

MEMORANDUM

DATE : June 10, 2023

TO : Shane LaFave / Roers Companies, LLC

FROM : Pratap Singh, Ph.D., PE / KSingh

SUBJECT : Weekly Progress Report for Week Ending 06/10/2023
Community Within the Corridor - East Block

COPY TO : Que El-Amin / Scott Crawford, Inc., Robert Reineke, PE, Robert Fedorchak, PE
Project #40441B

The purpose of this memorandum is to summarize the work performed as a part of the emergency response for the referenced project for the week ending 06/10/2023. This document is intended to serve two purposes:

1. Summarizing the tasks performed during the past week, and
2. The action items for the following week.

The following tasks were performed this week which are summarized below:

1. Task #1 – GC Testing by KSingh

KSingh continues to work on conducting gas chromatograph (GC) testing for measurement of TCE in various units of the East Block focused on the first floor. The focus of testing for TCE is concentrated in units that have detected elevated levels of TCE. The test results of TCE are shown in Tables 1 to 5 in Attachment A.

A comprehensive data table of Indoor Air Monitoring Data for TCE is provided in Table 7 (Attachment C). Note that highlighted cell values in green indicate levels that are **lower** than the vapor risk screening levels for **residential** facilities. Graphs showing comprehensive data can be found in Attachment D. The findings of portable discrete testing for TCE are as follows:

- TCE detections ranged from 2.4 $\mu\text{g}/\text{m}^3$ to 14.4 $\mu\text{g}/\text{m}^3$ in Unit 1045.
- TCE detections ranged from 3.4 $\mu\text{g}/\text{m}^3$ to 27.3 $\mu\text{g}/\text{m}^3$ in Unit 1050.
- TCE was **below detection limit** in Unit 1052 where the concrete was filled in under the water pipe going out of the wall onto 32nd Street.
- TCE detections were **below detection limit** in the First Floor Hallway.
- Units 1039, 1040, and 1041 had concentrations of TCE **below detection limit**.
- Sub-slab vapor concentrations taken from various locations saw a decline in the levels after installation of the Obar Fan in the 1B-NW Garage. For example, sub-slab TCE detections were 1443 $\mu\text{g}/\text{m}^3$ in Unit 1050 and 750 $\mu\text{g}/\text{m}^3$ in Unit 1045 in the previous week that dropped to 281 $\mu\text{g}/\text{m}^3$ and 200 $\mu\text{g}/\text{m}^3$ (refer to Table 5 in the attachment).

- Continuous monitoring was started in Units 1045 and 1050 which are displayed in Appendix D in Figures 1 and 2, respectively. The continuous monitoring data supports the information gathered from discrete sampling.
 - Overall, there was a **significant decline** in the indoor air concentrations in all the residential and utility units on the 1st floor of buildings 1B-W, 1B-SW, and 1B-S. This decline is largely associated to improved depressurization observed due to installation of a new blower fan to the VMS in Building 1B-W.
 - Improvements have also been observed in 2nd floor units. It should be noted that the Obar fan installation has induced sufficient vacuum north of the tunnel. Additional blowers are anticipated to be installed to depressurize the area south of the tunnel.
2. Task #2 – Redirection of Downspouts
Wenger Construction was onsite this week working on the downspouts and gutters. Redirection of downspouts from Building 1B-SE were completed. Please see Attachment E for photo documentation.
 3. Task #3 – Final Connections for Sumps
All sump connections have been made. Arrangements are being made to connect the sump pumps to power.
 4. Task #4 – Sealing of Access Points
9 out of the 13 installed Access Points were sealed with an air-tight plastic layer covered by reinforced concrete. The other 4 points are covered with plastic sealed air-tight with duct tape to provide access for any additional work.
 5. Task #5 – Electrical Connection for new Blower
Roman Electric completed the installation of power to the Obar Fan. The fan has been operational since June 6th, 2023.
 6. Task #6 – Operation of new Blower
The new blower has been tested to function at 50%, 75%, and 95% of its capacity. Vacuum readings fluctuated with the changes in operational conditions and have been noted in Table 6.
 7. Task #7 – Testing of Additional Fan at Access Point 1
A Radonaway GP501C was set up for a Pressure Field Extension Test at Access Point 1 and was plugged in with exhaust vented outdoors. Calculated approximately 68 cfm from GP501C after anemometer measurement. Observed an increase in vacuum and ultimately vacuum under all units greater than -0.004 inches of water except under Unit 1039. A more powerful fan likely to induce vacuum in unit 1039, and arrangements are being made for a permanent fan at Access Point 1.
 8. Task #8 – VMS Operations and Troubleshooting
Please note the following updates:
 - All four blowers continue to function properly. Fliteway Technologies and KSingh are monitoring the operations of the VMS.
 - The new VOC blower is now operational in the proximity of VMS in Buildings 1B-W and 1B-SW. By applying vacuum, we were able to quantify the radius of influence in this area where

no vacuum was observed, and this is the area where highest detections of TCE have been documented. **The addition of this blower has greatly improved the performance of the VMS.**

