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August 23, 2024

Mr. Riley Neumann
Wisconsin Department of Natural Resources
2300 North Dr. Martin Luther King, Jr. Drive
Milwaukee, Wisconsin 53212-3128

Re: Additional Vapor Investigation Status Report
BRRTS #: 02-41-576336
FID #: 241828620
Sunrise Shopping Center – Former Dry Cleaner
2410-2424 10th Avenue & 1009 Marquette Avenue
South Milwaukee, Wisconsin 53172

Mr. Neumann:

A *Case Closure* form (Form 4400-202) and *Case Closure Report* were submitted to Wisconsin Department of Natural Resources (WDNR) under cover letter dated August 14, 2023, for the above-referenced facility (FID # 241828620), BRRTS number 02-41-576336. In a response letter dated October 16, 2023, the WDNR requested additional vapor intrusion investigations within the former dry cleaner (2410 10th Avenue) and adjacent spaces (2412 10th Avenue and Ace Hardware) before case closure would be granted.

In response to the October 2023 letter, an *Additional Vapor Investigation Work Plan* (Work Plan) dated January 18, 2024, was submitted to WDNR providing response to comments and proposing investigation methodology for the additionally required vapor investigations. As requested by WDNR and proposed in the January 2024 Work Plan, the additional vapor intrusion investigations have been completed for the "Sunrise Shopping Center – Former Dry Cleaner" site (Site). The results indicate conditionals are suitable for re-requesting case closure of the Site. However, as requested by WDNR, this *Additional Vapor Investigation Status Report* is provided summarizing the sampling activities prior to submitting a Case Closure Report Amendment (CCR Amendment). A summary of the sampling and results is provided below.

Summary of Activities and Results

SSD System

Before beginning passive indoor air sampling, DAI Environmental, Inc. (DAI) conducted an operation & maintenance (O&M) inspection and vapor pin vacuum testing on March 25, 2024, to verify appropriate operations of the sub-slab depressurization (SSD) system. Vacuum readings were collected from the SSD system individual risers (5) and final vertical riser to verify that the readings remain within the appropriate operating range of 0.004-in water column (WC) minimum to 1.65-in WC maximum. The overall condition of the system was also evaluated as part of the O&M inspection. The March 25th inspection did not identify any physical concerns associated with the SSD system, and all vacuum readings (0.16 to 0.36-in WC) were within the appropriate operating range.

After completing the O&M inspection of the SSD system, pressure field extension (PFE) testing was be performed on March 25, 2024, to document the effectiveness of the SSD system within the subsurface. Although two (2) rounds of PFE testing on August 24th and December 10, 2020, had previously documented adequate vacuum within the subsurface to address the extent of Tetrachlorethene (Perc) contamination, an additional third round was performed per WDNR request. The testing was performed per WDNR guidance document RR-800 and consistent with the methodology following during the first two (2) rounds completed in 2020.

Sub-slab pressure gradient measurements were collected from all past testing locations TP-1 to TP-11. In addition to replicating prior test points, additional measurements (TP-12 to TP-17) were also collected to further document the system effectiveness. Additional sample locations were installed in both the 2410 (Cheata Bikes) and 2412 (vacant) 10th Avenue tenant spaces. Pressure readings again indicated continued and appropriate operation of the SSD system across the area of Perc contamination. All sampling results (2020 and 2024) are summarized in the below table. The locations of the vapor pins installed during each of the three (3) testing events are depicted in Figures C.4.d.1a-1c (see Attachment B).

Summary of Pressure Field Extension Measurements (inches water column)

Test Point	PFE Measurement Date		
	August 24, 2020	December 10, 2020	March 25, 2024
TP-1	-0.008	-0.004	-0.009
TP-2	-0.120	-0.037	-0.035
TP-3	-0.005	-0.004	-0.011
TP-4	-0.065	-0.041	-0.27
TP-5	-0.011	-0.006	-0.007
TP-6	-0.006	-0.004	-0.007
TP-7	-0.004	-0.009	-0.15
TP-8	-0.049	-0.013	-0.13
TP-9	-0.041	-0.015	-0.14
TP-10	-0.007	-0.005	-0.009
TP-11	-0.122	-0.067	-0.55
TP-12	Not installed		-0.41
TP-13	Not installed		-0.005
TP-14	Not installed		-0.011
TP-15	Not installed		-0.005
TP-16	Not installed		-0.005
TP-17	Not installed		-0.008
TP-SS4 (outside system range)	No measurement	0.0	No measurement

Passive Vapor Sampling

Following the completion of the PFE testing, long-term (10-day) Radiello® passive air samplers (obtained from an independent commercial analytical laboratory) were installed within the two (2) aforementioned tenant spaces, as well as within the Ace Hardware store located to the adjacent north of the 2410 10th Avenue tenant space. Additionally, passive samplers were installed within sanitary sewer manholes located "upstream" and "downstream" of the contaminant area. Specifically, passive samplers to address WDNR's request for indoor sampling were installed as follows:

Ace Hardware: adjacent north of former dry cleaner

- 2024 IAS-1: Within the southern portion of the Ace Hardware basement, generally consistent with historical sub-slab sample point SS-1
- 2024 IAS-2: Within the southern portion of the Ace Hardware main floor, approximately splitting historical sub-slab sample points SS-2 and SS-3

2410 10th Avenue: former dry cleaner

- 2024 IAS-3: Within the front portion of the 2410 10th Avenue tenant space, generally replicating the location of the past indoor air sample IAS-1
- 2024 IAS-4: Within the central portion of the 2410 10th Avenue tenant space, generally replicating the location of the past soil gas sample SG-1 and historical sub-slab sample point SS-5

2412 10th Avenue: adjacent south of former dry cleaner

- 2024 IAS-5: Within the 2412 10th Avenue tenant space, generally replicating the location of the past indoor air sample IAS-3

Sanitary manholes: adjacent area of former dry cleaner

- 2024 San[itary] 1: sanitary sewer upgradient of the former dry cleaner location
- 2024 San[itary] 2: sanitary sewer downgradient of the former dry cleaner location
    - Note: No sanitary manhole exists within the area of the former dry cleaner; a vapor grab sample was collected from a floor drain in the Ace Hardware basement as substitute to this requested sample

The indoor passive air sampling locations are depicted in Figure B.4.a.1c (see attachment B). Figure B.4.a.1d shows two (2) sanitary manholes where passive air sampling was performed. The 10-day vapor sampling was initiated on March 25th and completed on April 4, 2024. After the 10-day period, the passive samplers were collected and submitted to Pace Analytical Services, Inc., (Pace Analytical) of Green Bay, Wisconsin, which subsequently forwarded the samples to the Newburg, New York "sister" laboratory for analysis of Perc and associated breakdown compounds.

The passive vapor analytical results indicated all concentrations below the indoor air vapor actions levels (VALs) taken from the *Wisconsin Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (August 2023 update) in the Ace Hardware building, in the 2412 tenant space, and in the sanitary manholes. However, the two (2) passive air sample results collected in the 2410 10th Avenue tenant space (2024 IAS-3 and 2024 IAS-4) were observed at concentrations above the VAL. Table A.4.C summarizes the indoor air sampling results (see Attachment A).

SSD System Upgrade & Passive Vapor Re-sampling

With the O&M inspection and PFE testing documenting that the SSD system was operating properly, it was determined that upgrading the SSD system would be the most cost effective and expeditious way of handling the VAL exceedances. The SSD system was modified by increasing the fan size and power rating. The existing RadonAway® RP145 Pro Series was replaced with the RadonAway® LV 175 Pro Series. The installation was completed in June 2024, by CR Electric of Oak Creek,Wisconsin. DAI personnel then performed an O&M inspection to assess if the modification resulted in a change in SSD system operating conditions. Vacuum readings were collected from the SSD system individual risers (5) and final vertical riser on July 3rd, showing that the SSD system vacuum had increased by more than 200% from March 25, 2024, but continued to operate within the appropriate range of 0.004-in WC to 1.65-in WC under the building slab.

Therefore, re-testing of the 2410 10th Avenue tenant space was performed. Radiello® passive air samplers were installed in the same location as the March-April 2024 samples and given the additional designation of "-A" (i.e., 2024 IAC-3-A and 2024 IAC-4-A). The re-sampling locations are depicted in Figure B.4.a.1c. After the 10-day period, the passive samplers were collected and submitted to Pace Analytical. The 10-day vapor sampling was initiated on July 8th and completed on July 18, 2024. Additional O&M inspections were also performed on the start and stop days to continue to monitor system operations. The summary table below shows all vacuum readings at each riser from the four (4) O&M inspections completed between March 25th and July 18, 2024.

