE OF Maryland

Montgomery COUNTY

I, Rajeev S Panditharge, a Notary Public of the county and state aforesaid, certify that Liduvina Garcia personally came before me this day and signed this Notice of Dry-Cleaning Solvent Remediation.

WITNESS my hand and official stamp or seal, this 18th day of January, 2011.

NOTARIZE

R S le Panditharge

Name typed or printed: Rajeev S Panditharge

Notary Public

OFFICIAL SEAL
RAJEEV S. PANDITHARGE
NOTARY PUBLIC - STATE OF MARYLAND
MONTGOMERY COUNTY
My Commission Expires 10-30-2011

My Commission expires: 10/30/2011

[Stamp/Seal]

APPROVAL AND CERTIFICATION OF NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

The foregoing Notice of Dry-Cleaning Solvent Remediation is hereby approved and certified.

North Carolina Department of Environment and Natural Resources

By: Jack Butler 5-2-11

Jack Butler, Chief
Superfund Section
Division of Waste Management

Date

LIMITED POWER OF ATTORNEY

I Liduvina Garcia. "Property ← PRINT NAME HERE
grant a limited power of attorney to the Division and to the Division's independent
as follows:

The Division and the Division's independent contractors shall have the limited power of attorney to record this Notice, including its documentary and survey plat components, in accordance with N.C.G.S. § 143-215.104M on my "Property Owner" behalf. This limited power of attorney shall terminate upon completion of the recordation of the Notice.

Signature of Property Owner Liduvina Garcia. ← SIGN HERE

Dated this 18th day of January, 2011.

STATE OF Maryland
COUNTY OF Montgomery

I, RoJeev S Panditthage, a Notary Public, do hereby certify that Liduvina Garcia personally appeared before me this day and signed this "Limited Power of Attorney".

WITNESS my hand and official seal this 18th day of January 2011

R S K Panditthage ← NOTARIZE HERE
Notary Public

My Commission expires: 10/30/2011

ROJEEV S. PANDITHAGE
NOTARY PUBLIC - STATE OF MARYLAND
MONTGOMERY COUNTY
My Commission Expires 10-30-2011

[SEAL]

CERTIFICATION OF REGISTER OF DEEDS

The foregoing documentary component of the Notice of Dry-Cleaning Solvent Remediation, and the associated plat, are certified to be duly recorded at the date and time, and in the Books and Pages, shown on the first page hereof.

Register of Deeds for Durham County

By: _____ _____
Date

Name typed or printed: _____

Deputy/Assistant Register of Deeds

EXHIBIT A

SURVEY PLAT REDUCTION

LEGEND

- SURVEYED PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- EXISTING BUILDING
- EIP/R — EXISTING IRON PIPE/REBAR
- MW — MONITORING WELL
- GP — ONE TIME GROUNDWATER & SOIL SAMPLE LOCATION (GEOPROBE)
- MR — SOIL BORING SAMPLE LOCATION

REGISTER OF DEEDS APPROVAL:

CERTIFICATION OF REGISTER OF DEEDS:

THE FOREGOING DOCUMENTARY COMPONENT OF THE NOTICE OF DRY-CLEANING SOLVENT REMEDIATION, AND THE ASSOCIATED PLAT, ARE CERTIFIED TO BE DULY RECORDED AT THE DATE AND TIME, AND ON THE BOOK AND PAGES, SHOWN ON THE FIRST PAGE HEREOF.

REGISTER OF DEEDS FOR DURHAM COUNTY

BY:_____ DATE:_____

NAME TYPED OR PRINTED: _____

DEPUTY/ASSISTANT REGISTER OF DEEDS

PARCEL / OWNERSHIP INFORMATION

DURHAM COUNTY PARCEL #: 0822-15-84-4976
OWNER: (N/F) LIDUVINA GARCIA
201 CEDAR AVENUE
CATHERSBURG, MARYLAND, 28877

DB/PG: 5455/948
MB/PG: 19/57; LOTS 1 & 3
ZONING: CH
ADDRESS: 1103 W. CLUB BLVD.; DURHAM, NC 27701
TOTAL SITE AREA: 0.40± ACRES

NAD 83

N

GRAPHIC SCALE

40 0 20 40 80

1 inch = 40 ft.