- Installation of new vapor pins in various units in buildings 1B-W and 1B-S demonstrated vacuum significantly greater than the target of -0.004 in H_2O . The results of vacuum measurements are shown in Table 6 in Attachment B.
- High vacuum was observed in the Fitness Center (1054) and the Mechanical Room (1052) while the Units in the Building 1B-SW had little to no vacuum.
- Two (2) additional VOC blowers will be installed to conduct vacuum measurement testing in the proximity of VMS in Buildings 1B-S and 1B-SW. The blowers will have 800 cfm capacity. By applying vacuum, we should be able to quantify the radius of influence in this area where no vacuum is observed. We are waiting for an electrical connection to start operations.
- A pilot work plan is being prepared to propose the use of Biochar – a carbonaceous material, to act as an adsorbent to reduce the TCE concentrations in Rooms 1048 and 1049.

Action Items for Week of June 11, 2023 – June 17, 2023

KSingh plans to perform the following tasks in the upcoming week:

1. Fliteway Technology will replace two temporary North Blowers with two permanent blowers next week. Both blowers are 10-HP and yield about 500 cfm each at 14 inches of water vacuum.
2. Two OBAR Fans (GBR-89) will be delivered this week, and electrical and piping connections are being arranged this week. Installation of these blowers is likely to depressurize the southwest portion of the building. With this installation, it is anticipated that we will have a minimum depressurization of 0.004 inch of water throughout the building. Our goal is to depressurize the building at 0.01 inches of water.
3. Coordinate installation of valve in Powerhouse to control / limit vacuum draw from Powerhouse and maximize vacuum from Northern Mechanical Room.
4. Continue discrete sampling in the various impacted units and add results to comprehensive table.
5. Continue continuous sampling of units 1045 and 1050.
6. Conduct vacuum measurements at strategic locations within the buildings.
7. Continue to prepare comprehensive figures showing indoor air data using Tableau software.
8. Finalize work plan for the potential use of Biochar as an option for corrective action.

Attachment A
Summary of Monitoring Results by Date

Attachment A
Monitoring Results by Date
On-site EPA Method TO-14 Data from Indoor Air Samples

Instrument: SRI 8610 Gas Chromatograph with ECD

Operator: KSingh

Table 1: Monitoring Results from 06/05/2023

Sample ID	Sample Location	Sample Time	TCE (µg/m ³)	PCE (µg/m ³)
IA - 698	Unit 1042	11:14	4	ND
IA - 699	Unit 1044	11:22	65.2	ND
IA - 700	Unit 1045	11:51	246	ND
IA - 701	Unit 1049	12:15	23.6	ND
IA - 702	Unit 1048	12:23	19.8	ND
IA - 703	Unit 1050	12:33	27.3	ND
IA - 704	Unit 1054		4.2	ND
IA - 705	Stairwell 4	9:40	3	ND
IA - 706	Obar Exhaust	17:15	573.5	4.6
Reporting Limit (µg/m ³)			0.6	0.6
ND Indicates Not Detected at listed reporting level				

Table 2: Monitoring Results from 06/06/2023

No tests were conducted as the GC was moved to the West Block

Table 3: Monitoring Results from 06/07/2023

Sample ID	Sample Location	Sample Time	TCE ($\mu\text{g}/\text{m}^3$)	PCE ($\mu\text{g}/\text{m}^3$)
IA - 707	Obar Exhaust - 6/6	16:29	288	1.2
IA - 708	Unit 1044	17:18	11.7	ND
IA - 709	Unit 1045	17:25	14.4	ND
IA - 710	Unit 1050	17:33	10.3	ND
IA - 711	Unit 1042	17:02	19.2	ND
IA - 712	Unit 1048	17:10	13.5	ND
IA - 713	Unit 1036	17:42	6.9	ND
IA - 714	Obar Exhaust	8:25	211	0.75
Reporting Limit ($\mu\text{g}/\text{m}^3$)			0.6	0.6
ND Indicates Not Detected at listed reporting level				

Table 4: Monitoring Results from 06/08/2023

Sample ID	Sample Location	Sample Time	TCE ($\mu\text{g}/\text{m}^3$)	PCE ($\mu\text{g}/\text{m}^3$)
IA - 715	Unit 1055	14:40	0.4	0.9
IA - 716	Unit 1054	14:48	0.4	ND
IA - 717	Unit 1053	14:56	0.5	71.3
IA - 718	Unit 1052	15:04	0.23	24.6
IA - 719	Unit 1048	15:36	0.33	24.4
IA - 720	Unit 1049	15:44	1.2	19
IA - 721	Unit 1050	15:12	3.4	1.1
IA - 722	Unit 1045	15:20	2.4	1.1
IA - 723	Unit 1044	15:28	1.7	2.1
IA - 724	Unit 1042	15:52	0.8	18.7
IA - 725	Unit 1039	16:00	0.7	6.9
IA - 726	Unit 1040	16:08	0.6	18
IA - 727	Obar Fan Exhaust	16:16	461	16.7
Reporting Limit ($\mu\text{g}/\text{m}^3$)			0.6	0.6
ND Indicates Not Detected at listed reporting level				

