



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Brooke Grove Elementary School
Date of Test Report	1/04/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	50
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.2 pCi/L

Project Status:

1. 5-Year retesting completed.



January 4, 2023

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

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

Location: Brooke Grove Elementary School
2700 Spartan Rd.
Olney, MD 20832

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 Brooke Grove Elementary School, located at 2700 Spartan Rd. Olney, MD 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> or www.epa.gov/radon.

KCI visited the site on December 5, 2022 and deployed sixty-two (62) 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 8, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow up to initial testing.

These tests were conducted to:

- Evaluated radon concentrations at the facility.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility’s HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 20s°F and high temperatures ranged to the mid-50s°F. Maximum sustained winds ranged from 0-12 miles per hour. Average humidity was around 75% with .04 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

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

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Brooke Grove ES		
Test Period: 12/05/2022 - 12/08/2022		
Kit Number	Room / Area	Result
11140098	1	0.6
11140096	2	0.8
11140092	3	< 0.3
11140094	4	< 0.3
11140085	5	1.0
11140097	6	< 0.3
11140082	7	< 0.3
11140088	8	< 0.3
11140087	9	0.6
11140089	10	< 0.3
11132129	11	< 0.3
11140071	11	< 0.3
11132128	12	< 0.3
11132135	12	0.9
11132127	20	< 0.3
11132134	20	< 0.3
11132114	100F	< 0.3
11132106	100J	< 0.3
11132105	100L	0.6
11132103	100M	1.1
11140047	11A	< 0.3
11140080	11B BLAKE	< 0.3
11132101	11C	< 0.3
11140072	11D SABELLA	< 0.3
11132126	11E YELLOW	< 0.3
11140079	11G KATZMAN	0.7
11132120	APR	< 0.3
11132121	APR	< 0.3
11140048	ARKER	< 0.3
11140077	ARKER	< 0.3
11132119	ART	< 0.3
11132123	BLUE ROOM	< 0.3
11132102	BS OFFICE	< 0.3
11131737	CONFERENCE	0.7
11132104	CONFERENCE	1.0
11140083	CONFERENCE	< 0.3
11140081	COUNSELOR	< 0.3
11132108	GREEN ROOM	0.9
11132122	GREEN ROOM	< 0.3
11140086	GYM	< 0.3
11140099	GYM	0.9
11140095	GYM OFFICE	1.2

Table 1- Radon Testing Results		
Brooke Grove ES		
Test Period: 12/05/2022 - 12/08/2022		
Kit Number	Room / Area	Result
11132109	IMU	< 0.3
11140091	K1	< 0.3
11140100	K1	0.7
11140093	K2	1.1
11140090	K3	1.2
11140063	K4	1.1
11132113	KITCHEN OFFICE	< 0.3
11132110	MAIN OFFICE	< 0.3
11132107	MCINTOSH	< 0.3
11132118	MCINTOSH	< 0.3
11132125	MEDIA	< 0.3
11132130	MEDIA	< 0.3
11132124	MEDIA OFFICE	< 0.3
11140084	MEDIA WR	< 0.3
11132112	MU	0.8
11132115	NURSE	0.9
11140078	SE OFFICE	1.0
11132116	SPEECH 11J	1.1
11132117	STAFF LOUNGE	< 0.3
11132111	TARWATER	1.2