GENERAL NOTES:

1. THE AREAS AND TYPE OF CONTAMINATION DEPICTED UPON THE MAP ARE APPROXIMATIONS DERIVED FROM THE BEST AVAILABLE INFORMATION AT THE TIME OF FILING.
2. ADDITIONAL INFORMATION REGARDING DSCA SITE #32-0013 IS ON FILE WITH THE NC DENR, DIVISION OF WASTE MANAGEMENT'S DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM, OR ITS SUCCESSOR IN FUNCTION.
3. GROUNDWATER IN WELLS MW-1R, MW-11, MW-10, MW-2, MW-2R, MW-3, MW-3R, MW-3I, MW-4, MW-4R, MW-4I, MW-5, MW-5R, MW-5D EXCEEDED THE APPLICABLE 2L WATER QUALITY STANDARDS (15A NCAC 2L.0200) FOR ONE OR MORE OF THE FOLLOWING CONTAMINANTS: CHLOROFORM, CIS-1,2 DICHLOROETHENE, ETHYLBENZENE, 1,1,2,2-TRICHLOROETHENE, 1,1,1,2-TETRACHLOROETHANE, NAPHTHALENE, TETRACHLOROETHENE, TOLUENE, TRICHLOROETHENE, AND XYLENES.
4. SOIL BORINGS IN THE PLAT WERE LOCATED BY TAPE AND CHAIN METHOD USING BUILDING CORNERS AS REFERENCE LOCATIONS.
5. SOIL IN BORINGS MR-1, 2, 3, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 23, 25, 27, 28, 31, 32, 42 AND 43, AND GP-2, 3, 4, 5, 6, 7 AND 13, EXCEEDED THE ASSOCIATED RESIDENTIAL RISK BASED SCREENING LEVEL (15A NCAC 2S) FOR THE FOLLOWING CONTAMINANT: TETRACHLOROETHENE.
6. THE DOCUMENTARY COMPONENT OF THIS NOTICE OF DRY-CLEANING SOLVENT REMEDIATION, LIMITING THE USES OF THIS PROPERTY IS RECORDED AT: DEED BOOK: _____ PAGE: _____
7. N.C.G.S. 143-215.104M(D) REQUIRES THAT WHEN PROPERTY FOR WHICH A NOTICE OF DRY-CLEANING SOLVENT REMEDIATION HAS BEEN FILED IS SOLD, LEASED, CONVEYED OR TRANSFERRED, THE DEED OR OTHER INSTRUMENT OF TRANSFER SHALL CONTAIN IN THE DESCRIPTION SECTION, IN NO SMALLER TYPE THAN THAT USED IN THE BODY OF THE DEED OR INSTRUMENT, A STATEMENT THAT THE PROPERTY HAS BEEN CONTAMINATED WITH DRY-CLEANING SOLVENT AND, IF APPROPRIATE, CLEANED UP UNDER THIS PART. USE THE FOLLOWING STATEMENT TO SATISFY N.C.G.S. 143-215.104M(D):

THIS PROPERTY HAS BEEN CONTAMINATED WITH DRY-CLEANING SOLVENT. A NOTICE OF DRY-CLEANING SOLVENT REMEDIATION IS RECORDED IN THE DURHAM COUNTY REGISTER OF DEED'S OFFICE AT BOOK (_____), PAGE (_____). QUESTIONS CONCERNING THIS MATTER MAY BE DIRECTED TO THE NORTH CAROLINA DIVISION OF WASTE MANAGEMENT, SUPERFUND SECTION, DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM, OR ITS SUCCESSOR IN FUNCTION. 1648 MAIL SERVICE CENTER, RALEIGH, NC 27699-1646.

SURVEY NOTES

1.) THIS IS A SURVEY OF AN EXISTING PARCEL OF LAND.
THE PURPOSE OF THIS PLAT IS TO DISPLAY MONITORING WELL LOCATIONS, CONTAMINANT SAMPLE LOCATIONS, PARCEL BOUNDARY SHOWN PER DB/PG: 5455/948 AND PHYSICAL LOCATIONS.