Table 5: Monitoring Results from 06/09/2023

Sample ID	Sample Location	Sample Time	TCE ($\mu\text{g}/\text{m}^3$)	PCE ($\mu\text{g}/\text{m}^3$)
IA - 728	2nd Fl Hallway	9:37	0.42	ND
IA - 729	Unit 2045	9:44	0.52	ND
IA - 730	Unit 2056	9:52	1	ND
IA - 731	1st Hallway S	10:00	0.4	ND
IA - 732	Unit 1039	10:08	0.3	ND
IA - 733	Unit 1041	10:16	0.51	ND
IA - 734	Unit 1043	10:24	0.53	ND
IA - 735	Radon Fan exhaust	10:32	19.5	3.5
IA - 736	Unit 1051	10:43	0.76	ND
IA - 737	Unit 1037	10:51	0.46	ND
IA - 738	Unit 1036	11:00	0.26	ND
IA - 739	Unit 1035	11:11	0.22	ND
IA - 740	Unit 1058	11:19	0.38	ND
IA - 741	Unit 1026	11:27	0.27	ND
IA - 742	Unit 1025	11:34	0.31	ND
IA - 743	Unit 1014	11:42	0.21	ND
IA - 744	Stairwell 3	11:50	0	ND
IA - 745	Stairwell 4	11:57	0.34	ND
IA - 746	Stairwell 4 Pin	12:05	520	4
IA - 747	Basketball 1	12:13	2.65	ND
IA - 748	Unit 1050 Pin	12:20	281	ND
IA - 749	Unit 1045 Pin	12:28	200	2.5
IA - 750	Obar Fan Exhaust	12:36	460	2.7
Reporting Limit ($\mu\text{g}/\text{m}^3$)			0.6	0.6
ND Indicates Not Detected at listed reporting level				

Attachment B

Table 6: Comprehensive Vacuum Measurements (inches H₂O)

Note	Obar @ 50%				Obar @ 75% Radon Fan at Access Point 1 ON @ 12:45; OFF at 17:00				Obar @ 95%			Obar @ 50%
	6-Jun 14:35	6-Jun 16:45	7-Jun 8:00	7-Jun 12:00	7-Jun 16:00	8-Jun 9:00	8-Jun 12:45	8-Jun 14:00	8-Jun 16:15	9-Jun 8:30	9-Jun 12:00	9-Jun 15:30
Location												
1055							-0.383	-0.379	-0.464	-0.464	-0.459	-0.235
1054	-0.524	-0.510	-0.511	-0.521	-0.779	-0.751	-0.751	-0.770	-0.913	-0.914	-0.904	-0.499
1053							-0.414	-0.414	-0.505	-0.505	-0.505	-0.266
Oppo. 1054							-0.254	-0.262	-0.313	-0.332	-0.327	-0.167
Stairwell 4	0	0	0	0	0	0	0	0.000	0	0	0	0
1052							-0.752	-0.756	-0.905	-0.912	-0.901	-0.492
1051							-0.183	-0.176	-0.226	-0.219	-0.212	-0.117
1049			-0.131	-0.141	-0.176	-0.184	-0.173		-0.218	-0.214	-0.221	-0.122
1048							-0.068		-0.070	-0.088	-0.086	-0.044
1050	-0.060	-0.052	-0.054	-0.051	-0.081	-0.082	-0.072	-0.082	-0.092	-0.095	-0.097	-0.054
Out 1050	-0.073	-0.066	-0.076	-0.081	-0.109	-0.106	-0.102	-0.108	-0.125	-0.127	-0.0124	-0.072
1045	-0.025	-0.017	-0.022	-0.016	-0.04	-0.040	-0.047	-0.039	-0.046	-0.041	-0.053	-0.026
Out 1044	-0.063	-0.037	-0.048	-0.047	-0.065	-0.055	-0.074	-0.076	-0.076	-0.083	-0.068	-0.059
1043						0	-0.005	-0.013	-0.010	-0.010	0	0
1042	0	0	0	0	0	0	0	-0.005	0	0	0	-0.002
1041							-0.008	-0.007	-0.010	-0.003	-0.003	-0.005
1040							-0.006	-0.005	-0.008	-0.006	0	-0.009
Out 1040		0	0	0	0	0	-0.020	-0.022	-0.017	-0.015	-0.008	-0.015
1039		0	0	0	0	0	0	0.000	0	0	0	0
1037		0	0	0	0	0	-0.018	-0.012	-0.010	-0.009	-0.012	-0.014
1036		-0.009	-0.011	-0.012	-0.008	-0.005	-0.029	-0.025	-0.015	-0.029	-0.029	-0.027
1035		-0.004	-0.006	-0.004	-0.011	-0.011	-0.009	-0.021	-0.018	-0.014	-0.016	-0.016
Out 1035		-0.008	-0.008	-0.010	-0.002	0	-0.004	-0.006	0	-0.005	0	-0.003
1058 E		-0.018	-0.017	-0.019	-0.015	-0.015	-0.018	-0.018	-0.024	-0.023	-0.021	-0.022
1058 W		-0.012	-0.015	-0.017	-0.012	-0.017	-0.021	-0.018	-0.023	-0.022	-0.022	-0.024
1026		-0.033	-0.031	-0.036	-0.030	-0.035	-0.039	-0.046	-0.032	-0.029	-0.034	-0.031
1025							-0.055	-0.068	-0.048	-0.052	-0.055	-0.051
1014							-0.229	-0.214	-0.214	-0.224	-0.221	-0.222
SE Lobby		-0.630	-0.651	-0.673	-0.617	-0.610	-0.609	-0.616	-0.606	-0.612	-0.625	-0.622
BB 1		-0.016	-0.018	-0.018	-0.014	-0.019	-0.017	-0.020	-0.011	-0.005	-0.008	-0.006
BB 2		-0.019	-0.019	-0.018	-0.005	-0.013	-0.010	-0.009	0.000	0.000	-0.003	-0.003
BB 3		-0.053	-0.058	-0.057	-0.054	-0.051	-0.046	-0.046	-0.042	-0.048	-0.051	-0.053

