



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Montgomery Knolls Elementary School
Date of Test Report	2/16/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.8 pCi/L

Project Status:

1. Post mitigation testing completed.



February 16, 2023

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

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

Location: Montgomery Knolls Elementary School
807 Daleview Drive
Silver Spring, MD 20901

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 Montgomery Knolls Elementary School, located at 807 Daleview Dr. Dr. Silver Spring, MD 20901 (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 January 10, 2023 and deployed three (3) 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 January 13, 2023 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 the 26°F to the mid 56°F. Maximum sustained winds ranged from 0-21 miles per hour. Average humidity was around 68% with .09 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		
Montgomery Knolls ES		
Test Period: 01/10/2023 - 01/13/2023		
Kit Number	Room / Area	Result
11287545	192	< 0.3
11287546	192	0.8
11287551	192	< 0.3

Table 2- Radon Testing Results			
Montgomery Knolls ES			
Test Period: 01/10/23 - 01/13/23			
Kit Number	QC Type	Room / Area	Result
11287551	D	292	< 0.3
11287545	FB	192	< 0.3
11285162	OB	OFFICE BLANK	< 0.3
11284899	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Montgomery Knolls ES		
Test Period: 01/10/23 - 01/13/23		
Kit Number	Room/Area	Result
	N/A	

Summary of Missing, Compromised and ≥ 4 piC/L Tests		
Montgomery Knolls ES		
Test Period: 01/10/23 - 01/13/23		
Kit Number	Room/Area	Result
	N/A	

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

January 16, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11287545	192	2023-01-10 @ 1:00 pm	2023-01-13 @ 11:00 am	< 0.3	2023-01-16
11287546	192	2023-01-10 @ 1:00 pm	2023-01-13 @ 11:00 am	0.8 ± 0.3	2023-01-16
11287551	192	2023-01-10 @ 1:00 pm	2023-01-13 @ 11:00 am	< 0.3	2023-01-16

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 1 January Schools

Name of Schools:

1. Woodfield ES
2. Montgomery Village MS
3. Albert Einstein HS
4. Garrett Park Annex
5. Garrett Park ES
6. Kensington-Parkwood ES
7. Silver Creek MS
8. Stephen Knolls School
9. Highland View ES
10. MacDonald Knolls ECC
11. Montgomery Knolls ES
12. Rock Terrace HS

	Date	Initials
Radon Test Kits Deployed	01/10/2023	BMM
Radon Test Kits Collected	01/13/2023	BMM
Radon Test Kits Shipped to Lab*	01/13/2023	BMM
Radon Test Kits Received by Lab*	01/17/2023	BMM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Montgomery Knolls Elementary School
Date of Test Report	6/1/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	4.0 pCi/L

Project Status

Current Project Status at this time: Testing completed; no further action needed;

Mitigation needed - Room 192



June 1, 2022

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

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

Location: Montgomery Knolls Elementary School
807 Daleview Dr.
Silver Spring, MD 20901

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 Montgomery Knolls Elementary School, located at 807 Daleview Dr. Silver Spring, MD 20901 (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 April 19, 2022 and deployed three (3) 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 April 22, 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 low 40°Fs and high temperatures ranged from the low 60°Fs to the mid 80°Fs. Maximum sustained winds ranged from 0-30 miles per hour. Average humidity was around 49% with 0.03 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	192	4.0
<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		
Montgomery Knolls ES RT		
Test Period: 04/19/2022 - 04/22/2022		
Kit Number	Room / Area	Result
11132031	192	1.1
11139391	192	4.0
11139399	192	3.6

Table 2- Radon Testing Results			
Montgomery Knolls ES RT			
Test Period: 04/19/2022 - 04/22/2022			
Kit Number	QC Type	Room / Area	Result
11139391	D	192	4.0
11132031	FB	192	1.1
11139882	OB	OFFICE BLANK	< 0.3
11139881	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

April 25, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132031	192	2022-04-19 @ 12:00 pm	2022-04-22 @ 9:00 am	1.1 ± 0.3	2022-04-25

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

April 25, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139391	192	2022-04-19 @ 12:00 pm	2022-04-22 @ 9:00 am	4.0 ± 0.4	2022-04-25
11139399	192	2022-04-19 @ 12:00 pm	2022-04-22 @ 9:00 am	3.6 ± 0.3	2022-04-25

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 light

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 – April 2022 Schools – Retesting

Name of Schools:

1. Pine Crest ES
2. Montgomery Knolls ES
3. Poolesville ES
4. Cloverly ES

	Date	Initials
Radon Test Kits Deployed	04/19/2022	BMM
Radon Test Kits Collected	04/22/2022	BMM
Radon Test Kits Shipped to Lab*	04/22/2022	BMM
Radon Test Kits Received by Lab*	04/25/2022	BMM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Montgomery Knolls Elementary School
Date of Test Report	4/26/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	77
# Rooms \geq 4.0 pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	4.5 pCi/L

