



**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Belmont Elementary School
Date of Report	2/28/2020
Round of Testing	Initial <b>Follow-up</b> Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	1
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.1 pCi/L

**Project Status**

Current Project Status at this time: Retesting completed; no further action.



2/28/2020

Mr. Richard Cox, MS  
Team Leader  
Montgomery County Public Schools  
Division of Maintenance  
Gaithersburg, Maryland 20879

Re: Radon Testing Services

KCI Job #1214634188

**Location: Belmont Elementary School**

19528 Olney Mill Road  
Olney, Maryland 20832

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a “short-term” 3-day radon test for the Belmont Elementary School, located at 19528 Olney Mill Road in Olney, Maryland 20832 (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 #111004 RT) 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 2/3/2020 and deployed 6 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.

KCI sampled the following locations during this follow-up test:

1. Rooms with missing test kits from the December 2019 testing period (i.e. test kit was deployed but not recovered),

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2. Rooms with invalidated test kits from the December 2019 testing period (e.g. an open window in the room or disturbed test kit),
  3. Rooms which were locked/inaccessible during the December 2019 testing period,
  4. Rooms with elevated December 2019 results (i.e.  $\geq 3.5$  pCi/L),
  5. Rooms previously tested for radon but not tested in December 2019, and
  6. Additional rooms that require testing (if applicable.)

A floor plan map of the building with the test locations is included as Appendix 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, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on 2/6/2020 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, 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 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.

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 ranged from the mid-30s to the low-50s; and high temperatures ranged from the upper-40s to the mid-60s. Maximum sustained winds ranged from 13-21 miles per hour. Average humidity was approximately 76%. A total of 1.09 Inches of rain were recorded during the testing period. The weather conditions during the testing period may have resulted in atypical radon test results for this facility.

**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). Follow-up 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	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 410-316-7800.

Sincerely,

Mr. Tyler P. McCleaf  
 Radon Measurement Provider  
 KCI Technologies, Inc.

Attachments:

A- Floor Plan with Test Locations

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

### Floor Plan Legend

X-Sample Location (in red)

X- Previous Sample Location

1- Not Samled; No Ground Contact

2- Not Samled; Unoccupied (e.g. Storage, Mechanical)

3- Not Samled; High Humidity/Moisture

4- Not Samled; Bathroom/Hallway

# 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

Table 1- Radon Testing Results		
Belmont Elementary School		
Test Period: 02/03/20-02/06/20		
Kit Number	Room / Area	Result
9339958	MPR	1.7
9339963	MPR	1.8
9339959	MPR	2.1
9339960	MPR	<0.3
9334909	OFFICE BLANK	<0.3
9334910	OFFICE BLANK	<0.3



Table 2- Radon Testing Results			
Belmont Elementary School			
Test Period: 02/03/20-02/06/20			
Kit Number	QC Type	Room / Area	Result
9339959	D	MPR	2.1
9339960	FB	MPR	<0.3
9334902	TRANSIT BLANK	NA	<0.3

# ATTACHMENT C

## Laboratory Analytical Results

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February 11, 2020

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

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Radon test result report for:

**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>
9339958	MPR	2020-02-03 @ 12:00 pm	2020-02-06 @ 11:00 am	1.7 ± 0.5	2020-02-11
9339963	MPR	2020-02-03 @ 12:00 pm	2020-02-06 @ 11:00 am	1.8 ± 0.5	2020-02-11
9339959	MPR	2020-02-03 @ 12:00 pm	2020-02-06 @ 11:00 am	2.1 ± 0.5	2020-02-11
9339960	MPR	2020-02-03 @ 12:00 pm	2020-02-06 @ 11:00 am	< 0.3	2020-02-11

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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 194523

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 49.8 % Temp. 70.2 F

Date Start: 2/21/20 Date Stop: 2/24/20 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0745 Time Stop: 0745 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (9) Char Bags - Device No.'s: \_\_\_\_\_

