



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Potomac Elementary School
Date of Test Report	4/6/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	48
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.3 pCi/L

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



April 6, 2022

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

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

Location: Potomac ES
10311 River Rd.
Potomac, MD 20854

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 Potomac ES, located at 10311 River Rd. Potomac, MD 20854 (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 8, 2022 and deployed fifty six (56) 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 11, 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:

- Initial testing.

These tests were conducted to:

- Evaluate radon concentration levels 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 30s and high temperatures ranged from the mid 30s to the mid 50s Fahrenheit. Maximum sustained winds ranged from 3-12 miles per hour. Average humidity was around 23% with 0.1 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		
Potomac ES		
Test Period: 02/8/2022 - 02/11/2022		
Kit Number	Room / Area	Result
11114809	100	< 0.3
11114820	100	< 0.3
11114874	100	< 0.3
11114876	101	< 0.3
11114865	106	< 0.3
11114847	108	< 0.3
11114855	109	< 0.3
11114866	109	< 0.3
11114832	110	< 0.3
11114810	113	< 0.3
11114845	114	< 0.3
11114860	116	< 0.3
11114859	117	< 0.3
11114825	120	< 0.3
11114856	132	< 0.3
11114861	132	< 0.3
11114840	134	< 0.3
11114848	134	< 0.3
11114854	134	< 0.3
11114857	134	< 0.3
11114873	134	< 0.3
11114853	135	< 0.3
11114830	138	< 0.3
11114836	139	< 0.3
11114831	141	< 0.3
11114817	143	0.5
11114838	152	1.3
11114842	162	< 0.3
11114851	162	< 0.3
11114843	163	< 0.3
11114844	163	< 0.3
11114850	163	< 0.3
11114849	165	< 0.3
11114837	166	< 0.3
11114852	166	< 0.3
11114877	168	< 0.3
11114858	169	< 0.3
11114834	172	< 0.3
11114835	186	< 0.3
11114841	186	< 0.3
11114864	187	< 0.3
11114870	187	< 0.3

Table 1- Radon Testing Results		
Potomac ES		
Test Period: 02/8/2022 - 02/11/2022		
Kit Number	Room / Area	Result
11114878	187	< 0.3
11114868	220	< 0.3
11114867	242	< 0.3
11114827	100D	0.7
11114826	100E	< 0.3
11114862	100H	< 0.3
11114869	101A	< 0.3
11114875	101C	< 0.3
11114819	101D	< 0.3
11114846	132E	< 0.3
11114833	186B	< 0.3
11114863	186D	< 0.3
11114829	206F	< 0.3
11114839	KITCHEN OFFICE	< 0.3

Table 2- Radon Testing Results			
Potomac ES			
Test Period: 02/8/2022 - 02/11/2022			
Kit Number	QC Type	Room / Area	Result
11114820	D	100	< 0.3
11114809	FB	100	< 0.3
11114855	D	109	< 0.3
11114854	D	134	< 0.3
11114857	FB	134	< 0.3
11114844	D	163	< 0.3
11114878	D	187	< 0.3
11114870	FB	187	< 0.3
11113478	OB	OFFICE BLANK	< 0.3
11113477	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
POTOMAC ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114809	100	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114820	100	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114874	100	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114827	100D	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	0.7 ± 0.3	2022-02-14
11114826	100E	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114862	100H	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114876	101	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114869	101A	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114875	101C	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114819	101D	2022-02-08 @ 8:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-15
11114865	106	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114847	108	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114866	109	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114855	109	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114832	110	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114810	113	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114845	114	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114860	116	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114859	117	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114825	120	2022-02-08 @ 9:00 am	2022-02-11 @ 8:00 am	< 0.3	2022-02-14
11114856	132	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114861	132	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114846	132E	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114840	134	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114848	134	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114873	134	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114854	134	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114857	134	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114853	135	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114830	138	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114836	139	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114831	141	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114817	143	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	0.5 ± 0.3	2022-02-14
11114838	152	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	1.3 ± 0.3	2022-02-14
11114842	162	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114851	162	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114844	163	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14

Radon test result report for:
POTOMAC ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114850	163	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114843	163	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114849	165	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114837	166	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114852	166	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114877	168	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114858	169	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114834	172	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114835	186	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114841	186	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114833	186B	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-15
11114863	186D	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114878	187	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114864	187	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114870	187	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114829	206F	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114868	220	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114867	242	2022-02-08 @ 10:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14
11114839	KITCHEN OFFICE	2022-02-08 @ 9:00 am	2022-02-11 @ 9:00 am	< 0.3	2022-02-14

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 -
11113484, 1112998, 20107126 Device No.'s: _____

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 µR/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. Earle. B Wood MS
2. Flower Valley ES
3. Parkland MS
4. Herbert Hoover MS
5. Ritchie Park ES
6. Wayside ES
7. Potomac ES
8. Redland MS
9. Sequoyah ES
10. Sherwood ES
11. Rock Terrace School

	Date	Initials
Radon Test Kits Deployed	02/08/2022	PM
Radon Test Kits Collected	02/11/2022	PM
Radon Test Kits Shipped to Lab*	02/11/2022	PM
Radon Test Kits Received by Lab*	02/15/2022	PM

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