Project Status:

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



April 26, 2022

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

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

Location: Montgomery Knolls Elementary School
807 Daleview Dr.
Silver Spring, MD 20901

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 Montgomery Knolls ES, located at 807 Daleview Dr. Silver Spring, MD 20901 (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 1, 2022 and deployed eighty nine (89) 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 March 4, 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 biennial post-mitigation 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 50s to the low 60s Fahrenheit. Maximum sustained winds ranged from 9-17 miles per hour. Average humidity was around 40% with 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	192	4.5
<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		
Montgomery Knolls ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11132550	1	< 0.3
11132549	2	0.6
11132569	5	< 0.3
11132564	7	0.5
11132570	8	< 0.3
11132504	100	0.8
11132518	101	0.6
11132510	102	< 0.3
11132526	103	< 0.3
11132514	104	1.1
11132522	106	1.3
11132521	108	0.6
11132528	110	0.9
11132537	111	< 0.3
11132551	111	< 0.3
11132527	112	1.3
11132535	114	< 0.3
11132552	117	< 0.3
11132544	120	< 0.3
11132553	121	0.6
11132530	122	0.7
11132538	123	< 0.3
11132554	124	1.7
11132560	125	1.0
11132548	127	< 0.3
11132561	127	0.6
11132559	128	< 0.3
11132545	130	1.0
11132546	132	0.8
11132503	133	1.6
11132562	138	1.0
11132567	138	0.6
11132568	140	0.9
11132515	143	1.1
11132516	143	0.9
11132555	144	1.1
11132508	146	0.9
11132507	147	1.3
11132573	149	0.6
11132584	149	0.7
11132523	150	0.9
11132531	151	1.3

Table 1- Radon Testing Results		
Montgomery Knolls ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11132532	151	1.6
11132556	152	0.7
11132576	153	1.0
11132577	153	0.5
11132563	154	1.3
11132575	157	1.1
11132557	170	1.1
11132571	171	0.7
11132572	171	< 0.3
11132580	173	0.8
11132581	175	1.1
11132592	177	1.2
11132574	178	0.6
11132583	186	< 0.3
11132582	188	0.7
11132579	190	1.5
11132589	190	1.5
11132586	192	4.5
11132591	194	1.0
11132585	196	1.0
11132524	233	< 0.3
11132509	100B	0.6
11132505	100C	0.8
11132513	100D	1.1
11132511	100F	1.1
11132506	100H	0.8
11132519	100I	0.6
11132512	100J	0.7
11132517	100K	0.6
11132520	100K	< 0.3
11132501	102A	< 0.3
11132525	103B	< 0.3
11132533	103C	< 0.3
11132534	103C	< 0.3
11132529	118A	0.7
11132536	118A	< 0.3
11132542	118C	< 0.3
11132543	118C	< 0.3
11132541	118E	< 0.3
11132565	170C	1.0
11132578	170C	1.1
11132566	170D	1.2

Table 1- Radon Testing Results		
Montgomery Knolls ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11132558	170E	1.3
11132502	170F	0.6
11132539	GYM	0.7
11132540	GYM	0.8
11132547	GYM OFFICE	2.2

Table 2- Radon Testing Results			
Montgomery Knolls ES			
Test Period: 03/01/2022 - 03/04/2022			
Kit Number	QC Type	Room / Area	Result
11132520	D	100k	< 0.3
11132533	FB	103c	< 0.3
11132529	D	118a	0.7
11132537	D	111	< 0.3
11132548	FB	127	< 0.3
11132567	D	138	0.6
11132515	D	143	1.1
11132577	FB	153	0.5
11132532	D	151	1.6
11132565	D	170c	1.0
11132572	FB	171	< 0.3
11132579	D	190	1.5
11130861	OB	OFFICE BLANK	< 0.3
11130854	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
MONTGOMERY KNOLLS ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132550	001	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132549	002	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11132569	005	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132564	007	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.5 ± 0.3	2022-03-08
11132570	008	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132504	100	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.8 ± 0.3	2022-03-07
11132509	100B	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.6 ± 0.3	2022-03-08
11132505	100C	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.8 ± 0.3	2022-03-08
11132513	100D	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	1.1 ± 0.3	2022-03-08
11132511	100F	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	1.1 ± 0.3	2022-03-08
11132506	100H	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.8 ± 0.3	2022-03-08
11132519	100I	2022-03-01 @ 9:00 am	2022-03-04 @ 11:00 am	0.6 ± 0.3	2022-03-07
11132512	100J	2022-03-01 @ 9:00 am	2022-03-04 @ 11:00 am	0.7 ± 0.3	2022-03-07
11132520	100K	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-08
11132517	100K	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.6 ± 0.3	2022-03-08
11132518	101	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.6 ± 0.3	2022-03-08
11132510	102	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132501	102A	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-08
11132526	103	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-08
11132525	103B	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132533	103C	2022-03-01 @ 9:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132534	103C	2022-03-01 @ 9:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132514	104	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	1.1 ± 0.3	2022-03-08
11132522	106	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	1.3 ± 0.3	2022-03-07
11132521	108	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.6 ± 0.3	2022-03-07
11132528	110	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.9 ± 0.3	2022-03-08
11132537	111	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132551	111	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132527	112	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	1.3 ± 0.3	2022-03-07
11132535	114	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132552	117	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132529	118A	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	0.7 ± 0.3	2022-03-07
11132536	118A	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132543	118C	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132542	118C	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07
11132541	118E	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-08
11132544	120	2022-03-01 @ 9:00 am	2022-03-04 @ 9:00 am	< 0.3	2022-03-07

