



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Emory Grove Center
Date of Test Report	1/25/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	2
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.7 pCi/L

Project Status:

1. Post mitigation testing completed.



January 25, 2023

Mr. Brian Croyle
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122210551

Location: Emory Grove Center
18100 Washington Grove Lane
Gaithersburg, MD 20877

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Emory Grove Center located at 18100 Washington Grove Ln. Gaithersburg, MD 20877 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on December 22, 2022 and deployed four (4) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on December 27, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA for analysis by gamma-ray spectroscopy.

Accustar Labs - MA is a NRSB certified analytical laboratory for radon analysis (certification #ARL0017) located at 2 Saber Way, Ward Hill, MA 01835.

Evaluation of Testing Conditions:

These tests represent:

- Follow up to post mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility’s HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate temperatures ranged from 23°F to 55°F. Maximum sustained winds ranged from 0-18 miles per hour. Average humidity was around 75% with 0.0 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Emory Grove Center		
Test Period: 12/22/2022 - 12/27/2022		
Kit Number	Room / Area	Result
11288190	GYM	0.6
11288198	GYM	0.7
11288189	GYM STORAGE	< 0.3
11288196	GYM STORAGE	0.5

Table 2- Radon Testing Results			
Emory Grove Center			
Test Period: 12/22/22 - 12/27/22			
Kit Number	QC Type	Room / Area	Result
11288198	D	Gym	0.7
11288189	FB	Gym Storage	< 0.3
11288518	OB	OFFICE BLANK	< 0.3
11287685	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11288190	GYM	2022-12-22 @ 12:00 pm	2022-12-28 @ 11:00 am	0.6 ± 0.3	2022-12-29
11288198	GYM	2022-12-22 @ 12:00 pm	2022-12-28 @ 11:00 am	0.7 ± 0.3	2022-12-29
11288189	GYM STORAGE	2022-12-22 @ 12:00 pm	2022-12-28 @ 11:00 am	< 0.3	2022-12-29
11288196	GYM STORAGE	2022-12-22 @ 12:00 pm	2022-12-28 @ 11:00 am	0.5 ± 0.3	2022-12-29

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KC1 TECHNOLOGIES, INC Job Number 208343

NOMINAL Conditions: Radon Conc 34.7 pCi/L Rel. Hum 49.4 % Temp. 69.6 F

Date Start: 12/24/22 Date Stop: 12/27/22 Date Start: _____ Date Stop: _____

Time Start: 0810 Time Stop: 0810 Time Start: _____ Time Stop: _____

Device No.'s: (5) CHAR BAGS - Device No.'s: _____

11285109, 11285110, 11285101

THRU 11285103

BY LEFT

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)
Background = 7 μ R/h Elevation = 820 ft**

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285110	SK1	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	31.7 ± 2.5	2022-12-29
11285101	SK2	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.1 ± 2.4	2022-12-29
11285103	SK3	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	34.0 ± 2.7	2022-12-29
11285102	SK4	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.9 ± 2.5	2022-12-29
11285109	SK5	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	32.0 ± 2.6	2022-12-29

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Week 3 December Schools

Name of Schools:

1. Emory Grove Center

	Date	Initials
Radon Test Kits Deployed	12/22/2022	BMM
Radon Test Kits Collected	12/27/2022	BMM
Radon Test Kits Shipped to Lab*	12/27/2022	BMM
Radon Test Kits Received by Lab*	12/29/2022	BMM

*All samples sent to Air Check, Inc., 2 Saber Way, Ward Hill, MA 01835



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Emory Grove Center
Date of Test Report	05/27/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	3
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.7 pCi/L

Project Status

Current Project Status at this time: Testing completed; no further action needed; Mitigation needed - Room 135 (Gymnasium)



May 27, 2022

Mr. Brian Croyle, PG, CHMM
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122108316

Location: Emory Grove Center
18100 Washington Grove Lane
Gaithersburg, MD 20877

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Emory Grove Center, located at 18100 Washington Grove Lane, Gaithersburg, MD 20877 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on March 28, 2022 and deployed six (6) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

