



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Clopper Mill Elementary School
Date of Test Report	1/25/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	55
# Rooms $\geq$ 4.0 pCi/L	4
Lowest Value	<0.3 pCi/L
Highest Value	4.7 pCi/L

Project Status:

1. Initial testing completed;
2. Mitigate Rooms 25, 27, and Media.



January 25, 2023

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

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

Location: Clopper Mill Elementary School  
18501 Cinnamon Drive  
Germantown, MD 20874

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 Clopper Mill Elementary School, located at 18501 Cinnamon Dr. Germantown, MD 20874 (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](http://www.epa.gov/radon).

KCI visited the site on December 19, 2022 and deployed sixty-four (64) 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 December 22, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA. for analysis by gamma-ray spectroscopy.

Accustar Labs - MA is a NRSB certified analytical laboratory for radon analysis (certification #ARL0017) located at 2 Saber Way, Ward Hill, MA 01835.

**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 temperatures ranged from 23°F to 55°F. Maximum sustained winds ranged from 0-18 miles per hour. Average humidity was around 75% with 0.0 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	25	4.3
	27	4.7
	27	3.9
	MEDIA	4.4
<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		
Clopper Mill ES		
Test Period: 12/19/2022 - 12/22/2022		
Kit Number	Room / Area	Result
11288538	1	1.2
11288534	3	0.8
11288503	4	1.7
11288525	6	3.1
11288510	7	1.0
11288509	8	1.3
11288515	8	1.0
11288508	9	2.2
11288523	9	< 0.3
11288516	10	0.6
11288505	11	2.0
11288506	12	3.1
11288520	13	1.8
11288521	13	1.2
11287875	14	3.1
11288502	15	< 0.3
11288522	15	1.0
11287826	16	1.7
11287833	17	1.4
11287834	18	0.9
11287820	19	< 0.3
11287852	20	< 0.3
11288529	20	< 0.3
11287899	21	0.6
11287802	22	< 0.3
11287835	23	< 0.3
11288501	24	1.3
11287898	25	4.3
11288513	26	2.7
11287900	27	4.7
11288514	27	3.9
11287877	28	1.1
11287885	28	< 0.3
11288526	29	3.0
11288528	31	1.1
11288519	32	2.2
11287897	33	< 0.3
11287825	15B	< 0.3
11288524	5A	1.7
11288542	5B	0.7
11288540	APR	2.8
11288548	APR	3.1



Table 1- Radon Testing Results		
Clopper Mill ES		
Test Period: 12/19/2022 - 12/22/2022		
Kit Number	Room / Area	Result
11288530	ART	3.1
11288527	ASP	2.0
11288539	BUILDING SERVICES	< 0.3
11287895	CONFERENCE	2.2
11287829	GYM	3.4
11288507	GYM	3.1
11287687	GYM OFFICE	2.3
11287887	HEALTH	1.9
11288536	K1	< 0.3
11288504	K2	1.4
11288517	K3	< 0.3
11288533	K3	0.7
11288549	K4	< 0.3
11288547	MAIN OFFICE	1.9
11287872	MEDIA	4.4
11287871	MEDIA OFFICE	3.3
11287896	PRINCIPAL	2.8
11288541	SPEECH	1.6
11288543	STAFF KITCHEN	N/A
11287824	STAFF LOUNGE	1.7
11288544	STAFF LOUNGE	1.6
11287888	WORKROOM	2.0

