

MEMORANDUM

To: Billy Meyer

From: Christie Zawtocky, PE
Timothy Klotz

Date: November 5, 2013

Project: One Hour Martinizing Site, DSCA ID 32-0013
1103 W Club Blvd, Durham, NC

Subject: Monthly Update

Hart & Hickman, PC (H&H) is proceeding with implementation of the Remedial Action Plan (RAP) for the One Hour Martinizing site. A brief summary of recently completed activities and upcoming activities is provided below. An updated project calendar is provided in Appendix A.

Monthly Vapor Field Screening

On October 9, 2013, H&H completed a monthly vapor field screening event at the site. The event included measuring total volatile organic compounds (VOCs), methane, carbon dioxide, and oxygen in soil vapor, indoor air, and outdoor ambient air. The primary purpose of the sampling is to confirm methane levels are within acceptable standards. Measurements were collected at the following locations:

- Soil Vapor Monitoring Points: SV-8S, SV-8I, SV-18S, SV-19S, SV-20S, SV-20D, SV-29S, SV-55S, SV-55I
- Excavation Vent Exhaust Pipe
- Sub-Slab Depressurization (SSD) System Exhaust and Indoor Air at 1414 Watts St (Triangle Family Church)
- Ambient, Outdoor Air on Source Property

The field screening data are summarized in the attached Table 1, and the methane readings are shown on the attached Figure 1. Recorded field measurements indicate that methane was detected in the sampled source property soil vapor points (SV-8S, SV-8I, SV-55S and SV-55I) at low levels ranging from 0.1 to 0.8% by volume and two off-source property soil vapor points (SV-20S and SV-20D) at low levels of 0.1% by volume. Very low methane levels (0.1 % by volume) were also detected in the sub-slab depressurization system exhaust at the Triangle Family Church at 1414 Watts St. These methane readings are well within acceptable levels. The monthly methane field readings generally appear to be stable or decreasing over time between January 2013 and October 2013.

Methane was detected in the vapors from the excavation passive exhaust vent at a level of 16.0% by volume. These vapors are exhausted into the atmosphere through the stack installed on the source property where they dissipate into the atmosphere. Ambient air monitoring conducted near ground level in the immediate vicinity of the exhaust vent detected only a low methane level of 0.3% by volume.

VOCs were detected in each of the monitored soil vapor points. The highest VOC concentration was detected in the source property soil vapor point SV-8S (313 ppm) located near the source excavation area. The vapor points will continue to be monitored on a monthly basis to evaluate changes over time. The next monthly field screening event is scheduled for November 13, 2013.

Soil Vapor Sampling

On October 9, 2013, H&H collected soil vapor samples from select locations for laboratory analysis of VOCs. Samples for laboratory analysis were collected from the following locations:

- 1103 West Club Blvd (Source Property): SV-8S, SV-8I, SV-55S, SV-55I
- 1414 Watts St (Triangle Family Church): SV-27S, SV-27D, SV-28D
- 1421 Dollar Ave (Gilligan Residence): SV-19, SV-20S, SV-20D, SV-21S, SV-21D
- 1419 Dollar Ave (Drey Residence): SV-18, SV-29S

The samples were analyzed for the primary constituents of concern at the site, including tetrachloroethylene (PCE), trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), trans-1,2-dichloroethylene (trans-1,2-DCE), and vinyl chloride (VC). The analytical results for the soil vapor samples are summarized in Table 2 and presented on Figure 2. The results for the source property are compared to the Division of Waste Management (DWM) Non-Residential Soil Gas Screening Levels (SGSLs), and the results for the non-source properties to the south and east are compared to the DWM Residential SGSLs.

PCE was detected in each of the soil vapor samples at concentrations ranging from 1,200 $\mu\text{g}/\text{m}^3$ to 27,000,000 $\mu\text{g}/\text{m}^3$. The highest PCE concentrations were detected near the excavation area at source property monitoring points SV-8I (27,000,000 $\mu\text{g}/\text{m}^3$) and SV-55S (3,800,000 $\mu\text{g}/\text{m}^3$) and at adjacent property monitoring points SV-27S/D (2,200,000 $\mu\text{g}/\text{m}^3$ /9,200,000 $\mu\text{g}/\text{m}^3$) and SV-29S (1,900,000 $\mu\text{g}/\text{m}^3$). The PCE concentrations detected on the adjacent properties to the south and east exceed the DWM Residential SGSL of 278 $\mu\text{g}/\text{m}^3$.

PCE degradation products, including TCE, cis-1,2-DCE, trans-1,2-DCE, and VC, were also detected in some of the soil vapor samples. TCE was the most widely detected degradation product with concentrations ranging from 6.0 $\mu\text{g}/\text{m}^3$ to 890 $\mu\text{g}/\text{m}^3$. The highest TCE concentration was detected near the excavation in SV-55S (890 $\mu\text{g}/\text{m}^3$).

In accordance with the RAP, soil vapor samples will be collected for laboratory analysis of VOCs prior to the EHC injection and on a monthly basis for a minimum of three months following completion of the injection. The pre and post-injection soil vapor sampling events will include sampling the following soil vapor monitoring points:

- Source property: SV-8S/I, SV-17, SV-55S/I
- West of the source property: SV-49S/D, SV-50
- South of the source property: SV-27, SV-28
- East of the source property: SV-18, SV-19, SV-20S/D, SV-21S/D, SV-25S/D, SV-29S/D, SV-36S/D, SV-43S/D

As the vapor data are collected, the results will be evaluated to determine if any adjustments are needed to the remedial approach or monitoring plan. The pre-injection soil vapor sampling event is tentatively scheduled for the week of December 16, 2013.

Indoor Air Monitoring

In September 2013, H&H conducted quarterly indoor air monitoring at the three structures adjacent to the source property where vapor mitigation systems are in place (1419 Dollar St, 1421 Dollar St, and 1414 Watts St). On September 15, 2013, H&H collected two 3-hour Summa canister indoor air samples from the Triangle Family Church at 1414 Watts St during the church's Sunday service. H&H collected two Radiello samples from the 1419 Dollar St residence (between 9/17/13 and 10/1/13) and the 1421 Dollar St residence (between 9/4/13 and 9/17/13). The indoor air samples were submitted for laboratory analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and VC. The analytical results for the indoor air samples are summarized in Table 3 and presented on Figure 3.

PCE was detected in each of the indoor air samples collected at 1414 Watts St at concentrations of $66 \mu\text{g}/\text{m}^3$ (1414-Front) and $210 \mu\text{g}/\text{m}^3$ (1414-Rear). To evaluate the risk associated with the detected indoor air concentrations, H&H evaluated a residential exposure scenario assuming 6 hours per week of exposure time, which is typical of a Triangle Family Church parishioner. As shown in the worksheets provided in Appendix B, the calculated cumulative carcinogenic risk levels are 2.6×10^{-7} and 8.4×10^{-7} and the hazard index levels are 0.059 and 0.19 for the 1414-Front and 1414-Rear samples, respectively. These risk levels are within acceptable levels.

PCE was detected in each of the indoor air samples collected from the residences at 1419 Dollar St ($5.1 \mu\text{g}/\text{m}^3$ and $6.1 \mu\text{g}/\text{m}^3$) and 1421 Dollar St ($7.2 \mu\text{g}/\text{m}^3$ and $13 \mu\text{g}/\text{m}^3$). The PCE concentration detected in the basement at 1421 Dollar St ($13 \mu\text{g}/\text{m}^3$) exceeds the DWM Residential Indoor Air Screening Level of $8.34 \mu\text{g}/\text{m}^3$. H&H calculated the risk associated with the detected indoor air concentrations. As shown in the worksheets in Appendix B, the carcinogenic risk levels are less than 1×10^{-5} and the hazard index levels are less than 1. Thus, the risks associated with the detected indoor air concentrations are within acceptable levels.

The next quarterly indoor air sampling event is planned for December 2013.

Injection of EHC

The RAP includes injection of EHC (a commercial remediation product that contains zero-valent iron and carbon) to treat shallow groundwater impacts at the source property. Based on the August and September 2013 groundwater sampling results, H&H has been working with the

DSCA Program to finalize the EHC injection plan. The injection plan presented in the RAP was designed to target PCE groundwater concentrations of 15 mg/L or greater. The attached Figures 4A and 4B depict the extent of groundwater PCE impacts exceeding 15 mg/L in the shallow and intermediate groundwater zones at the site. H&H is proposing to modify the injection layout proposed in the RAP to target the current extent of PCE impacts exceeding 15 mg/L. As shown in Figures 4A and 4B, the modified injection plan includes 30 shallow injection locations and 14 intermediate injection locations. The shallow injections will target a vertical interval from approximately 22 to 40 ft below ground surface (bgs), and the intermediate injections will target a vertical interval from approximately 45 to 55 ft bgs.