Summary of SSD System Vacuum Readings (inches water column)

Riser	SSD Vacuum Reading Date			
	March 25, 2024	July 3, 2024	July 8, 2024	July 18, 2024
1 (left)	0.19	0.57	0.55	0.56
Riser 2 (left-center)	0.16	0.52	0.54	0.54
Riser 3 (center)	0.18	0.61	0.62	0.61
Riser 4 (right-center)	0.14	0.50	0.50	0.50
Riser 5 (right)	0.16	0.50	0.50	0.50
Final Riser (combined, center)	0.36	1.40	0.49	0.50

Note: July 2024 readings collected from following the upgrade of the SSD system vacuum fan

The results of the passive vapor re-sampling indicated that Perc concentrations inside of the 2410 10th Avenue tenant space indoor decreased from the original results to concentrations well below the VAL. Table A.4.C summarizes all indoor air sampling results from April 2017 (prior to soil remediation and installation of the SSD system) through August 2024. The indoor air sample results along with SSD system modification demonstrate that occupants of the tenant space are properly protected from indoor vapor exposure.

The SSD system will continue to operate, protecting occupants of the 2410 and 2412 10th Avenue tenant spaces. It is understood that the operation of the system is a continuing obligation that will remain following issuance of the case closure letter.

Ace Hardware Sump Vapor Sampling

As part of the October 2023 letter from WDNR, vapor sampling of the three (3) Ace Hardware sumps was also required. WDNR approved deviation from the vapor purge and 24-hr re-equilibration time procedures specified in RR-986. The vapor samples from the three (3) sump pits were instead collected via a 30-sec grab sample using Summa® canisters. This approved sampling protocol is consistent with the past sump vapor sampling completed in January 2018. In addition to the three (3) sumps, a sanitary clean out located in the Ace Hardware basement floor to the west of sump #3 was also grab sampled using a Summa® canister. The clean out sample was collected in lieu of sampling a sanitary manhole within the area of the former dry cleaner, as there was no existing manhole to sample. The sump and clean out sample locations are depicted in Figure B.4.a.1c.

Grab sampling of the sumps and cleanout was performed on April 4, 2024 (same day that the first passive samplers were collected). The canisters were submitted to Pace Analytical for analysis of volatile organic compounds (VOCs) via TO-15. Pace Analytical of East Longmeadow, Massachusetts performed the TO-15 analysis.

As observed in Table A.4.D (see Attachment A), the vapor concentrations in sump #1 and sump #2 exceeded the VAL for Perc. No VAL exceedances were observed in sump #3 or in the sanitary clean out. Although Perc concentrations exceeded the VAL in sump #1 and sump #2, all three (3) sumps are equipped with an air-tight sump lid that prevent vapors from transferring from the sump into the indoor space of the basement. These lids are shown in the below images.

Sump 1 (basement north)

Sump 2 (basement southeast)

Sump 3 (basement southwest)

The above-pictured air tight sump covers will remain in-place, preventing the vapor intrusion pathway from being complete, and therefore the VAL exceedances are not viewed as a concern. It is understood that maintaining the sump covers will be a continuing obligation following issuance of the case closure letter.

Upon approval of this *Additional Vapor Investigation Status Report* by WDNR, a CCR Amendment will be submitted providing all information and documentation previously provided and obtained since the August 2023 Case Closure Report. The CCR Amendment will request issuance of a Case Closure Letter for the Site. If there are any questions or you wish to discuss this submission further, please contact me at (847) 996-3580.

Sincerely,

DAI Environmental, Inc.

Christopher Cailles, P.E.
Project Engineer

Attachments

ATTACHMENT A
TABLES

Table A.4.A. Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Sub-Slab Vapor Points)

Volatile Organic Compound	Sample Location						Sub-slab VRSL[1]
	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	
Acetone	0.0409	0.148	0.158	0.0396	0.0946	0.0553	4,667
Benzene	0.0037	0.0022	0.0037	0.00049	0.0018	0.0056	0.53
Benzyl chloride	<0.00025	<0.00029	<0.00029	<0.00022	<0.00028	<0.00028	0.083
Bromodichloromethane	<0.00029	<0.00034	<0.00034	<0.00026	<0.00033	<0.00033	0.11
Bromoform	<0.0013	<0.0016	<0.0016	<0.0012	<0.0015	<0.0015	3.67
Bromomethane	<0.00046	<0.00054	<0.00054	<0.00042	<0.00052	<0.00052	0.73
1,3-Butadiene	<0.00026	<0.00031	<0.00031	<0.00024	<0.0003	<0.0003	0.14
2-Butanone (MEK)	0.0067	0.0086	0.013	<0.00031	0.0051	0.0102	733
Carbon disulfide	0.0197	0.0047	0.0082	<0.00014	0.0011	0.0024	103
Carbon tetrachloride	0.00059	0.0008	<0.00034	<0.00026	<0.00032	<0.00032	0.67
Chlorobenzene	<0.0002	<0.00023	<0.00023	<0.00018	<0.00023	<0.00023	7.33
Chloroethane	<0.00029	<0.00034	<0.00034	<0.00026	<0.00033	<0.00033	1,467
Chloroform	<0.00028	<0.00033	<0.00033	0.0008	<0.00032	0.0014	0.18
Chloromethane	<0.00016	<0.00019	0.00071	0.00035	0.001	<0.00018	13
Cyclohexane	0.0015	0.003	0.011	0.0013	0.0026	0.0202	866
Dibromochloromethane	<0.0013	<0.0015	<0.0015	<0.0011	<0.0014	<0.0014	NL
1,2-Dibromoethane (EDB)	<0.0012	<0.0013	<0.0013	<0.001	<0.0013	<0.0013	0.007
1,2-Dichlorobenzene	<0.00076	<0.00089	<0.00089	<0.00069	<0.00086	<0.00086	0.0029
1,3-Dichlorobenzene	<0.00079	<0.00092	<0.00092	<0.00071	<0.00089	<0.00089	NL
1,4-Dichlorobenzene	0.003	<0.00087	<0.00087	<0.00067	<0.00084	<0.00084	0.367
Dichlorodifluoromethane	0.0024	0.0032	0.0128	0.0034	0.0038	0.0104	15
1,1-Dichloroethane	<0.00023	<0.00027	<0.00027	<0.00021	<0.00026	<0.00026	2.6
1,2-Dichloroethane	<0.00031	<0.00036	<0.00036	<0.00027	0.0019	0.0074	0.16
1,1-Dichloroethene	<0.00035	<0.00041	<0.00041	<0.00032	<0.0004	<0.0004	29
cis-1,2-Dichloroethene	<0.00037	<0.00043	<0.00043	<0.00033	<0.00041	0.00071	NL
trans-1,2-Dichloroethene	<0.00057	<0.00067	<0.00067	<0.00051	<0.00065	0.0015	NL
1,2-Dichloropropane	<0.0004	<0.00047	<0.00047	<0.00036	<0.00045	<0.00045	0.4
cis-1,3-Dichloropropene	<0.00055	<0.00064	<0.00064	<0.00049	<0.00062	<0.00062	1.03
trans-1,3-Dichloropropene	<0.00039	<0.00045	<0.00045	<0.00035	<0.00044	<0.00044	NL
Dichlorotetrafluoroethane	<0.00046	<0.00054	<0.00054	<0.00042	<0.00052	<0.00052	NL
Ethanol	0.0213	0.105	0.0968	0.0391	0.0622	0.921	NL
Ethyl acetate	<0.00052	<0.00061	<0.00061	<0.00047	0.0011	<0.00058	10
Ethylbenzene	0.0028	0.0037	0.0045	0.00077	0.003	0.0071	1.6
4-Ethyltoluene	0.0014	0.0023	0.002	0.00057	0.0017	0.0033	NL
n-Heptane	0.0026	0.0045	0.0123	0.0012	0.0041	0.0108	NL
Hexachloro-1,3-butadiene	<0.00097	<0.0011	<0.0011	<0.00087	<0.0011	<0.0011	0.187
n-Hexane	0.0021	0.0045	0.0122	0.0022	0.0039	0.0106	103
2-Hexanone	<0.00061	<0.00071	<0.00071	<0.00055	<0.00069	<0.00069	4
Methylene chloride	<0.00081	<0.00094	<0.00094	0.0271	0.003	<0.00091	87
4-Methyl-2-pentanone (MIBK)	<0.00032	<0.00038	<0.00038	<0.00029	<0.00036	<0.00036	433
Methyl tertiary-butyl ether	<0.00045	<0.00053	<0.00053	<0.00041	<0.00051	<0.00051	16
Naphthalene	0.0255	0.0153	0.018	<0.00041	<0.00051	0.0031	0.12
2-Propanol	0.0358	0.204	0.371	0.118	0.353	0.264	29
Propylene	0.0089	<0.00023	<0.00023	<0.00018	<0.00023	<0.00023	433
Styrene	0.0011	<0.00034	<0.00034	<0.00026	<0.00032	<0.00032	146
1,1,2,2-Tetrachloroethane	<0.00049	<0.00057	<0.00057	<0.00044	<0.00055	<0.00055	0.567
Tetrachloroethene	0.0166	0.0089	0.0011	1.11	1.97	**41.5**	6
Tetrahydrofuran	0.0012	<0.00021	<0.00021	<0.00016	<0.0002	<0.0002	293
Toluene	0.0073	0.0095	0.012	0.0079	0.0078	0.0187	730
1,2,4-Trichlorobenzene	<0.0014	<0.0016	<0.0016	<0.0012	<0.0015	<0.0015	0.29
1,1,1-Trichloroethane	<0.00037	<0.00043	<0.00043	0.0062	0.0311	0.12	730