Table 2- Radon Testing Results			
Clopper Mill ES			
Test Period: 12/19/22 - 12/22/22			
Kit Number	QC Type	Room / Area	Result
11288515	D	8	1.0
11288523	FB	9	< 0.3
11288521	D	13	1.2
11288502	FB	15	< 0.3
11288529	D	20	< 0.3
11287900	D	27	4.7
11287885	FB	28	< 0.3
11288533	D	K3	0.7
11287824	D	Staff lounge	1.7
11288518	OB	OFFICE BLANK	< 0.3
11287685	TB	TRAVEL BLANK	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:  
**CLOPPER MILL ES**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11288538	1	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.2 ± 0.6	2022-12-28
11288516	10	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	0.6 ± 0.5	2022-12-28
11288505	11	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	2.0 ± 0.6	2022-12-28
11288506	12	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.1 ± 0.7	2022-12-28
11288521	13	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.2 ± 0.6	2022-12-28
11288520	13	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.8 ± 0.6	2022-12-28
11287875	14	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.1 ± 0.7	2022-12-28
11288522	15	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.0 ± 0.6	2022-12-28
11288502	15	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287825	15B	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287826	16	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.7 ± 0.6	2022-12-28
11287833	17	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.4 ± 0.6	2022-12-28
11287834	18	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	0.9 ± 0.6	2022-12-28
11287820	19	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288529	20	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287852	20	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287899	21	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	0.6 ± 0.5	2022-12-28
11287802	22	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287835	23	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288501	24	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.3 ± 0.6	2022-12-28
11287898	25	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	4.3 ± 0.8	2022-12-28
11288513	26	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	2.7 ± 0.7	2022-12-28
11287900	27	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	4.7 ± 0.8	2022-12-28
11288514	27	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	3.9 ± 0.8	2022-12-28
11287885	28	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287877	28	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	1.1 ± 0.6	2022-12-28
11288526	29	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.0 ± 0.6	2022-12-28
11288534	3	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	0.8 ± 0.5	2022-12-28
11288528	31	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.1 ± 0.6	2022-12-28
11288519	32	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	2.2 ± 0.6	2022-12-28
11287897	33	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288503	4	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.7 ± 0.6	2022-12-28
11288524	5A	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.7 ± 0.6	2022-12-28
11288542	5B	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	0.7 ± 0.5	2022-12-28
11288525	6	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.1 ± 0.7	2022-12-28
11288510	7	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.0 ± 0.6	2022-12-28
11288509	8	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.3 ± 0.6	2022-12-28

Radon test result report for:  
**CLOPPER MILL ES**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11288515	8	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.0 ± 0.5	2022-12-28
11288508	9	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	2.2 ± 0.6	2022-12-28
11288523	9	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288548	APR	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.1 ± 0.7	2022-12-28
11288540	APR	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	2.8 ± 0.6	2022-12-28
11288530	ART	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.1 ± 0.7	2022-12-28
11288527	ASP	2022-12-19 @ 12:00 pm	2022-12-22 @ 12:00 pm	2.0 ± 0.6	2022-12-28
11288539	BUILDING SERVICES	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11287895	CONFERENCE	2022-12-19 @ 12:00 pm	2022-12-22 @ 12:00 pm	2.2 ± 0.6	2022-12-28
11287829	GYM	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.4 ± 0.7	2022-12-28
11288507	GYM	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.1 ± 0.7	2022-12-28
11287687	GYM OFFICE	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	2.3 ± 0.7	2022-12-28
11287887	HEALTH	2022-12-19 @ 12:00 pm	2022-12-22 @ 12:00 pm	1.9 ± 0.6	2022-12-28
11288536	K1	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288504	K2	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.4 ± 0.6	2022-12-28
11288517	K3	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288533	K3	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	0.7 ± 0.5	2022-12-28
11288549	K4	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288547	MAIN OFFICE	2022-12-19 @ 12:00 pm	2022-12-22 @ 12:00 pm	1.9 ± 0.6	2022-12-28
11287872	MEDIA	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	4.4 ± 0.7	2022-12-28
11287871	MEDIA OFFICE	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	3.3 ± 0.7	2022-12-28
11287896	PRINCIPAL	2022-12-19 @ 12:00 pm	2022-12-22 @ 12:00 pm	2.8 ± 0.7	2022-12-28
11288541	SPEECH	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.6 ± 0.6	2022-12-28
11287824	STAFF LOUNGE	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.7 ± 0.6	2022-12-28
11288544	STAFF LOUNGE	2022-12-19 @ 1:00 pm	2022-12-22 @ 12:00 pm	1.6 ± 0.6	2022-12-28
11287888	WORKROOM	2022-12-19 @ 12:00 pm	2022-12-22 @ 12:00 pm	2.0 ± 0.6	2022-12-28

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KC1 TECHNOLOGIES, INC Job Number 208343

NOMINAL Conditions: Radon Conc 34.7 pCi/L Rel. Hum 49.4 % Temp. 69.6 F

Date Start: 12/24/22 Date Stop: 12/27/22 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0810 Time Stop: 0810 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (5) CHAR BAGS - Device No.'s: \_\_\_\_\_

11285109, 11285110, 11285101

THRU 11285103

BY 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  $\mu$ R/h Elevation = 820 ft**

