



August 7, 2017

Shanna L. Laube-Anderson  
Hydrogeologist – Remediation and Redevelopment  
Wisconsin Department of Natural Resources  
141 NW Barstow Street, Room 180  
Waukesha, WI 53188

Re: Site Investigation Work Plan, Greentree Cleaners  
5131 Douglas Avenue, Unit D, Racine, Wisconsin 53402  
*Wisconsin FID 252138700*

Dear Ms. Laube-Anderson,

Phillips Edison & Company, on behalf of Greentree Station LLC previously retained Apex Companies, LLC (Apex) to conduct a Phase II Limited Subsurface Investigation at the dry cleaner tenant space at 5131 Douglas Avenue, Unit D in Racine, Wisconsin (the Site). This tenant space is located within Greentree Station LLC's Greentree Centre, a retail strip mall on Douglas Avenue in Racine.

As directed by the Wisconsin Department of Natural Resources (DNR), in its letter dated July 27, 2017, Greentree Station LLC hereby affirms that it has retained Apex to pursue closure for VOCs exceeding applicable standards for soil, soil-gas and groundwater in the immediate vicinity of the Site. Apex has prepared this Work Plan to describe the first step in site characterization. Based upon the results of this work, Apex will develop additional Work Plan(s) for expanded site characterization, if needed, and options for media-specific remediation

## BACKGROUND INFORMATION

Dry cleaning operations have been conducted in the tenant space from 1991 to present and the use of dry cleaning solvents poses environmental concern. Analysis of soil, groundwater and soil-gas samples detected volatile organic compounds (VOCs) at concentration in excess of soil Residual Contaminant Levels (RCLs), Groundwater Quality Standards (GQS), and sub-slab Vapor Action Levels (VALs) cited in Wisconsin regulations. The results of environmental testing were described in Apex's report titled *Results of Phase II Limited Subsurface Investigation, Greentree Cleaners Tenant Space, Greentree Centre, 5153 Douglas Avenue, Unit D, Racine, Wisconsin*, dated June 30, 2017. The sample locations and data summary tables for previous soil, groundwater and soil-gas analysis are included in **Attachment A**.

As we discussed in a telephone conversation on July 25, 2017, the Wisconsin DNR requires that closure be obtained for VOCs exceeding applicable standards. To meet the agency requirements, expanded soil, groundwater and soil-gas assessment is warranted. Further, the soil-gas data indicates that remediation is required to mitigate potential vapor intrusion to indoor air. As you stated, to meet the agency requirements, the following steps will be needed:

1. Delineate the lateral and vertical extent of VOCs in soil. Additional soil samples will be needed near the dry cleaning plant, and in the areas to the east of the tenant space.
2. Delineate the lateral extent of VOCs in groundwater. Groundwater monitoring wells will be needed to determine the site-specific groundwater gradient/flow direction and to document the extent of groundwater impacts.
3. Delineate the lateral extent of sub-slab VOCs in soil-gas. Additional soil-gas sampling will be needed in the dry cleaner space and in the adjoining tenant spaces.
4. Once the extent of VOCs in soil-gas has been determined, remedial action will be required to achieve the applicable cleanup criteria and to mitigate vapor intrusion to indoor air.
5. Once the extent of VOCs in groundwater have been determined, remedial action will be required to address the groundwater contamination. At a minimum, groundwater attenuation<sup>1</sup> monitoring will be required to assess changes in groundwater quality over time. . Based upon its review of the groundwater data, Apex will recommend the number and frequency of groundwater monitoring events to the Wisconsin DNR. The need for active groundwater treatment will be evaluated based on the groundwater monitoring data, including whether impacts extend beyond the property, and whether the groundwater plume is stable.

In addition to the above, periodic reporting to the Wisconsin DNR will be needed to show compliance and to pursue agency closure.

## OBJECTIVES AND SCOPE OF WORK

As required by Wisconsin regulations, Apex has prepared this Work Plan to conduct expanded assessment in and near the dry cleaner tenant space. To meet this objective, Apex will conduct the following scope of work:

- Task 1: Pre-field Activities
- Task 2: Soil Sampling/Analysis
- Task 3: Monitoring Well Installation and Groundwater Sampling/Analysis
- Task 4: Soil-Gas Sampling/Analysis
- Task 5: Data Interpretation and Report Preparation
- Task 6: Project Management

The objective of the proposed sampling is to further characterize the extent of VOC impacts in soil, groundwater and sub-slab soil-gas.

### Task 1: Pre-field Activities

Pre-field activities will include preparation of a site-specific health and safety plan, and utility clearances as summarized below:

<sup>1</sup> A variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in-situ processes include biodegradation, dispersion; dilution; sorption; volatilization; and chemical or biological stabilization, transformation, or destruction of contaminants.

**Health & Safety Plan Preparation.** In accordance with the Occupational Safety and Health Administration (OSHA), Apex previously prepared a site-specific health and safety plan (HSP) for a previous phase of subsurface assessment conducted at the Site. Apex will revise this HSP for possible hazards and the procedures to be followed to safeguard worker health and safety during field activities at the Site. Apex will review HSP procedures with all subcontract personnel prior to the start of fieldwork.

**Utility Clearance.** Apex will arrange for a standard “call before you dig” 811 utility notification at least two working days prior to subsurface activities. The utility notification includes only public utilities located on public property and in the right-of-way and does not include utilities on private property. Apex also retained a private utility locator service, a geophysical subcontractor, to clear areas proposed for invasive sampling.

## Task 2: Soil Sampling/Analysis

To assess soil conditions at the Site, Apex will use a truck-mounted Geoprobe™ rig to collect soil samples from seven borings, each advanced to a depth of 20 feet below ground surface (bgs). The borings will be used to construct groundwater monitoring wells at the approximate locations shown in **Figure 1**.

It should be noted that soil sampling was planned adjacent to the dry cleaning plant, however, the geophysical survey identified an electrical conduit in the proposed boring locations. Recent analysis of a soil-gas sample collected adjacent to the dry cleaning plant (in June 2017) did not detect VOCs at concentrations in excess of VALs. Based on this result, and considering access limitations, at this time, Apex does not propose to conduct additional soil sampling adjacent to the dry cleaning plant.