Table 2- Radon Testing Results			
Brooke Grove ES			
Test Period: 12/05/22 - 12/08/22			
Kit Number	QC Type	Room / Area	Result
11140071	D	11	< 0.3
11132128	D	12	< 0.3
11132134	FB	20	< 0.3
11132120	D	APR	< 0.3
11140077	FB	Arker	< 0.3
11131737	D	Conference	0.7
11132122	FB	Green Room	< 0.3
11140100	D	K1	0.7
11132107	D	McIntosh	< 0.3
11133716	OB	OFFICE BLANK	< 0.3
11140129	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132114	100F	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132106	100J	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132105	100L	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	0.6 ± 0.5	2022-12-14
11132103	100M	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	1.1 ± 0.5	2022-12-14
11132129	11	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132101	11C	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132126	11E YELLOW	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132135	12	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.9 ± 0.5	2022-12-14
11132128	12	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132127	20	2022-12-05 @ 1:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132134	20	2022-12-05 @ 1:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132121	APR	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132120	APR	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132119	ART	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132123	BLUE ROOM	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132102	BS OFFICE	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132104	CONFERENCE	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	1.0 ± 0.5	2022-12-14
11131737	CONFERENCE	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.7 ± 0.5	2022-12-14
11132108	GREEN ROOM	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	0.9 ± 0.5	2022-12-14
11132122	GREEN ROOM	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132109	IMU	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132113	KITCHEN OFFICE	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132110	MAIN OFFICE	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132118	MCINTOSH	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132107	MCINTOSH	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132130	MEDIA	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132125	MEDIA	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132124	MEDIA OFFICE	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11132112	MU	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	0.8 ± 0.5	2022-12-14
11132115	NURSE	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	0.9 ± 0.5	2022-12-14
11132116	SPEECH 11J	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	1.1 ± 0.5	2022-12-14
11132117	STAFF LOUNGE	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11132111	TARWATER	2022-12-05 @ 11:00 am	2022-12-08 @ 9:00 am	1.2 ± 0.5	2022-12-14

December 14, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131712	122	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11131794	124	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11131729	128	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11131755	129	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14
11131793	131	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	1.3 ± 0.5	2022-12-14
11131792	137	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	0.8 ± 0.5	2022-12-14
11131780	KITCHEN OFFICE	2022-12-05 @ 9:00 am	2022-12-08 @ 9:00 am	< 0.3	2022-12-14

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

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11140098	1	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.6 ± 0.5	2022-12-14
11140089	10	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140071	11	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140047	11A	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140080	11B BLAKE	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140072	11D SABELLA	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140079	11G KATZMAN	2022-12-05 @ 11:00 am	2022-12-08 @ 10:00 am	0.7 ± 0.4	2022-12-14
11140096	2	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.8 ± 0.5	2022-12-14
11140092	3	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140094	4	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140085	5	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	1.0 ± 0.5	2022-12-14
11140097	6	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140082	7	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140088	8	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140087	9	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.6 ± 0.5	2022-12-14
11140077	ARKER	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140048	ARKER	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140083	CONFERENCE	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140081	COUNSELOR	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140086	GYM	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140099	GYM	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.9 ± 0.5	2022-12-14
11140095	GYM OFFICE	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	1.2 ± 0.5	2022-12-14
11140091	K1	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140100	K1	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	0.7 ± 0.5	2022-12-14
11140093	K2	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	1.1 ± 0.5	2022-12-14
11140090	K3	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	1.2 ± 0.5	2022-12-14
11140063	K4	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	1.1 ± 0.5	2022-12-14
11140084	MEDIA WR	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	< 0.3	2022-12-14
11140078	SE OFFICE	2022-12-05 @ 12:00 pm	2022-12-08 @ 10:00 am	1.0 ± 0.5	2022-12-14

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 μ R/h Elevation = 820 ft

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MA MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (34.7 pCi/L).

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

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 – April 2022 Schools – Retesting

Name of Schools:

1. Lynnbrook Center
2. Chevy Chase ES
3. North Chevy Chase ES
4. Wood Acres ES
5. Ashburton ES
6. Carderock Springs ES
7. North Bethesda MS
8. Brooke Grove ES

	Date	Initials
Radon Test Kits Deployed	12/05/2022	Bully
Radon Test Kits Collected	12/08/2022	Bully
Radon Test Kits Shipped to Lab*	12/08/2022	Bully
Radon Test Kits Received by Lab*	12/14/2022	Bully

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



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Brooke Grove Elementary School
Date of Report	March 12, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	12
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.6 pCi/L

Project Status

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



March 12, 2018

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

Re: Radon Testing Services

KCI Job #1214634188

Location: Brooke Grove Elementary School

2700 Spartan Rd.
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 Brooke Grove Elementary School, located at 2700 Spartan Rd. 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 or www.epa.gov/radon.

KCI visited the site on February 13, 2018 and deployed fourteen (14) 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 not successfully tested,
2. Rooms with elevated November 2017 results (i.e. ≥ 3.5 pCi/L).

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 February 16, 2018 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 HVAC upgrade testing.

These tests were conducted to:

- Evaluate radon concentrations following the installation of a new HVAC system.