2.) BEARINGS FOR THIS MAP ARE BASED ON NAD 83
ELEVATIONS ARE BASED ON NAVD 88 BASED ON NGS MONUMENT "DMFT".
ALL UNITS FOR THIS PLAT ARE U.S. SURVEY FEET UNLESS OTHERWISE NOTED.

3.) ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.

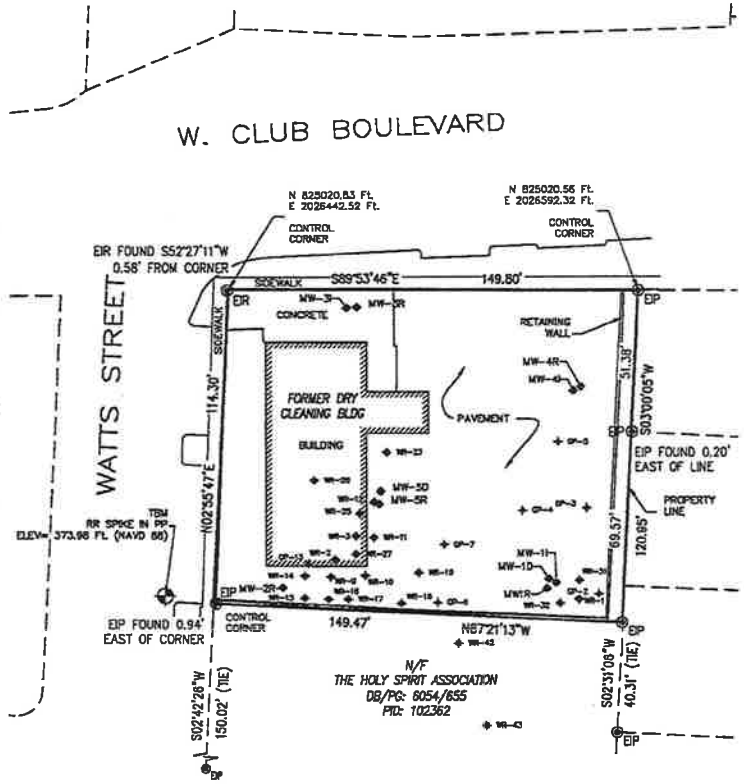
4.) AREA BY COORDINATE GEOMETRY.

5.) NO NGS STATIONS FOUND WITHIN 2000' OF SITE.

6.) THIS SURVEY PERFORMED AND MAP PREPARED WITHOUT BENEFIT OF A TITLE REPORT. THIS SURVEY SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.

7.) MAP & DEED REFERENCES (PER DURHAM COUNTY REGISTRY):
MB/PG: 19/57
(AND OTHERS THAT MAY BE SHOWN ON THIS MAP)

8.) FLOOD NOTE: AS DETERMINED BY GRAPHIC PLOTTING, THIS PARCEL IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE PER FEMA FLOOD INSURANCE RATE MAP #: 3720 0822 00J, EFFECTIVE DATE: MAY 2, 2006.



OWNER ACKNOWLEDGEMENT:

OWNER SIGNATURE:

I ACKNOWLEDGE THAT I HAVE FULL AUTHORITY TO LEGALLY EXECUTE A DEED FOR THIS PROPERTY.

_____ _____
(SIGNATURE) (DATE)

NOTARY CERTIFICATE:

_____ (STATE)
_____ (COUNTY)

I, _____, A NOTARY PUBLIC OF SAID COUNTY AND STATE, DO HEREBY CERTIFY THAT _____ DID PERSONALLY APPEAR AND SIGN BEFORE ME THIS THE ____ DAY OF _____, ____.

_____
NOTARY PUBLIC (SIGNATURE)

MY COMMISSION EXPIRES: _____

DENR APPROVAL:

APPROVED FOR THE PURPOSES OF N.C.G.S. 130A-310.8.

_____
JACK BUTLER, P.E.

CHIEF, SUPERFUND SECTION
DIVISION OF WASTE MANAGEMENT

NOTARY CERTIFICATE:

NORTH CAROLINA (STATE)
DURHAM COUNTY (COUNTY)

I, _____, A NOTARY PUBLIC OF SAID COUNTY AND STATE, DO HEREBY CERTIFY THAT _____ DID PERSONALLY APPEAR AND SIGN BEFORE ME THIS THE ____ DAY OF _____, ____.