**Lithologic Description.** Soil samples will be logged continuously from ground surface to the bottom of each boring. An experienced Apex geologist will document the subsurface conditions (soil type, volatile emissions, the presence of staining, odors and groundwater levels, etc.) in each boring.

**Soil Sampling.** Soil samples which exhibit indications of VOC impacts will be selected for analysis. In addition, soils will be collected in areas of previous RCL exceedances to document the lateral and vertical extent of chemical impacts. Following collection, the soil samples will be placed in clean, laboratory-supplied vials or bottles, labeled and placed in a chilled cooler pending delivery to the analytical laboratory. Appropriate chain-of-custody protocols will be maintained throughout the sample-handling process.

**Soil Analysis.** To further document the lateral and vertical extent of VOCs in soil near the tenant space, up to eight soil samples will be analyzed for VOCs by EPA Method 5035/8260. For soil and groundwater samples, the reporting limit for VOC analysis shall be the method detection limit for the analytical method used. The soil analysis will be performed on a one-week laboratory turnaround by a National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory. Appropriate chain-of-custody protocols will be maintained throughout the sample-handling process and a temperature blank will be included in each shipping container.

### Task 3: Monitoring Well Installation and Sampling/Analysis

Apex will install seven shallow groundwater monitoring wells in the soil borings discussed above. Each monitoring well will be installed to a depth of 20 feet bgs. Apex will construct the wells using 2-inch diameter, schedule 40 polyvinyl chloride (PVC), factory-slotted well casing and blank risers. Following drilling and soil sampling, a well screen and riser will be placed into the open borehole and a sand filter pack will be placed in the annulus surrounding the well casing. This sand pack will be placed to a depth of 2-feet above the well screen. The remainder of the borehole will be backfilled with a well seal consisting of bentonite clay and grout. The monitoring wells will be completed at ground surface using a flush-mount well box.

**Elevation Survey/Water Level Measurement.** Following installation, the top of each well casing will be surveyed for lateral and vertical control by a licensed surveyor. Several days following well installation, stabilized ground water levels will be measured in each well within an accuracy of 0.01-foot. The water level data and the results of the well elevation survey will be used to calculate the groundwater gradient and lateral flow direction at the Site.

**Monitoring Well Development.** Following installation, the monitoring wells will be developed to remove sediment and to improve hydraulic communication with the surrounding aquifer. Well development procedures will consist of the removal of approximately three to five well casing volumes of groundwater.

**Groundwater Sampling/Analysis.** Groundwater samples will be collected from each of the seven monitoring wells using a low flow pump, in accordance with Wisconsin DNR-approved protocols. Following collection, the groundwater samples will be placed in clean, laboratory-supplied vials or bottles, labeled and placed in a chilled cooler pending delivery to the analytical laboratory. Appropriate chain-of-custody protocols will be maintained throughout the sample-handling process, and a temperature blank will be included in each shipping container.

One groundwater sample from each monitoring well (seven samples) will be analyzed for VOCs by EPA Method 8260. For quality control purposes, one replicate groundwater sample and one trip blank will also be analyzed for VOCs. The groundwater analysis will be performed by a NELAC-certified lab on a one-week laboratory turnaround basis.

### Task 4: Soil-Gas Sampling/Analysis

To assess the lateral extent of VOCs below the concrete floor in the dry cleaning, and adjoining tenant spaces, Apex will collect up to five soil-gas samples at the approximate locations shown in **Figure 1**. The actual sample locations will be based upon accessibility. Apex will coordinate with the tenant to best locate each sample location.

A hammer drill will be used to install a 1½-inch diameter vapor probe through the concrete slab, and into the gravel layer below the floor, to depths of approximately 9-inches. An access valve concealed below a steel cap will be installed in the floor to allow for future soil-gas monitoring events, if needed.

Prior to sample collection, leak tests will be conducted on all of the fittings and vapor probes. The tubing will be purged of three volumes prior to the collection of soil-vapor samples using batch-certified 6-liter Summa® canisters (evacuated stainless steel canister) with (30 minute) flow control valves.

Upon successful leak test completion, the Summa canisters will be connected to the sample probes and the regulator valves will be opened. The initial time and vacuum pressure will be recorded and monitored on a regular basis until sample completion.

The soil-vapor samples will be analyzed for VOCs by EPA Method TO-15. The soil-vapor analysis will be performed on a one-week laboratory turnaround basis.

### **Task 5: Data Interpretation and Report Preparation**

The report will include the results of additional assessment, and to the extent possible, will define the lateral and vertical extent of VOC impacts in soil, groundwater and soil-gas. The laboratory data will be compared to the regulatory limits cited in the WAC as summarized below.

- The soil data will be compared to Non-Industrial and Industrial Residual Contaminant Levels (RCLs) for Direct Contact and the soil (leaching) component to groundwater, in accordance with WAC NR 720.
- The groundwater data will be compared to Groundwater Quality Standards cited in WAC NR 140.10 Table 1 and Vapor Risk Screening Levels (VRSLs) for groundwater for a commercial property, in accordance with WAC NR 140 and WAC NR 716.
- The soil-gas data will be compared to sub-slab Vapor Action Levels (VALs) for commercial property, in accordance with WAC NR 716.

The report will include a site plan showing the location of each boring and well; the soil and groundwater data summarized in data tables; copies of the laboratory reports; boring logs; and a description of our field protocols. Our field observations (soil type, photoionization detector [PID] measurements, the presence of odors/staining, depth to groundwater, and soil sampling depths) will be presented in the boring logs.

The report will also include a description of the rationale for all conclusions and recommendations relative to Wisconsin regulations.

- Assuming that the extent of VOCs in groundwater have been delineated, Apex will provide recommendations for future groundwater monitoring events (quarterly or semi-annual) to document changes in groundwater quality over time, or other appropriate remedial measures.
- Also, once the extent of VOCs in soil-gas has been determined, Apex will provide options to mitigate vapor intrusion to indoor air, address the source of VOCs in soil gas, or other appropriate remedial measures.
- The specific scope of work for such remedial action will be submitted to Wisconsin DNR in a separate Work Plan.

If you have any questions regarding the technical approach to the Site Investigation Work Plan, please contact Stephen Torres at (847) 956-8589 x3204. Thank you for your assistance with this matter.