Attachment C
Comprehensive Data Table

Attachment D Figures of TCE Levels through June 9, 2023

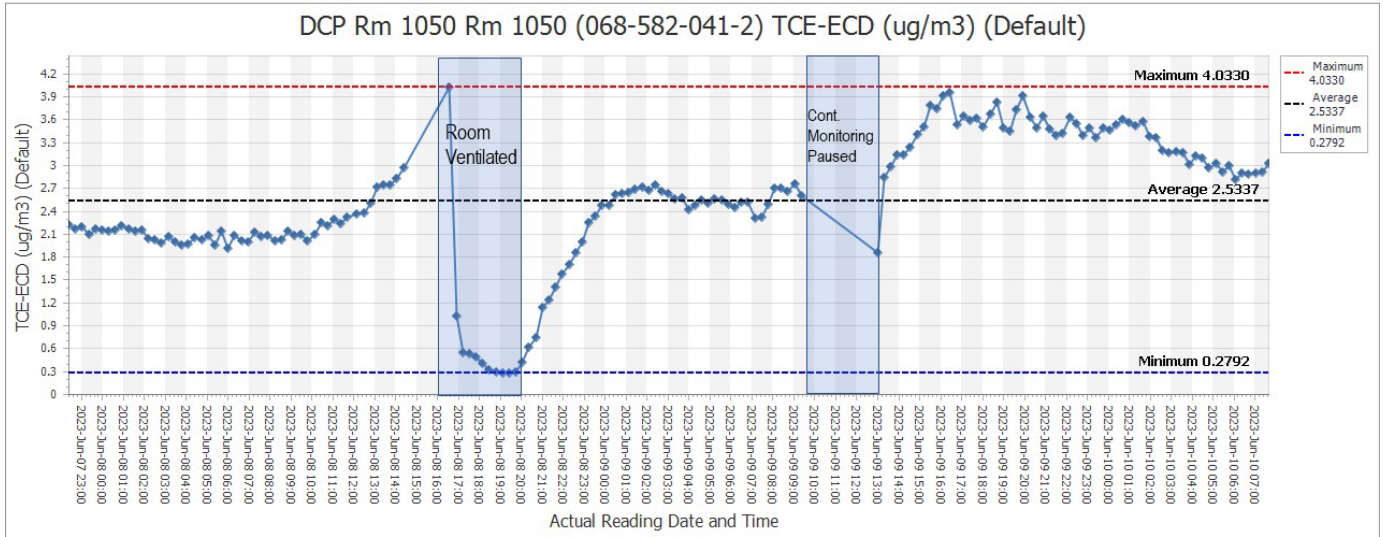


Figure 1 – Continuous Monitoring Data for Unit 1050 since June 7, 2023

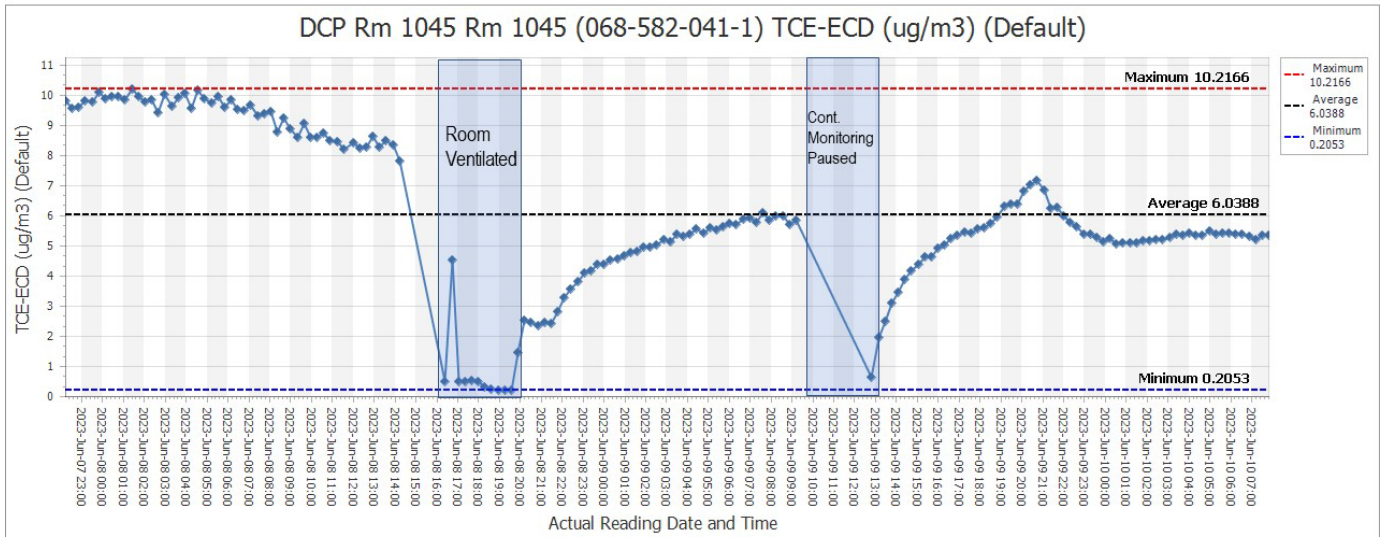