_____
NOTARY PUBLIC (SIGNATURE)

MY COMMISSION EXPIRES: _____

WELL COORDINATE TABLE			
ID	NORTHING	EASTING	ELEV
MW-1D	824913.59	2026539.17	374.69
MW-11	824914.25	2026561.83	374.70
MW1R	824912.06	2026558.47	374.67
MW-2R	824912.35	2026481.98	373.25
MW-3I	825014.10	2026485.43	373.06
MW-3R	825014.30	2026488.33	373.48
MW-4I	824984.11	2026568.27	375.13
MW-4R	824985.56	2026571.03	375.24
MW-5D	824947.13	2026487.71	373.90
MW-5R	824942.59	2026487.19	373.83

CERTIFICATE OF ACCURACY & MAPPING

I, THE UNDERSIGNED, CERTIFY THAT THIS SURVEY WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK _____, PAGE _____ ETC.); THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION AS FOUND IN BOOK _____, PAGE _____; THAT THE RATIO OF PRECISION, AS CALCULATED, IS 1:10,000+; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL THIS _____ DAY OF _____, A.D. 20____.

G.S. 47-30 (F) (11) (C)

I CERTIFY THAT THIS SURVEY IS OF AN EXISTING PARCEL OF LAND AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET.

_____
MILES O. McCALL, III - PROFESSIONAL LAND SURVEYOR (L-3510)

This map is not a certified survey and has not been reviewed by a local government agency for compliance with any applicable land development regulations.

NCAC 21-56.1607

I, _____, CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

1.	CLASS OF SURVEY:	2ND
2.	POSITIONAL ACCURACY:	HORIZ = 0.07' / VERT = 0.07'
3.	TYPE OF GPS FIELD PROCEDURE:	N.C. VRS SYSTEM
4.	DATE OF SURVEY:	10/30/12
5.	DATUM / EPOCH:	NAD 83 / 2002.0000
6.	PUBLISHED / FIXED-CONTROL USE:	NGS MON. "DMFT" (PID EY4427)
7.	GEOID MODEL:	GEOID 09
8.	COMBINED GRID FACTOR(S):	0.99994304
9.	UNITS:	U.S. SURVEY FOOT

ATLANTIC COAST SURVEY, PLLC
LICENSE P-0822
PO Box 12588, Wilmington, NC 28405
(910) 443-0080 www.atlanticcoastsurvey.com

SURVEY PLAT EXHIBIT "A" TO THE NOTICE OF DRY-CLEANING SOLVENT REMEDIATION
OWNER: LIDUVINA GARCIA / BB&T SITE
DSCA # 32-0013, 1103 W. CLUB BLVD, DURHAM, NC (DURHAM COUNTY)
CITY OF DURHAM — DURHAM COUNTY — NORTH CAROLINA

DSCA SURVEY PLAT

NO.	DESCRIPTION	DATE

DATE: SCALED: 1"=40'
DRAWN: JAR CHECKED: MCMc
SHEET: 1 OF 1
FIELD BOOK #:
ACS PROJECT NO: 10-1066
W&R PRJ. # 02060496.32

DSCA PLAT 18X24, 11/18/2013 11:43:39 PM, ARCH C (1:1)

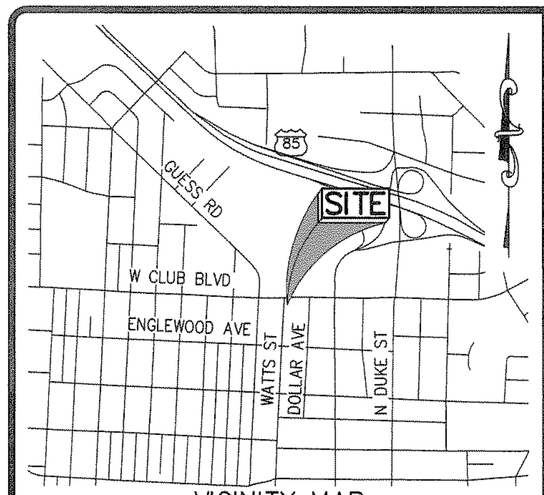
EXHIBIT B

LEGAL DESCRIPTION FOR PROPERTY

Exhibit "A"