Respectfully Submitted,  
**Apex Companies, LLC**

*Jane Allan*

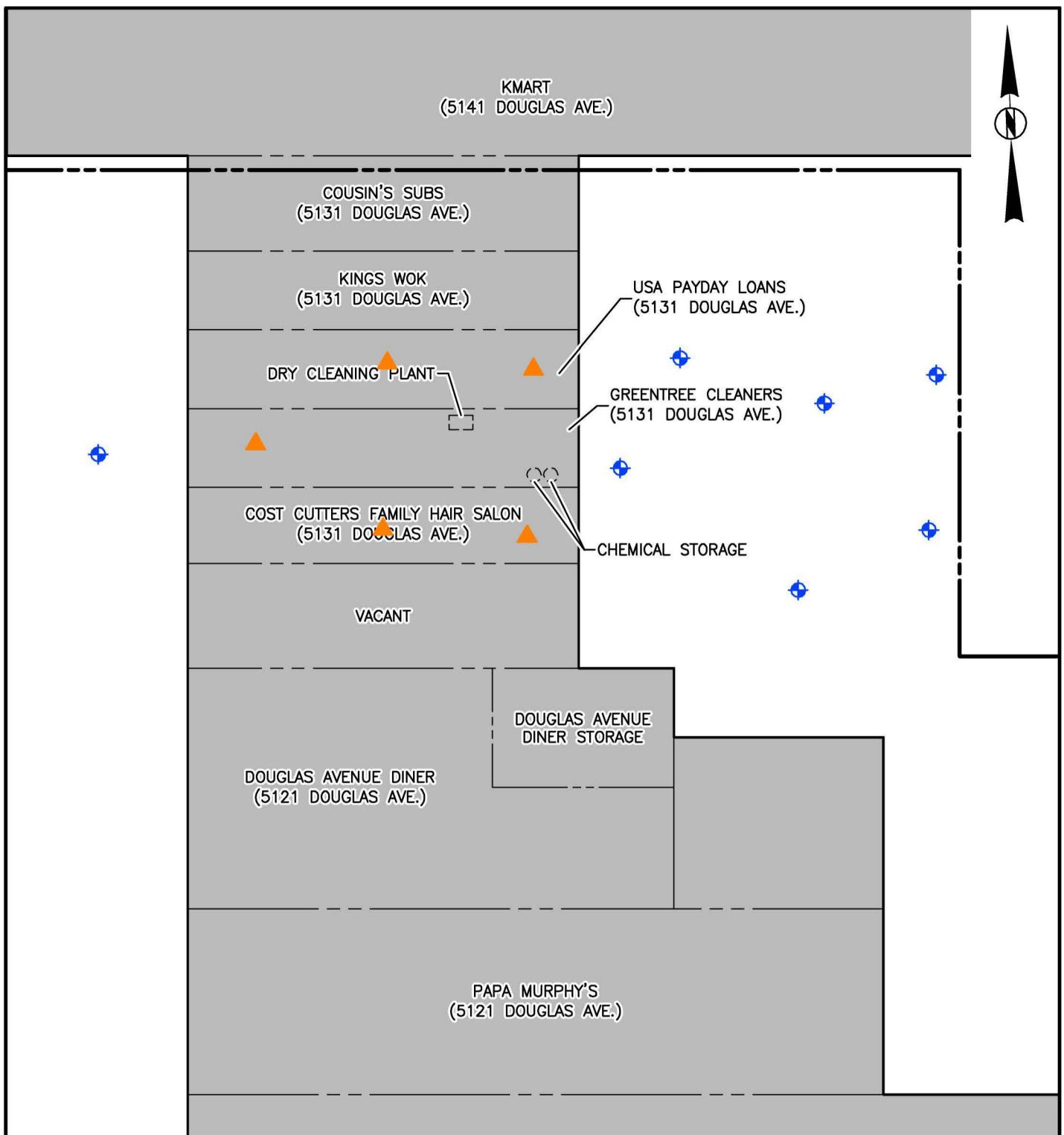
*Steph G. Torres*

Jane Allan  
Project Manager

Stephen G. Torres, P.G.  
Program Manager

Attachments

Figure 1: Proposed Sample Locations  
Attachment A: Previous Sample Locations and Data Summary Tables