Table A.4.A (Continued). Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Sub-Slab Vapor Points)

Volatile Organic Compound	Sample Location						Sub-slab VRSL[1]
	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	
1,1,2-Trichloroethane	<0.00037	<0.00043	<0.00043	<0.00033	<0.00041	<0.00041	0.26
Trichloroethene	0.00052	0.00059	<0.00048	0.0085	0.0037	0.0666	0.29
Trichlorofluoromethane	0.0011	0.0012	0.0021	0.0012	<0.00022	0.00096	NL
1,1,2-Trichlorotrifluoroethane	0.00062	<0.00052	0.0014	0.0305	0.0141	0.0079	4,333
1,2,4-Trimethylbenzene	0.0056	0.0089	0.0082	0.0016	0.0049	0.015	1
1,3,5-Trimethylbenzene	0.0015	0.0023	0.0022	<0.00025	0.0012	0.0043	NL
Vinyl acetate	<0.00049	<0.00057	<0.00057	<0.00044	<0.00055	<0.00055	29
Vinyl chloride	<0.00029	<0.00034	<0.00034	<0.00026	<0.00033	<0.00033	0.93
m&p-Xylene	0.006	0.01	0.0104	0.0023	0.0065	0.0168	15
o-Xylene	0.0028	0.0036	0.004	0.0008	0.0026	0.0065	15

[1] – Sub-slab Vapor Risk Screening Levels (VRSLs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (November 2017 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

Bold – Concentration exceeds the Sub-slab VRSL

NL – Not Listed and not calculated (either no information available on USEPA tables, or contaminant not detected)

VOCs by USEPA Method TO-15

Samples collected on February 18, 2016

Table A.4.A (Continued). Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Sub-Slab Vapor Points)

Volatile Organic Compound	Sample Location					Sub-slab VRSL[1]
	SS-7	SS-8	SS-9	SS-10	SS-11	
Acetone	0.0134	0.111	0.283	0.0642	0.212	4,667
Benzene	0.00047	0.00085	0.0063	0.0035	0.0033	0.53
Benzyl chloride	<0.00024	<0.00022	<0.00028	<0.00029	<0.00029	0.083
Bromodichloromethane	<0.00028	<0.00026	<0.00033	<0.00034	<0.00034	0.11
Bromoform	<0.0013	<0.0012	<0.0015	<0.0016	<0.0016	3.67
Bromomethane	<0.00045	<0.00042	<0.00052	<0.00054	<0.00054	0.73
1,3-Butadiene	<0.00025	<0.00024	<0.0003	<0.00031	<0.00031	0.14
2-Butanone (MEK)	<0.00033	0.0048	0.0136	0.0032	0.0198	733
Carbon disulfide	<0.00015	0.00087	0.0057	0.00094	0.0143	103
Carbon tetrachloride	0.00046	<0.00026	<0.00032	0.00081	<0.00034	0.67
Chlorobenzene	<0.00019	<0.00018	<0.00023	<0.00023	<0.00023	7.33
Chloroethane	<0.00028	<0.00026	<0.00033	<0.00034	<0.00034	1,467
Chloroform	<0.00027	<0.00025	<0.00032	<0.00033	<0.00033	0.18
Chloromethane	<0.00016	<0.00014	<0.00018	<0.00019	<0.00019	13
Cyclohexane	0.00061	0.0016	0.0125	0.0052	0.0105	866
Dibromochloromethane	<0.0012	<0.0011	<0.0014	<0.0015	<0.0015	NL
1,2-Dibromoethane (EDB)	<0.0011	<0.001	<0.0013	<0.0013	<0.0013	0.007
1,2-Dichlorobenzene	<0.00074	<0.00069	<0.00086	<0.00089	<0.00089	0.0029
1,3-Dichlorobenzene	<0.00076	<0.00071	<0.00089	<0.00092	<0.00092	NL
1,4-Dichlorobenzene	<0.00072	<0.00067	<0.00084	<0.00087	<0.00087	0.367
Dichlorodifluoromethane	0.0025	0.0026	0.0027	0.004	<0.00084	15
1,1-Dichloroethane	<0.00023	<0.00021	<0.00026	<0.00027	<0.00027	2.6
1,2-Dichloroethane	<0.0003	<0.00027	0.00076	<0.00036	<0.00036	0.16
1,1-Dichloroethene	<0.00034	<0.00032	<0.0004	<0.00041	<0.00041	29
cis-1,2-Dichloroethene	<0.00035	<0.00033	<0.00041	<0.00043	<0.00043	NL
trans-1,2-Dichloroethene	<0.00055	<0.00051	<0.00065	<0.00067	<0.00067	NL
1,2-Dichloropropane	<0.00039	<0.00036	<0.00045	<0.00047	<0.00047	0.4
cis-1,3-Dichloropropene	<0.00053	<0.00049	<0.00062	<0.00064	<0.00064	1.03
trans-1,3-Dichloropropene	<0.00037	<0.00035	<0.00044	<0.00045	<0.00045	NL
Dichlorotetrafluoroethane	<0.00045	<0.00042	<0.00052	<0.00054	<0.00054	NL
Ethanol	0.127	0.0245	0.125	0.0474	0.0964	NL
Ethyl acetate	<0.0005	<0.00047	0.00069	0.001	<0.00061	10
Ethylbenzene	0.00067	0.00063	0.0045	0.0031	0.0047	1.6
4-Ethyltoluene	<0.00027	<0.00025	0.0019	0.00098	0.0013	NL
n-Heptane	0.00069	0.0012	0.023	0.0078	0.0148	NL
Hexachloro-1,3-butadiene	<0.00094	<0.00087	<0.0011	<0.0011	<0.0011	0.187
n-Hexane	0.00065	0.0011	0.0223	0.0281	0.0144	103
2-Hexanone	<0.00059	<0.00055	<0.00069	<0.00071	0.0044	4
Methylene chloride	<0.00078	<0.00073	<0.00091	0.312	<0.00094	87
4-Methyl-2-pentanone (MIBK)	<0.00031	<0.00029	<0.00036	0.0014	<0.00038	433
Methyl tertiary-butyl ether	<0.00044	<0.00041	<0.00051	<0.00053	<0.00053	16
Naphthalene	<0.00044	0.0023	<0.00051	<0.00053	<0.00053	0.12
2-Propanol	0.0146	0.0214	0.0878	0.0067	0.0624	29
Propylene	<0.00019	<0.00018	<0.00023	<0.00023	<0.00023	433
Styrene	<0.00028	<0.00026	0.00048	<0.00034	<0.00034	146
1,1,2,2-Tetrachloroethane	<0.00047	<0.00044	<0.00055	<0.00057	<0.00057	0.567
Tetrachloroethene	0.0685	0.0311	0.0281	0.0057	0.0315	6
Tetrahydrofuran	<0.00017	<0.00016	0.0079	0.0039	<0.00021	293