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December 29, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**OFFICE**

**MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11285110	SK1	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	31.7 ± 2.5	2022-12-29
11285101	SK2	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.1 ± 2.4	2022-12-29
11285103	SK3	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	34.0 ± 2.7	2022-12-29
11285102	SK4	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.9 ± 2.5	2022-12-29
11285109	SK5	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	32.0 ± 2.6	2022-12-29

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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 – Week 3 December Schools

Name of Schools:

1. Clopper Mill ES
2. Cold Spring ES
3. Fox Chapel ES
4. Gaithersburg HS
5. Longview School
6. North Lake Center
7. Ronald McNair ES
8. Rosemont ES
9. S. Christa McAuliffe ES
10. Spark M. Matsunaga ES
11. William B. Gibbs, JR. ES

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	Date	Initials
Radon Test Kits Deployed	12/19/2022	BMM
Radon Test Kits Collected	12/22/2022	BMM
Radon Test Kits Shipped to Lab*	12/22/2022	BMM
Radon Test Kits Received by Lab*	12/28/2022	BMM

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

# RADON SCREENING SURVEY – FOLLOW-UP CLOPPER MILL ELEMENTARY SCHOOL

18501 Cinnamon Drive, Germantown, Maryland 20874

## EXECUTIVE SUMMARY

Date of Test Report:	3/14/16 Follow-Up
Round of Testing:	Initial <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">Follow-up</span> Post Remediation
# Rooms Tested	5
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	<0.3
High Value:	3.0
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	0

### Summary of Sampling Events $\geq$ 4.0 pCi/L

Room	Result (pCi/L) 2/4/16 (Rev 1 Initial)	Result (pCi/L) 3/14/16 Follow-Up	Average Result (pCi/L)
32	3.2 Tampered	2.1	2.7
Main Off	--- Missing	1.5	1.5
Library	3.8	3.0	3.4
Library	3.5	3.0	3.3
MPR	3.9	2.9	3.4
Building Service	Not Sampled	<0.3	<0.3



## MCPS RADON TESTING

### Executive Summary: Clopper Mill Elementary School

Date of Test Report:	3/14/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	5
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	3.0

#### Project Status:

Retesting completed; no further action at this time.



March 14, 2016

Mr. Richard Cox  
Indoor Air Quality Team Leader  
Montgomery County Public Schools  
850 Hungerford Drive  
Rockville, MD 20850

Re: **Radon Testing Services**  
KCI Job # 12146341.29

Location: Clopper Mill Elementary School  
18501 Cinnamon Drive  
Germantown, Maryland 20874

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Clopper Mill Elementary School, located at 18501 Cinnamon Drive in Germantown, Maryland 20874 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on February 23, 2016 and deployed nine (9) activated charcoal (AC) radon test kits. KCI deployed radon test kits in 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 included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) 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 26, 2016 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:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages  $\leq 65^{\circ}$  F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. Note that strong storms and heavy rainfall were recorded during the test period. The unusual weather conditions may have resulted in atypical radon test results for this facility.

KCI recorded observations of the following conditions in each room at 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.

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
<b><math>\geq 4.0</math> pCi/L</b>	None	N/A
<b><math>&lt; 4.0</math> pCi/L</b>	See Attachment B	

Notes:

D- Duplicate sample

The field blank, office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

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) 316-7800.

Sincerely,



James M. Mouldale  
Radon Measurement Specialist  
KCI Technologies, Inc.

Attachments:     A- Floor Plan with Test Locations  
                      B- Table 1-Radon Test Summary Spreadsheet  
                      C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet



**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank\*

PM- Project Manager

QC- Quality Control

\*Office blanks were submitted at a rate of 1% for all samples deployed in Phase 9 testing. Office blanks were not submitted under each school individually.