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-20s to upper 40s and high temperatures ranged from the high-30s to the high-60s. Maximum sustained winds ranged from 10-18 miles per hour. Average humidity was around 73%. 0.30 Inches of precipitation was recorded during the 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). 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 field blank, 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,



Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B - Radon Test Summary Spreadsheets

C - Laboratory Analytical Results

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		
Brooke Grove Elementary School		
Test Period: 02/13/18-02/16/18		
Kit Number	Room / Area	Result
7986866	9 OFFICE	0.8
7986875	APR	< 0.3
7986811	COPY	1.0
7986862	GYM OFFICE	1.2
7986872	KITCHEN	0.8
7986879	LC1	1.1
7986873	MAT	< 0.3
7986876	OFFICE	< 0.3
7986870	OT2	1.0
7986880	PRINCIPAL	1.6
7986869	RDG	< 0.3
7986863	STUDIO	0.8

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Brooke Grove Elementary School		
Test Period: 02/13/18-02/16/18		
Kit Number	QC Type	Result
7986871	D (OT2)	0.9
7986877	FB (RDG)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:**BROOKE GROVE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7986866	9 OFFICE	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.8 ± 0.3	2018-02-20
7986875	APR	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986811	COPY	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.0 ± 0.3	2018-02-20
7986862	GYM OFFICE	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.2 ± 0.3	2018-02-20
7986872	KITCHEN	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.8 ± 0.3	2018-02-20
7986879	LC1	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.1 ± 0.4	2018-02-20
7986873	MAT	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986876	OFFICE	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986870	OT2	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.0 ± 0.4	2018-02-20
7986871	OT2	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.9 ± 0.3	2018-02-20
7986880	PRINCIPAL	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.6 ± 0.3	2018-02-20
7986869	RDG	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986877	RDG	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986863	STUDIO	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.8 ± 0.3	2018-02-20



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

- | | |
|---------------------------------------|--|
| 1. Westbrook Elementary School | 21. E. Silver Spring Elementary School |
| 2. Westland Middle School | 22. Silver Spring Int. Middle School |
| 3. Walt Whitman High School | 23. Clarksburg High School |
| 4. Cloverly Elementary School | 24. Rosa Parks Middle School |
| 5. Sligo Middle School | 25. Greenwood Elementary School |
| 6. Flora Singer Elementary School | 26. Montgomery Knolls Elem. School |
| 7. Albert Einstein High School | 27. Watkins Mill Elementary School |
| 8. Roscoe Nix Elementary School | 28. Gaithersburg Elementary School |
| 9. Mario Loiederman Middle School | 29. Viers Mill Elementary School |
| 10. Sargent Shriver Elementary School | 30. Rock View Elementary School |
| 11. Whetstone Elementary School | |
| 12. Brooke Grove Elementary School | |
| 13. Clearspring Elementary School | |
| 14. Beall Elementary School | |
| 15. Maryvale Elementary School | |
| 16. Lathrop E. Smith Center | |
| 17. Laytonsville Elementary School | |
| 18. Germantown Elementary School | |
| 19. Spring Mill Center | |
| 20. Northwood High School | |

	Date	Initials
Radon Test Kits Deployed	2/13/18	JM
Radon Test Kits Collected	2/16/18	JM
Radon Test Kits Shipped to Lab*	2/16/18	JM
Radon Test Kits Received by Lab*	2/20/18	JM

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

Radon test result report for:
OFFICE BLANKS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7979482	1	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986991	10	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985684	11	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986987	12	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986993	13	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986990	14	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7979485	2	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985686	3	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986995	4	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986989	5	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986998	6	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986986	7	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986985	8	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986997	9	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20

Radon test result report for:
TRANSIT BLANKS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7984188	1	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7984044	10	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986582	11	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986999	12	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7987000	13	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7984196	14	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986996	2	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986994	3	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986992	4	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985680	5	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985698	6	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985699	7	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985700	8	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985872	9	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20

February 28, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within $\pm 25\%$ of the chamber's reference value (20.9 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7984181	1	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.7 \pm 0.8	2018-02-21
7986621	2	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.4 \pm 0.8	2018-02-21
7985683	3	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.5 \pm 0.8	2018-02-21
7984168	4	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	20.5 \pm 0.8	2018-02-21
7986618	5	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.9 \pm 0.8	2018-02-21
7984169	6	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	20.4 \pm 0.8	2018-02-21

