



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Takoma Park Elementary School
Date of Test Report	5/11/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	45
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	3.0 pCi/L

Project Status:
Initial testing completed; No further action needed



May 11, 2022

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

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

Location: Takoma Park Elementary School
7511 Holly Ave.
Takoma Park, MD 20912

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 Takoma Park Elementary School, located at 7511 Holly Ave. Takoma Park, MD 20912 (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 14, 2022 and deployed fifty-two (52) 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 17, 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 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 low 20s and high temperatures ranged from the mid 70s to the high 50s Fahrenheit. Maximum sustained winds ranged from 0-32 miles per hour. Average humidity was around 61% 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		
Takoma Park ES		
Test Period: 03/14/2022 - 03/17/2022		
Kit Number	Room / Area	Result
11134012	103	2.3
11134039	103	2.3
11134040	103	< 0.3
11134019	104	< 0.3
11134024	104	< 0.3
11134031	106	2.1
11134032	107	0.8
11134037	109	0.5
11134045	111	1.0
11134023	113	< 0.3
11134038	114	0.6
11134044	115	0.7
11134020	117	< 0.3
11134052	117	< 0.3
11134041	120	< 0.3
11134011	121	0.5
11134043	123	0.6
11134042	124	< 0.3
11134051	126	0.7
11134050	128	1.4
11134049	200	0.7
11134033	202	0.9
11134035	203	1.1
11134034	204	0.6
11134036	205	1.0
11134054	300	1.1
11134068	301	1.1
11134069	301	1.0
11134018	303	1.0
11134026	309	3.0
11134047	313	1.0
11134048	313	1.3
11134057	313	< 0.3
11134021	314	0.6
11134029	315	0.7
11134022	316	< 0.3
11131178	317	< 0.3
11134030	317	0.5
11131187	318	< 0.3
11134025	326	< 0.3
11134004	400	< 0.3
11134027	400	< 0.3

Table 1- Radon Testing Results		
Takoma Park ES		
Test Period: 03/14/2022 - 03/17/2022		
Kit Number	Room / Area	Result
11134017	401	< 0.3
11134028	500	< 0.3
11134046	200A	0.7
11134067	300B	2.4
11134060	300C	0.5
11134061	300D	1.7
11134066	301B	1.0
11134058	KITCHEN OFFICE	1.2
11134053	MPR	1.0
11134059	MPR	0.9

Table 2- Radon Testing Results			
Takoma Park ES			
Test Period: 03/14/2022 - 03/17/2022			
Kit Number	QC Type	Room / Area	Result
11131178	D	317	< 0.3
11134012	D	103	2.3
11134040	FB	103	< 0.3
11134052	D	117	< 0.3
11134048	D	313	1.3
11134057	FB	313	< 0.3
11134068	D	301	1.1
11138932	OB	OFFICE BLANK	< 0.3
11138946	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Takoma Park ES		
Test Period: 03/14/22 - 03/17/22		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and >= 4 piC/L Tests		
Takoma Park ES		
Test Period: 03/14/22 - 03/17/22		
Kit Number	Room/Area	Result
	NA	

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
TAKOMA PARK ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11134012	103	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	2.3 ± 0.4	2022-03-21
11134040	103	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134039	103	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	2.3 ± 0.4	2022-03-21
11134019	104	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134024	104	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134031	106	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	2.1 ± 0.4	2022-03-21
11134032	107	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.8 ± 0.3	2022-03-21
11134037	109	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-21
11134045	111	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.3	2022-03-21
11134023	113	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134038	114	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.6 ± 0.3	2022-03-21
11134044	115	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.7 ± 0.4	2022-03-21
11134052	117	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134020	117	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134041	120	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134011	121	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-21
11134043	123	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.6 ± 0.3	2022-03-21
11134042	124	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134051	126	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.7 ± 0.4	2022-03-21
11134050	128	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.4 ± 0.4	2022-03-21
11134049	200	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-21
11134046	200A	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-21
11134033	202	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	0.9 ± 0.3	2022-03-21
11134035	203	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	1.1 ± 0.4	2022-03-21
11134034	204	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	0.6 ± 0.3	2022-03-21
11134036	205	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.4	2022-03-21
11134054	300	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.1 ± 0.4	2022-03-21
11134067	300B	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	2.4 ± 0.4	2022-03-21
11134060	300C	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-21
11134061	300D	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.7 ± 0.4	2022-03-21
11134068	301	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.1 ± 0.3	2022-03-21
11134069	301	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.3	2022-03-21
11134066	301B	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.4	2022-03-21
11134018	303	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.3	2022-03-21
11134026	309	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	3.0 ± 0.4	2022-03-21
11134057	313	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134047	313	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.3	2022-03-21

March 22, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**TAKOMA PARK ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11134048	313	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.3 ± 0.4	2022-03-21
11134021	314	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	0.6 ± 0.3	2022-03-21
11134029	315	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-21
11134022	316	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134030	317	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-21
11134025	326	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134004	400	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134027	400	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134017	401	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134028	500	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11134058	KITCHEN OFFICE	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.2 ± 0.4	2022-03-21
11134053	MPR	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	1.0 ± 0.3	2022-03-21
11134059	MPR	2022-03-14 @ 1:00 pm	2022-03-17 @ 10:00 am	0.9 ± 0.3	2022-03-21

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

March 22, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
TAKOMA PARK ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131178	317	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21
11131187	318	2022-03-14 @ 12:00 pm	2022-03-17 @ 10:00 am	< 0.3	2022-03-21

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 – March 2022 Schools

Name of Schools:

1. Silver Spring International MS
2. Sligo Creek ES
3. Takoma Park MS
4. Takoma Park ES
5. Highland ES
6. Rolling Terrace ES

	Date	Initials
Radon Test Kits Deployed	03/14/2022	BMM
Radon Test Kits Collected	03/17/2022	BMM
Radon Test Kits Shipped to Lab*	03/17/2022	BMM
Radon Test Kits Received by Lab*	03/20/2022	BMM

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