Based on the injection contractor's availability, the EHC injection activities are scheduled to begin the week of January 6, 2013. Pre-injection groundwater and soil gas sampling activities are tentatively scheduled for the week of December 16, 2013. H&H is currently working with the UIC Program to obtain approval of the modified injection plan. As shown in Figure 4A, the shallow injection includes points on the 1414 Watts St property. The DSCA Program is working to obtain permission from the property owner for these injection locations.

Information Session

The DSCA Program is planning to hold a public information session prior to the start of the EHC injection. The meeting will likely be held in early December 2013. The website will be updated once the information session is scheduled.

TABLES

Table 1: Soil Vapor Point and Indoor/Outdoor Air Field Measurements						ADT 1
DSCA ID No.: 32-0013						
Sample ID	Depth [feet bgs]	Sampling Date (mm/dd/yy)	Total Volatile Organic Compounds (VOC)	Methane	Carbon Dioxide	Oxygen
			ppm	%	%	%
SV-8S	5.00	11/27/12	427	0.1	1.7	20.0
		01/08/13	1,833	0.8	2.2	18.7
		02/07/13	NA	0.1	2.0	19.2
		03/08/13	NA	0.0	2.4	18.8
		04/08/13	465	0.0	2.4	17.7
		05/08/13	473	0.0	4.1	15.7
		06/13/13	360	0.0	5.7	13.7
		07/08/13	349	0.0	5.8	13.4
		08/14/13	427	0.1	5.4	15.6
		09/11/13	423	0.2	4.1	15.1
10/09/13	313	0.3	3.0	18.0		
SV-8I	17.00	11/27/12	>9,999	0.0	2.5	18.8
		01/08/13	2222	1.3	2.8	18.3
		02/07/13	NM	0.2	2.2	18.6
		03/08/13	NM	0.1	2.4	17.9
		04/08/13	4,098	0.2	1.8	17.6
		05/08/13	1,720	0.2	3.9	13.3
		06/13/13	248	0.2	1.8	16.5
		07/08/13	305	0.2	2.3	15.9
		08/14/13	165	0.3	2.1	15.6
		09/11/13	3,056	0.2	1.2	11.2
10/09/13	119	0.5	2.5	15.9		
SV-18S	5.00	11/27/12	22.3	0.0	2.5	19.2
		01/08/13	51.1	0.4	0.0	21.5
		02/07/13	NM	0.0	2.3	18.6
		03/08/13	NM	0.0	4.1	16.9
		04/08/13	2.1	0.0	2.5	18.1
		05/08/13	14.9	0.0	4.9	15.9
		06/13/13	20.7	0.0	4.7	16.2
		08/14/13	26.1	0.1	3.0	18.2
		09/11/13	84.5	0.1	2.9	16.5
		10/09/13	201	0.0	3.5	17.5
SV-19S	5.00	11/27/12	2.25	0.0	10.8	11.5
		01/08/13	4.50	0.6	9.1	13.3
		02/07/13	NM	0.0	8.6	13.9
		03/08/13	NM	0.0	8.3	13.5
		04/08/13	1.2	0.0	8.3	13.7
		05/08/13	0.9	0.0	9.1	13.0
		06/13/13	6.2	0.0	9.7	11.7
		08/15/13	4.4	0.0	9.2	12.1
		09/11/13	22.9	0.0	10.1	9.3
		10/09/13	156	0.0	11.9	9.8
SV-20S	5.00	11/27/12	75.5	0.0	6.3	16.1
		01/08/13	15.0	1.3	5.0	16.9
		02/07/13	NM	0.1	6.4	15.5
		03/08/13	NM	0.0	5.0	16.0
		04/08/13	47.4	0.0	5.2	15.3
		05/08/13	62.5	0.0	6.3	14.6
		06/13/13	64.0	0.0	7.7	13.1
		08/15/13	61.8	0.0	6.8	13.6
		09/11/13	60.4	0.1	5.1	15.3
		10/09/13	89.7	0.1	7.0	15.3

Table 1: Soil Vapor Point and Indoor/Outdoor Air Field Measurements						ADT 1
DSCA ID No.: 32-0013						
Sample ID	Depth [feet bgs]	Sampling Date (mm/dd/yy)	Total Volatile Organic Compounds (VOC)	Methane	Carbon Dioxide	Oxygen
			ppm	%	%	%
SV-20D	20.00	01/08/13	11.10	0.4	7.6	15.2
		02/07/13	NM	0.1	6.7	15.6
		03/08/13	NM	0.0	6.8	14.9
		04/08/13	46.8	0.0	6.7	15.2
		05/08/13	61.4	0.0	5.8	15.1
		06/13/13	58.9	0.0	7.1	13.5
		08/15/13	60.1	0.0	6.6	14.1
		09/11/13	93.1	0.1	7.6	12.5
SV-29S	5.00	10/09/13	113	0.1	8.8	13.4
		11/27/12	344	0.0	1.9	19.9
		01/08/13	96.3	0.3	2.0	19.8
		02/07/13	NM	0.1	2.3	18.6
		03/08/13	NM	0.0	2.8	17.6
		04/08/13	235	0.0	2.6	17.2
		05/08/13	151	0.0	3.3	16.7
		06/13/13	197	0.0	3.6	16.2
SV-55S	5.00	08/14/13	317	0.1	3.4	17.7
		09/11/13	268	0.1	2.2	17.6
		10/09/13	356	0.0	3.2	18.0
		11/27/12	430	0.2	0.2	21.1
		01/08/13	295	4.1	3.0	14.7
		02/07/13	NM	2.1	2.8	14.6
		03/08/13	NM	1.8	3.1	14.0
		04/08/13	311	1.4	3.0	14.3
SV-55I	17.00	05/08/13	290	1.1	3.9	13.3
		06/13/13	295	0.8	4.5	11.8
		07/08/13	258	0.7	4.9	11.1
		08/14/13	133	0.2	1.8	17.8
		09/11/13	229	0.9	5.5	10.6
		10/09/13	501	0.8	5.4	13.6
		11/27/12	12	4.1	0.6	12.4
		01/08/13	442	3.6	2.0	12.1
Vent Exhaust Pipe		02/07/13	NM	1.4	2.9	14.8
		03/08/13	NM	1.6	3.5	14.6
		04/08/13	NM*			
		05/08/13	NM	1.6	2.7	10.7
		06/13/13	86.5	1.5	1.6	11.0
		07/08/13	NM	1.5	2.1	10.6
		08/14/13	26.7	0.3	0.2	16.5
		09/11/13	31.3	0.3	1.9	15.4
		10/09/13	4.9	0.1	0.0	21.2
		11/27/12	38.0	12.5	11.1	9.7
01/08/13	173	11.0	9.3	10.6		
02/07/13	NM	17.3	15.9	1.5		
03/08/13	NM	16.4	15.0	1.7		
04/08/13	6.5	12.6	11.7	4.9		
05/08/13	10.8	15.0	14.4	1.9		
06/13/13	9.6	14.9	13.4	0.7		
07/08/13	9.6	14.5	13.0	0.8		
08/14/13	17.7	15.2	14.5	1.7		
09/11/13	14.7	15.7	13.4	1.5		
10/09/13	16.0	13.8	10.4	6.7		

Table 1: Soil Vapor Point and Indoor/Outdoor Air Field Measurements						ADT 1
DSCA ID No.: 32-0013						
Sample ID	Depth [feet bgs]	Sampling Date (mm/dd/yy)	Total Volatile Organic Compounds (VOC)	Methane	Carbon Dioxide	Oxygen
			ppm	%	%	%
SSD System Triangle Family Church 1414 Watts Street		11/27/12	2.4	0.1	0.0	21.0
		01/08/13	159	1.0	0.0	21.1
		02/07/13	NM	0.2	0.0	21.4
		03/08/13	NM	0.0	0.0	20.8
		04/08/13	0.0	0.0	0.0	20.8
		05/08/13	0.0	0.0	0.0	20.6
		06/13/13	0.0	0.0	0.0	20.4
		07/08/13	0.0	0.0	0.0	20.5
		08/14/13	4.4	0.1	0.0	20.5
		09/18/13	0.5	0.1	0.0	20.2
	10/09/13	6.1	0.1	0.1	21.1	
Indoor Air Triangle Family Church 1414 Watts Street		11/27/12	0.0	0.0	0.0	21.0
		01/08/13	0.0	0.0	0.0	20.9
		02/07/13	NM	0.0	0.0	20.8
		03/08/13	NM	0.0	0.0	21.0
		04/08/13	0.0	0.0	0.0	20.9
		05/08/13	0.0	0.0	0.0	20.5
		06/13/13	0.0	0.0	0.0	20.5
		07/08/13	0.0	0.0	0.0	20.5
		08/14/13	0.0	0.1	0.0	20.6
		09/18/13	0.0	0.0	0.0	20.3
	10/09/13	0.0	0.1	0.0	21.2	
Ambient, Outdoor Air (near excavation area on subject site)		11/27/12	0.0	0.0	0.0	20.9
		01/08/13	0.0	0.0	0.0	20.9
		02/07/13	NM	0.0	0.0	21.5
		03/08/13	NM	0.0	0.0	20.9
		04/08/13	0.0	0.0	0.0	20.9
		05/08/13	0.0	0.0	0.0	20.4
		06/13/13	0.0	0.0	0.0	20.4
		07/08/13	0.0	0.0	0.0	20.4
		08/14/13	0.0	0.0	0.0	20.6
		09/11/13	0.0	0.0	0.0	20.3
	10/09/13	0.0	0.3	0.0	21.3	