CHECK BY JB
DRAWN BY EM
DATE 07-22-17
SCALE AS SHOWN
CAD NO. PECO.2016.78B-B
PRJ NO. PECO_2016-78B

SITE PLAN SHOWING PROPOSED SAMPLE LOCATIONS

GREENTREE CENTRE  
5131 DOUGLAS AVENUE  
RACINE, WISCONSIN

SCALE IN FEET  
0 15 30 60

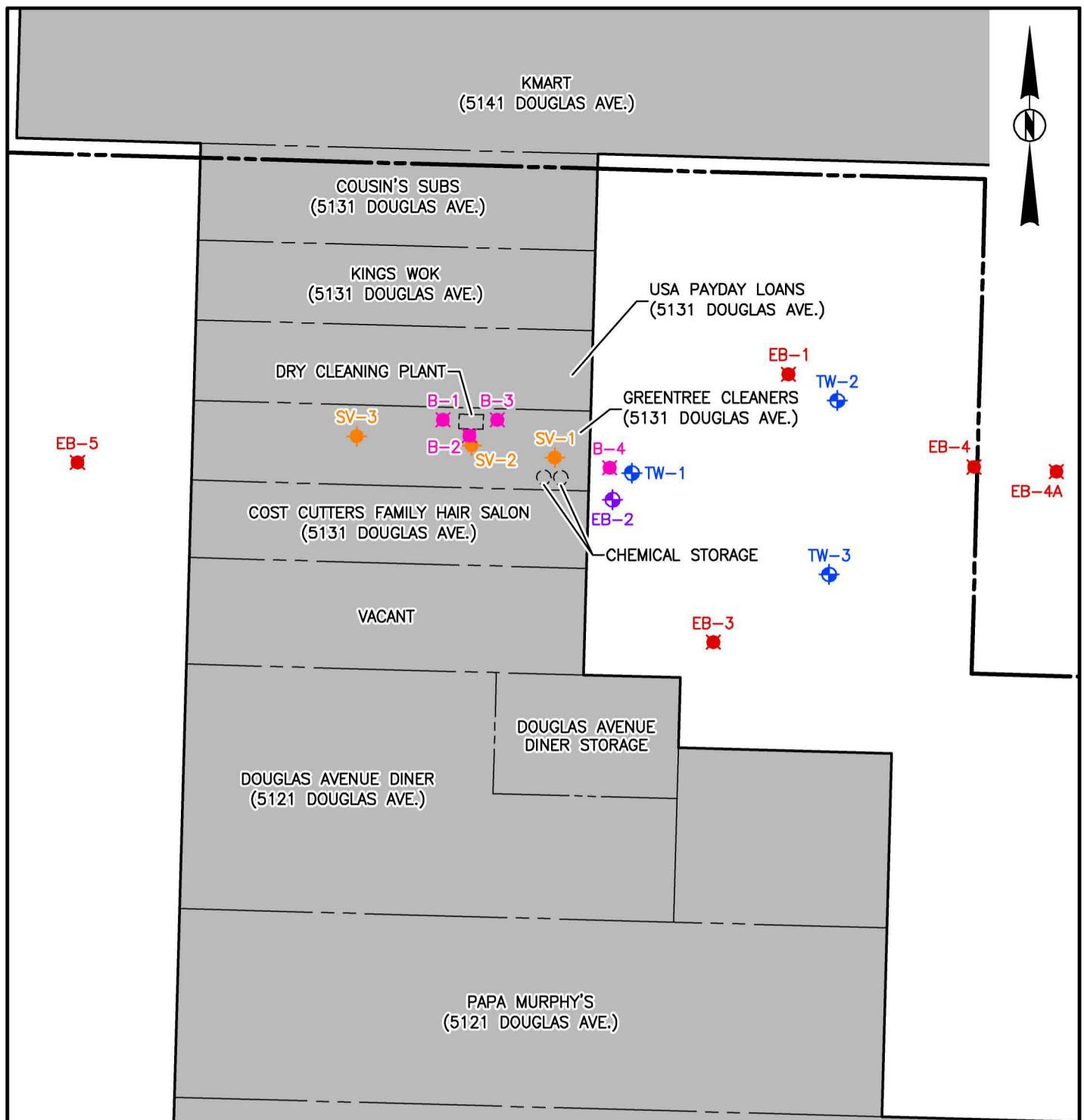
APEX

FIGURE

1

## Attachment A

### Previous Sample Locations and Data Summary Tables



#### LEGEND

- ◆ SUB-SLAB SOIL VAPOR SAMPLE
- ◆ TEMPORARY MONITORING WELLS
- ◆ HYGIENETICS SOIL BORINGS (2005)
- ◆ ECS SOIL BORINGS (2005)
- ◆ ECS TEMPORARY MONITORING WELLS (2005)

PICK 'N SAVE  
(5111 DOUGLAS AVE.)

SCALE IN FEET  
0 15 30 60

CHECK BY JB	
DRAWN BY EM	
DATE 06-27-17	
SCALE AS SHOWN	
CAD NO. PECO.2016.78B-B	
PRJ NO. PECO_2016-78B	

#### SITE DETAILS

GREENTREE CENTRE  
5111-5141 DOUGLAS AVENUE  
RACINE, WISCONSIN



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**Table 1**  
**Summary of Soil Data for**  
**Volatile Organic Compounds (VOCs)**  
**EPA Method 5035/8260B**  
**Greentree Centre**  
**5055 & 5111-5141 Douglas Avenue, Racine, Wisconsin**

concentrations in milligrams per kilogram (mg/kg)

Boring Number	TW-1	TW-3	EB-1 (ECS 2005)		EB-2 (ECS 2005)		Residual Contaminant Levels		
			5	7	3	10	3	10	Soil to Groundwater
Sample Depth (feet bgs)									
Acetone	—	—	—	—	—	—	63,400	100,000	1.8383
Benzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	1.6	7.07	0.0026
Bromobenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	342	679	NE
Bromoform	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	216	906	NE
Bromochloromethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	0.418	1.83	0.0002
Bromodichloromethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	25.4	113	0.0012
Bromomethane	<0.0699	<0.0699	<0.025	<0.025	<0.025	<0.026	9.6	43	0.0025
2-Butanone	—	—	—	—	—	—	28,400	28,400	0.833
n-Butylbenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	108	108	NE
sec-Butylbenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	145	145	NE
tert-Butylbenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	183	183	NE
Carbon disulfide	—	—	—	—	—	—	738	738	0.2959
Carbon tetrachloride	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	0.916	4.03	0.0019
Chlorobenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	370	761	0.0679
Chloroethane	<0.0670	<0.0670	<0.025	<0.025	<0.025	<0.026	2,120	2,120	0.1133
2-Chloroethylvinyl ether	—	—	—	—	—	—	117	117	NE
Chloroform	<0.0464	<0.0464	<0.025	<0.025	<0.025	<0.026	0.454	1.98	0.0017
Chloromethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	159	669	0.0078
2-Chlorotoluene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	907	907	NE
4-Chlorotoluene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	253	235	NE
Dibromochloromethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	8.28	38.9	0.016
1,2-Dibromo-3-chloropropane	<0.0912	<0.0912	<0.025	<0.025	<0.025	<0.026	0.008	0.092	0.0000864
1,2-Dibromoethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	0.05	0.221	0.0000141
Dibromomethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	34	143	NE
1,2-Dichlorobenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	376	376	0.584
1,3-Dichlorobenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	297	297	0.5764
1,4-Dichlorobenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	3.74	16.4	0.072
Dichlorodifluoromethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	126	530	1.5431
1,1-Dichloroethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	5.06	22.2	0.2417
1,2-Dichloroethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	0.652	2.87	0.0014
1,1-Dichloroethene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	320	1,190	0.0025
cis-1,2-Dichloroethene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	156	2,340	0.0206
trans-1,2-Dichloroethene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	156	2,340	0.0313
1,2-Dichloropropane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	0.406	1.78	0.0017
1,3-Dichloropropane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	1,490	1,490	NE
2,2-Dichloropropane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	191	191	NE
1,1-Dichloropropene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	NE	NE	NE
cis-1,3-Dichloropropene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	2.37	10.6	0.0001
trans-1,3-Dichloropropene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	2.37	10.6	0.0001
Diisopropyl ether	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	2,260	2,260	NE
Ethylbenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	8.02	35.4	0.785
Hexachloro-1,3-butadiene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	1.63	7.19	NE
2-Hexanone	—	—	—	—	—	—	237	1,760	NE
Isopropylbenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	268	268	NE
p-Isopropyltoluene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	162	162	NE
4-Methyl-2-pentanone	—	—	—	—	—	—	3,360	3,360	0.1126
Methylene Chloride	<b>0.512</b>	<b>0.371</b>	<0.025	<0.025	<0.025	<0.026	61.8	1,150	0.0013
Methyl tertiary-butyl ether	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	63.8	282	0.0135
Naphthalene	<0.0400	<0.0400	<b>0.34</b>	<0.025	<0.025	<0.026	5.52	24.1	0.3291
n-Propylbenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	264	264	NE
Styrene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	867	867	0.11
1,1,1,2-Tetrachloroethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	2.78	12.3	0.0267
1,1,2,2-Tetrachloroethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	0.81	3.6	0.0000782
Tetrachloroethene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	33	145	0.0023
Toluene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	818	818	0.5536
1,2,3-Trichlorobenzene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	62.6	934	NE
1,2,4-Trichlorobenzene	<0.0476	<0.0476	<0.025	<0.025	<0.025	<0.026	24	113	0.204
1,1,1-Trichloroethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	640	640	0.0701
1,1,2-Trichloroethane	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	1.59	7.01	0.0016
Trichloroethene	<0.0250	<0.0250	<0.025	<0.025	<0.025	<0.026	1.3	8.41	0.0018
Trichlorofluoromethene	<0.0250	<0.0250	<0.025	<0.025	&lt				