Radon test result report for:

**MONTGOMERY KNOLLS ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132553	121	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11132530	122	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-07
11132538	123	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132554	124	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	1.7 ± 0.3	2022-03-08
11132560	125	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	1.0 ± 0.3	2022-03-07
11132561	127	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11132548	127	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132559	128	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-08
11132545	130	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	1.0 ± 0.3	2022-03-07
11132546	132	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	0.8 ± 0.3	2022-03-07
11132503	133	2022-03-01 @ 9:00 am	2022-03-04 @ 10:00 am	1.6 ± 0.3	2022-03-07
11132562	138	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.0 ± 0.3	2022-03-07
11132567	138	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-08
11132568	140	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.9 ± 0.3	2022-03-07
11132515	143	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.1 ± 0.3	2022-03-07
11132516	143	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.9 ± 0.3	2022-03-07
11132555	144	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.1 ± 0.3	2022-03-07
11132508	146	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.9 ± 0.3	2022-03-07
11132507	147	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.3 ± 0.3	2022-03-07
11132584	149	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-08
11132573	149	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-08
11132523	150	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.9 ± 0.3	2022-03-07
11132532	151	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.6 ± 0.3	2022-03-08
11132531	151	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.3 ± 0.3	2022-03-08
11132556	152	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-07
11132576	153	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.0 ± 0.3	2022-03-07
11132577	153	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.5 ± 0.3	2022-03-07
11132563	154	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.3 ± 0.3	2022-03-07
11132575	157	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.1 ± 0.3	2022-03-07
11132557	170	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.1 ± 0.3	2022-03-07
11132578	170C	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.1 ± 0.3	2022-03-07
11132565	170C	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.0 ± 0.3	2022-03-07
11132566	170D	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.2 ± 0.3	2022-03-07
11132558	170E	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	1.3 ± 0.3	2022-03-07
11132502	170F	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11132572	171	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11132571	171	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-07

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**MONTGOMERY KNOLLS ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132580	173	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	0.8 ± 0.3	2022-03-07
11132581	175	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	1.1 ± 0.3	2022-03-07
11132592	177	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	1.2 ± 0.3	2022-03-07
11132574	178	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11132583	186	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-08
11132582	188	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-07
11132579	190	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	1.5 ± 0.3	2022-03-07
11132589	190	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	1.5 ± 0.3	2022-03-08
11132586	192	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	4.5 ± 0.4	2022-03-07
11132591	194	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	1.0 ± 0.3	2022-03-08
11132585	196	2022-03-01 @ 10:00 am	2022-03-04 @ 11:00 am	1.0 ± 0.3	2022-03-07
11132524	233	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-08
11132540	GYM	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.8 ± 0.3	2022-03-07
11132539	GYM	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-08
11132547	GYM OFFICE	2022-03-01 @ 10:00 am	2022-03-04 @ 10:00 am	2.2 ± 0.3	2022-03-08

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 light

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

March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**RSH
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139726	BASEMENT	2022-03-20 @ 8:00 am	2022-03-23 @ 7:00 am	0.9 ± 0.5	2022-03-30
11139725	DINING	2022-03-20 @ 8:00 am	2022-03-23 @ 7:00 am	< 0.3	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

Name of Schools:

1. Newport Mill MS
2. Rock View ES
3. Eastern MS
4. Blair, Montgomery HS
5. Montgomery Knolls ES
6. Northwood HS
7. Oakview ES
8. Pine Crest ES
9. Arcola ES
10. Glenallen ES

	Date	Initials
Radon Test Kits Deployed	03/01/2022	PM
Radon Test Kits Collected	03/04/2022	PM
Radon Test Kits Shipped to Lab*	03/04/2022	PM
Radon Test Kits Received by Lab*	03/07/2022	PM

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