Notes:
 * = Water was present in soil vapor point SV-55I - little to no air flow
 1. VOC concentrations measured using a photoionization detector (PID)
 2. Methane, carbon dioxide, and oxygen concentrations measured using GEM 2000 multi-gas meter.
 3. NM denotes not measured; NA denotes not available.

Table 2: Analytical Data for Soil Gas

ADT 2

DSCA ID No.: 32-0013

Sample ID	Depth [feet bgs]	Sample Duration ¹	Sampling Date (mm/dd/yy)	cis-1,2-Dichloroethylene	Tetrachloroethylene	trans-1,2-Dichloroethylene	Trichloroethylene	Vinyl chloride
				(µg/m ³)				
SV-8S	5	N/A	05/29/09	<6,300	2,600,000	<6,300	<8,600	<4,100
		16m	05/16/12	<63	88,000	<63	<86	<41
		10m	11/27/12	<7,900	1,000,000	<7,900	12,000	<5,100
		N/A	01/08/13	<1,600	1,600,000	<1,600	<2,100	<1,000
		1h	10/09/13	<4.0	3,400	<4.0	<5.4	<2.6
SV-8I	17	9m	11/27/12	<63,000	9,500,000	<63,000	<86,000	<41,000
		N/A	01/08/13	<32,000	39,000,000	<32,000	<43,000	<20,000
		1h	10/09/13	<16,000	27,000,000	<16,000	<21,000	<10,000
SV-18	5	N/A	09/10/09	<1.6	105,000	<1.6	11.3	<1.0
		N/A	11/17/09	<71.7	21,435	<138	<97	<45.2
		6m	05/17/12	<1,600	2,400,000	<1,600	<2,100	<1,000
		11m	11/27/12	<63	57,000	<63	<86	<41
		N/A	01/08/13	<32	81,000	<32	<43	<20
		1h 15m	10/09/13	<4.0	1,200	<4.0	<5.4	<2.6
SV-19	5	N/A	09/10/09	<13.0	3,910	<13.0	<17.6	<8.3
		16m	05/16/12	<1.6	2,100	<1.6	<2.1	<1.0
		18m	11/27/12	<6.3	2,100	<6.3	<8.6	<4.1
		N/A	01/08/13	<1.6	2,600	<1.6	<2.1	<1.0
		1h 10m	10/09/13	<4.0	15,000	<4.0	<5.4	<2.6
SV-20S	8	N/A	11/17/09	<69.4	257,085	<133	<94	<43.7
		19m	05/16/12	<63	140,000	<63	<86	<41
		10m	11/27/12	<63	120,000	<63	<86	<41
		N/A	01/08/13	<63	210,000	<63	100	<41
		1h	10/09/13	<4.0	330,000	<4.0	6.0	<2.6
SV-20D	20	N/A	11/17/09	<71.7	786.9	<138	<97.2	<45.2
		14m	05/16/12	<63	200,000	<63	<86	<41
		1h 5m	10/09/13	<4.0	390,000	<4.0	17	<2.6
SV-21S	8	N/A	11/17/09	<69.4	79,364	<133	<94	<43.7
		14m	05/16/12	<16	39,000	<16	<21	<10
		1h 5m	10/09/13	<4.0	90,000	<4.0	13	<2.6
SV-21D	20	N/A	11/17/09	<11.5	19,468	<22	<15.6	<7.4
		11m	05/16/12	<63	140,000	<63	<86	<41
		1h	10/09/13	<4.0	180,000	<4.0	27	<2.6
SV-27S	8	1h 17m	12/07/09	<23.4	419,604	<23.4	61.3J	<25.7
		12m	05/16/12	<1.6	2,200,000	<1,600	<2,100	<1,000
		1h 10m	10/09/13	<4.0	2,200,000	1.5	97	<2.6
SV-27D	20	1h 16m	12/07/09	<33.9	294,741	<33.9	117J	<37.3
		18m	05/16/12	<6,300	1,000,000	<6,300	<8,600	<4,100
		1h 5m	10/09/13	<16,000	9,200,000	<16,000	<21,000	<10,000
SV-28D	20	2 h 15m	01/07/10	<0.186	12.5	<0.186	0.407 J	<0.205
		2h 20m	05/16/12	<6.3	18,000	<6.3	<8.6	<4.1
		1h 45m	10/09/13	5.5	77,000	<4.0	8.2	<2.6

Table 2: Analytical Data for Soil Gas

ADT 2

DSCA ID No.: 32-0013

Sample ID	Depth [feet bgs]	Sample Duration ¹	Sampling Date (mm/dd/yy)	cis-1,2-Dichloroethylene	Tetrachloroethylene	trans-1,2-Dichloroethylene	Trichloroethylene	Vinyl chloride
				(µg/m ³)				
SV-29S	8	N/A	11/17/09	<69.4	2,190,984	<133	<94	<116
		33m	05/17/12	<1,600	2,200,000	<1,600	<2,100	<1,000
		10m	11/27/12	<630	610,000	<630	<860	<410
		N/A	01/08/13	<630	810,000	<630	<860	<410
		1h 25m	10/09/13	<4.0	1,900,000	<4.0	34	<2.6
SV-55S	5	15m	11/27/12	<630	1,200,000	<630	<860	<410
		N/A	01/08/13	<1,600	2,500,000	<1,600	<4,100	<1,000
		1h 5m	10/09/13	310	3,800,000	1.1 J	890	1.4 J
SV-55I	17	1h 30m	11/27/12	<6,300	6,800,000	<6,300	<8,600	<4,100
		N/A	01/08/13	<6,300	6,200,000	<6,300	9,600	<4,100
		5h 10m	10/09/13	8.3	320,000	1.7 J	33	3.0
DWM Residential Soil Gas Screening Level				NE	278	417	13.9	53.7
DWM Non-Residential Soil Gas Screening Level				NE	3,500	5,260	175	2,790

Notes:

1. NA = Not Analyzed; NE = Not Established; N/A = Not Available
2. **Bold** exceeds Division of Waste Management (DWM) Residential Soil Gas Screening Level or DWM Non-Residential Soil Gas Screening Level (October 2013).
3. Analytical data for the SV-8S/I and SV-55S/I compared to DWM Non-Residential Soil Gas Screening Levels. Other data compared to Residential Soil Gas Screening Levels.
4. J denotes estimated concentration between laboratory reporting limit and method detection limit.

