



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Oakview 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	43
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.6 pCi/L

Project Status:
Initial testing completed; no further action needed.



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: Oakview Elementary School
400 East Wayne Ave.
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 Oakview ES, located at 400 East Wayne Ave. 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 fifty (50) 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	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		
Oak View ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11132408	100	0.9
11132420	104	1.2
11132404	106	0.9
11133053	107	0.7
11133047	108	0.9
11132595	110	0.9
11132419	111	1.1
11133042	112	1.2
11133043	112	< 0.3
11133063	114	1.2
11130377	117	1.1
11133054	117	0.8
11132599	119	0.9
11132598	121	0.7
11132596	122	0.9
11132597	123	0.7
11132600	123	1.0
11132417	124	0.7
11132402	125	< 0.3
11132587	127	< 0.3
11132401	128	< 0.3
11132405	135	0.6
11132411	135	< 0.3
11132422	138	0.9
11132425	140	0.6
11132418	145	0.8
11132409	147	< 0.3
11132421	147	< 0.3
11132403	202	0.8
11132588	202	0.5
11132593	204	0.6
11133041	205	0.6
11133062	206	< 0.3
11133061	207	< 0.3
11132412	209	0.8
11132594	209	< 0.3
11133045	214	1.6
11132415	100A	< 0.3
11132414	100B	0.9
11132416	100E	1.0
11132413	100F	0.9
11132410	124A	0.7

Table 1- Radon Testing Results		
Oak View ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11132406	124B	0.5
11132407	APR	0.8
11132426	APR	< 0.3
11132590	GYM	1.0
11133029	GYM	0.8
11133034	GYM OFFICE	0.9
11132424	HEALTH	0.9
11132423	KITCHEN OFFICE	0.9

Table 2- Radon Testing Results			
Oak View ES			
Test Period: 03/01/2022 - 03/04/2022			
Kit Number	QC Type	Room / Area	Result
11132421	D	147	< 0.3
11132411	FB	135	< 0.3
11132594	D	209	< 0.3
11132588	D	202	0.5
11133043	FB	112	< 0.3
11133054	D	117	0.8
11132600	D	123	1.0
11130861	OB	OFFICE BLANK	< 0.3
11130854	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Oak View ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and >= 4 piC/L Tests		
Oak View ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room/Area	Result
	NA	

Table Note:
 * Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
OAKVIEW ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130377	117	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.1 ± 0.3	2022-03-07

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

Radon test result report for:
OAKVIEW ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132408	100	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.9 ± 0.3	2022-03-07
11132415	100A	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132414	100B	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.9 ± 0.3	2022-03-07
11132416	100E	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	1.0 ± 0.3	2022-03-07
11132413	100F	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.9 ± 0.3	2022-03-07
11132420	104	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.2 ± 0.3	2022-03-07
11132404	106	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.9 ± 0.3	2022-03-07
11133053	107	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.7 ± 0.3	2022-03-07
11133047	108	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.9 ± 0.3	2022-03-07
11132595	110	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.9 ± 0.3	2022-03-07
11132419	111	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.1 ± 0.3	2022-03-07
11133042	112	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.2 ± 0.3	2022-03-07
11133043	112	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	< 0.3	2022-03-07
11133063	114	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.2 ± 0.3	2022-03-07
11133054	117	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.8 ± 0.3	2022-03-07
11132599	119	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.9 ± 0.3	2022-03-07
11132598	121	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.7 ± 0.3	2022-03-07
11132596	122	2022-03-01 @ 12:00 pm	2022-03-04 @ 12:00 pm	0.9 ± 0.3	2022-03-07
11132600	123	2022-03-01 @ 12:00 pm	2022-03-04 @ 12:00 pm	1.0 ± 0.3	2022-03-07
11132597	123	2022-03-01 @ 12:00 pm	2022-03-04 @ 12:00 pm	0.7 ± 0.3	2022-03-07
11132417	124	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.7 ± 0.3	2022-03-07
11132410	124A	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.7 ± 0.3	2022-03-07
11132406	124B	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.5 ± 0.3	2022-03-07
11132402	125	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132587	127	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132401	128	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132405	135	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.6 ± 0.3	2022-03-07
11132411	135	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	< 0.3	2022-03-07
11132422	138	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.9 ± 0.3	2022-03-07
11132425	140	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.6 ± 0.3	2022-03-07
11132418	145	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.8 ± 0.3	2022-03-07
11132421	147	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132409	147	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11132588	202	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.5 ± 0.3	2022-03-07
11132403	202	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.8 ± 0.3	2022-03-07
11132593	204	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.6 ± 0.3	2022-03-07
11133041	205	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.6 ± 0.3	2022-03-07

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**OAKVIEW ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133062	206	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	< 0.3	2022-03-07
11133061	207	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	< 0.3	2022-03-07
11132412	209	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.8 ± 0.3	2022-03-07
11132594	209	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	< 0.3	2022-03-07
11133045	214	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.6 ± 0.3	2022-03-07
11132407	APR	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.8 ± 0.3	2022-03-07
11132426	APR	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	< 0.3	2022-03-07
11133029	GYM	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	0.8 ± 0.3	2022-03-07
11132590	GYM	2022-03-01 @ 11:00 am	2022-03-04 @ 12:00 pm	1.0 ± 0.3	2022-03-07
11133034	GYM OFFICE	2022-03-01 @ 12:00 pm	2022-03-04 @ 12:00 pm	0.9 ± 0.3	2022-03-07
11132424	HEALTH	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.9 ± 0.3	2022-03-07
11132423	KITCHEN OFFICE	2022-03-01 @ 11:00 am	2022-03-04 @ 11:00 am	0.9 ± 0.3	2022-03-07

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