



## **WORK PLAN FOR SUB-SLAB VAPOR ASSESSMENT**

**ATHERTON MILL PROPERTY**  
2000, 2100, 2130 & 2140 SOUTH BOULEVARD  
CHARLOTTE, MECKLENBURG COUNTY, NORTH CAROLINA

Prepared for:

**ATHERTON MILL (E&A), LLC**  
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COLUMBIA, SOUTH CAROLINA 29201

Prepared By:

**AMEC ENVIRONMENT & INFRASTRUCTURE, INC.**  
2801 YORKMONT ROAD, SUITE 100  
CHARLOTTE, NORTH CAROLINA 28208

**JULY 27, 2012**

**AMEC PROJECT: 6228-12-0051**



July 27, 2012

Ms. Carolyn Minnich, Brownfields Project Manager  
North Carolina Department of Environment and Natural Resources  
Division of Waste Management  
Brownfields Program  
1646 Mail Service Center  
Raleigh, North Carolina 27699-1646

**Subject: Transmittal Letter  
Work Plan for Sub-Slab Vapor Assessment  
Atherton Mill Property  
2000, 2100, 2130 & 2140 South Boulevard  
Charlotte, Mecklenburg County, North Carolina  
Brownfields Project Number: 10047-06-60  
AMEC Project: 6228-12-0051**

Dear Ms. Minnich:

On behalf of Atherton Mill (E&A), LLC, AMEC Environment & Infrastructure, Inc. (AMEC) is pleased to present this Work Plan to the North Carolina Department of Environment and Natural Resources (NCDENR) relating to the scope of services to be performed at the Atherton Mill Property located in Charlotte, North Carolina (subject property).

We appreciate your review of this Work Plan. Please contact the undersigned at (704) 357-8600 if you have questions.

Sincerely,

**AMEC ENVIRONMENT & INFRASTRUCTURE, INC.**

Andrew J. Frantz, A.E.P.  
Staff Environmental Scientist



Robert C. Foster, L. 1335  
Principal Geologist

Enclosures

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FIGURE 1 – SITE LAYOUT AND PROPOSED SUB-SLAB VAPOR SAMPLING  
LOCATIONS

## **1. SITE HISTORY AND CHARACTERIZATION**

The 9.78-acre subject property (subject property) is located at 2000 (Building 1), 2100 (Building 2), 2130 (Building 4) & 2140 (Building 3) South Boulevard in Charlotte, North Carolina and consists of Mecklenburg County Tax Parcel 121-031-09. A site layout is depicted on **Figure 1**. The subject property contains four buildings. According to the Mecklenburg County Property Ownership and Land Records Information System (POLARIS), an approximately 58,959-square foot commercial building (Building 1) constructed in 1908 at 2000 South Boulevard, an approximately 41,166-square foot commercial building (Building 2) constructed in 1940 at 2100 South Boulevard, an approximately 12,422-square foot commercial building (Building 3) constructed in 1962 at 2130 South Boulevard and an approximately 6,255-square foot commercial building (Building 4) constructed in 1932 at 2140 South Boulevard occupy the site (**Figure 1**). Remaining portions of the site consist of asphalt-paved driveway and parking areas and grass covered areas. The site is currently occupied by office retail and restaurant space.

According to the Brownfields Agreement, in the early 1900's, the Parks-Cramer Company initially developed 4.5-acres of the subject property at the corner of South Boulevard and West Tremont Avenue (2000 South Boulevard). The Parks-Cramer Company manufactured products that included humidity control equipment for textile mills. Later, the Parks-Cramer Company manufactured and restored air handling equipment and hoisting systems for the textile industry.

The Parks-Cramer Company expanded its holdings to the southern portion of the subject property in the 1960's and 1970's. In 1962, it commenced operation of a vapor degreasing unit for cleaning and preparation of metal parts prior to paint application at the northern portion of the subject property. Initially, trichloroethene was used as the solvent in the degreasing process, with 1,1,1-trichloroethane replacing it in 1976.

In 1988, the Parks-Cramer Company sold its manufacturing operation to Flakt, Inc. The property operated under a lease until December 1992, when South Boulevard Properties, Inc. became the owner of the subject property. In 1993, Building 1 was renovated for use of office, restaurant and retail space. Atherton Mills (E&A), LLC purchased the subject property on September 7, 2006.

The most recent environmental sampling at the subject property reportedly occurred in June 2004. The highest concentrations of the contaminants of concern reported in June 2004 were: 1,1-dichloroethene - 26,000 µg/L, 1,1-dichloroethane – 840 µg/L, cis-1,2-dichloroethene – 1,200 µg/L, 1,1,1-trichloroethane – 16,000 µg/L, trichloroethene – 250,000 µg/L and tetrachloroethene – 10,000 µg/L.

The subject property is located within the Charlotte Belt of the Piedmont Physiographic Province. Based on a review of the Geologic Map of North Carolina (1985), the site is underlain by granitic rock.