Table 3: Analytical Data for Indoor Air

ADT 3

DSCA ID No.: 32-0013

Sample ID	Sampling Date (mm/dd/yy)	Sample Location ¹	Sampling Method ²	Sampling Duration ³	cis-1,2-Dichloroethylene	Tetrachloroethylene	trans-1,2-Dichloroethylene	Trichloroethylene	Vinyl chloride
					[µg/m ³]				
1414 Watts St									
BG-1414	05/07/10		SU	6h	<0.0339	2.11	<0.0339	0.0162J	<0.0129
	05/14/10		P	7d	<0.24	2.1	<0.24	<0.14	<0.38
	03/17/11		P	7d	<0.15	0.36	<0.15	<0.092	<0.24
	11/11/12		SU	3h	<0.079	0.38	<0.079	<0.11	<0.051
1414-South	07/29/09	C	SU	3h	<34	814	<34	<45	<22
1414-Chase	03/17/11	C	P	7d	<0.15	31	<0.15	<0.092	<0.24
1414-Front	07/16/09	C	SU	1h	<3.2	510	<3.2	<4.3	<2.0
	07/29/09		SU	3h	<32	692	<32	<43	<21
	03/15/10		SU	6h	<0.0336	163	<95.5	0.0892	<0.0128
	04/09/10		SU	6h	<0.0348	143	<0.0348	0.0403J	<0.0132
	05/07/10		SU	6h	<0.0305	90.4	0.105	0.0740	<0.0116
	05/14/10		P	7d	<0.24	89	<0.24	<0.14	<0.38
	03/17/11		P	7d	<0.15	19	<0.15	<0.091	<0.24
	08/11/11		P	30d	<0.052	100	<0.052	<0.031	<0.084
	09/25/11		SU	3h	1.7	55	0.24	1.3	<0.051
	01/29/12		SU	3h	0.48	28	<0.079	0.42	<0.051
	04/22/12		SU	3h	1.8	5.4	<0.079	<0.11	<0.051
	11/11/12		SU	3h	<0.079	320	<0.079	<0.11	<0.051
	01/13/13		SU	3h	<0.079	61	<0.079	<0.11	<0.051
	07/28/13		SU	3h	0.33	150	<0.079	<0.11	<0.051
	09/15/13		SU	3h	<0.14	66	<0.14	<0.19	<0.090
1414-Rear	07/29/09	C	SU	3h	<35	841	<35	<47	<22
	12/28/09		SU	6h	<0.191	99	<0.20	<0.395	<0.21
	03/15/10		SU	6h	<0.0345	181	<0.0345	0.0870	<0.0131
	04/09/10		SU	6h	<0.0336	213	<0.0336	0.0785	<0.0128
	05/07/10		SU	6h	<0.0344	104	0.0978	0.0717	<0.0131
	05/14/10		P	7d	<0.24	120	<0.24	<0.14	<0.38
	03/17/11		P	7d	<0.15	30	<0.15	<0.092	<0.24
	08/11/11		P	30d	<0.052	110	<0.052	<0.031	<0.084
	09/25/11		SU	3h	1.4	95	<0.079	0.17	<0.051
	01/29/12		SU	3h	2.6	81	<0.079	<0.11	<0.051
	04/22/12		SU	3h	1.2	25	<0.079	<0.11	<0.051
	11/11/12		SU	3h	<0.079	190	<0.079	<0.11	<0.051
	01/13/13		SU	3h	<0.079	180	<0.079	<0.11	<0.051
	07/28/13		SU	3h	0.29	240	<0.079	<0.11	<0.051
09/15/13	SU	3h	<0.14	210	<0.14	0.057 J	<0.090		

Table 3: Analytical Data for Indoor Air

ADT 3

DSCA ID No.: 32-0013

Sample ID	Sampling Date (mm/dd/yy)	Sample Location ¹	Sampling Method ²	Sampling Duration ³	cis-1,2-Dichloroethylene	Tetrachloroethylene	trans-1,2-Dichloroethylene	Trichloroethylene	Vinyl chloride
					[µg/m ³]				
1419 Dollar Ave									
1419-SUMP	03/30/10	R	SU	24h	<0.0310	0.581	<0.0310	0.0318J	<0.0142
BG-1419	03/30/10		SU	24h	<0.0332	0.369	<0.0332	0.0198J	<0.0126
	01/07/11		SU	24h	<0.079	1.0	<0.079	<0.11	<0.051
	01/07/11		P	24h	<1.7 C	<1.2	<1.7	<1.0	<2.7
	03/14/11		P	30d	<0.060 C	0.35	<0.060 C	<0.036	<0.096 C
	04/14/11		P	28d	<0.060 C	0.42	<0.060 C	<0.036	<0.096 C
	12/05/12		P	30d	<0.077 C	1.2	<0.080 C	<0.035	<0.11 C
	02/01/13		P	30d	<0.074 C	0.49	<0.077 C	<0.034	<0.10 C
1419-UP	10/15/09	R	SU	24h	<1.1	1.2J	<1.1	<1.5	<0.7
	11/10/09		SU	24h	3.73	16.3	<5.15	7.52	<1.74
	11/16/09		SU	24h	0.276	9.15	<0.04	0.07J	<0.0153
	11/24/09		SU	24h	4.36	21.69	<5.15	5.91	<1.74
	12/28/09		SU	24h	<0.040	3.13	<0.0749	0.193J	<0.0141
	03/30/10		SU	24h	0.512	2.71	<0.0324	0.0501	<0.0123
	01/07/11		SU	24h	<0.079	4.8	<0.079	<0.11	<0.051
	01/07/11		P	24h	<1.7 C	5.2	<1.7 C	<1.0	<2.7 C
	03/14/11		P	30d	<0.060 C	3.1	<0.060 C	<0.036	<0.096 C
	04/14/11		P	28d	<0.060 C	4.8	<0.060 C	<0.036	<0.096 C
	10/05/11		P	34d	<0.049 C	5.8	<0.049 C	<0.029	<0.079 C
	02/13/12		P	30d	<0.060 C	6.7	<0.060 C	<0.036	<0.096 C
	05/16/12		SU	24h	<0.079	17.0	<0.079	<0.11	<0.051
	05/21/12		P	30d	<0.051 C	5.4	<0.051 C	<0.030	<0.082 C
	12/05/12		P	30d	<0.077 C	6.0	<0.080 C	<0.035	<0.11 C
	02/01/13		P	30d	<0.074 C	4.7	<0.077 C	<0.034	<0.10 C
	10/01/13		P	14d	<0.16 C	5.1	<0.17 C	<0.072	<0.22 C
1419-DOWN	10/15/09	R	SU	24h	<1.1	6.1	<1.1	<1.5	<0.7
	11/10/09		SU	24h	<55.09	54.2	<106.21	63.39J	<35.006
	11/16/09		SU	24h	0.165	8.47	<0.0346	0.0468J	<0.014
	11/24/09		SU	24h	4.4	18	<5.15	5.9	<1.74
	12/28/09		SU	24h	<0.03	1.78	<0.030	0.021J	<0.0114
	03/30/10		SU	24h	<0.0347	2.83	<0.0347	0.0219J	<0.0132
	01/07/11		SU	24h	<0.079	5.2	<0.079	<0.11	<0.051
	01/07/11		P	24h	<1.7 C	5.7	<1.7 C	<1.0	<2.7 C
	03/14/11		P	30d	<0.060 C	6.6	<0.060 C	<0.036	<0.096 C
	04/14/11		P	28d	<0.060 C	8.6	<0.060 C	<0.036	<0.096 C
	10/05/11		P	34d	<0.049 C	12	<0.049 C	<0.029	<0.079 C
	02/13/12		P	30d	<0.060 C	5.1	<0.060 C	<0.036	<0.096 C
	05/16/12		SU	24h	<0.079	12	<0.079	<0.11	<0.051
	05/21/12		P	30d	<0.051 C	10	<0.051 C	<0.030	<0.082 C
	12/05/12		P	30d	<0.077 C	7.3	<0.080 C	<0.035	<0.11 C
	02/01/13		P	30d	<0.074 C	6.3	<0.077 C	<0.034	<0.10 C
	10/01/13		P	14d	<0.16 C	6.1	<0.17 C	<0.072	<0.22 C

