



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Sequoyah 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	53
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.9 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: Sequoyah ES
17301 Bowie Mill Rd.
Derwood, MD 20855

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 Sequoyah ES, located at 17301 Bowie Mill Rd. Derwood, MD 20855 (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 sixty one (61) 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:

- 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 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		
Sequoyah ES		
Test Period: 02/8/2022 - 02/11/2022		
Kit Number	Room / Area	Result
11114783	1	< 0.3
11114784	1	< 0.3
11114795	1	< 0.3
11114801	2	< 0.3
11114786	3	< 0.3
11114789	4	< 0.3
11114768	5	< 0.3
11114886	6	< 0.3
11114797	7	< 0.3
11114796	8	< 0.3
11114790	9	< 0.3
11114808	10	< 0.3
11114828	11	< 0.3
11114805	12	0.9
11114811	13	< 0.3
11114900	14	< 0.3
11114898	15	< 0.3
11114800	16	0.6
11114824	17	< 0.3
11114884	18	< 0.3
11114775	20	< 0.3
11114821	30	< 0.3
11114896	ACROSS FROM CONF3	< 0.3
11114822	ART	< 0.3
11114804	BUILDING SERVICES	< 0.3
11114803	CAFETERIA	0.7
11114890	CAFETERIA	< 0.3
11114823	CONF 1	< 0.3
11114889	CONF3	< 0.3
11114892	CONFERENCE	< 0.3
11114776	CONFERENCE 2	< 0.3
11114888	COU	< 0.3
11114782	GYM	0.9
11114798	GYM	< 0.3
11114887	GYM OFFICE	< 0.3
11114899	HEALTH	< 0.3
11114891	HEALTH OFFICE	< 0.3
11114791	IMC	< 0.3
11114792	IMC	< 0.3
11114806	IMC	< 0.3
11114785	IMC OFFICE	< 0.3
11114883	KITCHEN	< 0.3

Table 1- Radon Testing Results		
Sequoyah ES		
Test Period: 02/8/2022 - 02/11/2022		
Kit Number	Room / Area	Result
11114871	MAIN OFFICE	< 0.3
11114879	MAIN OFFICE	< 0.3
11114882	MAIN OFFICE	< 0.3
11114894	MAIN OFFICE	< 0.3
11114895	MS LEE	< 0.3
11114885	MUSIC	< 0.3
11114880	MUSIC 2	< 0.3
11114872	PRINCIPAL OFFICE	< 0.3
11114893	PRINTING ROOM	< 0.3
11114813	RDG	< 0.3
11114812	RES	< 0.3
11114815	RES	< 0.3
11114816	RES	< 0.3
11114897	SPT	< 0.3
11114814	STAFF LOUNGE	< 0.3
11114881	STAFF LOUNGE	< 0.3
11114777	TESTING	< 0.3
11114818	TESTING	< 0.3
11114807	WORKROOM	< 0.3

Table 2- Radon Testing Results			
Sequoyah ES			
Test Period: 02/8/2022 - 02/11/2022			
Kit Number	QC Type	Room / Area	Result
11114871	D	Main office	< 0.3
11114814	D	Staff lounge	< 0.3
11114815	D	Res	< 0.3
11114816	FB	Res	< 0.3
11114791	D	Imc	< 0.3
11114784	D	1	< 0.3
11114783	FB	1	< 0.3
11114777	D	Testing	< 0.3
11113478	OB	OFFICE BLANK	< 0.3
11113477	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
SEQUOYAH ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114795	1	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114784	1	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114783	1	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114808	10	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114828	11	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114805	12	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	0.9 ± 0.3	2022-02-15
11114811	13	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114900	14	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114898	15	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114800	16	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	0.6 ± 0.3	2022-02-15
11114824	17	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114884	18	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114801	2	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114775	20	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114786	3	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114821	30	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114789	4	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114768	5	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114886	6	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114797	7	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114796	8	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114790	9	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114896	ACROSS FROM CONF3	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114822	ART	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114804	BUILDING SERVICES	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114890	CAFETERIA	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114803	CAFETERIA	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	0.7 ± 0.3	2022-02-15
11114823	CONF 1	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114889	CONF3	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114892	CONFERENCE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114776	CONFERENCE 2	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114888	COU	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114798	GYM	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114782	GYM	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	0.9 ± 0.3	2022-02-15
11114887	GYM OFFICE	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114899	HEALTH	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114891	HEALTH OFFICE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15

Radon test result report for:
SEQUOYAH ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114792	IMC	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114791	IMC	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114806	IMC	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114785	IMC OFFICE	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114883	KITCHEN	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114882	MAIN OFFICE	2022-02-08 @ 11:00 am	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114871	MAIN OFFICE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114894	MAIN OFFICE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114879	MAIN OFFICE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114895	MS LEE	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114885	MUSIC	2022-02-08 @ 11:00 am	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114880	MUSIC 2	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114872	PRINCIPAL OFFICE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114893	PRINTING ROOM	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114813	RDG	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114815	RES	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114816	RES	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114812	RES	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114897	SPT	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114814	STAFF LOUNGE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114881	STAFF LOUNGE	2022-02-08 @ 11:00 am	2022-02-11 @ 10:00 am	< 0.3	2022-02-15
11114818	TESTING	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114777	TESTING	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114807	WORKROOM	2022-02-08 @ 12:00 pm	2022-02-11 @ 10:00 am	< 0.3	2022-02-15

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 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. 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