**Table 1 (Continued)**  
**Summary of Soil Data for**  
**Volatile Organic Compounds (VOCs)**  
**EPA Method 5035/8260B**  
**Greentree Centre**  
**5055 & 5111-5141 Douglas Avenue, Racine, Wisconsin**

concentrations in milligrams per kilogram (mg/kg)

Boring Number	EB-3 (ECS 2005)		EB-4 (ECS 2005)	EB-4A (ECS 2005)	EB-5 (ECS 2005)		Residual Contaminant Levels		
	3	10			3	10	Non-Industrial	Industrial	Soil to Groundwater
Acetone	—	—	—	—	—	—	63,400	100,000	1.8383
Benzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	1.6	7.07	0.0026
Bromobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	342	679	NE
Bromochloromethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	216	906	NE
Bromodichloromethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.418	1.83	0.0002
Bromoform	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	25.4	113	0.0012
Bromomethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	9.6	43	0.0025
2-Butanone	—	—	—	—	—	—	28,400	28,400	0.833
n-Butylbenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	108	108	NE
sec-Butylbenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	145	145	NE
tert-Butylbenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	183	183	NE
Carbon disulfide	—	—	—	—	—	—	738	738	0.2959
Carbon tetrachloride	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.916	4.03	0.0019
Chlorobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	370	761	0.0679
Chloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	2,120	2,120	0.1133
2-Chloroethylvinyl ether	—	—	—	—	—	—	117	117	NE
Chloroform	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.454	1.98	0.0017
Chloromethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	159	669	0.0078
2-Chlorotoluene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	907	907	NE
4-Chlorotoluene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	253	235	NE
Dibromochloromethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	8.28	38.9	0.016
1,2-Dibromo-3-chloropropane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.008	0.092	0.0000864
1,2-Dibromoethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.05	0.221	0.0000141
Dibromomethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	34	143	NE
1,2-Dichlorobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	376	376	0.584
1,3-Dichlorobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	297	297	0.5764
1,4-Dichlorobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	3.74	16.4	0.072
Dichlorodifluoromethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	126	530	1.5431
1,1-Dichloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	5.06	22.2	0.2417
1,2-Dichloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.652	2.87	0.0014
1,1-Dichloroethene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	320	1,190	0.0025
cis-1,2-Dichloroethene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	156	2,340	0.0206
trans-1,2-Dichloroethene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	156	2,340	0.0313
1,2-Dichloropropane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.406	1.78	0.0017
1,3-Dichloropropane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	1,490	1,490	NE
2,2-Dichloropropane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	191	191	NE
1,1-Dichloropropene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	NE	NE	NE
cis-1,3-Dichloropropene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	2.37	10.6	0.0001
trans-1,3-Dichloropropene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	2.37	10.6	0.0001
Diisopropyl ether	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	2,260	2,260	NE
Ethylbenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	8.02	35.4	0.785
Hexachloro-1,3-butadiene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	1.63	7.19	NE
2-Hexanone	—	—	—	—	—	—	237	1,760	NE
Isopropylbenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	268	268	NE
p-Isopropyltoluene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	162	162	NE
4-Methyl-2-pentanone	—	—	—	—	—	—	3,360	3,360	0.1126
Methylene Chloride	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	61.8	1,150	0.0013
Methyl tertiary-butyl ether	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	63.8	282	0.0135
Naphthalene	<0.027	<0.026	0.71	<0.025	0.031	<0.025	5.52	24.1	0.3291
n-Propylbenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	264	264	NE
Styrene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	867	867	0.11
1,1,1,2-Tetrachloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	2.78	12.3	0.0267
1,1,2,2-Tetrachloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	0.81	3.6	0.0000782
Tetrachloroethene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	33	145	0.0023
Toluene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	818	818	0.5536
1,2,3-Trichlorobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	62.6	934	NE
1,2,4-Trichlorobenzene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	24	113	0.204
1,1,1-Trichloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	640	640	0.0701
1,1,2-Trichloroethane	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	1.59	7.01	0.0016
Trichloroethene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	1.3	8.41	0.0018
Trichlorofluoromethene	<0.027	<0.026	<0.027	<0.025	<0.026	<0.025	1,230	1,230	NE
1,2,3-Trichloropropane	<0.027	<0.026	<0.027	<0.025	<				