Table A.4.A (Continued). Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Sub-Slab Vapor Points)

Volatile Organic Compound	Sample Location					Sub-slab VRSL[1]
	SS-7	SS-8	SS-9	SS-10	SS-11	
Toluene	0.0037	0.0016	0.0117	0.0476	0.0093	730
1,2,4-Trichlorobenzene	<0.0013	<0.0012	<0.0015	<0.0016	<0.0016	0.29
1,1,1-Trichloroethane	<0.00036	0.00096	0.0125	<0.00043	<0.00043	730
1,1,2-Trichloroethane	<0.00035	<0.00033	<0.00041	<0.00043	<0.00043	0.26
Trichloroethene	0.0015	<0.00037	<0.00046	0.00096	<0.00048	0.29
Trichlorofluoromethane	0.0012	0.0012	0.0013	0.0023	0.0012	NL
1,1,2-Trichlorotrifluoroethane	0.00076	0.00055	0.00079	0.00096	<0.00052	4,333
1,2,4-Trimethylbenzene	0.0015	0.002	0.0078	0.0022	0.0053	1
1,3,5-Trimethylbenzene	<0.00026	<0.00025	0.0023	0.0012	0.0019	NL
Vinyl acetate	<0.00048	<0.00044	<0.00055	<0.00057	<0.00057	29
Vinyl chloride	<0.00028	<0.00026	<0.00033	<0.00034	<0.00034	0.93
m&p-Xylene	0.002	0.0022	0.0139	0.011	0.017	15
o-Xylene	0.00073	0.00082	0.0049	0.0032	0.0053	15

[1] – Sub-slab Vapor Risk Screening Levels (VRSLs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (November 2017 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

Bold – Concentration exceeds the Sub-slab VRSL

NL – Not listed in *WI Vapor Quick Look-Up Table* and not calculated (either no information available on USEPA tables, or contaminant not detected)

VOCs by USEPA Method TO-15

Samples collected on February 18, 2016

Table A.4.A (Continued). Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Sub-Slab Vapor Points)

Volatile Organic Compound	Sample Location					Sub-slab VRSL[1]
	SS-101	SS-204 (SS-101Rep)	SS-201	SS-202	SS-203	
Acetone	0.097	0.12	0.089	0.061	0.19	4,667
Benzene	0.0055	0.0023	0.0031	0.0013	0.0022	0.53
Bromodichloromethane	<0.004	<0.0016	<0.0014	<0.0014	<0.0015	0.11
Bromoform	<0.016	<0.0061	<0.0055	<0.0055	<0.0057	3.67
Bromomethane	<0.0059	<0.0023	<0.0021	<0.0021	<0.0021	0.73
2-Butanone (MEK)	0.0093	0.0099	0.015	0.0036	0.0097	733
Carbon disulfide	0.0092	<0.00073	0.0016	0.0008	<0.00068	103
Carbon tetrachloride	<0.004	<0.0015	<0.0013	<0.0013	<0.0014	0.67
Chlorobenzene	<0.0028	<0.0011	<0.00099	<0.00098	<0.001	7.33
Chloroform	<0.0031	<0.0012	<0.0010	<0.0010	<0.0011	0.18
Dibromochloromethane	<0.0052	<0.002	<0.0018	<0.0018	<0.0019	NL
1,2-Dibromoethane (EDB)	<0.0046	<0.0018	<0.0016	<0.0016	<0.0017	0.007
1,2-Dichlorobenzene	<0.0037	<0.0014	<0.0013	<0.0013	<0.0013	0.0029
1,4-Dichlorobenzene	<0.0037	<0.0014	<0.0013	<0.0013	<0.0013	0.367
Dichlorodifluoromethane	0.012	0.0031	<0.0011	0.0031	0.0021	15
1,1-Dichloroethane	<0.0025	<0.00095	<0.00087	<0.00087	<0.00089	2.6
1,2-Dichloroethane	<0.0025	<0.00095	<0.00087	<0.00087	<0.00089	0.16
1,1-Dichloroethene	<0.0025	<0.00093	<0.00085	<0.00085	<0.00087	29
cis-1,2-Dichloroethene	<0.0025	<0.00093	<0.00085	<0.00085	<0.00087	NL
trans-1,2-Dichloroethene	<0.0025	<0.00093	<0.00085	<0.00085	<0.00087	NL
1,2-Dichloropropane	<0.0028	<0.0011	<0.00099	<0.00099	<0.001	0.4
cis-1,3-Dichloropropene	<0.0028	<0.0011	<0.00097	<0.00097	<0.001	1.03
trans-1,3-Dichloropropene	<0.0028	<0.0011	<0.00097	<0.00097	<0.001	NL
Ethylbenzene	0.028	0.0028	0.0027	0.0013	0.0022	1.6
Methylene chloride	<0.021	<0.0082	<0.0074	<0.0074	<0.0076	87
Methyl tertiary-butyl ether	<0.0022	<0.00085	<0.00077	<0.00077	<0.00079	16
Naphthalene	**0.8**	0.012	<0.0011	<0.0011	<0.0011	0.12
Styrene	0.0056	<0.001	<0.00091	<0.00091	<0.00093	146
Tetrachloroethene	2.3	0.12	0.017	0.018	0.032	6
Toluene	0.42	0.033	0.0087	0.0047	0.0067	730
1,2,4-Trichlorobenzene	<0.0046	<0.0017	<0.0016	<0.0016	<0.0016	0.29
1,1,1-Trichloroethane	<0.0034	<0.0013	<0.0012	<0.0012	<0.0012	730
1,1,2-Trichloroethane	<0.0034	<0.0013	<0.0012	<0.0012	<0.0012	0.26
Trichloroethene	<0.0034	<0.0013	<0.0012	<0.0011	<0.0012	0.29
Trichlorofluoromethane	0.0035	<0.0013	<0.0012	<0.0012	<0.0012	NL
Vinyl acetate	<0.022	<0.0083	<0.0075	<0.0075	<0.0077	29
Vinyl chloride	<0.0015	<0.0006	<0.00055	<0.00055	<0.00056	0.93
m&p-Xylene	0.039	0.0023	0.0031	0.0014	0.0041	15
o-Xylene	0.021	0.0053	0.0069	0.0035	0.0077	15

[1] – Sub-slab Vapor Risk Screening Levels (VRSLs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (November 2017 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

Bold – Concentration exceeds the Sub-slab VRSL

NL – Not listed in *WI Vapor Quick Look-Up Table* and not calculated (either no information available on USEPA tables, or contaminant not detected)

VOCs by USEPA Method TO-15

Samples collected on September 8, 2016 (S-101) or January 5, 2018 (200 series)

Table A.4.B. Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Soil Gas Borings)

Volatile Organic Compound	Sample Location			Deep Soil Gas VRSL[1]
	SG-1	SG-2	SG-3	
Acetone	<0.015	0.15	<0.015	14,000
Benzene	0.0025	0.0078	0.0081	1.6
Bromodichloromethane	<0.0041	<0.004	<0.0042	0.33
Bromoform	<0.016	<0.016	<0.017	11
Bromomethane	<0.006	<0.0059	<0.0061	2.2
2-Butanone (MEK)	<0.0047	0.0075	0.0089	2,200
Carbon disulfide	0.41	0.0095	0.053	310
Carbon tetrachloride	<0.0041	<0.004	<0.0042	2
Chlorobenzene	<0.0028	<0.0028	<0.0029	22
Chloroform	<0.0031	0.019	<0.0032	0.53
Dibromochloromethane	<0.0053	<0.0052	<0.0055	NL
1,2-Dibromoethane (EDB)	<0.0047	<0.0046	<0.0048	0.02
1,2-Dichlorobenzene	<0.0038	<0.0037	<0.0039	0.0088
1,4-Dichlorobenzene	<0.0038	<0.0037	<0.0039	1
Dichlorodifluoromethane	0.029	0.026	0.022	44
1,1-Dichloroethane	<0.0025	<0.0025	<0.0026	7.7
1,2-Dichloroethane	<0.0025	<0.0025	<0.0026	0.47
1,1-Dichloroethene	<0.0025	<0.0025	<0.0026	88
cis-1,2-Dichloroethene	<0.0025	<0.0025	<0.0026	NL
trans-1,2-Dichloroethene	<0.0025	<0.0025	<0.0026	NL
1,2-Dichloropropane	<0.0028	<0.0028	<0.0029	1.2
cis-1,3-Dichloropropene	<0.0028	<0.0028	<0.0029	3.1
trans-1,3-Dichloropropene	<0.0028	<0.0028	<0.0029	NL
Ethyl acetate	<0.0056	<0.0055	<0.0058	31
Ethylbenzene	<0.0028	<0.0028	<0.0029	4.9
Methylene chloride	<0.022	<0.021	<0.022	260
Methyl tertiary-butyl ether	<0.0022	<0.0022	<0.0023	47
Naphthalene	<0.0031	<0.0031	<0.0032	0.36
Styrene	<0.0028	<0.0028	<0.0029	440
Tetrachloroethene	5.8	0.35	0.071	18
Toluene	<0.0025	0.0094	0.017	2,200
1,2,4-Trichlorobenzene	<0.0047	<0.0046	<0.0048	0.88
1,1,1-Trichloroethane	0.0043	<0.0034	<0.0035	2,200
1,1,2-Trichloroethane	<0.0034	<0.0034	<0.0035	0.077
Trichloroethene	<0.0034	<0.0034	<0.0035	0.88
Trichlorofluoromethane	<0.0034	<0.0034	<0.0035	NL
Vinyl acetate	<0.022	<0.022	<0.023	88
Vinyl chloride	<0.0016	<0.0015	<0.0016	2.8
m&p-Xylene	<0.0053	<0.0052	0.0066	44
o-Xylene	<0.0028	<0.0028	0.0039	44