Table 3: Analytical Data for Indoor Air

ADT 3

DSCA ID No.: 32-0013

Sample ID	Sampling Date (mm/dd/yy)	Sample Location ¹	Sampling Method ²	Sampling Duration ³	cis-1,2-Dichloroethylene	Tetrachloroethylene	trans-1,2-Dichloroethylene	Trichloroethylene	Vinyl chloride
					[µg/m ³]				
1421 Dollar Ave									
BG-1421	03/02/10		SU	24h	<0.0270	0.0626	<0.0270	0.0109J	<0.0103
1421-UP	10/06/09	R	SU	24h	<1.1	4.70	<1.1	<1.5	<1.8653
	11/10/09		SU	24h	<2.93	6.24	<5.55	8.59	<1.8653
	11/16/09		SU	24h	0.14	2.23	<0.03	0.045J	<0.01265
	11/24/09		SU	24h	4.76	10.85	<5.15	8.06	<1.738
	12/28/09		SU	24h	<0.0345	0.64	<0.0345	0.03J	0.01661J
	01/13/10		SU	24h	<0.029	0.98	<0.029	0.0334J	<0.011
	03/02/10		SU	24h	<0.0297	0.564	<0.0297	0.0125J	<0.0113
	06/03/10		SU	24h	<0.0352	1.07	<0.0352	0.0302J	<0.0134
	01/07/11		SU	24h	0.36	2.2	<0.079	<0.11	<0.051
	01/07/11		P	24h	<1.7 C	2.3	<1.7 C	<1.0	<2.7 C
	04/14/11		P	28d	<0.049 C	3.7	<0.049 C	<0.029	<0.079 C
	02/13/12		P	30d	<0.060 C	1.1	<0.060 C	<0.036	<0.096 C
	05/16/12		SU	24h	0.75	2.5	<0.079	<0.11	<0.051
	05/21/12		P	30d	<0.054 C	1.6	<0.054 C	<0.032	<0.087 C
	12/05/12		P	30d	<0.077 C	6.7	<0.080 C	<0.035	<0.110 C
	02/01/13		P	30d	<0.074 C	2.1	<0.077 C	<0.034	<0.100 C
	09/19/13		P	13.3 d	<0.17 C	7.2	<0.17 C	<0.076	<0.23 C
1421-DOWN	10/06/09	R	SU	24h	<21.7	86.4	<21.7	18.9J	<13.9
	11/10/09		SU	24h	<2.77	9.5	<5.15	<3.8	<1.738
	11/16/09		SU	24h	0.07	3.32	<0.03	0.0430J	<0.0128
	11/24/09		SU	24h	3.84	11.53	<5.15	7.0	<1.738
	12/28/09		SU	24h	<0.033	0.71	<0.033	0.0215J	0.01536J
	01/13/10		SU	24h	<0.0298	1.32	<0.030	0.0327J	<0.01132
	03/02/10		SU	24h	<0.0279	0.927	<0.0279	0.0119J	<0.0106
	06/03/10		SU	24h	<0.0348	2.44	<0.035	0.0184	<0.01324
	01/07/11		SU	24h	0.11	2.9	<0.079	<0.11	<0.051
	01/07/11		P	24h	<1.7 C	3.5	<1.7	<1.0	<2.7
	04/14/11		P	28d	<0.049 C	7.0	<0.049 C	<0.029	<0.079 C
	02/13/12		P	30d	<0.060 C	1.9	<0.060 C	<0.036	<0.096 C
	05/16/12		SU	24h	0.21	5.6	<0.079	<0.11	<0.051
	05/21/12		P	30d	<0.054 C	4.3	<0.054 C	<0.032	<0.087 C
	12/05/12		P	30d	<0.077 C	11	<0.080 C	<0.035	<0.110 C
	02/01/13		P	30d	<0.074 C	3.5	<0.077 C	<0.034	<0.100 C
	09/19/13		P	13.3 d	<0.17 C	13	<0.17 C	<0.076	<0.23 C
DWM Residential IASLs					NE	8.34	12.6	0.43	0.16
DWM Non-Residential IASLs					NE	35.1	52	1.76	2.8

Notes:

- "C" denotes commercial not adjacent space
- SU denotes Summa canister. P denotes passive sampler.
- Bold** exceeds DWM Non-Residential Indoor Air Screening Levels (IASLs) for 1414 Watts St samples and Residential IASLs for 1419 and 1421 Dollar Ave samples.
- NA = Not Analyzed; NE = Not Established

FIGURES

W. CLUB BOULEVARD

FORMER ONE HOUR MARTINIZING FACILITY

RESTAURANT (1129 W. CLUB)

PASSIVE EXCAVATION VENT STACK

DATE	METHANE % BY VOLUME
11/27/12	12.5%
1/8/13	11.0%
2/7/13	17.3%
3/8/13	16.4%
4/8/13	12.6%
5/8/13	15.0%
6/13/13	14.9%
7/8/13	14.5%
8/14/13	15.2%
9/11/13	15.7%
10/9/13	13.8%

PASSIVE EXCAVATION VENT STACK

DATE	SV-55S	SV-55I
11/27/12	0.2%	4.1%
1/8/13	4.1%	3.6%
2/7/13	2.1%	1.4%
3/8/13	1.8%	1.6%
4/8/13	1.4%	NM
5/8/13	1.1%	1.6%
6/13/13	0.8%	1.5%
7/8/13	0.7%	1.5%
8/14/13	0.2%	0.3%
9/11/13	0.9%	0.3%
10/9/13	0.8%	0.1%

SSD SYSTEM EXHAUST FAN

DATE	METHANE % BY VOLUME
11/27/12	0.1%
1/8/13	1.0%
2/7/13	0.2%
3/8/13	0.0%
4/8/13	0.0%
5/8/13	0.0%
6/13/13	0.0%
7/8/13	0.0%
8/14/13	0.1%
9/11/13	0.1%
10/9/13	0.1%

TRIANGLE FAMILY CHURCH (1414 WATTS)

0.3% METHANE WAS DETECTED IN AMBIENT AIR AT GROUND LEVEL ON THE SUBJECT SITE IN OCTOBER 2013

SOIL VAPOR VENT A
SOIL VAPOR VENT B
SOIL VAPOR VENT C
SOIL VAPOR VENT D

DATE	SV-8S	SV-8I
11/27/12	0.1%	0.0%
1/8/13	0.8%	1.3%
2/7/13	0.1%	0.2%
3/8/13	0.0%	0.1%
4/8/13	0.0%	0.2%
5/8/13	0.0%	0.2%
6/13/13	0.0%	0.2%
7/8/13	0.0%	0.2%
8/14/13	0.1%	0.3%
9/11/13	0.2%	0.2%
10/9/13	0.3%	0.5%

DATE	SV-19
11/27/12	0.0%
1/8/13	0.6%
2/7/13	0.0%
3/8/13	0.0%
4/8/13	0.0%
5/8/13	0.0%
6/13/13	0.0%
8/15/13	0.0%
9/11/13	0.0%
10/9/13	0.0%

DATE	SV-20S	SV-20D
11/27/12	0.0%	0.4%
1/8/13	1.3%	0.1%
2/7/13	0.1%	0.0%
3/8/13	0.0%	0.0%
4/8/13	0.0%	0.0%
5/8/13	0.0%	0.0%
6/13/13	0.0%	0.0%
8/15/13	0.0%	0.0%
9/11/13	0.1%	0.1%
10/9/13	0.1%	0.1%

DATE	SV-18
11/27/12	0.0%
1/8/13	0.4%
2/7/13	0.0%
3/8/13	0.0%
4/8/13	0.0%
5/8/13	0.0%
6/13/13	0.0%
8/14/13	0.1%
9/11/13	0.1%
10/9/13	0.0%

DATE	SV-29S
11/27/12	0.0%
1/8/13	0.3%
2/7/13	0.1%
3/8/13	0.0%
4/8/13	0.0%
5/8/13	0.0%
6/13/13	0.0%
8/14/13	0.1%
9/11/13	0.1%
10/9/13	0.0%

LEGEND

- SOURCE PROPERTY BOUNDARY
- - - PROPERTY PARCEL
- ▲ SOIL GAS MONITORING POINT

SV-19

DATE	METHANE % BY VOLUME
11/27/12	0.0%
1/8/13	0.6%
2/7/13	0.0%
3/8/13	0.0%
4/8/13	0.0%
5/8/13	0.0%
6/13/13	0.0%
8/15/13	0.0%
9/11/13	0.0%
10/9/13	0.0%

← SAMPLE IDENTIFICATION
← METHANE % BY VOLUME
← SAMPLE DATE


- NOTES:
- DATA SOURCES: DURHAM COUNTY GIS, WITHERS & RAVENEL.
 - METHANE FIELD READINGS WERE MEASURED USING A GEM 2000 MULTI-GAS METER
 - NM = NOT MEASURED