Figure 2 – Continuous Monitoring Data for Unit 1045 since June 7, 2023

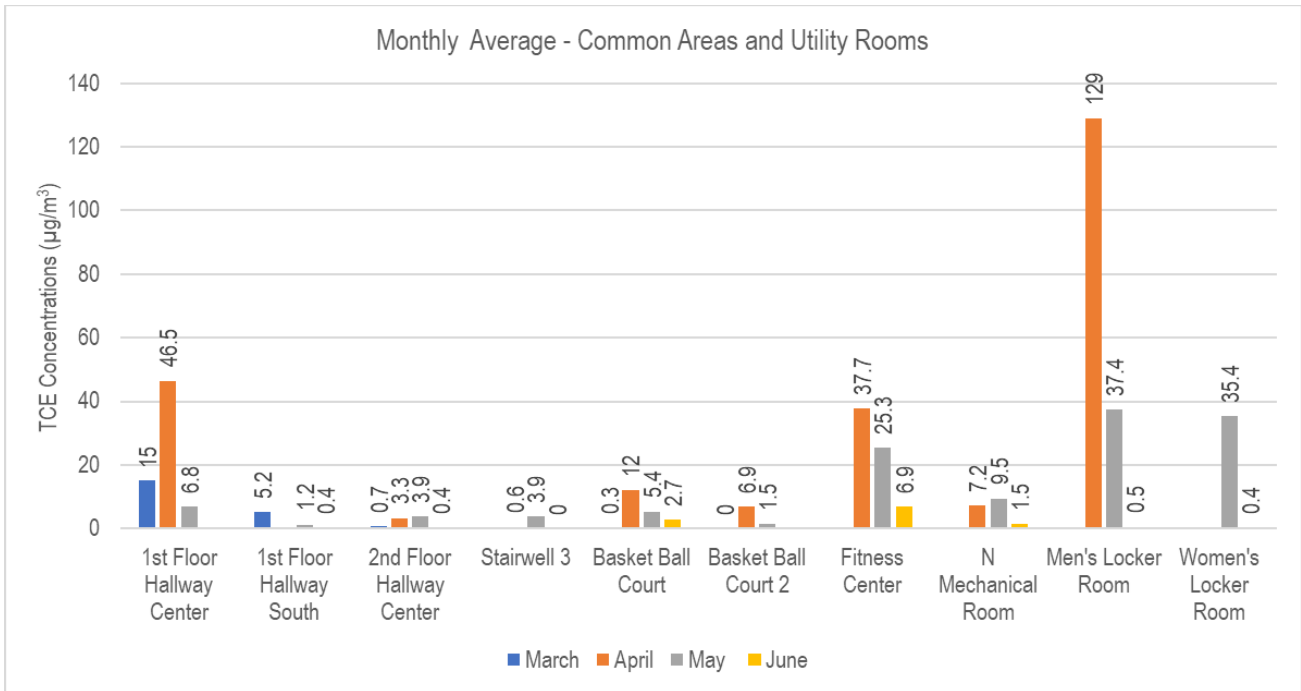


Figure 3 – Monthly Averages for Common Areas

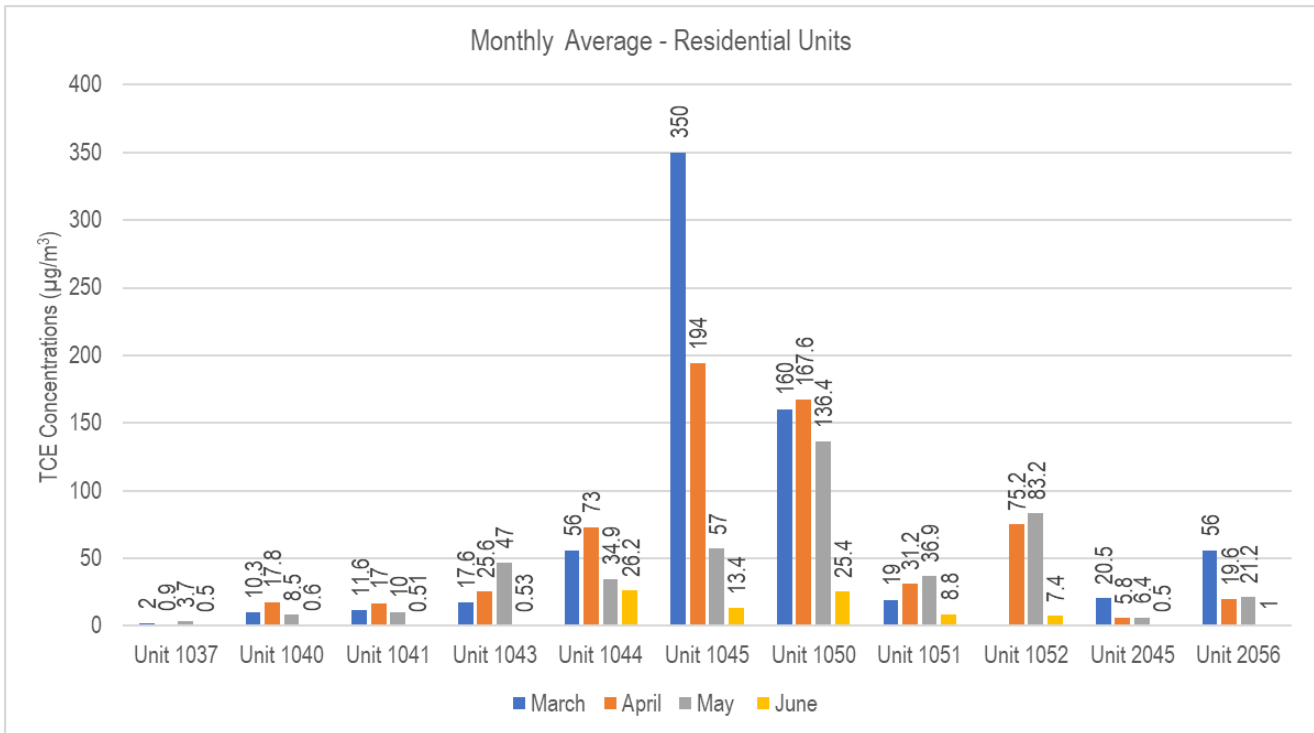


Figure 4 – Monthly Averages for Residential Units

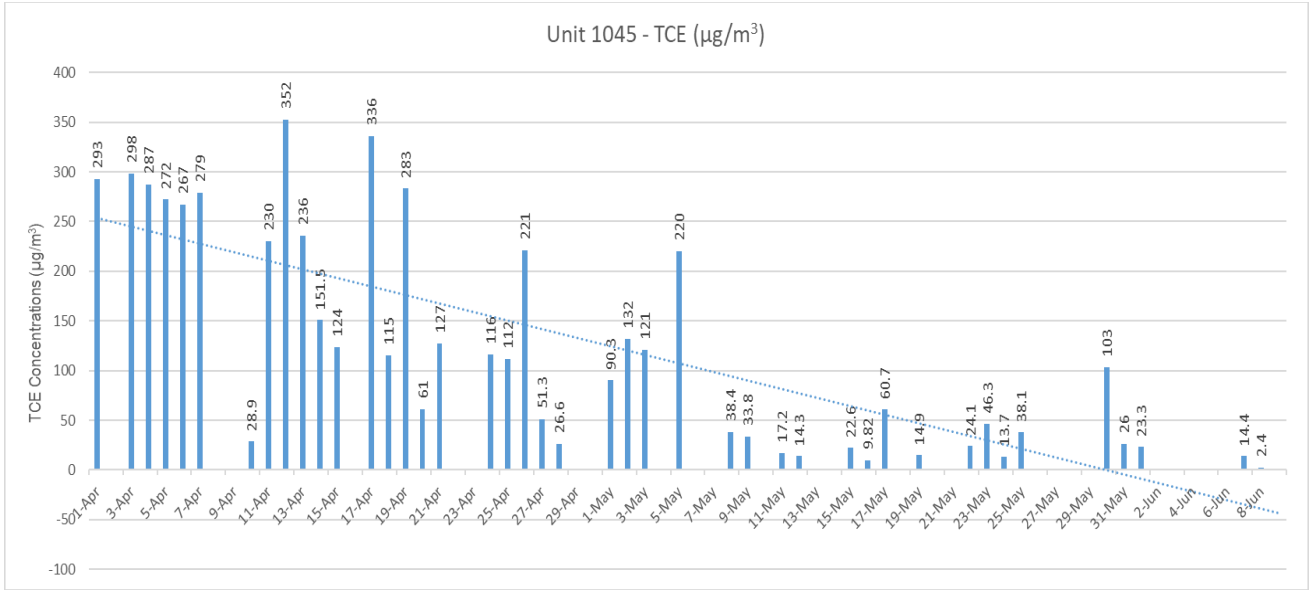


