



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Jackson Road Elementary School
Date of Test Report	4/29/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	74
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.9 pCi/L

Project Status:
Initial testing completed; no further action needed



April 29, 2022

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

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

Location: Jackson Road Elementary School
900 Jackson Rd.
Silver Spring, MD 20904

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 Jackson Road Elementary School, located at 900 Jackson Rd. Silver Spring, MD 20904 (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 7, 2022 and deployed eighty-six (86) 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 10, 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 mid 20s and high temperatures ranged from the high 70s to the low 50s Fahrenheit. Maximum sustained winds ranged from 0-32 miles per hour. Average humidity was around 65% with 1.09 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		
Jackson Road ES		
Test Period: 03/07/2022 - 03/10/2022		
Kit Number	Room / Area	Result
11131804	100	1.1
11131808	104	< 0.3
11131815	104	< 0.3
11131822	105	0.6
11131820	106	0.5
11131805	107	< 0.3
11131806	108	< 0.3
11131803	109	< 0.3
11131811	110	< 0.3
11131813	113	< 0.3
11131814	114	< 0.3
11131839	115	0.5
11131840	115	0.6
11131841	116	< 0.3
11131827	120	0.7
11131896	121	< 0.3
11131897	127	< 0.3
11131879	134	0.6
11131858	135	0.6
11131872	139	< 0.3
11131871	141	< 0.3
11131828	143	0.7
11131859	144	< 0.3
11131818	145	< 0.3
11131825	145	< 0.3
11131826	145	< 0.3
11131833	147	< 0.3
11131861	150	< 0.3
11131862	152	< 0.3
11131863	153	< 0.3
11131817	154	< 0.3
11131834	155	< 0.3
11131854	155	< 0.3
11131844	164	1.9
11131845	166	0.5
11131810	168	0.9
11131807	169	0.6
11131809	171	< 0.3
11131831	172	0.7
11131819	174	< 0.3
11131832	174	< 0.3
11131838	174	< 0.3

Table 1- Radon Testing Results		
Jackson Road ES		
Test Period: 03/07/2022 - 03/10/2022		
Kit Number	Room / Area	Result
11131837	175	1.4
11131885	180	< 0.3
11131886	181	< 0.3
11131853	202	< 0.3
11131855	204	< 0.3
11131852	206	< 0.3
11131848	209	< 0.3
11131851	211	< 0.3
11131843	363	< 0.3
11131830	100A	1.6
11131816	103A	< 0.3
11131829	103B	0.9
11131823	103C	< 0.3
11131824	103D	0.7
11131821	105A	< 0.3
11131836	11P	1.1
11131857	134 PHONE	< 0.3
11131860	144 OFFICE	< 0.3
11131802	209A	1.1
11131869	209B	0.8
11131850	214A	< 0.3
11131864	214A	< 0.3
11131870	214A	< 0.3
11131865	APR	< 0.3
11131878	APR	< 0.3
11131801	BSM	0.8
11131899	COPY ROOM	< 0.3
11131849	GYM	< 0.3
11131856	GYM	0.6
11131898	HR	< 0.3
11131900	HR OFFICE	0.8
11131877	KITCHEN OFFICE	< 0.3
11131880	MAIN OFFICE	< 0.3
11131842	MC	< 0.3
11131846	MC	0.8
11131847	MC OFFICE	2.9
11131835	MC OFFICE 2	1.1
11131893	REINKI	1.0
11131812	STAFF LOUNGE	0.8
11131867	STAGE	< 0.3
11131868	STAGE	< 0.3
11131888	VELASQUEZ	0.8

Table 1- Radon Testing Results		
Jackson Road ES		
Test Period: 03/07/2022 - 03/10/2022		
Kit Number	Room / Area	Result
11131894	VELASQUEZ	< 0.3
11131895	VELASQUEZ	0.8