**Table 1 (Continued)**  
**Summary of Soil Data for**  
**Volatile Organic Compounds (VOCs)**  
**EPA Method 5035/8260B**  
**Greentree Centre**  
**5055 & 5111-5141 Douglas Avenue, Racine, Wisconsin**

concentrations in milligrams per kilogram (mg/kg)

Boring Number	B-1	B-2	B-3	B-4	Residual Contaminant Levels		
					Direct Contact		Soil to Groundwater
					Non-Industrial	Industrial	
Sample Depth (feet bgs)	2 to 4	3 to 5	3 to 5	2 to 4			
Acetone	<0.010	<0.010	<0.010	<0.010			
Benzene	<0.0015	<0.0015	<0.0015	<b>0.0057</b>			
Bromobenzene	—	—	—	—			
Bromoform	—	—	—	—			
Bromomethane	—	—	—	—			
2-Butanone	<0.010	<0.010	<0.010	<0.010			
n-Butylbenzene	—	—	—	—			
sec-Butylbenzene	—	—	—	—			
tert-Butylbenzene	—	—	—	—			
Carbon disulfide	<0.003	<0.003	<0.003	<0.003			
Carbon tetrachloride	<0.0023	<0.0023	<0.0023	<0.0023			
Chlorobenzene	<0.0015	<0.0015	<0.0015	<0.0015			
Chloroethane	<0.0015	<0.0015	<0.0015	<0.0015			
2-Chloroethylvinyl ether	<0.0074	<0.0074	<0.0074	<0.0074			
Chloroform	<0.0015	<0.0015	<0.0015	<0.0015			
Chloromethane	<0.010	<0.010	<0.010	<0.010			
2-Chlorotoluene	—	—	—	—			
4-Chlorotoluene	—	—	—	—			
Dibromochloromethane	<0.0015	<0.0015	<0.0015	<0.0015			
1,2-Dibromo-3-chloropropane	—	—	—	—			
1,2-Dibromoethane	—	—	—	—			
Dibromomethane	—	—	—	—			
1,2-Dichlorobenzene	—	—	—	—			
1,3-Dichlorobenzene	—	—	—	—			
1,4-Dichlorobenzene	—	—	—	—			
Dichlorodifluoromethane	—	—	—	—			
1,1-Dichloroethane	<0.0015	<0.0015	<0.0015	<0.0015			
1,2-Dichloroethane	<0.0016	<0.0016	<0.0016	<0.0016			
1,1-Dichloroethene	<0.0027	<0.0027	<0.0027	<0.0027			
cis-1,2-Dichloroethene	<0.0015	<0.0015	<0.0015	<0.0015			
trans-1,2-Dichloroethene	<0.0016	<0.0016	<0.0016	<0.0016			
1,2-Dichloropropane	<0.0015	<0.0015	<0.0015	<0.0015			
1,3-Dichloropropane	—	—	—	—			
2,2-Dichloropropane	—	—	—	—			
1,1-Dichloropropene	—	—	—	—			
cis-1,3-Dichloropropene	<0.0013	<0.0013	<0.0013	<0.0013			
trans-1,3-Dichloropropene	<0.0013	<0.0013	<0.0013	<0.0013			
Diisopropyl ether	—	—	—	—			
Ethylbenzene	<0.0015	<0.0015	<0.0015	<b>0.0017</b>			
Hexachloro-1,3-butadiene	—	—	—	—			
2-Hexanone	<0.010	<0.010	<0.010	<0.010			
Isopropylbenzene	—	—	—	—			
p-Isopropyltoluene	—	—	—	—			
4-Methyl-2-pentanone	<0.010	<0.010	<0.010	<0.010			
Methylene Chloride	<0.005	<0.005	<0.005	<0.005			
Methyl tertiary-butyl ether	—	—	—	—			
Naphthalene	—	—	—	—			
n-Propylbenzene	—	—	—	—			
Styrene	<0.001	<0.001	<0.001	<0.001			
1,1,1,2-Tetrachloroethane	—	—	—	—			
1,1,2,2-Tetrachloroethane	<0.0023	<0.0023	<0.0023	<0.0023			
Tetrachloroethene	<b>0.067</b>	<b>0.0082</b>	<b>0.0030</b>	<b>1.4</b>			
Toluene	<0.0015	<0.0015	<0.0015	<b>0.0065</b>			
1,2,3-Trichlorobenzene	—	—	—	—			
1,2,4-Trichlorobenzene	—	—	—	—			
1,1,1-Trichloroethane	<0.002	<0.002	<0.002	<0.002			
1,1,2-Trichloroethane	<0.0015	<0.0015	<0.0015	<0.0015			
Trichloroethene	<0.0015	<0.0015	<0.0015	<b>0.0021</b>			
Trichlorofluoromethane	—	—	—	—			
1,2,3-Trichloropropane	—	—	—	—			
1,2,4-Trimethylbenzene	—	—	—	—			
1,3,5-Trimethylbenzene	—	—	—	—			
Vinyl acetate	<0.010	<0.010	<0.010	<0.010			
Vinyl chloride	<0.003	<0.003	<0.003	<0.003			
m&p-Xylene	—	—	—	—			
o-Xylene	—	—	—	—			
Xylenes (Total)	<0.0032	<0.0032	<0.0032	<0.0032			

Notes:

bgs = feet below ground surface

TW-1 = Soil boring completed by Apex (2017)

EB-1 = Soil boring completed by ECS (2015)

B-1 = Soil boring completed by ECS (2015)

< = Not Detected: Concentration less than the indicated laboratory detection limit

Detected compounds are shown as **bold**

— = specific parameter not included in analysis

NE = Remedial Objective not established

RCLs (Non-Industrial Direct-Contact) = Residual Contaminant Levels per the U.S. EPA's Regional Screening Level Web-Calculator (updated March 2017) in accordance with Wisconsin Administrative Code NR 720

RCLs (Industrial Direct-Contact) = Residual Contaminant Levels per the U.S. EPA's Regional Screening Level Web-Calculator (updated March 2017) in accordance with Wisconsin Administrative Code NR 720

RCLs (Soil to Groundwater) = Soil to Groundwater Residual Contaminant Levels per the U.S. EPA Regional Screening Level Web-Calculator (updated March 2017) in accordance with Wisconsin Administrative Code NR 720