The Soil Survey of Mecklenburg County indicates that soils at the subject property are classified as Urban land (Ur). This map unit consists of areas where 90 percent of the surface is covered with buildings, streets, parking lots, and other impervious material. The natural soils are paved over, covered, or greatly altered by cutting, filling, or grading during the process of urban development. The original landscape and topography and commonly the drainage pattern(s) have been changed.

Based on the USGS topographic map, the elevation of the subject property is approximately 750 feet above mean sea level. Surface drainage patterns within the Piedmont typically indicate the direction contaminants would be transported by surface water or groundwater. Based on our interpretation of the topographic map and on-site observations, surface water on the property would primarily be expected to flow southeast toward an unnamed tributary of Little Sugar Creek.

The direction and movement of groundwater through soil is dependent on soil type and the presence of relict structures and textures of the underlying rock. Fractures, faults, folds and foliation planes affect the migration of groundwater in rock. Since no significant geologic features were identified on the site, it is reasonable to assume that the direction of groundwater flow under static conditions (no pumping interference) approximates the surface topography of the site. Groundwater at the property would primarily be expected to flow southeast toward an unnamed tributary of Little Sugar Creek.

## **2. SAMPLING AND ANALYSIS PLAN**

AMEC proposes to collect 12 sub-slab vapor samples in general accordance with the “*DRAFT Vapor Intrusion Guidance, NCDENR Brownfields Program*”, dated March 2012, “*Supplemental Guidelines for the Evaluation of Structural Vapor Intrusion Potential for Site Assessments and Remedial Actions Under the Inactive Hazardous Sites Branch*”, dated June 21, 2011 and “*Section 3.0 of the “Assessment of Vapor Intrusion in Homes near the Raymark Superfund Site Using Basement and Sub-Slab Air Samples”*.” The sampling scope includes the following items:

- On July 26, AMEC personnel visited the site and were accompanied by Ms. Cynthia Humphreys, the Property Manager for Edens. The purpose of the site visit was to determine locations appropriate for sub-slab sampling based on accessibility and current site conditions. **Figure 1** depicts the approximate proposed locations of the 12 sub-slab vapor samples;
- Prior to advancement of borings for the sub-slab vapor sampling tips, AMEC will retain a private utility locator to check the proposed sampling locations for buried utilities;
- The one-inch diameter boreholes for the dedicated sub-slab vapor sampling tips will be installed through the concrete slab to the native soil using a hammer drill;
- The dedicated sampling tips will be installed a minimum of 12 inches below the base of the concrete slab using an AMS Manual Soil Vapor Probe kit. The kit will consist of a dedicated sub-slab vapor sampling tip, a 5/8" x 3' sub-slab vapor probe rod and a slide hammer. Teflon® tubing will be attached to the sampling tip and threaded through the probe rod prior to advancement of the probe rod. The probe rod will be advanced to an approximate depth of 12 inches below the base of the concrete slab and then retracted, leaving the dedicated sampling tip and tubing in the borehole;
- The annular space of the borehole will be filled with cement to the surface and left to cure for a minimum of 24 hours prior to sampling;
- Each sample shall be collected into a 6-liter Summa canister at a flow rate of approximately 12.5 mL/min (8-hour sample time);
- Each Summa canister will have a dedicated pressure gauge and all Summa canisters and pressure gauges will be either “100% certified” or “batch certified”;

- The vacuum reading of each Summa canister will be recorded prior to and after sample collection;
- To assist in collecting samples without breakthrough of outside air, a helium shroud will be constructed with will surround the sample tubing. The shroud will contain a valve which will allow for helium to be added and measure with a detector;
- Prior to connecting the Summa canisters to the sampling tubing, stagnant air inside the tubing will be purged using a hand pump.
- Relative humidity and temperature will be monitored and recorded inside and outside the facility during sampling activities;
- The sub-slab vapor samples shall be maintained under a chain-of-custody protocol and submitted to a North Carolina certified laboratory for analysis of VOCs via EPA Compendium Method TO-15 (EPA/625/R-96-010b) and helium via EPA Method 3C.

### **3. REPORT AND FIGURES**

AMEC will describe the field activities, present the results of the sub-slab vapor sampling as tabulated data, and submit the laboratory data packet in a suitable report format for submittal to the NCDENR Brownfields Program. The report will include a site plan with current and estimated previous sampling locations and current site structures. The report will summarize the data collected and/or generated and provide recommendations for additional assessment, if necessary.

#### **4. SCHEDULE**

AMEC anticipates the coordination and implementation of the field activities can be completed within ten days of NCDENR approval, assuming sampling locations are readily accessible. Laboratory analysis is expected to be completed on a standard turnaround time of ten business days. A final report can be submitted to the NCDENR within approximately 10 business days of receiving the final laboratory data.

**FIGURE**



Source: Mecklenburg County Aerial Photography, dated 2009.

Subject Property Boundary



Proposed Sub-Slab Vapor Sampling Locations

0 100 200 400 600 800 Feet



**SITE LAYOUT AND PROPOSED  
SUB-SLAB VAPOR SAMPLING LOCATIONS  
ATHERTON MILL PROPERTY  
2000, 2100, 2130 & 2140 SOUTH BOULEVARD  
CHARLOTTE, NORTH CAROLINA**