Air Chek, Inc. 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 183530

NOMINAL Conditions: Radon Conc 20.9 pCi/L Rel. Hum 49.8 % Temp. 79.1 F

Date Start: <u>2/16/18</u> Date Stop: <u>2/19/18</u>	Date Start: _____ Date Stop: _____
Time Start: <u>1052</u> Time Stop: <u>1052</u>	Time Start: _____ Time Stop: _____
Device No.'s: <u>(6) Char. Bags</u>	Device No.'s: _____
<u>7984181, 7986621, 7985683</u>	_____
<u>7984168, 7986618, 7984169</u>	_____
<u>G3 Middle</u>	_____

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



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Brooke Grove Elementary School
Date of Report	February 2, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	44
# Rooms \geq 4.0 pCi/L	0
Lowest Value	< 0.3 pCi/L
Highest Value	1.5 pCi/L

Current Project Status at this time: Results satisfactory to date; missed locations and missing/compromised tests to be sampled.



February 2, 2018

Mr. Richard Cox, MS
Team Leader
Montgomery County Public Schools
Division of Maintenance
Rockville, Maryland 20855

Re: Radon Testing Services

KCI Job #1214694182

Location: Brooke Grove Elementary School

2700 Spartan Rd.
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 Brooke Grove Elementary School, located at 2700 Spartan Rd. 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 or www.epa.gov/radon.

KCI visited the site on December 4, 2017 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 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 December 7, 2017 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:

- HVAC upgrade testing.

These tests were conducted to:

- Evaluate radon concentrations following the installation of a new HVAC system.

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 high-20s to mid-40s and high temperatures ranged from the low-40s to mid-50s. Maximum sustained winds ranged from 12-17 miles per hour. Average humidity was around 65%. 0.16 Inches of precipitation was recorded during the testing period.

RESULTS

The sampling locations, field observations, 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). Missing/compromised tests, missed rooms, and locked rooms 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 blank and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. The field blank result indicated a low concentration of radon, which could indicate the field blank was incompletely sealed during deployment
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,



Unknown User
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B- Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

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

Radon Testing Results		
Brooke Grove Elementary School		
Test Period: 12/04/17-12/07/17		
Kit Number	Room / Area	Result
7975219	1	0.7
7975220	2	0.8
7194274	3	0.6
7194280	4	1.1
7194278	5	0.8
7975223	6	0.5
7194277	7	0.7
7975202	8	< 0.3
7975224	9	< 0.3
7975222	10	1.1
7975208	11	0.9
7194293	16	0.7
7975215	18	0.9
7194294	19	0.6
7975225	11A	< 0.3
7975216	AP	1.0
7975240	APR	1.0
7975241	* APR (Missing)	-
7975229	ART	< 0.3
7194286	COM	1.1
7975217	CONF	1.1
7975242	DR	0.6
7975221	ESOL	0.9
7975205	FAC	1.0
7975244	GYM	1.5
7975212	GYM	0.9
7975238	IMU	0.7
7194272	K1	0.9
7975201	K2	0.6
7975209	K3	0.6
7194287	K4	0.7
7975227	LC-2	1.2
7975218	MAIN OFFICE	< 0.3
7975237	MAINT	0.7
7975206	MAINT	0.7
7194288	MEDIA	0.8
7194279	MEDIA	0.9
7975239	MU	0.8
7975233	OFF1	0.8
7975211	OFF2	1.0
7975204	OFF3	0.9
7975245	OFFICEL	1.1
7975246	OFFICELI	0.8
7975228	RES	1.2
7975235	SPEECH	0.7
7975232	SPEECH1	1.2

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Brooke Grove Elementary School		
Test Period: 12/04/17-12/07/17		
Kit Number	Room / Area	Result
7975234	SPT	0.7

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Brooke Grove Elementary School		
Test Period: 12/04/17-12/07/17		
Kit Number	QC Type	Result
7975210	D (CONF)	0.8
7975213	D (K2)	0.7
7975226	D (LC-2)	0.9
7194271	D (MEDIA)	1.3
7975231	FB (SPT)	0.5
7194090	OB (OFFICE BLANK)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