Figure 5 – YTD Data of TCE Concentration in Unit 1045

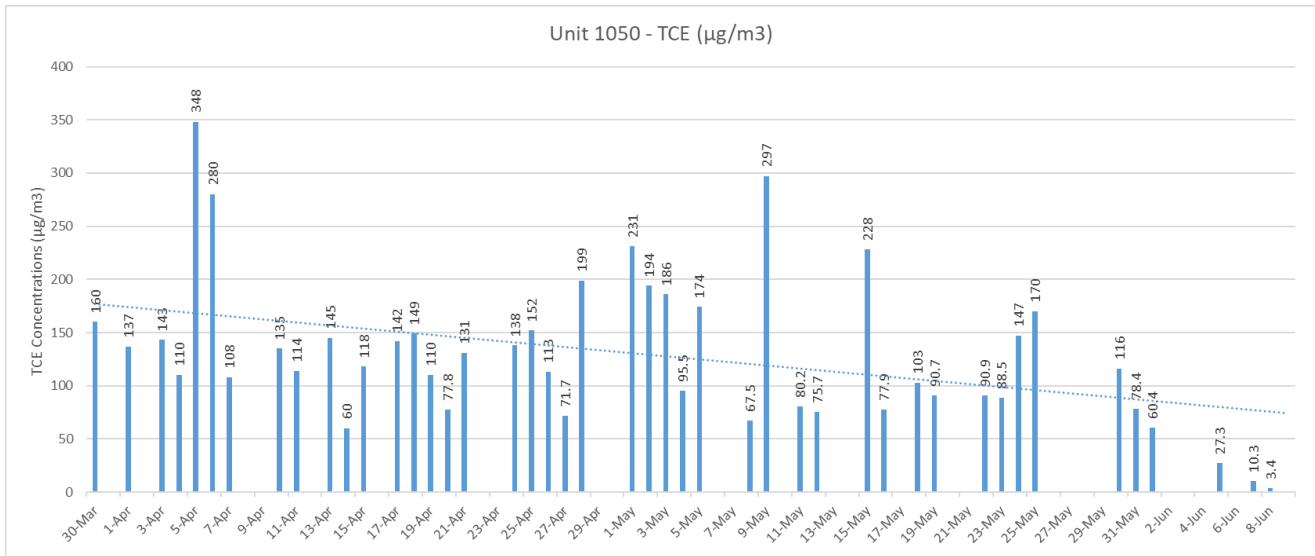


Figure 6 – YTD Data of TCE Concentration in Unit 1045

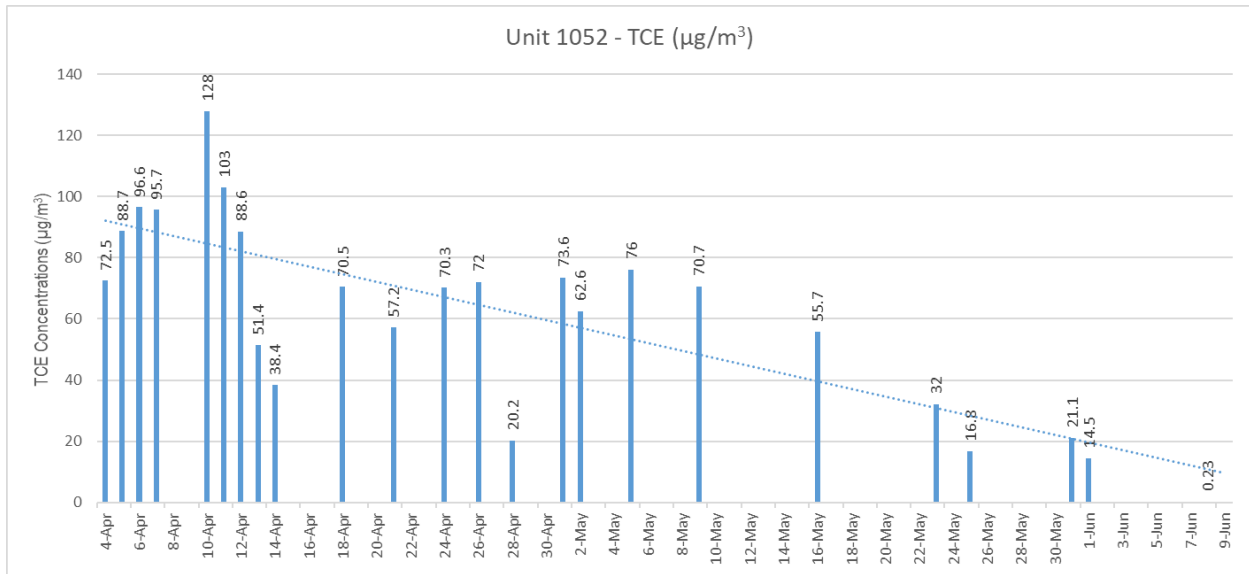


Figure 7 – YTD Data of TCE Concentration in Unit 1052