[1] – Deep Soil Gas Vapor Risk Screening Levels (VRSLs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (November 2017 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

VOCs by USEPA Method TO-15

Samples collected on September 8, 2016

Table A.4.C. Vapor Analytical Table for Volatile Organic Compounds (µg/m^3) (Ambient Air Samples)

Volatile Organic Compound	Sample Location (Sample Date)					Indoor Air VAL[1]
	IAS-1 (4/5/17)	IAS-2 (4/5/17)	IAS-3 (4/5/17)	IAS-4(4/5/17)	OAS-1* (4/5/17)	
Benzene	<0.74	<0.76	<0.72	<0.69	<0.73	16
Carbon tetrachloride	<1.5	<1.5	<1.4	<1.4	<1.4	20
Chloroform	<0.28	<0.29	<0.28	<0.26	<0.28	5.3
Chloromethane	<1.2	<1.2	<1.2	1.1	<1.2	390
Dichlorodifluoromethane	1.7	1.8	1.8	1.8	1.8	440
1,1-Dichloroethane	<0.94	<0.96	<0.92	<0.87	<0.93	77
1,2-Dichloroethane	<0.94	<0.96	<0.92	<0.87	<0.93	4.7
1,1-Dichloroethene	<0.92	<0.94	<0.9	<0.86	<0.91	880
cis-1,2-Dichloroethene	<0.92	<0.94	<0.9	<0.86	<0.91	NL
trans-1,2-Dichloroethene	<0.92	<0.94	<0.9	<0.86	<0.91	NL
Ethylbenzene	<1	<1	<0.99	<0.94	<1	49
Methylene chloride	<8.1	<8.2	<7.9	<7.5	<8	2,600
Methyl tertiary-butyl ether	<0.84	<0.85	<0.82	<0.78	<0.83	470
Naphthalene	<0.31	<0.31	<0.3	<0.28	<0.3	3.6
Tetrachloroethene	15	15	23	3.5	<1.6	180
Toluene	1.1	1.2	2.4	2	<0.87	22,000
1,1,1-Trichloroethane	<1.3	<1.3	<1.2	<1.2	<1.3	22,000
Trichloroethene	<0.31	<0.32	<0.3	<0.29	<0.31	8.8
Trichlorofluoromethane	<1.3	<1.3	<1.3	<1.2	<1.3	NL
1,2,4-Trimethylbenzene	<1.1	<1.2	<1.1	<1.1	<1.1	31
1,3,5-Trimethylbenzene	<1.1	<1.2	<1.1	<1.1	<1.1	NL
Vinyl chloride	<0.6	<0.61	<0.58	<0.55	<0.59	28
m&p-Xylene	<2	<2.1	<2	<1.9	<2	440
o-Xylene	<1	<1	<0.99	<0.94	<1	440

[1] – Indoor Air Vapor Action Levels (VALs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (November 2017 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

***** – OAS-1 is an outdoor air sample for comparison to indoor air sample results

NL – Not listed in *WI Vapor Quick Look-Up Table* and not calculated (either no information available on USEPA tables, or contaminant not detected)

VOCs by USEPA Method TO-15

Table A.4.C (Continued). Vapor Analytical Table for Volatile Organic Compounds (µg/m^3) (Passive Ambient Air Samples)

Volatile Organic Compound	Sample Location (Sample Date)				Indoor Air VAL[1]
	2024 IAS-1 (3/25-4/4/24)	2024 IAS-2 (3/25-4/4/24)	2024 IAS-3 (3/25-4/4/24)	2024 IAS-3-A (7/8-7/18/24)	
1,1-Dichloroethene	<1	<1	<10	<0.5	880
cis-1,2-Dichloroethene	0.2	<0.2	<2	<0.1	180
trans-1,2-Dichloroethene	<1	<1	<10	<0.5	180
Tetrachloroethene	4.2	3.2	**620**	9.5	180
Trichloroethene	0.32	<0.2	<2	<0.1	8.8
Vinyl chloride	<0.16	<0.16	<1.6	<0.08	28

Volatile Organic Compound	Sample Location					Indoor Air VAL[1]
	2024 IAS-4 (3/25-4/4/24)	2024 IAS-4-A (7/8-7/18/24)	2024 IAS-5 (3/25-4/4/24)	2024 San[itary] 1 (Up) (3/25-4/4/24)	San[itary] 2 (Down) (3/25-4/4/24)	
1,1-Dichloroethene	<1	<0.5	<1	<1	<1	880
cis-1,2-Dichloroethene	<0.2	<0.1	<0.2	<0.2	1.5	180
trans-1,2-Dichloroethene	<1	<0.5	<1	<1	<1	180
Tetrachloroethene	**830**	6.7	27	<0.2	8.7	180
Trichloroethene	<0.2	<0.1	<0.2	<0.2	1.8	8.8
Vinyl chloride	<0.16	<0.08	<0.16	<0.16	<0.16	28

[1] – Indoor Air Vapor Action Levels (VALs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (August 2023 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

Bold – Concentration exceeds the Indoor Air VAL

VOCs RAD 130

Table A.4.D. Vapor Analytical Table for Volatile Organic Compounds (mg/m^3) (Ace Hardware Sump Pit Vapor)

Volatile Organic Compound	Sample Location (Sample Date)					Indoor Air VAL[1]
	SS-Sump [1] (01/05/18)	Sump 1 (04/04/24)	Sump 2 (04/04/24)	Sump 3 (04/04/24)	Sanitary Cleanout (04/04/24)	
Benzene	<0.00067	<0.00064	0.00074	0.0011	0.0021	0.016
Carbon tetrachloride	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.02
Chloroform	<0.001	0.0015	<0.00098	0.0026	0.0052	0.0053
Dichlorodifluoromethane	0.0016	0.0027	0.0028	0.0073	0.0036	0.44
1,1-Dichloroethane	<0.00085	<0.00081	<0.00081	<0.00081	<0.00081	0.077
1,2-Dichloroethane	<0.00085	<0.00081	<0.00081	<0.00081	<0.00081	0.0047
1,1-Dichloroethene	<0.00083	<0.00079	<0.00079	<0.00079	<0.00079	0.88
cis-1,2-Dichloroethene	<0.00083	<0.00079	0.0016	<0.00079	<0.00079	0.18
trans-1,2-Dichloroethene	<0.00083	<0.00079	<0.00079	<0.00079	<0.00079	0.18
Ethylbenzene	<0.00091	0.0014	0.0051	0.00087	0.0075	0.049
Methylene chloride	<0.0073	<0.0069	<0.0069	<0.0069	<0.0069	2.6
Methyl tertiary-butyl ether	<0.00075	<0.00072	<0.00072	<0.00072	<0.00072	0.47 (9/21)
Naphthalene	<0.0011	0.003	0.0015	0.001	0.0031	0.0036
Tetrachloroethene	0.073	**0.21**	**0.88**	0.0058	0.0069	0.18
Toluene	<0.00079	0.0086	0.035	0.0068	0.0047	22 (9/21)
1,1,1-Trichloroethane	<0.0011	0.0014	0.0043	<0.0011	<0.0011	22
Trichloroethene	<0.0011	0.0013	0.0081	0.0016	<0.0011	0.0088
Trichlorofluoromethane	<0.0012	<0.0045	<0.0045	<0.0045	<0.0045	NL
1,2,4-Trimethylbenzene	--	0.003	0.0052	0.0014	0.0086	0.26 (9/21)
1,3,4-Trimethylbenzene	--	<0.00098	0.0018	<0.00098	0.0022	0.26 (9/21)
Vinyl chloride	<0.00053	<0.00051	<0.00051	<0.00051	<0.00051	0.028
Xylenes (total)	<0.00091	0.0067	0.0211	0.00372	0.0297	0.44