**BROOKE GROVE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975219	1	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975222	10	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.1 ± 0.4	2017-12-12
7975208	11	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7975225	11A	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	< 0.3	2017-12-12
7194293	16	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975215	18	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7194294	19	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.6 ± 0.3	2017-12-12
7975220	2	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7194274	3	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.6 ± 0.4	2017-12-12
7194280	4	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	1.1 ± 0.4	2017-12-12
7194278	5	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7975223	6	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.5 ± 0.4	2017-12-12
7194277	7	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975202	8	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	< 0.3	2017-12-12
7975224	9	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	< 0.3	2017-12-12
7975216	AP	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.0 ± 0.4	2017-12-12
7975240	APR	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.0 ± 0.4	2017-12-12
7975229	ART	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	< 0.3	2017-12-12
7194286	COM	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	1.1 ± 0.4	2017-12-12
7975210	CONF	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7975217	CONF	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.1 ± 0.4	2017-12-12
7975242	DR	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.6 ± 0.4	2017-12-12
7975221	ESOL	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7975205	FAC	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	1.0 ± 0.4	2017-12-12
7975212	GYM	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7975244	GYM	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	1.5 ± 0.4	2017-12-12
7975238	IMU	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7194272	K1	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7975213	K2	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975201	K2	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.6 ± 0.4	2017-12-12
7975209	K3	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.6 ± 0.4	2017-12-12
7194287	K4	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975226	LC-2	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7975227	LC-2	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.2 ± 0.4	2017-12-12
7975218	MAIN OFFICE	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	< 0.3	2017-12-12
7975206	MAINT	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975237	MAINT	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12

Radon test result report for:

**BROOKE GROVE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7194279	MEDIA	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.4	2017-12-12
7194271	MEDIA	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	1.3 ± 0.4	2017-12-12
7194288	MEDIA	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7975239	MU	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7975233	OFF1	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7975211	OFF2	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	1.0 ± 0.4	2017-12-12
7975204	OFF3	2017-12-04 @ 1:00 pm	2017-12-07 @ 12:00 pm	0.9 ± 0.3	2017-12-12
7194090	OFFICE BLANK	2017-12-04 @ 1:00 pm	2017-12-07 @ 1:00 pm	< 0.3	2017-12-12
7975245	OFFICEL	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.1 ± 0.4	2017-12-12
7975246	OFFICELI	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.8 ± 0.4	2017-12-12
7975228	RES	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.2 ± 0.4	2017-12-12
7975235	SPEECH	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.4	2017-12-12
7975232	SPEECH1	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	1.2 ± 0.4	2017-12-12
7975231	SPT	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.5 ± 0.4	2017-12-12
7975234	SPT	2017-12-04 @ 12:00 pm	2017-12-07 @ 12:00 pm	0.7 ± 0.3	2017-12-12
7975241	APR	@	@		



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

- | | |
|---------------------------------------|----------------------------------|
| 1. Brooke Grove Elementary School | 14. Newport Mill Middle School |
| 2. Brown Station Elementary School | 15. Oakview Elementary School |
| 3. Diamond Elementary School Addition | 16. Quince Orchard High School |
| 4. Dufief Elementary School | 17. Robert Frost Middle School |
| 5. Emory Grove Center | 18. Rosa Parks Middle School |
| 6. Fields Road Elementary School | 19. South Lake Elementary School |
| 7. Facilities Maintenance Depot | |
| 8. Forest Oak Middle School | |
| 9. Francis Scott Key Middle School | |
| 10. Gaithersburg Elementary School | |
| 11. Gaithersburg Middle School | |
| 12. Germantown Elementary School | |
| 13. Greenwood Elementary School | |
| 14. Jones Lane Elementary School | |

	Date	Initials
Radon Test Kits Deployed	12/04/17	JM
Radon Test Kits Collected	12/07/17	JM
Radon Test Kits Shipped to Lab*	12/07/17	JM
Radon Test Kits Received by Lab*	12/11/17	JM