9341725 thru 9341733

52 ccp

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

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
9341725	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.9 $\pm$ 1.6	2020-02-26
9341730	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.1 $\pm$ 1.6	2020-02-26
9341728	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.9 $\pm$ 1.6	2020-02-26
9341726	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	25.8 $\pm$ 1.5	2020-02-26
9341731	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	25.1 $\pm$ 1.5	2020-02-26
9341729	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.2 $\pm$ 1.6	2020-02-26
9341727	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	27.2 $\pm$ 1.6	2020-02-26
9341732	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	27.3 $\pm$ 1.6	2020-02-26



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1 Retesting

Name of Schools:

1. Belmont E.S.
2. Clarksburg H.S.
3. Damascus E.S.
4. Damascus H.S.
5. DuFief E.S.
6. Fields Road E.S.
7. Gaithersburg E.S.
8. McAuliffe E.S.
9. Quince Orchard H.S.
10. Snowden Farms E.S.
11. South Lake E.S.
12. Stone Mill E.S.
13. Travilah ES
14. Watkins Mill ES
15. Whitman H.S.

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	Date	Initials
Radon Test Kits Deployed	02/03/20 to 02/04/20	JM
Radon Test Kits Collected	02/06/20 to 02/07/20	JM
Radon Test Kits Shipped to Lab*	02/07/20	JM
Radon Test Kits Received by Lab*	02/10/20	JM

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



**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Belmont Elementary School
Date of Report	1/28/2020
Round of Testing	Initial Follow-up Post Remediation 2 year testing <b>5 year testing</b> HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	38
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.2 pCi/L

**Project Status**

Current Project Status at this time: Testing Complete; missing/compromised tests need re-testing.



1/28/2020

Mr. Richard Cox, MS  
Environmental Team Leader  
Montgomery County Public Schools  
Division of Maintenance  
Gaithersburg, Maryland 20879

Re: Radon Testing Services

KCI Job #12146341126

**Location: Belmont Elementary School**

19528 Olney Mill Road  
Olney, Maryland 20832

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a “short-term” 3-day radon test for the Belmont Elementary School, located at 19528 Olney Mill Road in Olney, Maryland 20832 (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/departments/facilities/maintenance/default.aspx?id=458858> or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on 12/9/2019 and deployed forty-seven (47) 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 Appendix A of this report.



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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 sixty (60) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on 12/12/2019 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, 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 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.

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 upper-30s and high temperatures ranged from the upper-30s to the mid-50s. Maximum sustained winds ranged from 7-21 miles per hour. Average humidity was around 75%. 0.52 inches of precipitation (rain) was recorded during the testing period.

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## **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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥4.0 pCi/L	None	N/A
≤4.0 pCi/L	See Attachment B	See Attachment B

<b>Quality Control Samples</b>	
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 410-316-7800.

Sincerely,

Mr. Tyler P. McCleaf  
Radon Measurement Provider  
111004 RT

KCI Technologies, Inc.

Attachments:

A- Floor Plan with Test Locations

B - Tables 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 Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
Belmont Elementary School		
Test Period: 12/9/2019-12/12/2019		
Kit Number	Room / Area	Result
9335601	WR	0.6
9335602	CR3	1.2
9335603	CR4	1.4
9335604	CR12	1.1
9335605	IMC	0.8
9335606	IMC	1.3
9335607	IMC	< 0.3
9335608	ART	1.3
9335609	COUNSELOR	0.7
9335610	SPEECH	0.7
9335611	PE OFFICE	2.2
9335612	GYM	1.9
9335613	IMC	0.9
9335614	MPR	1.7
9335615	SP	0.9
9335616	GYM	1.9
9335618	GYM	1.6
9335619	CR2	1.5
9335620	BSO	1.4
9335621	MAIN OFFICE	1.3
9335622	PRINCIPAL OFFICE	1.8
9335623	HEALTH RM	1.3
9335624	CONF RM1	1.7
9335625	STAFF LOUNGE	1.5
9335626	KITCHEN	1.7
9335705	CR18	0.7
9335707	CR14	0.9
9335708	CR19	0.6
9335709	CR21	0.7
9335710	CR11	1.1
9335711	CR22	0.9
9335713	CR10	1
9335714	CR9	1.6
9335715	CR9	0.7
9335716	CR13	1.1
9335717	CR16	0.9
9335718	CR15	1
9335719	COMPUTER RM	1
9335720	K1	1
9335721	K2	0.8
9335726	CR7	1
9335727	CR8	1.3
9335730	CR5	1.4
9335733	COMPUTER RM	< 0.3
9335734	COMPUTER RM	0.8
9335735	CR6	0.6
9334501	OFFICE BLANK	<0.3
9335617	MPR	MISSING

