



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Harriet Tubman Elementary School
Date of Test Report	5/1/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	49
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	<0.3 pCi/L

Project Status:

1. Initial testing completed.



May 1, 2023

Mr. Brian Croyle
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122210551

Location: Harriet Tubman Elementary School
400 Victory Farm Dr.
Gaithersburg, MD 20877

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 Harriet Tubman Elementary School, located at 400 Victory Farm Dr. in Gaithersburg, MD 20877 (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 April 18, 2023 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 April 21, 2023 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 concentrations 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 mid-60s and high temperatures ranged from the mid-50s to the high 80s. Maximum sustained winds ranged from 0 to 36 miles per hour. Average humidity was around 53% with 0.02 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		
Harriet Tubman ES		
Test Period: 04/18/2023 - 04/21/2023		
Kit Number	Room / Area	Result
11635048	100	< 0.3
11635040	101	< 0.3
11635047	101	< 0.3
11635011	102	< 0.3
11635044	103	< 0.3
11635012	104	< 0.3
11635041	107	< 0.3
11635017	108	< 0.3
11635019	109	< 0.3
11635020	109	< 0.3
11635031	110	< 0.3
11635022	112	< 0.3
11635008	116	< 0.3
11635024	120	< 0.3
11635033	122	< 0.3
11635034	122	< 0.3
11635025	123	< 0.3
11635027	123	< 0.3
11635035	130	< 0.3
11635036	130	< 0.3
11635016	132	< 0.3
11635021	134	< 0.3
11635009	135	< 0.3
11635013	137	< 0.3
11635015	138	< 0.3
11635046	139	< 0.3
11635006	140	< 0.3
11635010	141	< 0.3
11635014	141	< 0.3
11635029	142	< 0.3
11635030	144	< 0.3
11635007	146	< 0.3
11635005	210	< 0.3
11635050	216	< 0.3
11635003	302	< 0.3
11635004	302	< 0.3
11635065	100A	< 0.3
11635067	100B	< 0.3
11635038	100C	< 0.3
11635060	100D	< 0.3
11635055	101A	< 0.3
11635056	101B	< 0.3

Kit Number	Room / Area	Result
11635043	105A	< 0.3
11635042	105B	< 0.3
11635023	112B	< 0.3
11635028	149A	< 0.3
11635026	GYM	< 0.3
11635032	GYM	< 0.3
11635018	KITCHEN OFFICE	< 0.3
11635051	L100	< 0.3
11635052	L101	< 0.3
11635057	L101	< 0.3
11635058	L101	< 0.3
11635049	L102	< 0.3
11635066	L104	< 0.3
11635059	L105	< 0.3

Table 2- Radon Testing Results			
Harriet Tubman ES			
Test Period: 04/18/23 - 04/21/23			
Kit Number	QC Type	Room / Area	Result
11635047	D	101	< 0.3
11635034	D	122	< 0.3
11635036	FB	130	< 0.3
11635010	D	141	< 0.3
11635003	D	302	< 0.3
11635052	D	L101	< 0.3
11635058	FB	L101	< 0.3
11635074	OB	OFFICE BLANK	< 0.3
11635068	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
HARRIET TUBMAN ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11635048	100	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635065	100A	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635067	100B	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635038	100C	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635060	100D	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635047	101	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635040	101	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635055	101A	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635056	101B	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635011	102	2023-04-18 @ 10:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635044	103	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635012	104	2023-04-18 @ 10:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635043	105A	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635042	105B	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635041	107	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635017	108	2023-04-18 @ 10:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635020	109	2023-04-18 @ 10:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635019	109	2023-04-18 @ 10:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635031	110	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635022	112	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635023	112B	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635008	116	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635024	120	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635033	122	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635034	122	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635025	123	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635027	123	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635036	130	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635035	130	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635016	132	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635021	134	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635009	135	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635013	137	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635015	138	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635046	139	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635006	140	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635014	141	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25

April 25, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**HARRIET TUBMAN ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11635010	141	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635029	142	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635030	144	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635007	146	2023-04-18 @ 12:00 pm	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635028	149A	2023-04-18 @ 11:00 am	2023-04-21 @ 10:00 am	< 0.3	2023-04-25
11635005	210	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635050	216	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635003	302	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635004	302	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635018	KITCHEN OFFICE	2023-04-18 @ 11:00 am	2023-04-21 @ 10:00 am	< 0.3	2023-04-25
11635051	L100	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635058	L101	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635057	L101	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635052	L101	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635049	L102	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635066	L104	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635059	L105	2023-04-18 @ 11:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25

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

April 25, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**HARRIET TUBMAN ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11635026	GYM	2023-04-18 @ 9:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25
11635032	GYM	2023-04-18 @ 9:00 am	2023-04-21 @ 9:00 am	< 0.3	2023-04-25

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 208802

NOMINAL Conditions: Radon Conc 24.4 pCi/L Rel. Hum 48.6 % Temp. 79.3 F

Date Start: 1/27/23 Date Stop: 1/30/23 Date Start: _____ Date Stop: _____

Time Start: 0816 Time Stop: 0816 Time Start: _____ Time Stop: _____

Device No.'s: (5) CHAR BAGS Device No.'s: _____

11633682, 11633687, 11633688 _____

11633695, 11633696 _____

P3 left

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**

February 3, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633696	SK10	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	24.2 ± 1.9	2023-02-03
11633682	SK6	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	26.9 ± 2.1	2023-02-03
11633687	SK7	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	23.8 ± 1.9	2023-02-03
11633688	SK8	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	25.9 ± 2.1	2023-02-03
11633695	SK9	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	27.0 ± 2.2	2023-02-03

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 – Testing April 18th to April 21st

Name of Schools:

1. Brown Station ES
2. Harriet Tubman ES

	Date	Initials
Radon Test Kits Deployed	04/18/2023	<i>BWDM</i>
Radon Test Kits Collected	04/21/2023	<i>BWDM</i>
Radon Test Kits Shipped to Lab*	04/21/2023	<i>BWDM</i>
Radon Test Kits Received by Lab*	04/25/2023	<i>BWDM</i>

*All samples sent to Air Check, Inc., 2 Saber Way, Ward Hill, MA 01835