KCI sampled the following locations during this follow-up test:

1. Rooms with missing test kits from the Radon 2022 testing period (i.e. test kit was deployed but not recovered),
2. Rooms with invalidated test kits from the Radon 2022 testing period (e.g. an open window in the room or disturbed test kit),
3. Rooms which were locked/inaccessible during the Radon 2022 testing period,
4. Rooms with elevated radon results (i.e. ≥ 3.5 pCi/L),
5. Rooms previously tested for radon but not tested in Radon 2022, and
6. Additional rooms that require testing (if applicable.)

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on March 31, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the mid 20°Fs and high temperatures ranged from the low 50°Fs to the mid 70°Fs. Maximum sustained winds ranged from 0-33 miles per hour. Average humidity was around 47% with 0.23 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Emory Grove Center RT		
Test Period: 03/28/2022 - 03/31/2022		
Kit Number	Room / Area	Result
11139822	135	1.5
11139825	135	1.7
11139815	139	< 0.3
11139834	139	< 0.3
11139823	141	< 0.3
11139828	141	< 0.3

Table 2- Radon Testing Results			
Emory Grover Center RT			
Test Period: 03/28/2022 - 03/31/2022			
Kit Number	QC Type	Room / Area	Result
11139828	D	141	< 0.3
11139815	FB	139	< 0.3
11139883	OB	OFFICE BLANK	< 0.3
11139841	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Emory Grove Center RT		
Test Period: 03/28/22 - 03/31/22		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and ≥ 4 pIC/L Tests		
Emory Grover Center Rt		
Test Period: 03/28/22 - 03/31/22		
Kit Number	Room/Area	Result
	NA	

Table Note:
 * Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

April 4, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
EMORY GROVE CENTER
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139822	135	2022-03-28 @ 12:00 pm	2022-03-31 @ 11:00 am	1.5 ± 0.3	2022-04-04
11139825	135	2022-03-28 @ 12:00 pm	2022-03-31 @ 11:00 am	1.7 ± 0.3	2022-04-04
11139815	139	2022-03-28 @ 12:00 pm	2022-03-31 @ 11:00 am	< 0.3	2022-04-04
11139834	139	2022-03-28 @ 12:00 pm	2022-03-31 @ 11:00 am	< 0.3	2022-04-04
11139823	141	2022-03-28 @ 12:00 pm	2022-03-31 @ 11:00 am	< 0.3	2022-04-04
11139828	141	2022-03-28 @ 12:00 pm	2022-03-31 @ 11:00 am	< 0.3	2022-04-04

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: _____ Date Stop: _____

Time Start: 0705 Time Stop: 0705 Time Start: _____ Time Stop: _____

Device No.'s: (5) Char Bags - Device No.'s: _____

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 Right

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)
Background = 7 μ R/h Elevation = 820 ft

March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 \pm 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 \pm 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 \pm 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 \pm 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 \pm 2.0	2022-03-30

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools – Retesting

Name of Schools:

1. Rock Terrace School
2. S. Christa McAuliffe ES
3. Cedar Grove ES
4. DuFief ES
5. Emory Grove Center
6. Gaithersburg ES
7. Gaithersburg MS
8. Jones Lane ES
9. Rachel Carson ES
10. Rosemont ES
11. Shady Grove MS
12. Summit Hall ES
13. Albert Einstein HS
14. Eastern MS
15. Montgomery Blair HS
16. Newport Mill MS
17. Strawberry Knoll ES

	Date	Initials
Radon Test Kits Deployed	03/28/2022	BMM
Radon Test Kits Collected	03/31/2022	BMM
Radon Test Kits Shipped to Lab*	04/01/2022	BMM
Radon Test Kits Received by Lab*	04/04/2022	BMM

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Emory Grove Center
Date of Test Report	4/7/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	50
# Rooms ≥ 4.0 pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	19 pCi/L

Project Status:

Initial testing completed; Missing, Elevated, or compromised samples need re-sampling



April 7, 2022

Brian T. Croyle, PG, CHMM
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122108316

Location: Emory Grove Center
18100 Washington Grove Ln.
Gaithersburg, MD 20877

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Emory Grove Center, located at 18100 Washington Grove Ln. Gaithersburg, MD 20877 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on February 22, 2022 and deployed fifty three (53) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on February 25, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to post-mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility’s HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 20s and high temperatures ranged from the high 30s to the high 40s Fahrenheit. Maximum sustained winds ranged from 5-18 miles per hour. Average humidity was around 15% with 1.5 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	135	19
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Emory Grove Center		
Test Period: 02/22/2022 - 02/25/2022		
Kit Number	Room / Area	Result
11123721	100	1.0
11130915	101	< 0.3
11123872	102	< 0.3
11130920	103	< 0.3
11123870	104	< 0.3
11123871	105	< 0.3
11130701	113	0.9
11130711	115	< 0.3
11130928	118	0.7
11130921	120	< 0.3
11130923	122	1.1
11130926	123	1.0
11130929	123	1.0
11130930	123	< 0.3
11130905	124	< 0.3
11130910	124	1.0
11130922	125	2.3
11130924	126	< 0.3
11130902	129	1.6
11130903	131	1.2
11130912	133	< 0.3
11130901	134	< 0.3
11130909	135	1.0
11130918	135	19
11123879	136	< 0.3
11123868	139	< 0.3
11123882	140	< 0.3
11130914	141	< 0.3
11130917	143	< 0.3
11123881	144	1.5
11123873	145	1.0
11123874	145	< 0.3
11130919	146	0.7
11123720	147	< 0.3
11123713	100A	< 0.3
11123723	100B	1.2
11123724	100C	2.1
11123714	100F	< 0.3
11123722	100F	0.8
11123729	100F	1.4
11130916	100G	1.7
11123718	100H	1.4
11130908	110A	< 0.3
11130906	124 OFFICE	1.8
11130904	132A	< 0.3

Table 1- Radon Testing Results		
Emory Grove Center		
Test Period: 02/22/2022 - 02/25/2022		
Kit Number	Room / Area	Result
11123869	132B	< 0.3
11130911	133 OFFICE	< 0.3
11123876	135D	< 0.3
11123875	136B	< 0.3
11130734	136B	< 0.3
11123883	136C	< 0.3
11123880	136D	< 0.3
11123877	140B	< 0.3
11123716	APR	< 0.3
11123717	APR	< 0.3

Table 2- Radon Testing Results			
Emory Grove Center			
Test Period: 02/22/2022 - 02/25/2022			
Kit Number	QC Type	Room / Area	Result
11130926	D	123	1.0
11130930	FB	123	1.0
11123873	D	145	1.0
11123729	D	100f	1.4
11123714	FB	100f	< 0.3
11139384	OB	OFFICE BLANK	< 0.3
11131222	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Emory Grove Center		
Test Period: 02/22/22 - 02/25/22		
Kit Number	Room/Area	Result
	141	
	139	

Summary of Missing, Compromised and >= 4 piC/L Tests		
Emory Grove Center		
Test Period: 02/22/22 - 02/25/22		
Kit Number	Room/Area	Result
11130918	135	19.0

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 3, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**EMORY GROVE LC
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123717	APR	2022-02-22 @ 9:00 am	2022-02-25 @ 9:00 am	< 0.3	2022-03-03
11123716	APR	2022-02-22 @ 9:00 am	2022-02-25 @ 9:00 am	< 0.3	2022-03-03