<b>Radon Testing Results</b>		
<b>Clopper Mill Elementary School</b>		
<b>Test Period: 02/23/16-02/26/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7718600	32	2.1
7718594	BUILDING SERVICE	< 0.3
7730096	LIBRARY	3.0
7730090	LIBRARY	3.0
7730095	MAIN OFFICE	1.5
7718595	MPR	2.0
7718598	MPR	2.9

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Clopper Mill Elementary School</b>		
<b>Test Period: 02/23/16-02/26/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7730093	D (MAIN OFFICE)	1.5
7730094	FB (MAIN OFFICE)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

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March 8, 2016 **\*\* LABORATORY ANALYSIS REPORT \*\***

---

Radon test result report for:  
**CLOPPER MILL ELEMENTARY SCHOOL  
MAIN**

---

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7718600	32	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	2.1 ± 0.4	2016-03-01
7718595	MPR	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	2.0 ± 0.3	2016-03-01
7718598	MPR	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	2.9 ± 0.4	2016-03-01
7718594	BUILDING SERVICE	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	< 0.3	2016-03-01
7730090	LIBRARY	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	3.0 ± 0.4	2016-03-01
7730096	LIBRARY	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	3.0 ± 0.4	2016-03-01
7730093	MAIN OFFICE	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	1.5 ± 0.3	2016-03-01
7730094	MAIN OFFICE	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	< 0.3	2016-03-01
7730095	MAIN OFFICE	2016-02-23 @ 11:00 am	2016-02-26 @ 8:00 am	1.5 ± 0.3	2016-03-01

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March 9, 2016 **\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**MCPS**  
**Phase 9 Office Blanks**

---

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712568	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7712584	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719460	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719481	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719497	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719498	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29

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

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March 9, 2016 **\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**MCPS**  
**Phase 9 Office Blanks**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7731626	0	2016-02-23 @ 2:00 pm	2016-02-26 @ 3:00 pm	< 0.3	2016-03-01
7731633	0	2016-02-23 @ 2:00 pm	2016-02-26 @ 3:00 pm	< 0.3	2016-03-01
7735204	0	2016-02-23 @ 2:00 pm	2016-02-26 @ 3:00 pm	< 0.3	2016-03-01

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

February 23, 2016 **LABORATORY ANALYSIS REPORT** \*\*

Radon test result report for:  
**TRANSIT- PHASE 7, 8, 9**  
**NONE**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7734937	1	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734946	10	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734955	11	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734956	12	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734959	13	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734930	14	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734953	15	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734954	16	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734940	17	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734949	18	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734948	19	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734939	2	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734942	20	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734929	21	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734933	22	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734934	23	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734936	24	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734943	25	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734944	26	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734935	27	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734928	28	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734952	29	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734947	3	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734931	30	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734932	31	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718520	32	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718523	33	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718522	34	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718521	35	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734945	4	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734960	5	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734958	6	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734951	7	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734957	8	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734938	9	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23



February  
15,  
2016

**\*\*LABORATORY ANALYSIS  
REPORT \*\***

Spike Sample Laboratory Results

Radon test result report for:  
**MCPS**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7718273	101A	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.5 ± 0.6	2016-02-04
7718281	102B	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.4 ± 0.6	2016-02-04
7718282	103C	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.3 ± 0.6	2016-02-04
7718288	104D	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.7 ± 0.6	2016-02-04
7718289	105E	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.6 ± 0.6	2016-02-04
7718291	106F	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.5 ± 0.6	2016-02-04

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

Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

**EXPOSURE IN BOWSER-MORNER RADON CHAMBER**

CLIENT KCF Technologies Inc. Job Number 173704

NOMINAL Conditions: Radon Conc 5.9 pCi/L Rel. Hum 45.9 % Temp. 79.0 F

Date Start: 11/30/16 Date Stop: 2/1/16 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0926 Time Stop: 0926 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (6) Char. Bags - Device No.'s: \_\_\_\_\_

7718281, 7718282, 7718291, \_\_\_\_\_

7718288, 7718289, 7718273 \_\_\_\_\_

ε3 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**



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 9

Name of Schools:

- |                          |                           |                        |
|--------------------------|---------------------------|------------------------|
| 1. Rocking Horse Road ES | 16. Broad Acres ES        | 31. Rosa Parks MS      |
| 2. Rockwell ES           | 17. Belmont ES            | 32. Rosemary Hills ES  |
| 3. Oakland Terrace ES    | 18. Emory Grove Center    | 33. Sequoyah ES        |
| 4. Rosemont ES           | 19. Forest Knolls ES      | 34. Damascus HS        |
| 5. Beall ES              | 20. Baker MS              | 35. Einstein ES        |
| 6. Cresthaven ES         | 21. MLK MS                | 36. Forest Oak MS      |
| 7. Quince Orchard HS     | 22. Richard Montgomery HS | 37. Hoover MS          |
| 8. Smith Center          | 23. Sherwood HS           | 38. Julius West MS     |
| 9. Ashburton ES          | 24. Walter Johnson HS     | 39. John F. Kennedy HS |
| 10. Bannockburn ES       | 25. Diamond ES            | 40. Travilah ES        |
| 11. Bradley Hills ES     | 26. Newport Mill MS       | 41. Watkins Mill HS    |
| 12. Cannon Road ES       | 27. Drew ES               | 42. Northwood HS       |
| 13. Flora M. Singer ES   | 28. Monocacy ES           | 43. Lincoln Center     |
| 14. Clarksburg HS        | 29. Potomac ES            |                        |
| 15. Briggs Chaney MS     | 30. Rock Terrace School   |                        |