Table 2- Radon Testing Results			
Belmont Elementary School			
Test Period: 12/9/2019-12/12/2019			
Kit Number	QC Type	Room / Area	Result
9335618	D	GYM	1.6
9335613	D	IMC	0.9
9335607	FB	IMC	<0.3
9335714	D	CR9	1.6
9335719	D	COMPUTER RM	1
9335733	FB	COMPUTER RM	<0.3
9334850	TRANSIT BLANK	NA	< 0.3
9334914	TRANSIT BLANK	NA	< 0.3
9334916	TRANSIT BLANK	NA	< 0.3
9334963	TRANSIT BLANK	NA	< 0.3

Summary of Missed Locations		
Belmont Elementary School		
Test Period: 12/9/2019 - 12/12/2019		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and $\geq 4$ piC/L Tests		
Belmont Elementary School		
Test Period: 12/9/2019-12/12/2019		
Kit Number	Room/Area	Result
9335617	*MPR	Missing

Table Note:  
\* Missing or Compromised Sample



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:**BELMONT ES  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9335608	ART	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.3 ± 0.4	2019-12-17
9335620	BSO	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.4 ± 0.4	2019-12-17
9335733	COMPUTER RM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	< 0.3	2019-12-16
9335719	COMPUTER RM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.0 ± 0.4	2019-12-17
9335734	COMPUTER RM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.8 ± 0.4	2019-12-17
9335624	CONF RM1	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.7 ± 0.5	2019-12-17
9335609	COUNSELOR	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.7 ± 0.4	2019-12-17
9335713	CR10	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.0 ± 0.4	2019-12-17
9335710	CR11	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.1 ± 0.4	2019-12-17
9335604	CR12	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.1 ± 0.4	2019-12-17
9335716	CR13	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.1 ± 0.4	2019-12-17
9335707	CR14	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.9 ± 0.4	2019-12-17
9335718	CR15	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.0 ± 0.4	2019-12-17
9335717	CR16	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.9 ± 0.4	2019-12-17
9335705	CR18	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.7 ± 0.4	2019-12-17
9335708	CR19	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.6 ± 0.4	2019-12-17
9335619	CR2	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.5 ± 0.4	2019-12-17
9335709	CR21	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.7 ± 0.4	2019-12-17
9335711	CR22	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.9 ± 0.4	2019-12-17
9335602	CR3	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.2 ± 0.4	2019-12-17
9335603	CR4	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.4 ± 0.4	2019-12-17
9335730	CR5	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.4 ± 0.5	2019-12-16
9335735	CR6	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.6 ± 0.4	2019-12-17
9335726	CR7	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.0 ± 0.4	2019-12-17
9335727	CR8	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.3 ± 0.4	2019-12-17
9335715	CR9	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.7 ± 0.4	2019-12-17
9335714	CR9	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.6 ± 0.4	2019-12-17
9335612	GYM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.9 ± 0.4	2019-12-16
9335618	GYM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.6 ± 0.4	2019-12-17
9335616	GYM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.9 ± 0.4	2019-12-17
9335623	HEALTH RM	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.3 ± 0.4	2019-12-17
9335613	IMC	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.9 ± 0.4	2019-12-16
9335605	IMC	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.8 ± 0.4	2019-12-17
9335606	IMC	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.3 ± 0.4	2019-12-17
9335607	IMC	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	< 0.3	2019-12-17
9335720	K1	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.0 ± 0.4	2019-12-17
9335721	K2	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.8 ± 0.4	2019-12-17