BEING all that certain tract or parcel of land located in Durham County, North Carolina which is more particularly described as follows:

BEGINNING at a stake at the southeast intersection of Watts Street and Club Boulevard and running thence along and with the south side of Club Boulevard South 86° 53' 00" East 149.70 feet to a stake; thence South 06° 00' 00" West 121.10 feet to a stake; thence North 84° 17' 00" West 149.60 feet to a stake in the east side of Watts Street; thence along and with the east side of Watts Street North 06° 00' 00" East 114.30 feet to the point and place of beginning, being Lots 1 and 3 as per plat and survey of part of the Estate of Miss Demerius Dollar, by Hunter Jones, C.E., dated July 1946 and recorded in Plat Book 19, page 67 in the office of the Register of Deeds of Durham County, to which plat reference is hereby made for a more particular description.



VICINITY MAP
N.T.S.

LEGEND

- SURVEYED PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- EXISTING BUILDING
- EIP/R — EXISTING IRON PIPE/REBAR
- MW — MONITORING WELL
- GP — ONE TIME GROUNDWATER & SOIL SAMPLE LOCATION (GEOPROBE)
- WR — SOIL BORING SAMPLE LOCATION

REGISTER OF DEEDS APPROVAL:

CERTIFICATION OF REGISTER OF DEEDS:

THE FOREGOING DOCUMENTARY COMPONENT OF THE NOTICE OF DRY-CLEANING SOLVENT REMEDIATION, AND THE ASSOCIATED PLAT, ARE CERTIFIED TO BE DULY RECORDED AT THE DATE AND TIME, AND ON THE BOOK AND PAGES, SHOWN ON THE FIRST PAGE HEREOF.

REGISTER OF DEEDS FOR DURHAM COUNTY

BY:_____ DATE:_____

NAME TYPED OR PRINTED: _____
DEPUTY/ASSISTANT REGISTER OF DEEDS

PARCEL / OWNERSHIP INFORMATION

DURHAM COUNTY PARCEL #: 0822-15-64-4976
OWNER: (N/F) LIDUVINA GARCIA
201 CEDAR AVENUE
GATHERSBURG, MARYLAND, 28077

DB/PG: 5455/948
MB/PG: 19/67; LOTS 1 & 3
ZONING: CN
ADDRESS: 1103 W. CLUB BLVD.; DURHAM, NC 27701
TOTAL SITE AREA: 0.40± ACRES

NAD 83
N
GRAPHIC SCALE
40 0 20 40 80
1 inch = 40 ft.

FILED
Time
WILLIE L. COVINGTON
REGISTER OF DEEDS
DURHAM COUNTY, NC
Date
Plat Book
Page

FILED
Plat Book 187 Page 353
Date 5-2-11 Time 3:12pm
WILLIE L. COVINGTON
REGISTER OF DEEDS
DURHAM COUNTY, NC

GENERAL NOTES:

1. THE AREAS AND TYPE OF CONTAMINATION DEPICTED UPON THE MAP ARE APPROXIMATIONS DERIVED FROM THE BEST AVAILABLE INFORMATION AT THE TIME OF FILING.
2. ADDITIONAL INFORMATION REGARDING DSCA SITE #32-0013 IS ON FILE WITH THE NC DENR, DIVISION OF WASTE MANAGEMENT'S DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM, OR ITS SUCCESSOR IN FUNCTION.
3. GROUNDWATER IN WELLS MW-1R, MW-1I, MW-1D, MW-2, MW-2R, MW-3, MW-3R, MW-3I, MW-4, MW-4R, MW-4I, MW-5, MW-5R, MW-5D EXCEEDED THE APPLICABLE 2L WATER QUALITY STANDARDS (15A NCAC 2L.0200) FOR ONE OR MORE OF THE FOLLOWING CONTAMINANTS: CHLOROFORM, CIS-1,2 DICHLOROETHENE, ETHYLBENZENE, 1,1,2,2-TRICHLOROETHENE, 1,1,1,2-TETRACHLOROETHANE, NAPHTHALENE, TETRACHLOROETHENE, TOLUENE, TRICHLOROETHENE, AND XYLENES.
4. SOIL BORINGS IN THE PLAT WERE LOCATED BY TAPE AND CHAIN METHOD USING BUILDING CORNERS AS REFERENCE LOCATIONS.
5. SOIL IN BORINGS WR-1, 2, 3, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 23, 25, 27, 28, 31, 32, 42 AND 43, AND GP-2, 3, 4, 5, 6, 7 AND 13, EXCEEDED THE ASSOCIATED RESIDENTIAL RISK BASED SCREENING LEVEL (15A NCAC 2S) FOR THE FOLLOWING CONTAMINANT: TETRACHLOROETHENE.
6. THE DOCUMENTARY COMPONENT OF THIS NOTICE OF DRY-CLEANING SOLVENT REMEDIATION, LIMITING THE USES OF THIS PROPERTY IS RECORDED AT: DEED BOOK: 6714 PAGE: 441
7. N.C.G.S. 143-215.104M(D) REQUIRES THAT WHEN PROPERTY FOR WHICH A NOTICE OF DRY-CLEANING SOLVENT REMEDIATION HAS BEEN FILED IS SOLD, LEASED, CONVEYED OR TRANSFERRED, THE DEED OR OTHER INSTRUMENT OF TRANSFER SHALL CONTAIN IN THE DESCRIPTION SECTION, IN NO SMALLER TYPE THAN THAT USED IN THE BODY OF THE DEED OR INSTRUMENT, A STATEMENT THAT THE PROPERTY HAS BEEN CONTAMINATED WITH DRY-CLEANING SOLVENT AND, IF APPROPRIATE, CLEANED UP UNDER THIS PART. USE THE FOLLOWING STATEMENT TO SATISFY N.C.G.S. 143-215.104M(D):

THIS PROPERTY HAS BEEN CONTAMINATED WITH DRY-CLEANING SOLVENT. A NOTICE OF DRY-CLEANING SOLVENT REMEDIATION IS RECORDED IN THE DURHAM COUNTY REGISTER OF DEED'S OFFICE AT BOOK (6714), PAGE (441). QUESTIONS CONCERNING THIS MATTER MAY BE DIRECTED TO THE NORTH CAROLINA DIVISION OF WASTE MANAGEMENT, SUPERFUND SECTION, DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM, OR ITS SUCCESSOR IN FUNCTION. 1646 MAIL SERVICE CENTER, RALEIGH, NC 27699-1646.

SURVEY NOTES

1.) THIS IS A SURVEY OF AN EXISTING PARCEL OF LAND.
THE PURPOSE OF THIS PLAT IS TO DISPLAY MONITORING WELL LOCATIONS, CONTAMINANT SAMPLE LOCATIONS. PARCEL BOUNDARY SHOWN PER DB/PG: 5455/948 AND PHYSICAL LOCATIONS.

2.) BEARINGS FOR THIS MAP ARE BASED ON NAD 83
ELEVATIONS ARE BASED ON NAVD 88 BASED ON NCGS MONUMENT "SWIFT".
ALL UNITS FOR THIS PLAT ARE U.S. SURVEY FEET UNLESS OTHERWISE NOTED.

3.) ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.