Table 2- Radon Testing Results			
Jackson Road ES			
Test Period: 03/07/2022 - 03/10/2022			
Kit Number	QC Type	Room / Area	Result
11131808	D	104	< 0.3
11131819	D	174	< 0.3
11131832	FB	174	< 0.3
11131840	D	115	0.6
11131825	D	145	< 0.3
11131826	FB	145	< 0.3
11131854	D	155	< 0.3
11131864	D	214a	< 0.3
11131850	FB	214a	< 0.3
11131867	D	Stage	< 0.3
11131888	D	Velasquez	0.8
11131894	FB	Velasquez	< 0.3
11131662	OB	OFFICE BLANK	< 0.3
11131691	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
**JACKSON ROAD ES
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131804	100	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	1.1 ± 0.3	2022-03-14
11131830	100A	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	1.6 ± 0.3	2022-03-14
11131816	103A	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131829	103B	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	0.9 ± 0.3	2022-03-14
11131823	103C	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131824	103D	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	0.7 ± 0.3	2022-03-14
11131808	104	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131815	104	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131822	105	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.6 ± 0.3	2022-03-14
11131821	105A	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131820	106	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.5 ± 0.3	2022-03-14
11131805	107	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131806	108	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131803	109	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131811	110	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131813	113	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131814	114	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131839	115	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.5 ± 0.3	2022-03-14
11131840	115	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.6 ± 0.3	2022-03-14
11131841	116	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131836	11P	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	1.1 ± 0.3	2022-03-14
11131827	120	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.7 ± 0.3	2022-03-14
11131896	121	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131897	127	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131879	134	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.6 ± 0.3	2022-03-14
11131857	134 PHONE	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131858	135	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.6 ± 0.3	2022-03-14
11131872	139	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131871	141	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131828	143	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	0.7 ± 0.3	2022-03-14
11131859	144	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131860	144 OFFICE	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131825	145	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131818	145	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131826	145	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131833	147	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131861	150	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14

Radon test result report for:
**JACKSON ROAD ES
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131862	152	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131863	153	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131817	154	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131854	155	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131834	155	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131844	164	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	1.9 ± 0.4	2022-03-14
11131845	166	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.5 ± 0.3	2022-03-14
11131810	168	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.9 ± 0.3	2022-03-14
11131807	169	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.6 ± 0.3	2022-03-14
11131809	171	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131831	172	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.7 ± 0.3	2022-03-14
11131819	174	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131832	174	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131838	174	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131837	175	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	1.4 ± 0.4	2022-03-14
11131885	180	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131886	181	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131853	202	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131855	204	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131852	206	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131848	209	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131802	209A	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	1.1 ± 0.3	2022-03-14
11131869	209B	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.8 ± 0.3	2022-03-14
11131851	211	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131870	214A	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131864	214A	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131850	214A	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131843	363	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131878	APR	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131865	APR	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131801	BSM	2022-03-07 @ 12:00 pm	2022-03-10 @ 9:00 am	0.8 ± 0.3	2022-03-14
11131899	COPY ROOM	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131856	GYM	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.6 ± 0.3	2022-03-14
11131849	GYM	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131898	HR	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131900	HR OFFICE	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.8 ± 0.3	2022-03-14
11131877	KITCHEN OFFICE	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14

March 15, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**JACKSON ROAD ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131880	MAIN OFFICE	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131846	MC	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	0.8 ± 0.4	2022-03-14
11131842	MC	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	< 0.3	2022-03-14
11131847	MC OFFICE	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	2.9 ± 0.4	2022-03-14
11131835	MC OFFICE 2	2022-03-07 @ 12:00 pm	2022-03-10 @ 8:00 am	1.1 ± 0.3	2022-03-14
11131893	REINKI	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	1.0 ± 0.3	2022-03-14
11131812	STAFF LOUNGE	2022-03-07 @ 11:00 am	2022-03-10 @ 8:00 am	0.8 ± 0.3	2022-03-14
11131868	STAGE	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131867	STAGE	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131894	VELASQUEZ	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11131895	VELASQUEZ	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.8 ± 0.3	2022-03-14
11131888	VELASQUEZ	2022-03-07 @ 1:00 pm	2022-03-10 @ 9:00 am	0.8 ± 0.3	2022-03-14

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

Name of Schools:

1. Cresthaven ES
2. Key, Francis Scott MS
3. Nix, Roscoe ES
4. Greencastle ES
5. Jackson Road
6. Page, William Tyler ES
7. West Farm Transportation Depot
8. Westover ES
9. White Oak MS

	Date	Initials
Radon Test Kits Deployed	03/07/2022	BMM
Radon Test Kits Collected	03/10/2022	BMM
Radon Test Kits Shipped to Lab*	03/10/2022	BMM
Radon Test Kits Received by Lab*	03/13/2022	BMM

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