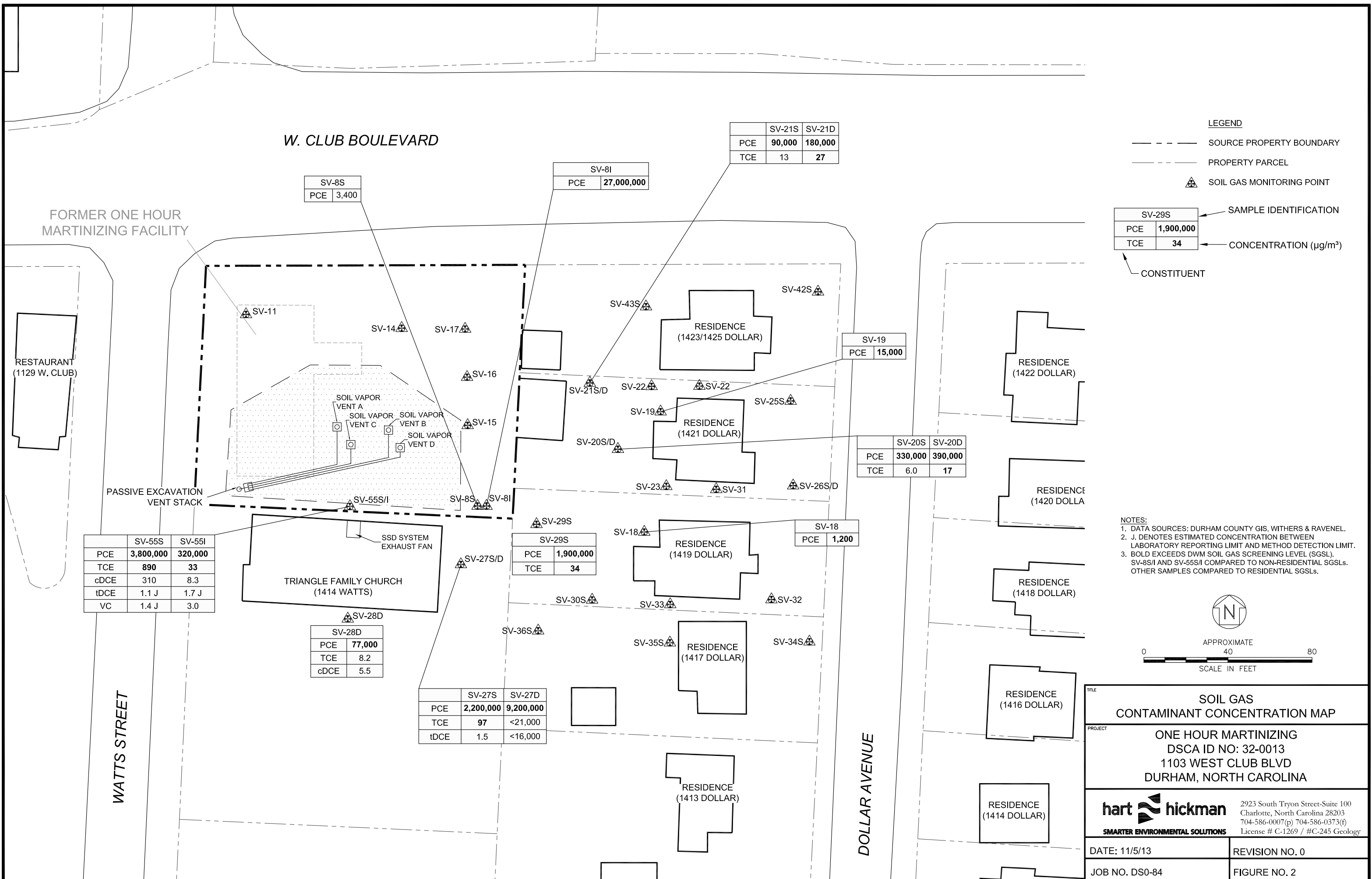
0 40 80
APPROXIMATE
SCALE IN FEET

WATTS STREET

DOLLAR AVENUE

TITLE METHANE FIELD MEASUREMENTS OCTOBER 2013	
PROJECT ONE HOUR MARTINIZING DSCA ID NO: 32-0013 1103 WEST CLUB BLVD DURHAM, NORTH CAROLINA	
 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology	
DATE: 10/29/13	REVISION NO. 0
JOB NO. DS0-84	FIGURE NO. 1

S:\AAA-Master Projects\DSCA - DS0\DS0-84 One Hr Martinizing (former BB&T)\Website Updates\2013 Website Updates\November 2013\DC320013_20131105_Figures.dwg, 11/5/2013 10:17:07 AM, Adobe PDF



LEGEND

- SOURCE PROPERTY BOUNDARY
- - - PROPERTY PARCEL
- ▲ SOIL GAS MONITORING POINT

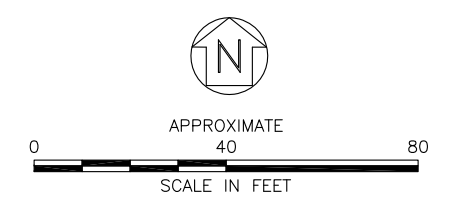
SV-29S

PCE	1,900,000
TCE	34

← SAMPLE IDENTIFICATION
← CONCENTRATION (µg/m³)
← CONSTITUENT

NOTES:

1. DATA SOURCES: DURHAM COUNTY GIS, WITHERS & RAVENEL.
2. J. DENOTES ESTIMATED CONCENTRATION BETWEEN LABORATORY REPORTING LIMIT AND METHOD DETECTION LIMIT.
3. BOLD EXCEEDS DWM SOIL GAS SCREENING LEVEL (SGSL). SV-8S/I AND SV-55S/I COMPARED TO NON-RESIDENTIAL SGSLs. OTHER SAMPLES COMPARED TO RESIDENTIAL SGSLs.



	SV-55S	SV-55I
PCE	3,800,000	320,000
TCE	890	33
cDCE	310	8.3
tDCE	1.1 J	1.7 J
VC	1.4 J	3.0

	SV-28D
PCE	77,000
TCE	8.2
cDCE	5.5

	SV-27S	SV-27D
PCE	2,200,000	9,200,000
TCE	97	<21,000
tDCE	1.5	<16,000

	SV-29S
PCE	1,900,000
TCE	34

	SV-21S	SV-21D
PCE	90,000	180,000
TCE	13	27

	SV-8I
PCE	27,000,000

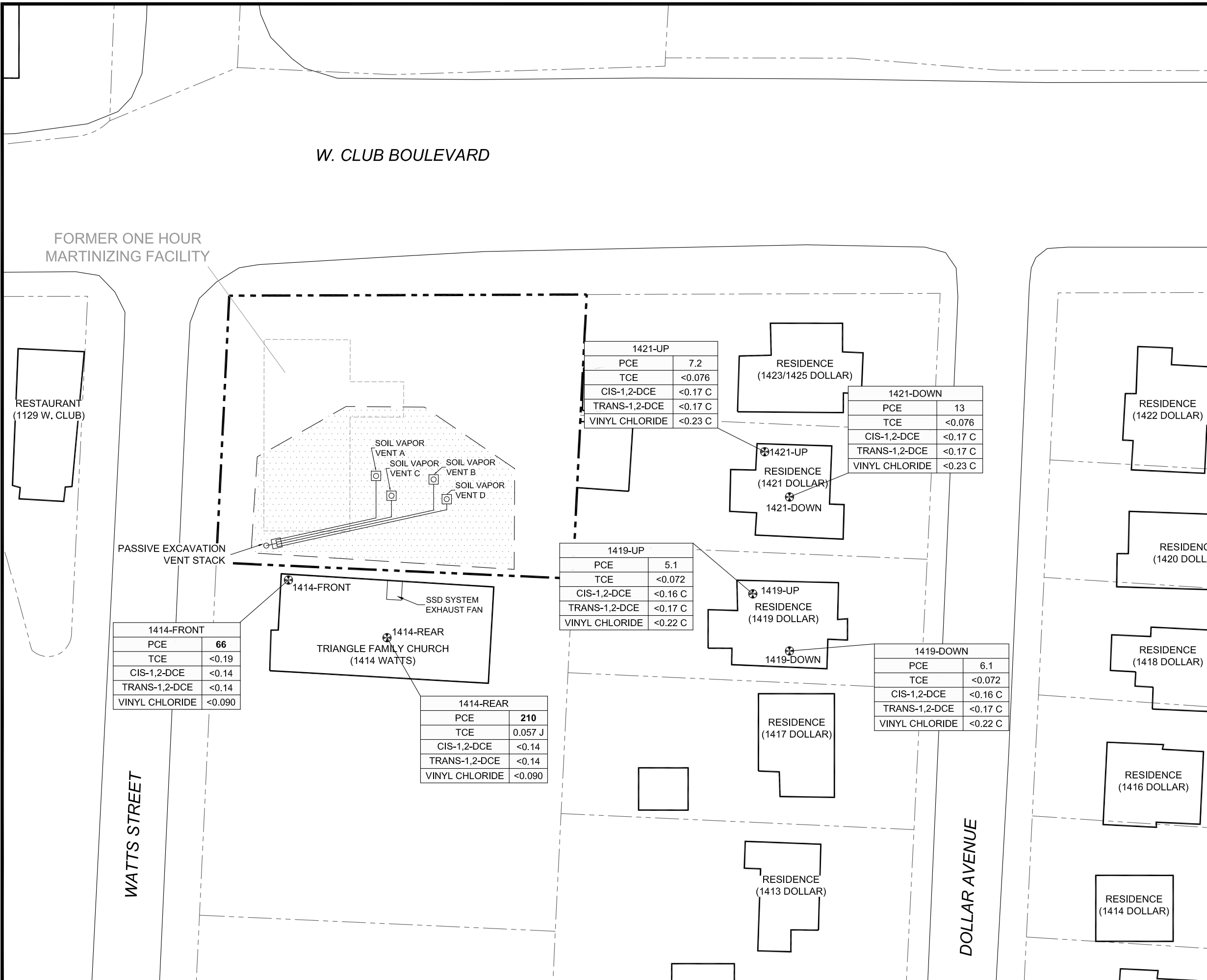
	SV-19
PCE	15,000

	SV-20S	SV-20D
PCE	330,000	390,000
TCE	6.0	17

	SV-18
PCE	1,200

TITLE	SOIL GAS CONTAMINANT CONCENTRATION MAP	
PROJECT	ONE HOUR MARTINIZING DSCA ID NO: 32-0013 1103 WEST CLUB BLVD DURHAM, NORTH CAROLINA	
		2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology
DATE:	11/5/13	REVISION NO. 0
JOB NO.	DS0-84	FIGURE NO. 2