- |  |  |
|--|--|
|  | Concentrations in excess of RCLs are shaded yellow |
|  | Exceeded RCLs are shaded green                     |

**Table 2**  
**Summary of Groundwater Data for**  
**Volatile Organic Compounds (VOCs)**  
**EPA Method 8260B**  
**Greentree Centre**  
**5055 & 5111-5141 Douglas Avenue, Racine, Wisconsin**  
concentrations in milligrams per liter ( $\mu\text{g}/\text{L}$ )

Well Number	TW-1	TW-3	GW-2 (ECS 2005)	Groundwater Quality Standards		Vapor Risk Screening Levels
				Enforcement Standards	Preventative Action Limit	
Benzene	<0.50	<0.50	<0.41	5	0.5	69
Bromobenzene	<0.23	<0.23	<0.82	NE	NE	2,600
Bromoform	<0.34	<0.34	<0.97	NE	NE	2,900
Bromochloromethane	<0.50	<0.50	<0.56	0.6	0.06	38
Bromodichloromethane	<0.50	<0.50	<0.94	4.4	0.44	5,100
Bromoform	<0.50	<0.50	<0.91	10	1	73
Bromomethane	<2.4	<2.4	<0.91	NE	NE	NE
n-Butylbenzene	<0.50	<0.50	<0.93	NE	NE	NE
sec-Butylbenzene	<2.2	<2.2	<0.89	NE	NE	NE
tert-Butylbenzene	<0.18	<0.18	<0.97	NE	NE	NE
Carbon tetrachloride	<0.50	<0.50	<0.91	5	0.5	18
Chlorobenzene	<0.50	<0.50	<0.41	100	20	1,700
Chloroethane	<0.37	<0.37	<0.97	400	80	97,000
Chloroform	<2.5	<2.5	<0.37	6	0.6	36
Chloromethane	<0.50	<0.50	<b>0.28</b>	30	3	1,100
2-Chlorotoluene	<0.50	<0.50	<0.85	NE	NE	NE
4-Chlorotoluene	<0.21	<0.21	<0.74	NE	NE	NE
Dibromochloromethane	<0.50	<0.50	<0.81	60	6	NE
1,2-Dibromo-3-chloropropane	<2.2	<2.2	<0.87	0.2	0.02	3.4
1,2-Dibromoethane	<0.18	<0.18	<0.56	0.05	0.005	7.7
Dibromomethane	<0.43	<0.43	<0.60	NE	NE	520
1,2-Dichlorobenzene	<0.50	<0.50	<0.83	600	60	11,000
1,3-Dichlorobenzene	<0.50	<0.50	<0.87	600	120	NE
1,4-Dichlorobenzene	<0.50	<0.50	<0.95	75	15	110
Dichlorodifluoromethane	<0.22	<0.22	<0.99	1,000	200	31
1,1-Dichloroethane	<0.41	<0.24	<0.75	850	85	330
1,2-Dichloroethane	<0.17	<0.17	<0.36	5	0.5	98
1,1-Dichloroethene	<0.41	<0.41	<0.57	7	0.7	820
cis-1,2-Dichloroethene	<b>4.4</b>	<b>25.5</b>	<0.83	70	7	NE
trans-1,2-Dichloroethene	<b>0.64</b>	<b>1.7</b>	<0.89	100	20	NE
1,2-Dichloropropane	<0.23	<0.23	<0.46	5	0.5	110
1,3-Dichloropropane	<0.50	<0.50	<0.61	NE	NE	NE
2,2-Dichloropropane	<0.48	<0.48	<0.62	NE	NE	NE
1,1-Dichloropropene	<0.44	<0.44	<0.75	NE	NE	NE
cis-1,3-Dichloropropene	<0.50	<0.50	<0.19	0.4	0.04	210
trans-1,3-Dichloropropene	<0.23	<0.23	<0.19	0.4	0.04	210
Diisopropyl ether	<0.50	<0.50	<0.76	NE	NE	29,000
Ethylbenzene	<0.50	<0.50	<0.54	700	140	150
Hexachloro-1,3-butadiene	<2.1	<2.1	<0.67	NE	NE	13
Isopropylbenzene	<0.14	<0.14	<0.59	NE	NE	NE
p-Isopropyltoluene	<0.50	<0.50	<0.67	NE	NE	NE
Methylene Chloride	<0.23	<0.23	<0.43	5	0.5	20,000
Methyl tertiary-butyl ether	<0.17	<0.17	<0.61	60	12	20,000
Naphthalene	<2.5	<2.5	<0.74	100	10	200
n-Propylbenzene	<0.50	<0.50	<0.81	NE	NE	10,000
Styrene	<0.50	<0.50	<0.86	100	10	39,000
1,1,2,2-Tetrachloroethane	<0.25	<0.25	<0.92	0.2	0.02	140
1,1,1,2-Tetrachloroethane	<0.18	<0.18	<0.20	70	7	1.2
Tetrachloroethene	<0.50	<b>82.9</b>	<0.45	5	0.5	240
Toluene	<0.50	<0.50	<0.67	800	160	81,000
1,2,3-Trichlorobenzene	<2.1	<2.1	<0.74	NE	NE	NE
1,2,4-Trichlorobenzene	<2.2	<2.2	<0.97	70	14	150
1,1,1-Trichloroethane	<0.50	<0.50	<0.90	200	40	31,000
1,1,2-Trichloroethane	<0.24	<0.20	<0.42	5	0.5	26
1,2,3-Trichloropropane	<0.50	<0.50	<0.99	60	12	NE
1,2,4-Trimethylbenzene	<0.50	<0.50	<0.97	480	96	120
1,3,5-Trimethylbenzene	<0.50	<0.50	<0.83	480	96	NE
Trichloroethene	<0.33	<b>15.4</b>	<0.48	5	0.5	22
Trichlorofluoromethane	<0.18	<0.18	<0.79	NE	NE	NE
Vinyl chloride	<b>8.4</b>	<b>7.9</b>	<0.18	0.2	0.02	25
m&p-Xylene	<1.0	<1.0	<1.8	2,000	400	1,500
o-Xylene	<0.50	<0.50	<0.83	2,000	400	2,100

Notes:

TW-1 = Temporary monitoring well installed by Apex (2017)

GW-2 = Temporary monitoring well installed by ECS (2015)

< = Not Detected: Concentration less than the indicated laboratory detection limit.