---

	Date	Initials
Radon Test Kits Deployed	2/22/16	JM
Radon Test Kits Collected	2/25/16	JM
Radon Test Kits Shipped to Lab*	2/25/16	JM
Radon Test Kits Received by Lab*	2/29/16	JM

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



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 9

Name of Schools:

- |                            |                         |
|----------------------------|-------------------------|
| 1. Banneker MS             | 10. Maryvale ES         |
| 2. Bethesda-Chevy Chase HS | 11. Montgomery Blair HS |
| 3. Burtonsville ES         | 12. Poolesville HS      |
| 4. Chevy Chase ES          | 13. Rachel Carson ES    |
| 5. Clopper Mill ES         | 14. Stedwick ES         |
| 6. Edison HS               | 15. Watkins Mill ES     |
| 7. Flower Hill ES          | 16. Laytonsville ES     |
| 8. Flower Valley ES        | 17. Lincoln Center      |
| 9. Greencastle ES          |                         |

---

	Date	Initials
Radon Test Kits Deployed	2/23/16	JM
Radon Test Kits Collected	2/26/16	JM
Radon Test Kits Shipped to Lab*	2/26/16	JM
Radon Test Kits Received by Lab*	3/01/16	JM

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



## MCPS RADON TESTING

### Executive Summary: Clopper Mill Elementary School

Date of Test Report:	2/04/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	53
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	3.9

#### Project Status:

Initial testing completed; missing or compromised samples need re-test.



February 4, 2016 (Rev 1)

Mr. Richard Cox  
Indoor Air Quality Team Leader  
Montgomery County Public Schools  
850 Hungerford Drive  
Rockville, MD 20850

Re: **Radon Testing Services**  
KCI Job # 12146341.24

Location: Clopper Mill Elementary School  
18501 Cinnamon Drive  
Germantown, MD 20874

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Clopper Mill Elementary School, located at 18501 Cinnamon Drive in Germantown, Maryland 20874 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on January 11, 2016 and deployed sixty-five (65) activated charcoal (AC) radon test kits. KCI deployed radon test kits in 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 included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) 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 January 14, 2016 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:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages  $\leq 65^{\circ}$  F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. KCI recorded observations of the following conditions in each room at 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.

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	none	n/a
$< 4.0$ pCi/L	See Attachment B	

Notes:  
D- Duplicate sample

All field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

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) 316-7800.

Sincerely,



H. Allen Bennett  
Certified Industrial Hygienist  
KCI Technologies, Inc.

Attachments:      A- Floor Plan with Test Locations  
                          B- Table 1-Radon Test Summary Spreadsheet  
                          C- Laboratory Analytical Results



# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

<b>Radon Testing Results</b>		
<b>Clopper Mill Elementary School</b>		
<b>Test Period: 01/11/16-01/14/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7719239	1	0.6
7719237	2	1.3
7719236	3	< 0.3
7719214	4	0.9
7719227	5	0.6
7719230	6	1.3
7714690	7	< 0.3
7713490	8	< 0.3
7715279	9	0.6
7713128	10	0.7
7715280	11	1.6
7713139	12	1.6
7715278	13	0.8
7710513	14	2.1
7713117	15	0.7
7713180	16	1.4
7715269	17	< 0.3
7713103	18	< 0.3
7715283	19	0.6
7713496	20	< 0.3
7713152	21	0.6
7713200	22	< 0.3
7713140	23	< 0.3
7707315	24	0.8
7707278	25	2.9
7715277	26	< 0.3
7713494	27	2.6
7713129	28	0.9
7710681	29	1.7
7713183	31	1.8
7719218	* 32 (Tampered)	3.2
7710889	ART	2.6
7715270	ASST PRINCIPAL	2.2
7713478	CONFERENCE	0.8
7713141	GYM	< 0.3
7713480	GYM	1.7
7714945	GYM OFF	1.5
7713479	HEALTH	1.5
7719238	K1	0.8
7719205	K2	< 0.3
7719228	K3	< 0.3
7719222	K4	< 0.3
7719234	LIBRARY	3.8
7719240	LIBRARY	3.5
7719221	LIBRARY OFFICE	2.4
7714946	* MAIN OFF (Missing)	0