S:\AAA-Master Projects\DSCA - DS0\DS0-84 One Hr Martinizing (former BB&T)\Website Updates\November 2013\DC320013_20131105_Figures.dwg, 11/5/2013 10:19:28 AM, Adobe PDF



LEGEND

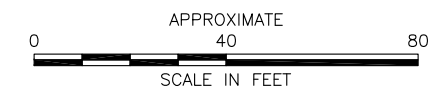
- SOURCE PROPERTY BOUNDARY
- - - - - PROPERTY PARCEL
- ⊕ INDOOR AIR SAMPLE

SAMPLE IDENTIFICATION

1414-REAR	
PCE	210
TCE	0.057 J
CIS-1,2-DCE	<0.14
TRANS-1,2-DCE	<0.14
VINYL CHLORIDE	<0.090

CONCENTRATION (µg/m³)
CONSTITUENT

- NOTES:**
- INDOOR AIR SAMPLES FROM 1414 WATTS ST WERE COLLECTED USING SUMMA CANISTERS ON 09/15/13.
 - INDOOR AIR SAMPLES FROM 1421 DOLLAR AVE WERE COLLECTED USING RADIELLO PASSIVE SAMPLERS DEPLOYED FROM 9/4/13 TO 9/17/13.
 - INDOOR AIR SAMPLES FROM 1419 DOLLAR AVE WERE COLLECTED USING RADIELLO PASSIVE SAMPLERS DEPLOYED FROM 9/17/13 TO 10/1/13.
 - BOLD** CONCENTRATIONS EXCEED DIVISION OF WASTE MANAGEMENT RESIDENTIAL INDOOR AIR SCREENING LEVELS.
 - "J" DENOTES ESTIMATED CONCENTRATION BETWEEN LABORATORY REPORTING LIMIT AND METHOD DETECTION LIMIT.
 - "C" DENOTES ESTIMATED CONCENTRATION DUE TO CALCULATED SAMPLING RATE
 - MAP DATA SOURCES: DURHAM COUNTY GIS, WITHERS & RAVENEL.



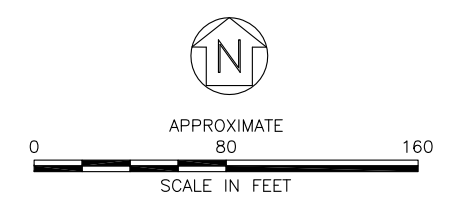
TITLE	
INDOOR AIR CONTAMINANT CONCENTRATION MAP	
PROJECT	
ONE HOUR MARTINIZING DSCA ID NO: 32-0013 1103 WEST CLUB BLVD DURHAM, NORTH CAROLINA	
2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology	
DATE: 11/5/13	REVISION NO. 0
JOB NO. DS0-84	FIGURE NO. 3


S:\AAA-Master Projects\DSCA - DS0\DS0-84 One Hr Martinizing (former BB&T)\EHC Injection\DC320013_20131023_RevisionInjectionFigure.dwg, 11/5/2013 10:32:20 AM, Adobe PDF



- LEGEND**
- SITE PROPERTY BOUNDARY
 - - - PROPERTY PARCEL
 - ⊕ TYPE II MONITORING WELL
 - ⊕ TEMPORARY MONITORING WELL
 - 1.76 PCE CONCENTRATION IN mg/L
 - 15 PCE ISOCONTOUR LINE IN mg/L (DASHED WHERE INFERRED)
 - EXCAVATION AREA
 - PROPOSED INJECTION POINT (6-FT RADIUS)

- NOTES:**
1. SAMPLES FROM PERMANENT GROUNDWATER MONITORING WELLS COLLECTED ON 8/19/13 - 8/22/13.
 2. SAMPLES FROM TEMPORARY MONITORING WELLS COLLECTED ON 09/06/13.
 3. NS = NOT SAMPLED



TITLE PROPOSED INTERMEDIATE INJECTION LOCATIONS	
PROJECT ONE HOUR MARTINIZING DSCA ID NO: 32-0013 1103 WEST CLUB BLVD DURHAM, NORTH CAROLINA	
 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology	
DATE: 09/27/13	REVISION NO. 0
JOB NO. DS0-84	FIGURE NO. 4B

APPENDIX A
PROJECT CALENDAR

~ November 2013 ~

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>Note: Schedule tentative and subject to change. Please check http://portal.ncdenr.org/web/wm/dsca/bbt_updates regularly for any changes in the schedule.</p>					1	2
					3	4
10	11	12	13	14	15	16
	Veterans Day		<div style="border: 2px solid black; padding: 5px; text-align: center;"> Monthly Methane Field Screening </div>			
17	18	19	20	21	22	23
24	25	26	27	28	29	30
				Thanksgiving		

~ December 2013 ~

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
14-Day Radiello Indoor Air Sampling at 1419 & 1421 Dollar Ave						
8	9	10	11	12	13	14
14-Day Radiello Indoor Air Sampling at 1419 & 1421 Dollar Ave						
3-Hour Summa Canister Indoor Air Sampling at 1414 Watts St						
15	16	17	18	19	20	21
14-Day Radiello Indoor Air Sampling at 1419 & 1421			Monthly Methane Field Screening			
Pre-Injection Groundwater and Soil Vapor Sampling						
22	23	24	25	26	27	28
			Christmas Day			
29	30	31	Note: Schedule tentative and subject to change. Please check http://portal.ncdenr.org/web/wm/dsca/bbt_updates regularly for any changes in the schedule.			

~ January 2014 ~

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
<p>Note: Schedule tentative and subject to change. Please check http://portal.ncdenr.org/web/wm/dsca/bbt_updates regularly for any changes in the schedule.</p>			1	2	3	4	
	5	6	7	8	9	10	11
			Monthly Methane Field Screening				
Inject Adventus EHC							
12	13	14	15	16	17	18	
Inject Adventus EHC							
19	20	21	22	23	24	25	
26	27	28	29	30	31		

~ February 2014 ~

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>Note: Schedule tentative and subject to change. Please check http://portal.ncdenr.org/web/wm/dsca/bbt_updates regularly for any changes in the schedule.</p>						1
2	3	4	5	6	7	8
			Monthly Methane Field Screening			
Post-Injection Groundwater and Soil Vapor Sampling						
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

APPENDIX B
INDOOR AIR RISK CALCULATORS

Calculated Cumulative Indoor Air Risks (September 2013)
Triangle Family Church, 1414 Watts Street, Durham, NC
One Hour Martinizing Site, DSCA ID 32-0013
H&H Job No. DS0-84

Risk Exposure Scenario: Residential exposure based on 6 hrs per week occupancy (typical parishioner)

Cumulative Carcinogenic Risk								
Unit	Compound	Exposure Conc. ug/m ³	IUR (ug/m ³) ⁻¹	AT days	EF days/yr	ED years	ET hr/day	LICR
1414-Front	Tetrachloroethene	66	2.60E-07	25550	208	30	1.500	0.00000026
	Trichloroethene		4.10E-06	25550	208	30	1.500	0.00000000
	Total							2.6E-07
1414-Rear	Tetrachloroethene	210	2.60E-07	25550	208	30	1.500	0.00000083
	Trichloroethene	0.057	4.10E-06	25550	208	30	1.500	0.00000000
	Total							8.4E-07

Cumulative Non-Carcinogenic Risk								
Unit	Compound	Exposure Conc. ug/m ³	Rfc mg/m ³	AT days	EF days/yr	ED years	ET hr/day	Hazard Index
1414-Front	Tetrachloroethene	66	4.00E-02	10950	208	30	1.5	0.05876712
	Trichloroethene		2.00E-03	10950	208	30	1.5	0.00000000
	Total							0.059
1414-Rear	Tetrachloroethene	210	4.00E-02	10950	208	30	1.5	0.18698630
	Trichloroethene	0.057	2.00E-03	10950	208	30	1.5	0.00101507
	Total							0.19

Notes:

IUR and Rfc concentrations from EPA Regional Screening Level (RSL) Residential Air Table May 2013.