[1] – Indoor Air Vapor Action Levels (VALs) for Small Commercial space taken from the *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels* (August 2023 update) or calculated from USEPA RSLs per *WI Vapor Quick Look-Up Table* notes

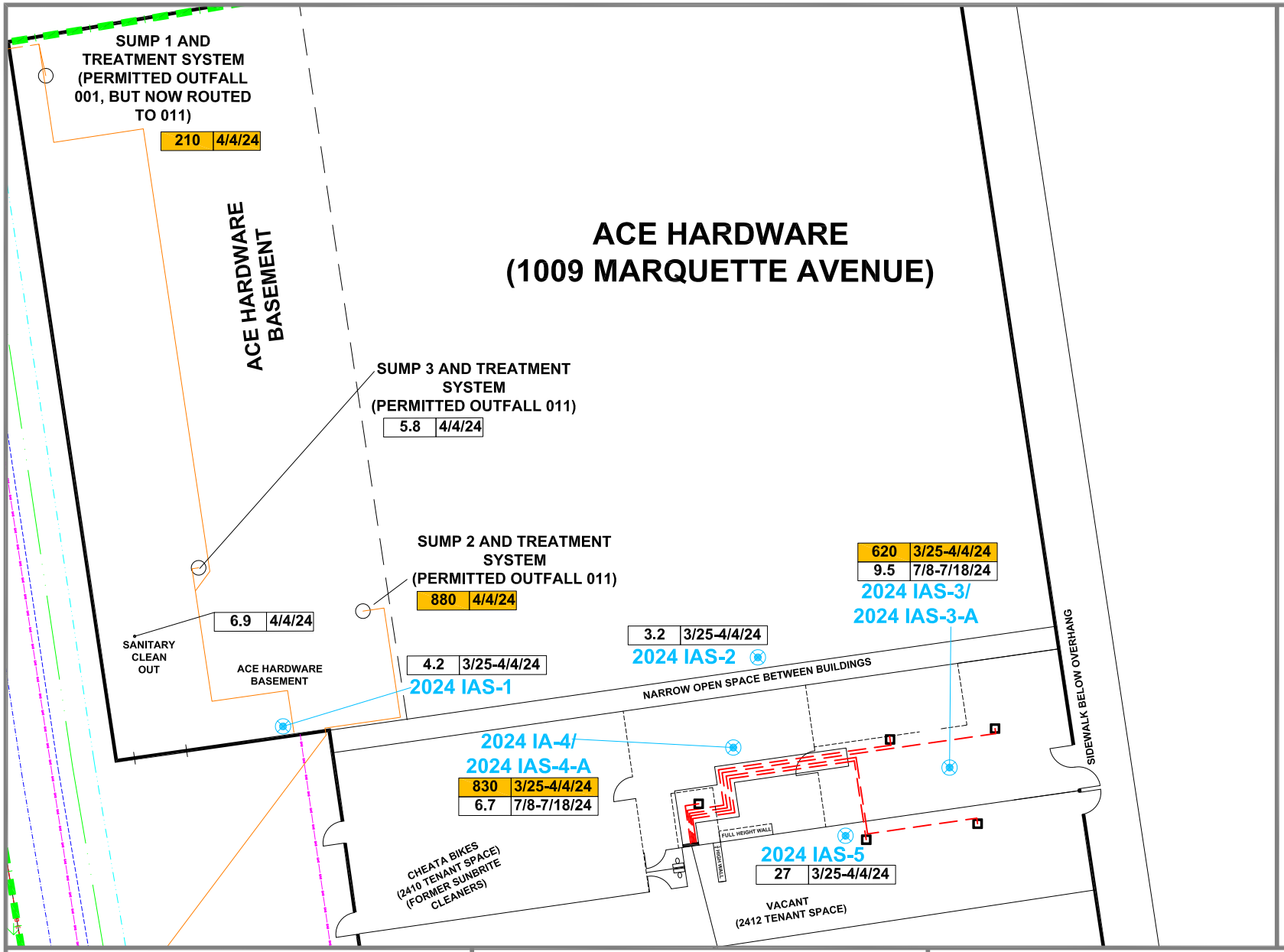
(9/21) – Listed VALs taken from September 2021 *WI Vapor Quick Look-Up Table Indoor Air Vapor Action Levels and Vapor Risk Screening Levels*

NL – Not listed in *WI Vapor Quick Look-Up Table* and not calculated (either no information available on USEPA tables, or contaminant not detected)

Bold – Concentration exceeds the Indoor Air VAL (vapor-tight sump lid covers sump pit)

VOCs by USEPA Method TO-15

ATTACHMENT B
FIGURES



LEGEND

(2410) UNIT ADDRESS

GAS UTILITY LINE

SANITARY UTILITY LINE

STORM SEWER UTILITY LINE

WATER UTILITY LINE (4")

SUMP PIT LOCATION

DISCHARGE PIPING (PIPING FROM SUMP TO DISCHARGE POINT INCLUDES VERTICALS; ONLY HORIZONTAL LAYOUT DEPICTED)

PASSIVE INDOOR AIR SAMPLE (2024)

6 4/4/24

TETRACHLOROETHENE CONCENTRATION (µg/m³) SAMPLE DATE OR COMPOSITE SAMPLE PERIOD

OBSERVED EXCEEDANCE OF THE PERC VAPOR RISK SCREENING LEVEL OF 180 µg/m³ (ADDRESSED BY MAINTAINING SEALED SUMPS VIA HARD COVER OR ELIMINATED VIA SUB-SLAB DEPRESSURIZATION SYSTEM UPGRADE/RE-SAMPLING)

RECOVERY LINE ACCESS VAULT (1.5-FT x 1.5-FT x 1-FT DEEP SUCTION PIT)

RECOVERY PIPING TRENCH

RECOVERY LINES (UNDERGROUND)

NOTE: RECOVERY LINES ARE 2-INCH PVC TO THE MANIFOLD

N

0' 20'