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

Radon test result report for:
EMORY GROVE CENTER

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130916	100G	2022-02-22 @ 2:00 pm	2022-02-25 @ 11:00 am	1.7 ± 0.5	2022-03-03
11130915	101	2022-02-22 @ 2:00 pm	2022-02-25 @ 11:00 am	< 0.3	2022-03-03
11130920	103	2022-02-22 @ 2:00 pm	2022-02-25 @ 11:00 am	< 0.3	2022-03-03
11130908	110A	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130701	113	2022-02-22 @ 3:00 pm	2022-02-25 @ 10:00 am	0.9 ± 0.5	2022-03-03
11130711	115	2022-02-22 @ 3:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130928	118	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	0.7 ± 0.4	2022-03-03
11130921	120	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130923	122	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.1 ± 0.5	2022-03-03
11130926	123	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.0 ± 0.5	2022-03-03
11130930	123	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130929	123	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.0 ± 0.5	2022-03-03
11130905	124	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130910	124	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.0 ± 0.5	2022-03-03
11130906	124 OFFICE	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.8 ± 0.6	2022-03-03
11130922	125	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	2.3 ± 0.5	2022-03-03
11130924	126	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130902	129	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.6 ± 0.5	2022-03-03
11130903	131	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.2 ± 0.5	2022-03-03
11130904	132A	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130912	133	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130911	133 OFFICE	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130901	134	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130909	135	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	1.0 ± 0.5	2022-03-03
11130918	135	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	19.0 ± 1.5	2022-03-03
11130734	136B	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130914	141	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130917	143	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11130919	146	2022-02-22 @ 2:00 pm	2022-02-25 @ 11:00 am	0.7 ± 0.5	2022-03-03

Radon test result report for:
EMORY GROVE CENTER

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123721	100	2022-02-22 @ 3:00 pm	2022-02-25 @ 10:00 am	1.0 ± 0.5	2022-03-03
11123713	100A	2022-02-22 @ 3:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123723	100B	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	1.2 ± 0.5	2022-03-03
11123724	100C	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	2.1 ± 0.5	2022-03-03
11123714	100F	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	< 0.3	2022-03-03
11123722	100F	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	0.8 ± 0.5	2022-03-03
11123729	100F	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	1.4 ± 0.5	2022-03-03
11123718	100H	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	1.4 ± 0.5	2022-03-03
11123872	102	2022-02-22 @ 2:00 pm	2022-02-25 @ 11:00 am	< 0.3	2022-03-03
11123870	104	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	< 0.3	2022-03-03
11123871	105	2022-02-22 @ 3:00 pm	2022-02-25 @ 11:00 am	< 0.3	2022-03-03
11123869	132B	2022-02-22 @ 1:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123876	135D	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123879	136	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123875	136B	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123883	136C	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123880	136D	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123868	139	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123882	140	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123877	140B	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123881	144	2022-02-22 @ 2:00 pm	2022-02-25 @ 11:00 am	1.5 ± 0.5	2022-03-03
11123873	145	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	1.0 ± 0.5	2022-03-03
11123874	145	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03
11123720	147	2022-02-22 @ 2:00 pm	2022-02-25 @ 10:00 am	< 0.3	2022-03-03

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204186

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 50.1 % Temp. 70.9 F

Date Start: 2/18/22 Date Stop: 2/21/22 Date Start: _____ Date Stop: _____

Time Start: 0911 Time Stop: 0911 Time Start: _____ Time Stop: _____

Device No.'s: (3) Char Bags - Device No.'s: _____

11113484, 1112998, 20107126 _____

23 Right

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)
Background = 7 μ R/h Elevation = 820 ft

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11113484	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK1		1	27.9
11122998	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK2		1	26.0
20107126	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK3		1	27.6



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – February 2022 Schools

Name of Schools:

1. Dufief ES
2. Emory Grove Center
3. Fields Road ES
4. Forest Oak MS
5. Gaithersburg ES
6. Gaithersburg MS
7. Jones Lane ES
8. Rachel Carson ES
9. Rosemont ES
10. Shady Grove MS
11. Summit Hall ES
12. Washington Grove ES

	Date	Initials
Radon Test Kits Deployed	02/22/2022	PM
Radon Test Kits Collected	02/25/2022	PM
Radon Test Kits Shipped to Lab*	02/25/2022	JM
Radon Test Kits Received by Lab*	02/28/2022	PM

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759