LICR = Lifetime Incremental Cancer Risk

AT = Averaging Time

IUR = Inhalation Unit Rate

Rfc = Reference Concentration

EF = Exposure Frequency

ED = Exposure Duration

ET = Exposure Time

DSCA Indoor Air Risk Calculator - Table 1: Cumulative Risk for Resident

DSCA ID No: 32-0013

Name/Address of DSCA Site: One Hour Martinizing, 1103 West Club Blvd, Durham, NC 27701

Name/Address of Sampling Location: First Floor, Drey Residence, 1419 Dollar Ave, Durham, NC 27701

Sampling Date: 10/1/2013 Sample ID: 1419-UP

Cumulative Risk Calculation for Indoor Air Pathway (Residential)													
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	Benzene	Ethylbenzene	Naphthalene	MTBE	1,2-Dichloroethane					
Maximum Concentration Detected (µg/m ³)	5.1												
EPA Regional Screening Level (RSL) for Residential Air (carcinogenic target risk = 1E-06) µg/m ³	9.36	0.43	0.16	0.31	0.97	0.072	9.4	0.094					
Ratio = Max Concentration ÷ EPA RSL	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00					

CUMULATIVE RISK (sum of ratios x 10⁻⁶)	5.45E-07
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Cumulative Hazard Index (HI) Calculation for Indoor Air Pathway (Residential)													
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	trans - 1,2-DCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	MTBE	1,2-Dichloroethane		
Maximum Concentration Detected	5.1												
EPA Regional Screening Level (RSL) for Residential Air [noncancer Hazard Index (HI)=1] µg/m ³	41.7	2.1	100	63	31	5200	1000	100	3.1	3100	7.3		
Ratio = Max Concentration ÷ EPA RSL	0.1223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		

CUMULATIVE HI (sum of ratios)	0.12
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Notes:

1. RSLs available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm
2. Trans-1,2-DCE, toluene and xylenes were not included in the cumulative risk calculation since they currently have no carcinogenic EPA RSLs.
3. Cis-1,2-DCE was not included in cumulative risk or HI calculation since there are currently no EPA RSLs.
4. Note that EPA RSL for PCE was recalculated by the DSCA Program based on the 2/10/2012 toxicity data issued under IRIS.

DSCA Indoor Air Risk Calculator - Table 1: Cumulative Risk for Resident

DSCA ID No: 32-0013

Name/Address of DSCA Site: One Hour Martinizing, 1103 West Club Blvd, Durham, NC 27701

Name/Address of Sampling Location: Basement, Drey Residence, 1419 Dollar Ave, Durham, NC 27701

Sampling Date: 10/1/2013 Sample ID: 1419-DOWN

Cumulative Risk Calculation for Indoor Air Pathway (Residential)														
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	Benzene	Ethylbenzene	Naphthalene	MTBE	1,2-Dichloroethane						
Maximum Concentration Detected ($\mu\text{g}/\text{m}^3$)	6.1													
EPA Regional Screening Level (RSL) for Residential Air (carcinogenic target risk = $1\text{E}-06$) $\mu\text{g}/\text{m}^3$	9.36	0.43	0.16	0.31	0.97	0.072	9.4	0.094						
Ratio = Max Concentration \div EPA RSL	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

CUMULATIVE RISK (sum of ratios $\times 10^6$)	6.52E-07
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Cumulative Hazard Index (HI) Calculation for Indoor Air Pathway (Residential)														
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	trans - 1,2 -DCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	MTBE	1,2-Dichloroethane			
Maximum Concentration Detected	6.1													
EPA Regional Screening Level (RSL) for Residential Air [noncancer Hazard Index (HI)=1] $\mu\text{g}/\text{m}^3$	41.7	2.1	100	63	31	5200	1000	100	3.1	3100	7.3			
Ratio = Max Concentration \div EPA RSL	0.1463	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			

CUMULATIVE HI (sum of ratios)	0.15
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- Notes:**
- RSLs available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm
 - Trans-1,2-DCE, toluene and xylenes were not included in the cumulative risk calculation since they currently have no carcinogenic EPA RSLs.
 - Cis-1,2-DCE was not included in cumulative risk or HI calculation since there are currently no EPA RSLs.
 - Note that EPA RSL for PCE was recalculated by the DSCA Program based on the 2/10/2012 toxicity data issued under IRIS.

DSCA Indoor Air Risk Calculator - Table 1: Cumulative Risk for Resident

DSCA ID No: 32-0013

Name/Address of DSCA Site: One Hour Martinizing, 1103 West Club Blvd, Durham, NC 27701

Name/Address of Sampling Location: First Floor, Gilligan Residence, 1421 Dollar Ave, Durham, NC 27701

Sampling Date: 9/17/2013 **Sample ID:** 1421-UP

Cumulative Risk Calculation for Indoor Air Pathway (Residential)													
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	Benzene	Ethylbenzene	Naphthalene	MTBE	1,2-Dichloroethane					
Maximum Concentration Detected (µg/m ³)	7.2												
EPA Regional Screening Level (RSL) for Residential Air (carcinogenic target risk = 1E-06) µg/m ³	9.36	0.43	0.16	0.31	0.97	0.072	9.4	0.094					
Ratio = Max Concentration ÷ EPA RSL	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00					

CUMULATIVE RISK (sum of ratios x 10⁻⁶)	7.69E-07
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Cumulative Hazard Index (HI) Calculation for Indoor Air Pathway (Residential)													
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	trans - 1,2-DCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	MTBE	1,2-Dichloroethane		
Maximum Concentration Detected	7.2												
EPA Regional Screening Level (RSL) for Residential Air [noncancer Hazard Index (HI)=1] µg/m ³	41.7	2.1	100	63	31	5200	1000	100	3.1	3100	7.3		
Ratio = Max Concentration ÷ EPA RSL	0.1727	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		

CUMULATIVE HI (sum of ratios)	0.17
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- Notes:**
1. RSLs available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration-table/Generic_Tables/index.htm
 2. Trans-1,2-DCE, toluene and xylenes were not included in the cumulative risk calculation since they currently have no carcinogenic EPA RSLs.
 3. Cis-1,2-DCE was not included in cumulative risk or HI calculation since there are currently no EPA RSLs.
 4. Note that EPA RSL for PCE was recalculated by the DSCA Program based on the 2/10/2012 toxicity data issued under IRIS.

DSCA Indoor Air Risk Calculator - Table 1: Cumulative Risk for Resident

DSCA ID No: 32-0013

Name/Address of DSCA Site: One Hour Martinizing, 1103 West Club Blvd, Durham, NC 27701

Name/Address of Sampling Location: Basement, Gilligan Residence, 1421 Dollar Ave, Durham, NC 27701

Sampling Date: 9/17/2013 Sample ID: 1421-DOWN

Cumulative Risk Calculation for Indoor Air Pathway (Residential)														
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	Benzene	Ethylbenzene	Naphthalene	MTBE	1,2-Dichloroethane						
Maximum Concentration Detected ($\mu\text{g}/\text{m}^3$)	13													
EPA Regional Screening Level (RSL) for Residential Air (carcinogenic target risk = $1\text{E-}06$) $\mu\text{g}/\text{m}^3$	9.36	0.43	0.16	0.31	0.97	0.072	9.4	0.094						
Ratio = Max Concentration \div EPA RSL	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

CUMULATIVE RISK (sum of ratios $\times 10^6$)	1.39E-06
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Cumulative Hazard Index (HI) Calculation for Indoor Air Pathway (Residential)														
	Tetrachloroethene	Trichloroethylene	Vinyl Chloride	trans - 1,2 -DCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	MTBE	1,2-Dichloroethane			
Maximum Concentration Detected	13													
EPA Regional Screening Level (RSL) for Residential Air [noncancer Hazard Index (HI)=1] $\mu\text{g}/\text{m}^3$	41.7	2.1	100	63	31	5200	1000	100	3.1	3100	7.3			
Ratio = Max Concentration \div EPA RSL	0.3118	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			

CUMULATIVE HI (sum of ratios)	0.31
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- Notes:**
- RSLs available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm
 - Trans-1,2-DCE, toluene and xylenes were not included in the cumulative risk calculation since they currently have no carcinogenic EPA RSLs.
 - Cis-1,2-DCE was not included in cumulative risk or HI calculation since there are currently no EPA RSLs.
 - Note that EPA RSL for PCE was recalculated by the DSCA Program based on the 2/10/2012 toxicity data issued under IRIS.