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December 17, 2019

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

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Radon test result report for:  
**BELMONT ES**  
**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>
9335626	KITCHEN	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.7 ± 0.4	2019-12-17
9335621	MAIN OFFICE	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.3 ± 0.4	2019-12-17
9335614	MPR	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.7 ± 0.4	2019-12-17
9335611	PE OFFICE	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	2.2 ± 0.4	2019-12-16
9335622	PRINCIPAL OFFICE	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.8 ± 0.5	2019-12-16
9335615	SP	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.9 ± 0.4	2019-12-17
9335610	SPEECH	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.7 ± 0.4	2019-12-16
9335625	STAFF LOUNGE	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	1.5 ± 0.4	2019-12-17
9335601	WR	2019-12-09 @ 9:00 am	2019-12-12 @ 10:00 am	0.6 ± 0.4	2019-12-16

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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 KEI Technologies Inc. Job Number 193475

NOMINAL Conditions: Radon Conc 25.7 pCi/L Rel. Hum 74.6 % Temp. 69.9 F

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
Time Start: 0806 Time Stop: 0806 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
(Group 1)  
Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334502 thru 9334510,  
9334514, 9334516, 9334517,  
9334519, 9334519  
9334522 thru 9334528  
B4

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
Time Start: 0811 Time Stop: 0811 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
(Group 2)  
Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334529 thru 9334538,  
9334540,  
9334542 thru 9334550  
B3

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
Time Start: 0816 Time Stop: 0816 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
(Group 3)  
Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334551, 9334552, 9334562,  
9334555 thru 9334559,  
9334569, 9334576, 9334579,  
9334580, 9334583, 9334584,  
9334591, 9334593, 9334594,  
9334597, 9334598, 9334599  
B2

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft

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
9334583	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334529	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 $\pm$ 1.5	2019-12-18
9334597	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 $\pm$ 1.4	2019-12-18
9334534	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334540	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.9 $\pm$ 1.4	2019-12-18
9334546	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.9 $\pm$ 1.5	2019-12-18
9334551	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334558	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334579	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334593	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334532	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334537	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 $\pm$ 1.4	2019-12-18
9334544	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 $\pm$ 1.4	2019-12-18
9334549	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18
9334556	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334569	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334584	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18
9334530	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334598	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334535	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.0 $\pm$ 1.4	2019-12-18
9334542	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334547	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	25.2 $\pm$ 1.5	2019-12-18
9334552	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.2 $\pm$ 1.4	2019-12-18
9334559	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334580	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334594	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334533	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 $\pm$ 1.5	2019-12-18
9334538	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.6 $\pm$ 1.5	2019-12-18
9334545	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.0 $\pm$ 1.4	2019-12-18
9334550	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334557	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.6 $\pm$ 1.5	2019-12-18
9334576	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334591	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334531	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 $\pm$ 1.5	2019-12-18
9334599	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 $\pm$ 1.4	2019-12-18
9334536	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18
9334543	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18

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December 18, 2019

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

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Radon test result report for:

**N/A**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
9334548	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.0 ± 1.4	2019-12-18
9334555	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.4 ± 1.4	2019-12-18
9334562	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 ± 1.4	2019-12-18

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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 result report for:**S****N/A**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
9334505	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.5 ± 1.5	2019-12-18
9334510	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 ± 1.5	2019-12-18
9334522	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.9 ± 1.4	2019-12-18
9334527	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	22.6 ± 1.4	2019-12-18
9334503	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 ± 1.4	2019-12-18
9334508	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.7 ± 1.5	2019-12-18
9334517	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 ± 1.4	2019-12-18
9334525	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 ± 1.4	2019-12-18
9334506	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 ± 1.5	2019-12-18
9334514	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.5 ± 1.5	2019-12-18
9334523	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 ± 1.4	2019-12-18
9334528	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 ± 1.4	2019-12-18
9334504	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 ± 1.4	2019-12-18
9334509	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 ± 1.4	2019-12-18
9334519	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 ± 1.4	2019-12-18
9334526	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 ± 1.4	2019-12-18
9334502	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 ± 1.4	2019-12-18
9334507	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.7 ± 1.5	2019-12-18
9334516	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	22.2 ± 1.3	2019-12-18
9334524	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.6 ± 1.5	2019-12-18



### Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1

Name of Schools:

- |                             |                         |
|-----------------------------|-------------------------|
| 1. Baker M.S.               | 13. Jones Lane E.S.     |
| 2. Belmont E.S.             | 14. Lake Seneca E.S.    |
| 3. Clarksburg E.S.          | 15. McAuliffe E.S.      |
| 4. Clarksburg H.S.          | 16. Quince Orchard H.S. |
| 5. Clearspring E.S.         | 17. Rosa Parks M.S.     |
| 6. Damascus E.S.            | 18. Snowden Farm E.S.   |
| 7. Damascus H.S.            | 19. South Lake E.S.     |
| 8. Dufief E.S.              | 20. Stone Mill E.S.     |
| 9. Fields Road E.S.         | 21. Travilah E.S.       |
| 10. Gaithersburg E.S.       | 22. Watkins Mill E.S.   |
| 11. Germantown E.S.         | 23. Watkins Mill H.S.   |
| 12. Great Seneca Creek E.S. | 24. Whitman H.S.        |

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	Date	Initials
Radon Test Kits Deployed	12/09/19 to 12/10/19	JM
Radon Test Kits Collected	12/12/19 to 12/13/19	JM
Radon Test Kits Shipped to Lab*	12/13/19	JM
Radon Test Kits Received by Lab*	12/16/19	JM

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



RADON SCREENING SURVEY – FOLLOW-UP BELMONT ES ELEMENTARY SCHOOL

19528 Olney Mill Rd, Olney, Maryland 20832

EXECUTIVE SUMMARY

Date of Test Report:	3/10/16
Round of Testing:	Initial <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">Follow-up</span> Post Remediation
# Rooms Tested	1
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	1.9
High Value:	2.0
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) 2/23/16 (Rev 1)	Result (pCi/L) 3/10/16	Average Result (pCi/L)
104	<0.3 (tampered)	2.0	1.2



## MCPS RADON TESTING

### Executive Summary: Belmont Elementary School

Date of Test Report:	3/10/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	1
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	1.9
High Value:	2.0

### Project Status:

Retesting completed; no further action at this time.



March 10, 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: Belmont Elementary School  
19528 Olney Mill Road  
Olney, MD 20832

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 Belmont Elementary School, located at 19528 Olney Mill Road in Olney, Maryland 20832 (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 22, 2016 and deployed three (3) 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 25, 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 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>Belmont Elementary School</b>		
<b>Test Period: 02/22/16-02/25/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7729775	104	2.0

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Belmont Elementary School</b>		
<b>Test Period: 02/22/16-02/25/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7729776	D (104)	1.9
7729783	* FB (104:Missing)	-

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

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

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Radon test result report for:  
**BELMONT ELEMENTARY SCHOOL  
MAIN**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7729783		@	@		
7729775	104	2016-02-22 @ 8:00 am	2016-02-25 @ 10:00 am	2.0 ± 0.3	2016-02-29
7729776	104	2016-02-22 @ 8:00 am	2016-02-25 @ 10:00 am	1.9 ± 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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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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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
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  $\mu$ R/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   |                        |

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	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          |                         |

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	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: Belmont Elementary School

Date of Test Report:	2/23/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	41
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.9

Project Status:

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



February 23, 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 # 12146341.20

Location: Belmont Elementary School  
19528 Olney Mill Road  
Olney, MD 20832

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 Belmont Elementary School, located at 19528 Olney Mill Road in Olney, Maryland 20832 (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 December 21, 2015 and deployed fifty-three (53) 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 December 24, 2015 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,