Detected concentrations are shown in **bold**.

NE = Remedial Objective not established.

Groundwater Quality Standards (GQSs) cited in Wisconsin Administrative Code NR 140.10 Table 1

Vapor Risk Screening Levels (VRSLs) for groundwater with a commercial property use based on the U.S. EPA Vapor Intrusion Screening Level Calculator (Version 3.5.1, May 2016) with an excess lifetime cancer risk of  $1 \times 10^{-5}$  in accordance with Wisconsin Administrative Code NR 716

	Concentrations in excess of GQSs and/or VRSLs are shaded yellow
	Exceeded GQSs and/or VRSLs are shaded green

**Table 3**  
**Summary of Soil Gas Data for**  
**Volatile Organic Compounds (VOCs)**  
**EPA Method TO-15**  
**Greentree Centre**  
**5055 & 5111-5141 Douglas Avenue, Racine, Wisconsin**

concentrations in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )

Sub-slab Sample Number	SV-1	SV-2	SV-3	Sub-Slab Vapor Action Levels
Acetone	41.1	32.5	30.2	4,500,000
Benzene	1.3	1.4	1.2	530
Benzyl chloride	<0.28	<0.25	<0.29	83
Bromodichloromethane	<0.33	8.8	4.7	110
Bromoform	4.1	3.9	4.3	3,700
Bromomethane	<0.52	1.6	<0.54	730
1,3-Butadiene	<0.30	<0.26	<0.31	140
2-Butanone	6.2	4.0	10.8	730,000
Carbon disulfide	1.0	2.7	25.3	100,000
Carbon tetrachloride	1.2	1.2	1.3	670
Chlorobenzene	<0.23	<0.20	<0.23	7,300
Chloroethane	<0.33	1.9	<0.34	1,500,000
Chloroform	1.7	39.0	29.8	180
Chloromethane	1.9	11.8	<0.19	13,000
Cyclohexane	3.3	1.3	1.7	880,000
Dibromochloromethane	<1.4	3.7	1.7	NE
1,2-Dibromoethane	<1.3	<1.2	<1.4	6.8
1,2-Dichlorobenzene	<0.86	<0.76	<0.90	29,000
1,3-Dichlorobenzene	2.3	2.2	2.4	NE
1,4-Dichlorobenzene	2.5	2.3	2.5	370
Dichlorodifluoromethane	849	3.2	3.7	15,000
1,1-Dichloroethane	<0.26	<0.23	<0.27	2,600
1,2-Dichloroethane	<0.34	<0.31	<0.36	160
1,1-Dichloroethene	<0.40	<0.353	<0.42	29,000
cis-1,2-Dichloroethene	<0.41	2.2	5.4	NE
trans-1,2-Dichloroethene	<0.65	<0.57	<0.67	NE
1,2-Dichloropropane	<0.45	<0.40	<0.47	410
cis-1,3-Dichloropropene	<0.62	<0.55	<0.65	1,000
trans-1,3-Dichloropropene	<0.44	<0.39	<0.46	1,000
Dichlorotetrafluoroethane	<0.52	<0.46	<0.54	NE
Ethanol	79.7	32.5	64.4	NE
Ethyl acetate	5.7	<0.52	<0.61	10,000
Ethylbenzene	2.3	1.5	2.0	1,600
4-Ethyltoluene	9.3	5.2	4.7	NE
n-Heptane	2.7	1.3	2.2	NE
Hexachloro-1,3-butadiene	<1.1	<0.97	<1.1	190
n-Hexane	5.0	2.7	4.2	100,000
2-Hexanone	<0.69	<0.61	<0.72	4,400
Methylene Chloride	14.7	4.8	3.8	87,000
4-Methyl-2-pentanone	<0.36	<0.32	<0.38	440,000
Methyl tertiary-butyl ether	<0.51	<0.45	<0.53	16,000
Naphthalene	19.0	25.3	26.0	120
2-Propanol	42.2	9.8	32.6	NE
Propylene	<0.23	<0.20	<0.24	440,000
Styrene	1.2	1.6	0.80	150,000
1,1,2,2-Tetrachloroethane	<0.55	<0.49	<0.58	70
Tetrachloroethene	116	4,570	7,720	6,000
Tetrahydrofuran	<0.20	1.5	<0.21	290,000
Toluene	13.0	2.8	4.1	730,000
1,2,4-Trichlorobenzene	<1.5	4.0	<1.6	290
1,1,1-Trichloroethane	<0.41	<0.37	<0.43	730,000
1,1,2-Trichloroethane	<0.41	<0.37	<0.43	29
Trichloroethene	2.7	28.6	48.0	290
Trichlorofluoromethane	3.3	1.9	1.9	NE
1,1,2-Trichlorotrifluoroethane	1.3	1.2	<0.53	NE
1,2,4-Trimethylbenzene	36.6	10.6	16.5	1,000
1,3,5-Trimethylbenzene	22.4	4.4	7.9	NE
Vinyl acetate	<0.55	<0.49	3.1	29,000
Vinyl chloride	<0.33	<0.29	<0.34	930
m,p-Xylene	6.3	2.8	3.3	15,000
o-Xylene	3.4	1.5	2.2	15,000

Notes:

SV-2 = Sub-slab vapor sample collected by Apex (2017)

< = Not Detected: Concentration less than the indicated laboratory detection limit.

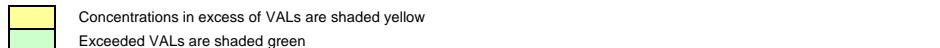
Detected concentrations are shown in **bold**.

NE = Remedial Objective not established.

Sub-Slab Vapor Action Levels (VALs) for a commercial property use based on the U.S. EPA Vapor Instrucion Screening Level Calculator (Version 3.5.1, May 2016) with an excess lifetime cancer risk of  $1 \times 10^{-5}$  in accordance with Wisconsin Administrative Code NR 716



Concentrations in excess of VALs are shaded yellow



Exceeded VALs are shaded green