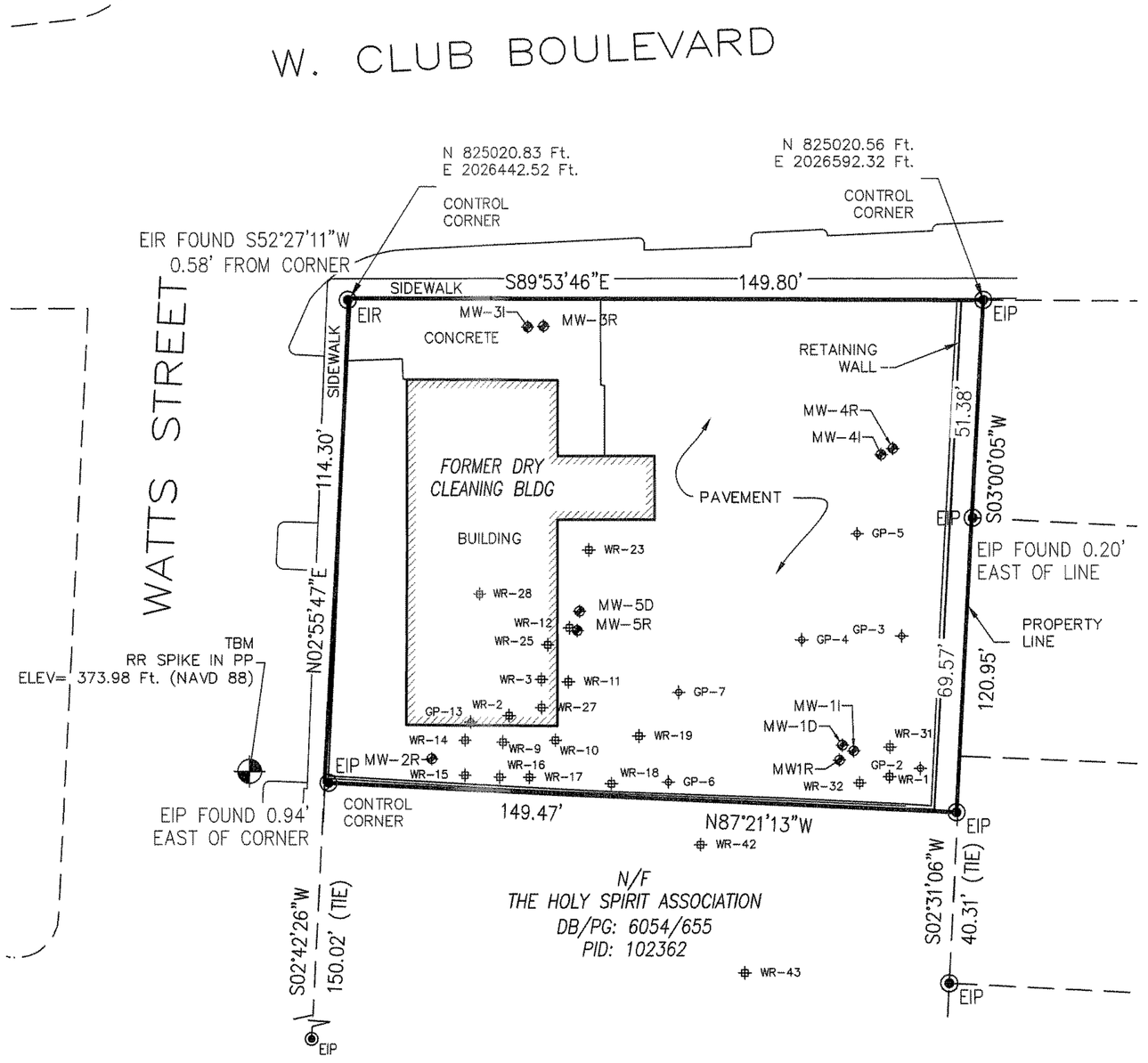
4.) AREA BY COORDINATE GEOMETRY.

5.) NO NCGS STATIONS FOUND WITHIN 2000' OF SITE.

6.) THIS SURVEY PERFORMED AND MAP PREPARED WITHOUT BENEFIT OF A TITLE REPORT. THIS SURVEY SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.

7.) MAP & DEED REFERENCES (PER DURHAM COUNTY REGISTRY):
MB/PG: 19/67
(AND OTHERS THAT MAY BE SHOWN ON THIS MAP)

8.) FLOOD NOTE: AS DETERMINED BY GRAPHIC PLOTTING, THIS PARCEL IS NOT LOCATED IN A SPECIAL FLOOD HAZARD ZONE PER FEMA FLOOD INSURANCE RATE MAP #: 3720 0822 00J, EFFECTIVE DATE: MAY 2, 2006.



WELL COORDINATE TABLE			
ID	NORTHING	EASTING	ELEV
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MW-1I	824914.25	2026561.83	374.70
MW1R	824912.06	2026558.47	374.67
MW-2R	824912.38	2026461.98	373.23
MW-3I	825014.10	2026485.43	373.08
MW-3R	825014.30	2026489.23	373.48
MW-4I	824984.11	2026568.27	375.13
MW-4R	824985.56	2026571.03	375.24
MW-5D	824947.13	2026497.71	373.90
MW-5R	824942.59	2026497.19	373.93

CERTIFICATE OF ACCURACY & MAPPING

I, THE UNDERSIGNED, CERTIFY THAT THIS SURVEY WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (DEED DESCRIPTION RECORDED IN BOOK AS, PAGE NOTED, ETC.); THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION AS FOUND IN BOOK AS, PAGE NOTED; THAT THE RATIO OF PRECISION, AS CALCULATED, IS 1:10,000+; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL THIS 22 DAY OF NOV, A.D. 20 10.