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

<b>Radon Testing Results</b>		
<b>Belmont Elementary</b>		
<b>Test Period: 12/21/15-12/24/15</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7713241	101	1.6
7713245	102	1.2
7713238	103	1.2
7713226	105	1.4
7713244	106	1.3
7713219	106	1.2
7713230	109	1.6
7713229	109	1.0
7713214	110	1.9
7713223	111	< 0.3
7713222	112	0.7
7713249	113	0.8
7713242	114	0.8
7713217	114	1.2
7713240	115	0.7
7713237	134	0.6
7713213	138	0.6
7713216	139	0.9
7713211	140	< 0.3
7713208	141	< 0.3
7713204	142	< 0.3
7713205	143	< 0.3
7713201	144	< 0.3
7713246	145	< 0.3
7713262	146	0.7
7713260	147	< 0.3
7713254	148	0.9
7713257	149	0.8
7713255	150	0.9
7713212	151	0.9
7713202	152	0.7
7713236	153	1.3
7713210	154	1.3
7713206	155	1.5
7713203	155	1.6
7713251	156	1.1
7713258	157	< 0.3
7713261	158	< 0.3
7713259	159	0.9
7713247	160	0.6
7713256	161	< 0.3
7713252	162	1.0
7713215	350	< 0.3
7710308	* 104 (tampered)	< 0.3
7713248	CONFERENCE ROOM	1.9

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Belmont Elementary</b>		
<b>Test Period: 12/21/15-12/24/15</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7713218	D (106)	0.9
7713220	D (139)	0.6
7713209	D (140)	< 0.3
7713253	D (146)	< 0.3
7713207	D (154)	1.6
7713224	FB (101)	< 0.3
7713250	FB (147)	< 0.3
7707329	OB (0)	< 0.3
7707329	OB (0)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

January 13, 2016  
\*\* LABORATORY ANALYSIS REPORT \*\*

Radon test result report for:  
**BELMONT ELEMENTARY  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7713224	101	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713245	102	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.2 ± 0.3	2015-12-28
7713238	103	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.2 ± 0.3	2015-12-28
7713226	105	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.4 ± 0.3	2015-12-28
7713218	106	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7713219	106	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7713244	106	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.3 ± 0.3	2015-12-28
7713229	109	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.0 ± 0.3	2015-12-28
7713230	109	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.6 ± 0.4	2015-12-28
7713214	110	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.9 ± 0.4	2015-12-28
7713223	111	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7713222	112	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7713249	113	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7713217	114	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7713242	114	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7713240	115	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7713237	134	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7713213	138	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7713216	139	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7713220	139	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7713208	141	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7713209	140	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7713211	140	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7713204	142	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713205	143	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713246	145	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713253	146	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713262	146	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	0.7 ± 0.3	2015-12-28
7713250	147	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713260	147	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713254	148	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-28
7713257	149	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.8 ± 0.3	2015-12-28
7713255	150	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-28
7713212	151	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-28
7713202	152	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.7 ± 0.3	2015-12-29
7713236	153	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.3 ± 0.3	2015-12-28
7713207	154	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.6 ± 0.3	2015-12-28

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January 13, 2016 **LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**BELMONT ELEMENTARY  
MAIN**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7713210	154	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.3 ± 0.3	2015-12-28
7713203	155	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.6 ± 0.3	2015-12-28
7713206	155	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.5 ± 0.3	2015-12-28
7713251	156	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.1 ± 0.3	2015-12-28
7713258	157	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713261	158	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713259	159	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-28
7713256	161	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7713247	160	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.6 ± 0.3	2015-12-28
7713252	162	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.0 ± 0.3	2015-12-28
7713215	350	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7713248	CONFERENCE ROOM	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.9 ± 0.4	2015-12-28

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January 13, 2016  
**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**BELMONT ELEMENTARY  
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>
7710308	104	2015-12-21 @ 5:00 pm	2015-12-24 @ 1:00 pm	< 0.3	2015-12-28

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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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January 13, 2016  
**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**BELMONT ELEMENTARY  
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>
7707329	0	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7713241	101	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.6 ± 0.3	2015-12-28
7713201	144	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28

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

December  
29,  
2015

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

Radon test result report for:  
**TRANSIT DEC 14 2015**  
**NONE**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704395	TRANSIT 1	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706508	TRANSIT 10	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706510	TRANSIT 11	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706511	TRANSIT 12	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706505	TRANSIT 13	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704371	TRANSIT 14	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706506	TRANSIT 15	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704381	TRANSIT 16	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704399	TRANSIT 17	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704390	TRANSIT 18	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704396	TRANSIT 2	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704364	TRANSIT 3	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704370	TRANSIT 4	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704368	TRANSIT 5	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706524	TRANSIT 6	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706526	TRANSIT 7	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706518	TRANSIT 8	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706516	TRANSIT 9	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16