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

Radon test result report for:**TRANSIT 2
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7193838	TRANSIT 1	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979384	TRANSIT 10	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979385	TRANSIT 11	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7984056	TRANSIT 12	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7983834	TRANSIT 13	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7194097	TRANSIT 14	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7194092	TRANSIT 15	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7193840	TRANSIT 16	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979072	TRANSIT 17	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979071	TRANSIT 18	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979065	TRANSIT 19	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	0.6 ± 0.4	2017-12-13
7978194	TRANSIT 2	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7985660	TRANSIT 20	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7985661	TRANSIT 21	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	0.7 ± 0.4	2017-12-13
7193843	TRANSIT 22	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7984055	TRANSIT 23	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7983813	TRANSIT 24	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7983827	TRANSIT 25	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7978193	TRANSIT 3	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7978189	TRANSIT 4	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	0.5 ± 0.4	2017-12-13
7986187	TRANSIT 5	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7986188	TRANSIT 6	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7986177	TRANSIT 7	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979077	TRANSIT 8	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979386	TRANSIT 9	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13

December 19, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within $\pm 25\%$ of the chamber's reference value (27.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975075	S1	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	25.6 \pm 0.7	2017-12-07
7975064	S2	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	27.4 \pm 0.8	2017-12-07
7975063	S3	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	26.3 \pm 0.7	2017-12-07
7975065	S4	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	23.0 \pm 0.7	2017-12-07
7975069	S5	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	25.6 \pm 0.7	2017-12-07
7975070	S6	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	23.0 \pm 0.7	2017-12-07

Air Chek, Inc. 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 182393

NOMINAL Conditions: Radon Conc 27.7 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/1/17 Date Stop: 12/4/17 Date Start: _____ Date Stop: _____

Time Start: 1049 Time Stop: 1049 Time Start: _____ Time Stop: _____

Device No.'s: (6) Char. Bags. Device No.'s: _____

7975075, 7975064, 7975063, _____

7975065, 7975069, 7975070 _____

F4 Right

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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



MCPS RADON TESTING

Executive Summary: Brooke Grove Elementary School

Date of Test Report:	3/10/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	51
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.0

Project Status:

Initial testing completed; no further action at this time.



March 10, 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: Brooke Grove Elementary School
2700 Spartan 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 Brooke Grove Elementary School, located at 2700 Spartan 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 or www.epa.gov/radon.

KCI visited the site on December 21, 2015 and deployed sixty-six (66) 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:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	none	n/a
< 4.0 pCi/L	See Attachment B	

Notes:
D- Duplicate sample

The 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

Radon Testing Results		
Brooke Grove Elementary		
Test Period: 12/21/15-12/24/15		
Kit Number	Room / Area	Result
7713012	1	0.6
7713050	2	< 0.3
7713032	3	0.7
7713037	4	0.6
7713021	5	0.7
7713016	6	0.7
7713027	7	< 0.3
7713024	8	< 0.3
7713056	9	0.5
7713025	10	0.8
7712986	11	0.8
7713005	13	0.6
7713008	14	< 0.3
7713007	15	< 0.3
7712992	20	0.6
7712988	21	0.6
7713001	22	0.7
7713029	9 OFFICE	0.6
7713047	ART	< 0.3
7713006	ART	< 0.3
7713019	BUILD SERVICE	0.8
7713023	CAFETERIA	< 0.3
7713026	CAFETERIA	1.0
7713041	COM	< 0.3
7712982	CONFERENCE RM	0.9
7712996	COPY ROOM	0.7
7713013	DR	0.8
7713028	ESOL	0.6
7713042	FAC	< 0.3
7713035	GYM	< 0.3
7713051	GYM	< 0.3
7713054	GYM	< 0.3
7713055	GYM	< 0.3
7713044	GYM OFFICE	0.9
7712984	HEALTH	0.6
7712999	HEALTH	0.9
7713018	IMU	< 0.3
7713033	K1	0.6
7713017	K2	0.6
7713057	K3	< 0.3
7713020	K4	0.7
7713043	LC-1	0.9
7713053	LC-2	0.8
7713011	LIBRARY	0.7
7713031	LIBRARY	0.8
7713048	LIBRARY OFFICE	0.8

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Brooke Grove Elementary		
Test Period: 12/21/15-12/24/15		
Kit Number	Room / Area	Result
7713022	MAIN OFFICE	0.8
7712985	MAIN OFFICE -2	0.8
7712998	MAIN OFFICE -3	0.9
7713034	MU	< 0.3
7713052	OT-2	0.9
7713049	RDG	0.6
7712983	READING	< 0.3
7713045	RES	0.7
7713040	SPEECH	0.6
7713014	SPT	0.6
7713015	STUDIO	0.7