G.S. 47-30 (F) (11) (C)

I CERTIFY THAT THIS SURVEY IS OF AN EXISTING PARCEL OF LAND AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET.

MILES O. McCALL, III - PROFESSIONAL LAND SURVEYOR (L-3518)

NORTH CAROLINA PROFESSIONAL SEAL L-3518 LAND SURVEYOR MILES O. McCALL, III
11-22-10

OWNER ACKNOWLEDGEMENT:

OWNER SIGNATURE:

I ACKNOWLEDGE THAT I HAVE FULL AUTHORITY TO LEGALLY EXECUTE A DEED FOR THIS PROPERTY.

Liduvina Garcia (SIGNATURE) 1/31/2011 (DATE)

NOTARY CERTIFICATE:

10-17-2011

Maryland (STATE)
Montgomery (COUNTY)

I, Tolu O. Soyinka, A NOTARY PUBLIC OF SAID COUNTY AND STATE, DO HEREBY CERTIFY THAT Liduvina Garcia DID PERSONALLY APPEAR AND SIGN BEFORE ME THIS THE 31 DAY OF January, 2011

Tolu O. Soyinka
NOTARY PUBLIC (SIGNATURE)

MY COMMISSION EXPIRES: October 17, 2011

DENR APPROVAL:

APPROVED FOR THE PURPOSES OF N.C.G.S. 130A-310.8.

Jack Butler
JACK BUTLER, P.E.

CHIEF, SUPERFUND SECTION
DIVISION OF WASTE MANAGEMENT

NOTARY CERTIFICATE:

NORTH CAROLINA (STATE)
~~WAKE~~ DURHAM COUNTY (COUNTY)

I, Holly A. Murray, A NOTARY PUBLIC OF SAID COUNTY AND STATE, DO HEREBY CERTIFY THAT Jack Butler DID PERSONALLY APPEAR AND SIGN BEFORE ME THIS THE 2nd DAY OF May, 2011.

Holly A. Murray
NOTARY PUBLIC (SIGNATURE)

MY COMMISSION EXPIRES: 1/19/2014

HOLLY A. MURRAY
Notary Public
Wake County, NC
My Commission Expires 1/19/2014

NCAC 21-56.1607

I, MILES McCALL PLS CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

1. CLASS OF SURVEY: 2ND
2. POSITIONAL ACCURACY: HORIZ = 0.03' / VERT = 0.03'
3. TYPE OF GPS FIELD PROCEDURE: N.C. VRS SYSTEM
4. DATE OF SURVEY: 10/30/10
5. DATUM / EPOCH: NAVD 88 / 2002.0000
6. PUBLISHED / FIXED-CONTROL USE: NGS MON. "SWIFT" (PID FY4427)
7. GEOID MODEL: GEIOD 09
8. COMBINED GRID FACTOR(S): 0.99994304
9. UNITS: U.S. SURVEY FOOT

ATLANTIC COAST SURVEY, PLLC
LICENSE P-0822
PO Box 12588, Wilmington, NC 28405
(910) 443-0080 www.atlanticcoastsurvey.com

SURVEY PLAT EXHIBIT "A" TO THE NOTICE OF DRY-CLEANING SOLVENT REMEDIATION
OWNER: LIDUVINA GARCIA / BB&T SITE
DSCA # 32-0013, 1103 W. CLUB BLVD, DURHAM, NC (DURHAM COUNTY)
CITY OF DURHAM — DURHAM COUNTY — NORTH CAROLINA
DSCA SURVEY PLAT

NO.	DATE	DESCRIPTION	BY

DATE: SCALE: 1"=40'
DRAWN: JAR CHECKED: MOMc
SHEET: 1 OF 1
FIELD BOOK#
ACS PROJECT NO: 10-1066
W&R PRJ. # 02060496.32