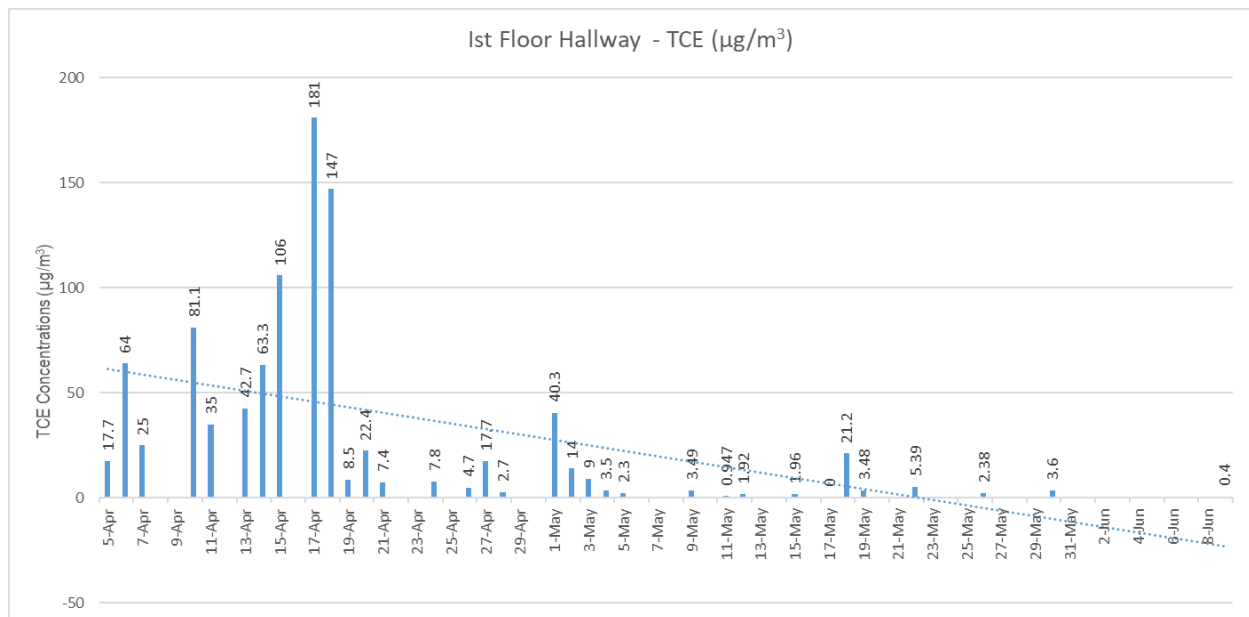


Figure 8 – YTD Data of TCE Concentration in 1st Floor Hallway

Attachment E
Relevant Photos



June 5, 2023 - Sump in Unit 1042 - Plumbing Completed



June 5, 2023 - Horner Construction Completed Northern Garage Sump with Plugs



June 5, 2023 - Installed Ceiling Conduit to Obar Fan by Roman Electric



June 6, 2023 - Obar Fan with Active Electrical Connection



June 6, 2023 - Rerouted Gutters



June 6, 2023 - Rerouted Gutters



June 8, 2023 - GP501C Radon Fan Set Up at Access Point 1