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Clopper Mill Elementary School</b>		
<b>Test Period: 01/11/16-01/14/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7719232	ML1010	< 0.3
7719220	ML514	< 0.3
7719223	ML561	< 0.3
7719235	ML765	< 0.3
7714778	MPR	3.9
7719219	MPR	2.1
7715276	PRINCIPAL	2.1
7707277	STAFF LOUNGE	1.4
7719229	WEBBER	< 0.3
7715293	WORKROOM	1.6

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Clopper Mill Elementary School</b>		
<b>Test Period: 01/11/16-01/14/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7710891	D (ART)	2.8
7713101	D (GYM)	1.9
7713124	D (HEALTH)	1.6
7719231	D (ML561)	< 0.3
7715272	D (MPR)	3.3
7714692	FB (ART)	< 0.3
7713179	FB (HEALTH)	< 0.3
7707279	FB (MPR)	< 0.3
7719283	OB (0)	< 0.3

Table Note:

\* Missing or Compromised Sample

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

# ATTACHMENT C

## Laboratory Analytical Results

February 4, 2016  
**LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:  
**CLOPPER MILL ELEMENTARY SCHOOL  
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7719283	0	2016-01-11 @ 1:00 pm	2016-01-14 @ 12:00 pm	< 0.3	2016-01-18
7719239	1	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18
7713128	10	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.7 ± 0.3	2016-01-18
7715280	11	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.6 ± 0.3	2016-01-18
7713139	12	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.6 ± 0.4	2016-01-18
7715278	13	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.8 ± 0.3	2016-01-18
7710513	14	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	2.1 ± 0.4	2016-01-18
7713117	15	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.7 ± 0.3	2016-01-18
7713180	16	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.4 ± 0.3	2016-01-18
7715269	17	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7713103	18	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7715283	19	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18
7719237	2	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	1.3 ± 0.3	2016-01-18
7713496	20	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7713152	21	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18
7713200	22	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7713140	23	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7707315	24	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.8 ± 0.3	2016-01-18
7707278	25	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	2.9 ± 0.4	2016-01-18
7715277	26	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7713494	27	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	2.6 ± 0.4	2016-01-18
7713129	28	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	0.9 ± 0.3	2016-01-18
7710681	29	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.7 ± 0.4	2016-01-18
7719236	3	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7713183	31	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.8 ± 0.4	2016-01-18
7719218	32	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	3.2 ± 0.4	2016-01-18
7719214	4	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.9 ± 0.3	2016-01-18
7719227	5	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18
7719230	6	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	1.3 ± 0.3	2016-01-18
7714690	7	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7713490	8	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7715279	9	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18
7710889	ART	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	2.6 ± 0.4	2016-01-18
7710891	ART	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	2.8 ± 0.4	2016-01-18
7714692	ART	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7715270	ASST PRINCIPAL	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	2.2 ± 0.4	2016-01-18
7713478	CONFERENCE	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	0.8 ± 0.3	2016-01-18



February 4, 2016  
**\*\*LABORATORY ANALYSIS  
REPORT \*\***

Radon test result report for:

**CLOPPER MILL ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7713101	GYM	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.9 ± 0.4	2016-01-18
7713141	GYM	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	< 0.3	2016-01-18
7713480	GYM	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.7 ± 0.3	2016-01-18
7714945	GYM OFF	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.5 ± 0.3	2016-01-18
7713124	HEALTH	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.6 ± 0.4	2016-01-18
7713179	HEALTH	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	< 0.3	2016-01-18
7713479	HEALTH	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.5 ± 0.3	2016-01-18
7719238	K1	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.8 ± 0.3	2016-01-18
7719205	K2	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719228	K3	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719222	K4	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719234	LIBRARY	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	3.8 ± 0.5	2016-01-18
7719240	LIBRARY	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	3.5 ± 0.4	2016-01-18
7719221	LIBRARY OFFICE	2016-01-11 @ 10:00 am	2016-01-14 @ 8:00 am	2.4 ± 0.4	2016-01-18
7714946	MAIN OFF	@	@		
7715272	MPR	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	3.3 ± 0.5	2016-01-18
7707279	MPR	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	< 0.3	2016-01-18
7714778	MPR	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	3.9 ± 0.5	2016-01-18
7715276	PRINCIPAL	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	2.1 ± 0.4	2016-01-18
7707277	STAFF LOUNGE	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.4 ± 0.3	2016-01-18
7719229	WEBBER	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7715293	WORKROOM	2016-01-11 @ 9:00 am	2016-01-14 @ 8:00 am	1.6 ± 0.4	2016-01-18

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February 4, 2016 **\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**CLOPPER MILL ELEMENTARY SCHOOL  
PORTABLE**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7719232	ML1010	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719220	ML514	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719223	ML561	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719231	ML561	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719235	ML765	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7719219	MPR	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	2.1 ± 0.4	2016-01-18

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

February 2, 2016  
**LABORATORY ANALYSIS REPORT**

Radon test result report for:  
**MCPS PHASE 5 & 6 TRANSIT BLANKS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7722194	1	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718494	10	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718475	11	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718495	12	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718496	13	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718497	14	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718498	15	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718499	16	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718500	17	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718296	18	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718295	19	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722195	2	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716789	20	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716785	21	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7716791	22	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716786	23	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716793	24	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718274	25	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716792	26	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718294	27	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718293	28	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718292	29	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722197	3	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718290	30	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722198	4	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722199	5	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722211	6	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718491	7	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718476	8	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7718479	9	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27

December  
23,  
2015

**LABORATORY ANALYSIS  
REPORT \*\***

Spike Sample Laboratory Results

Radon test result report for:  
**MCPS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7706380	101	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	25.2	2015-12-23
7706381	102	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	26.5	2015-12-23
7706208	103	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	27.7	2015-12-23
7705132	104	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	28.6	2015-12-23
7706366	105	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	26.5	2015-12-23
7706211	106	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	26.1	2015-12-23

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**Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.**

**EXPOSURE IN BOWSER-MORNER RADON CHAMBER**

CLIENT KCI Technologies Inc. Job Number 173224

NOMINAL Conditions: Radon Conc 26.9 pCi/L Rel. Hum 49.6 % Temp. 69.9 F

Date Start: 12/18/15 Date Stop: 12/21/15 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0929 Time Stop: 0929 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: 7705132, 7706208, Device No.'s: \_\_\_\_\_

7706211, 7706366, \_\_\_\_\_

7706380, 7706381 \_\_\_\_\_

F3 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  $\mu$ R/h Elevation = 820 ft**



### Chain of Custody

Project Name: MCPS Radon Phase V

Name of Schools:

- |                         |                           |                         |
|-------------------------|---------------------------|-------------------------|
| 1. Arcola ES            | 11. Clopper Mill ES       | 21. Parkland Magnet MS  |
| 2. Argyle ES            | 12. College Gardens ES    | 22. Rachel Carson ES    |
| 3. Bells Mill ES        | 13. Eastern MS            | 23. Roberto Clemente MS |
| 4. Bethesda ES          | 14. Fallsmead ES          | 24. Rock Creek ES       |
| 5. Brookhaven ES        | 15. Fields Road ES        | 25. Rockview ES         |
| 6. Burning Tree ES      | 16. Flower Hill ES        | 26. Rockville HS        |
| 7. Capt. James Daly ES  | 17. Flower Valley ES      | 27. Rocky Hill MS       |
| 8. Carderock Springs ES | 18. Fox Chapel ES         | 28. Seneca Valley HS    |
| 9. Cashell ES           | 19. Glen Haven ES         | 29. Westover ES         |
| 10. Clearspring ES      | 20. James Hubert Blake HS | 30. William Farquar MS  |

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	Date	Initials
Radon Test Kits Deployed	1/11/16	JM
Radon Test Kits Sampled	1/14/16	JM
Radon Test Kits Shipped to Lab*	1/15/16	JM
Radon Test Kits Received by Lab*	1/18/16	JM

\*All samples sent to Air Check, Inc., 1936 Butler Bridge Road, Mills River, NC 28758