December  
23,  
2015

**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>
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

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 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 II

School Names:

- |                           |                             |                           |
|---------------------------|-----------------------------|---------------------------|
| 1. Bannockburn ES         | 11. Sherwood HS             | 21. Fairland ES           |
| 2. Walt Whitman HS        | 12. Hadley Farms            | 22. Cannon Road ES        |
| 3. Walter Johnson HS      | 13. S. Christa McAuliffe ES | 23. Richard Montgomery HS |
| 4. North Chevy Chase ES   | 14. Ronald A. McNair ES     | 24. Brooke Grove ES       |
| 5. Piney Branch ES        | 15. MLK MS                  | 25. Belmont ES            |
| 6. Forest Knolls ES       | 16. Ashburton ES            | 26. Emory Grove           |
| 7. Newport Mill MS        | 17. Bradley Hills ES        | 27. Clarksburg HS         |
| 8. Broad Acres ES         | 18. Flora M. Singer ES      | 28. Clarksburg ES         |
| 9. Briggs Chaney MS       | 19. Woodlin ES              | 29. John T. Baker MS      |
| 10. Blair G. Ewing Center | 20. Montgomery Knolls ES    |                           |

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	Date	Initials
Radon Test Kits Deployed	12/21/2015	JM
Radon Test Kits Collected	12/24/2015	JM
Radon Test Kits Shipped to Lab*	12/24/2015	JM
Radon Test Kits Received by Lab*	12/28/2015	JM

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

M. A. CECIL & ASSOCIATES, INC.  
4475 Shannon Way, Port Republic, Maryland 20676 (301) 855-7710  
INDUSTRIAL HYGIENE AND ENVIRONMENTAL HEALTH

January 15, 2014

Mr. Sean Yarup  
Montgomery County Public Schools  
16651 Crabbs Branch Way  
Rockville, Maryland 20855

Re: Radon Evaluation - Belmont Elementary

Dear Mr. Yarup:

Environmental radon testing has been completed at Belmont Elementary School.

Thirty-one charcoal canisters were placed in various rooms throughout the school. The canisters were placed on December 27, 2013 and retrieved on December 30, 2013.

The detected radon concentrations were below the EPA recommended level of 4.0 pico curies per liter (pCi/l) of air with several exceptions. The detected radon concentrations in Rooms 18, 19, K1, and K2 and the main office, gym, and computer lab were above 4.0pCi/l. Testing locations and results are summarized in the attached table.

Tests should be repeated in the five rooms. Alternatively, radon levels could be determined with long term film dosimeters. Based on those results appropriate response actions should be initiated. The EPA recommends some form of a response action for areas with radon levels for two consecutive tests exceeding the recommended level of 4.0 pCi/l.

Should you have any questions concerning this report please do not hesitate to contact us.

Sincerely,

  
Michael A. Cecil, CIH

**Belmont Elementary School  
Environmental Radon Results  
December 27, 2013**

Location	Detected Radon Concentration (pCi/l)
Main Office	4.1
IMC	2.5
APR	2.9
Gym	5.9
Staff Lounge	2.8
Computer Lab	4.0
Room K-1	4.2
Room K-1 (QC duplicate)	3.8
Room K-2	5.5
Room 1	0.6
Room 1 (QC duplicate)	0.6
Room 2	1.0
Room 3	<0.5
Room 4	0.5
Room 5	0.8
Room 6	0.8
Room 7	<0.5
Room 8	<0.5
Room 9	<0.5
Room 10	<0.5
Room 11	1.3
Room 12	1.4
Room 13	2.1
Room 14	2.8
Room 15	2.5
Room 16	2.3
Room 18	4.4
Room 19	4.4
Room 20	3.6
Room 21	3.5
Room 22	1.5