S C A L E

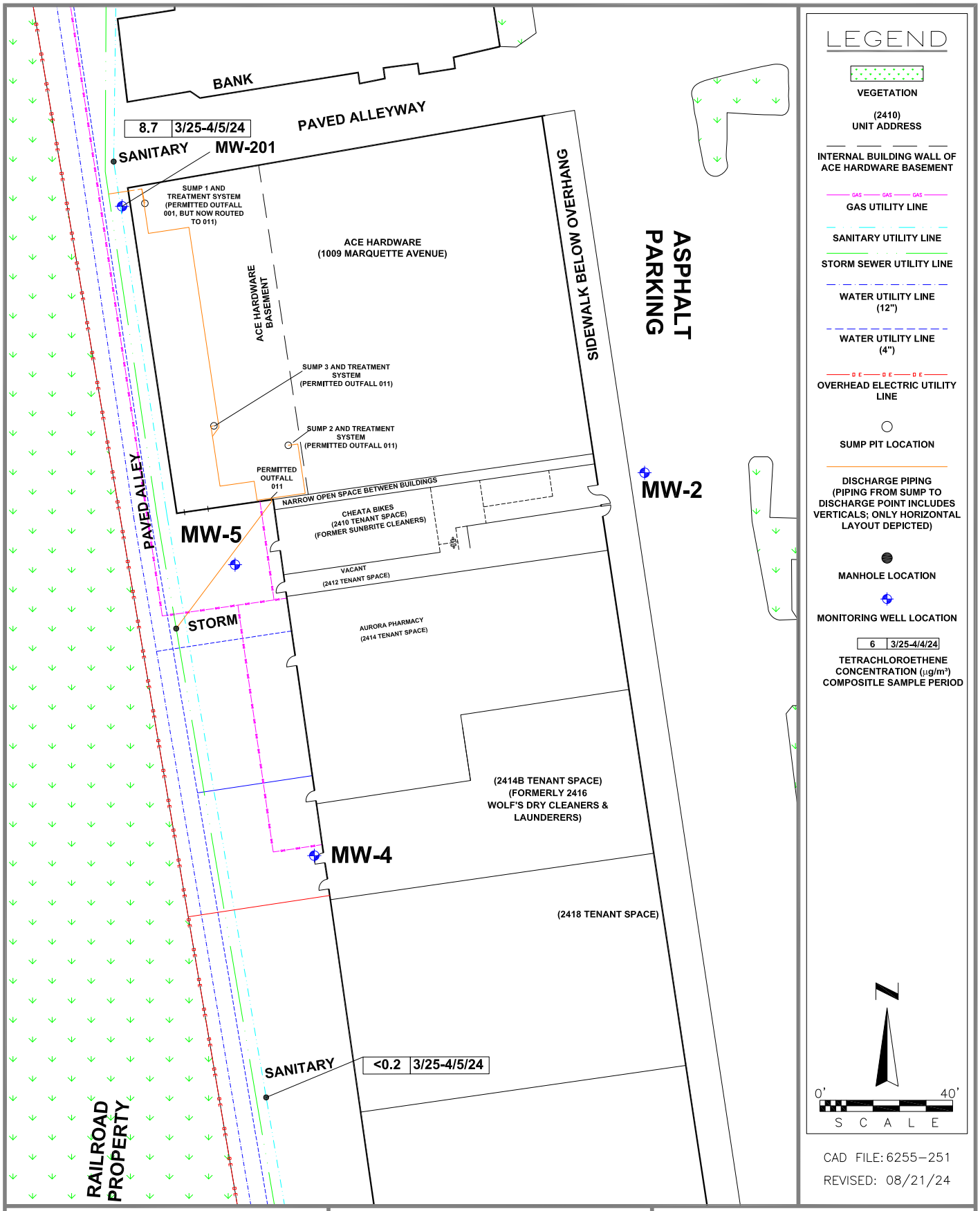
CAD FILE: 6255-248

REVISED: 08/21/24

DAI ENVIRONMENTAL

SUNRISE SHOPPING CENTER-FORMER DRY CLEANER
2410-2424 10TH AVENUE
1009 MARQUETTE AVENUE
SOUTH MILWAUKEE, WISCONSIN

FIGURE B.4.a.1c
POST-REMEDIATION VAPOR INTRUSION MAP
(TETRACHLOROETHENE)
(2024 INDOOR AIR AND SUMP)



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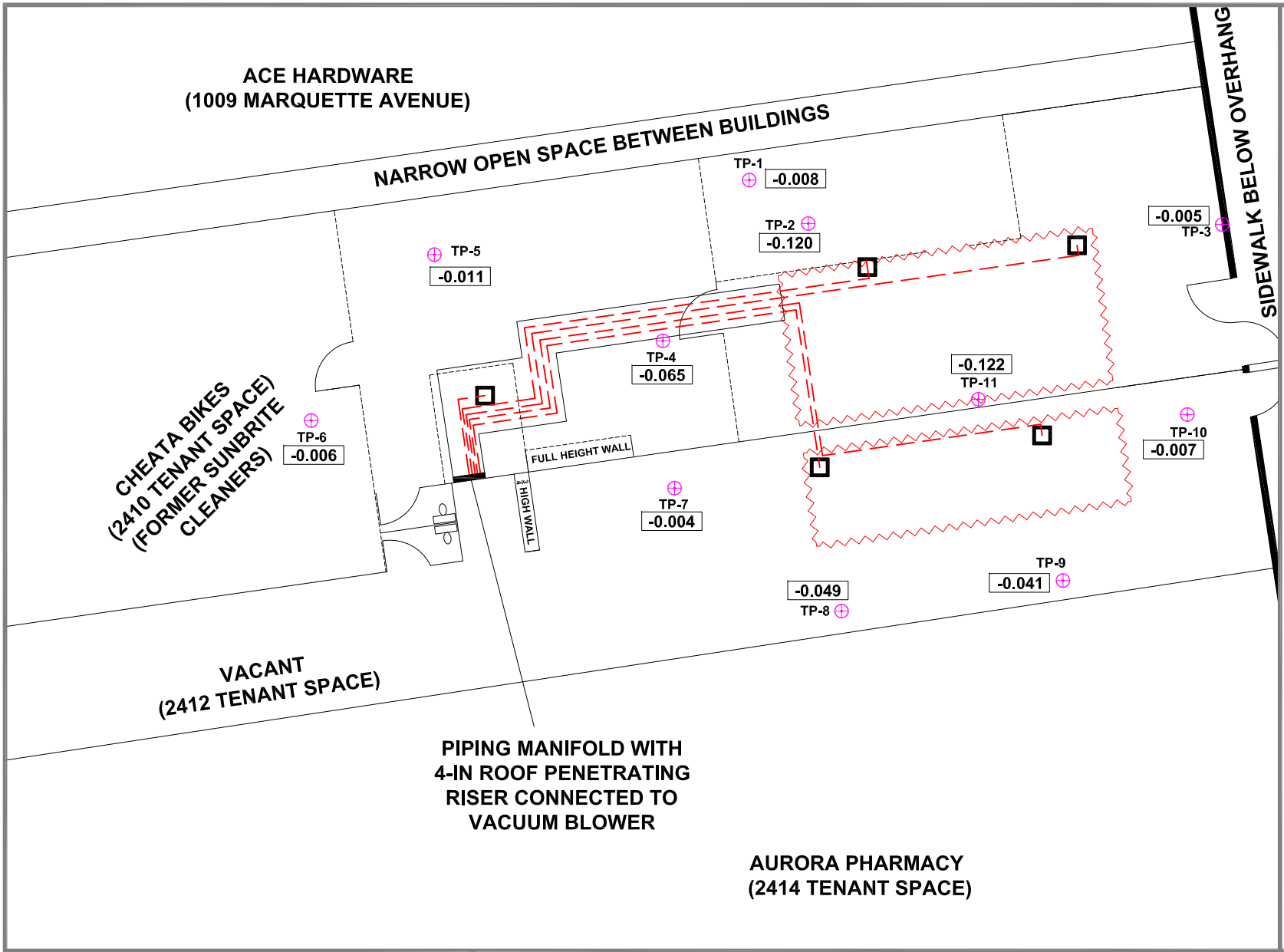
REVISED: 08/21/24

ENVIRONMENTAL DAI

SUNRISE SHOPPING CTR-FMR DRY CLEANER
2410-2424 10TH AVENUE
1009 MARQUETTE AVENUE
SOUTH MILWAUKEE, WISCONSIN

FIGURE B.4.a.1d
SEWER VAPOR INTRUSION MAP
(TETRACHLOROETHENE)
(MARCH-APRIL 2024)