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Brooke Grove Elementary		
Test Period: 12/21/15-12/24/15		
Kit Number	QC Type	Result
7713030	D (11)	0.8
7712997	D (COPY ROOM)	0.7
7713046	D (GYM)	< 0.3
7713002	D (HEALTH)	0.7
7713009	D (MAIN OFFICE -3)	0.6
7713004	D (MAIN OFFICE)	0.6
7713039	FB (COM)	< 0.3
7713003	FB (HEALTH)	< 0.3
7713906	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

January 12, 2016 **LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**BROOKE GROVE ELEMENTARY
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7713906	00	2015-12-21 @ 3:00 pm	2015-12-24 @ 2:00 pm	< 0.3	2015-12-28
7713012	1	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.6 ± 0.3	2015-12-28
7713025	10	2015-12-21 @ 1:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7713030	11	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7712986	11	2015-12-21 @ 1:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7713005	13	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713008	14	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713007	15	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713050	2	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-29
7712992	20	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7712988	21	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713001	22	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.7 ± 0.3	2015-12-28
7713032	3	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.7 ± 0.3	2015-12-29
7713037	4	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.6 ± 0.3	2015-12-29
7713021	5	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.7 ± 0.3	2015-12-28
7713016	6	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.7 ± 0.3	2015-12-28
7713027	7	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713024	8	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713056	9	2015-12-21 @ 1:00 pm	2015-12-24 @ 12:00 pm	0.5 ± 0.3	2015-12-29
7713029	9 OFFICE	2015-12-21 @ 1:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7712983	READING	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713019	BUILD SERVICE	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7713026	CAFETERIA	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	1.0 ± 0.3	2015-12-28
7713023	CAFETERIA	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-29
7713041	COM	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713039	COM	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-29
7712982	CONFERENCE RM	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.9 ± 0.3	2015-12-28
7712997	COPY ROOM	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.7 ± 0.3	2015-12-28
7712996	COPY ROOM	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.7 ± 0.3	2015-12-29
7713043	LC-1	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.9 ± 0.3	2015-12-28
7713013	DR	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7713042	FAC	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713035	GYM	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713051	GYM	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713054	GYM	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713055	GYM	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-28
7713044	GYM OFFICE	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.9 ± 0.3	2015-12-28

January 12, 2016 **LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**BROOKE GROVE ELEMENTARY
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712984	HEALTH	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713002	HEALTH	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.7 ± 0.3	2015-12-28
7713003	HEALTH	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7712999	HEALTH	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.9 ± 0.3	2015-12-29
7713018	IMU	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713047	ART	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713006	ART	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713033	K1	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.6 ± 0.3	2015-12-28
7713017	K2	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.6 ± 0.3	2015-12-28
7713057	K3	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	< 0.3	2015-12-29
7713020	K4	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.7 ± 0.3	2015-12-28
7713052	OT-2 LC-2	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.9 ± 0.3	2015-12-28
7713053	LIBRARY	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-29
7713031	LIBRARY	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.8 ± 0.3	2015-12-28
7713011		2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.7 ± 0.3	2015-12-29
7713048	LIBRARY OFFICE	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.8 ± 0.3	2015-12-28
7713004	MAIN OFFICE	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713022	MAIN OFFICE	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7713040	SPEECH	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713034	MU	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28
7713049	RDG	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-29
7713045	RES	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.7 ± 0.3	2015-12-28
7713028	ESOL	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713014	SPT	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7713015	STUDIO	2015-12-21 @ 1:00 pm	2015-12-24 @ 11:00 am	0.7 ± 0.3	2015-12-28
7712985	MAIN OFFICE -2	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.8 ± 0.3	2015-12-28
7713009	MAIN OFFICE -3	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.6 ± 0.3	2015-12-28
7712998	MAIN OFFICE -3	2015-12-21 @ 2:00 pm	2015-12-24 @ 12:00 pm	0.9 ± 0.3	2015-12-29

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

Radon test result report for:
**BROOKE GROVE ELEMENTARY
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7713046	GYM	2015-12-21 @ 1:00 pm	2015-12-24 @ 12:00 pm	< 0.3	2015-12-28

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

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

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 μ 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 | |

	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