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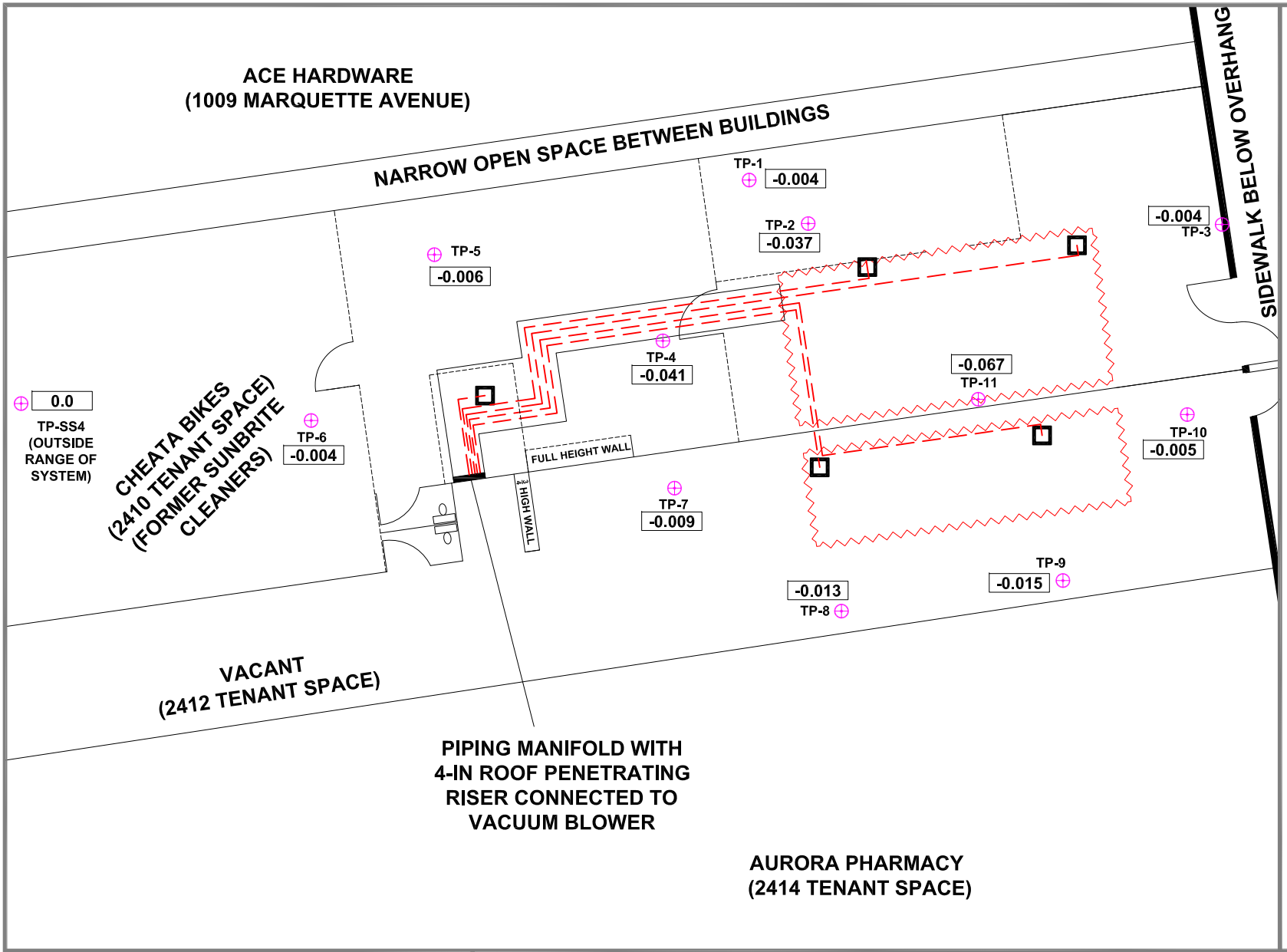
REVISED: 11/02/23

ENVIRONMENTAL DAI

SUNRISE SHOPPING CENTER-FORMER DRY CLEANER
2410-2424 10TH AVENUE
1009 MARQUETTE AVENUE
SOUTH MILWAUKEE, WISCONSIN

FIGURE C.4.d.1a
SSD SYSTEM LAYOUT AND VACUUM TEST MONITORING (AUGUST 24, 2020)



LEGEND

(2410) UNIT ADDRESS

EXTENT OF CHEMICAL TREATMENT VIA SOIL MIXING

RECOVERY LINE ACCESS VAULT (1.5-FT x 1.5-FT x 1-FT DEEP SUCTION PIT)

RECOVERY PIPING TRENCH

RECOVERY LINES (UNDERGROUND)

NOTE: RECOVERY LINES ARE 2-INCH PVC TO THE MANIFOLD

SSD SYSTEM VACUUM TEST MONITORING POINT LOCATION

-0.008

SSD SYSTEM VACUUM TEST MONITORING POINT MEASUREMENT (INCHES OF H_2O)

N

0' 10'

S C A L E

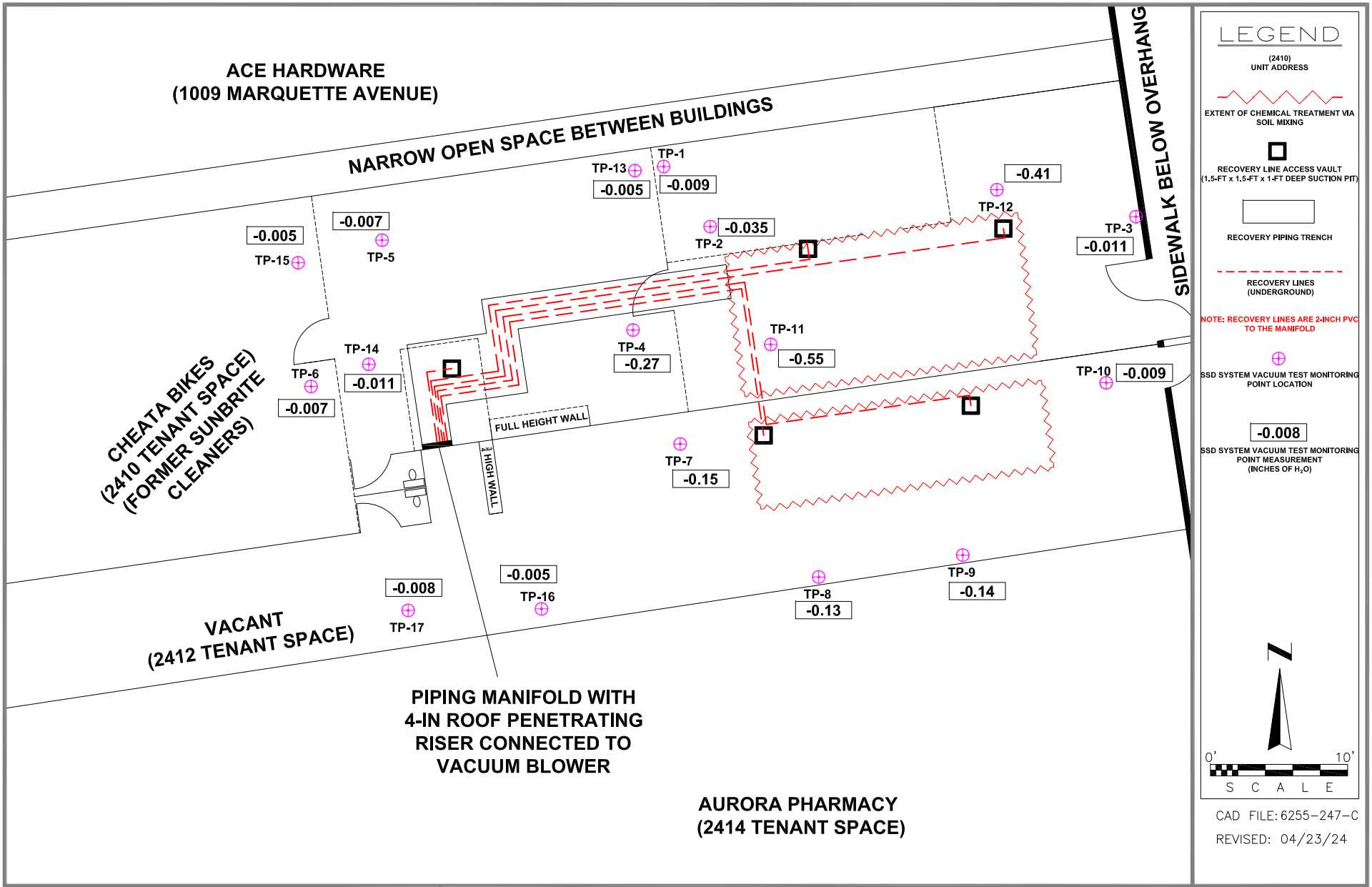
CAD FILE: 6255-247-B

REVISED: 11/02/23

ENVIRONMENTAL DAI

SUNRISE SHOPPING CENTER-FORMER DRY CLEANER
2410-2424 10TH AVENUE
1009 MARQUETTE AVENUE
SOUTH MILWAUKEE, WISCONSIN

FIGURE C.4.d.1b
SSD SYSTEM LAYOUT AND VACUUM TEST MONITORING (DECEMBER 10, 2020)



CAD FILE: 6255-247-C

REVISED: 04/23/24

ENVIRONMENTAL DAI

SUNRISE SHOPPING CENTER-FORMER DRY CLEANER
2410-2424 10TH AVENUE
1009 MARQUETTE AVENUE
SOUTH MILWAUKEE, WISCONSIN

FIGURE C.4.d.1c
SSD SYSTEM LAYOUT AND VACUUM TEST MONITORING (MARCH 25, 2024)