



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Diamond Elementary School
Date of Test Report	2/16/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	77
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.4 pCi/L

Project Status:

1. 2-Year retesting completed.



February 16, 2023

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

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

Location: Diamond Elementary School  
4 Marquis Avenue  
Gaithersburg, MD 20878

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 Diamond Elementary School, located at 4 Marquis Ave. Gaithersburg, MD 20878 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on January 9, 2023 and deployed eighty-seven (87) 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 January 12, 2023 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA for analysis by gamma-ray spectroscopy.

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

**Evaluation of Testing Conditions:**

These tests represent:

- Follow up to post mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).
- Evaluate radon concentration levels due to Addition/HVAC Upgrades/Replacement.

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate temperatures ranged from the 26°F to the mid 56°F. Maximum sustained winds ranged from 0-21 miles per hour. Average humidity was around 68% with .09 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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	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) 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		
Diamond ES		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11285372	100	< 0.3
11132044	101	< 0.3
11132042	103	< 0.3
11132047	104	< 0.3
11132043	105	< 0.3
11132048	105	0.5
11139396	106	< 0.3
11132041	107	0.6
11132046	108	< 0.3
11132065	109	< 0.3
11132064	113	< 0.3
11132066	115	0.5
11132063	116	< 0.3
11132052	117	< 0.3
11132060	117	< 0.3
11132059	118	< 0.3
11132068	120	< 0.3
11132032	122	< 0.3
11132067	123	< 0.3
11132073	126	< 0.3
11132071	127	0.5
11132072	128	0.6
11132069	129	< 0.3
11132074	129	< 0.3
11132075	129	< 0.3
11132077	130	< 0.3
11132070	131	< 0.3
11132037	132	< 0.3
11285367	132	< 0.3
11285376	132	< 0.3
11285381	133	0.8
11285373	135	< 0.3
11285377	136	0.6
11132100	137	0.6
11285382	138	< 0.3
11285368	139	1.4
11285380	140	< 0.3
11285375	141	< 0.3
11132035	142	0.5
11139996	142	< 0.3
11132036	143	< 0.3
11132055	146	< 0.3



Table 1- Radon Testing Results		
Diamond ES		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11132053	147	< 0.3
11132051	148	< 0.3
11132054	148	0.8
11132058	148	< 0.3
11132099	160	< 0.3
11132094	163	< 0.3
11132098	164	0.6
11132093	166	< 0.3
11132095	166	< 0.3
11132096	166	< 0.3
11132091	169	0.6
11132092	170	< 0.3
11285384	171	1.0
11132085	172	0.5
11132088	173	0.9
11132089	174	< 0.3
11132097	176	< 0.3
11132090	178	< 0.3
11132080	179	< 0.3
11132084	181	< 0.3
11132087	181	< 0.3
11132086	183	< 0.3
11132076	184	< 0.3
11132081	185	< 0.3
11132082	186	< 0.3
11132083	187	< 0.3
11132079	189	0.7
11132078	191	0.8
11132040	104-106 FOYER	< 0.3
11132061	114A	0.6
11132039	134 MEDIA CENTER	< 0.3
11132045	134 MEDIA CENTER	< 0.3
11285374	134A	< 0.3
11132049	151 ALL PURPOSE ROOM	0.6
11132050	151 ALL PURPOSE ROOM	0.9
11132056	155 GYM	0.6
11132057	155 GYM	< 0.3
11132062	155A	1.0
11285387	ASSISTANT PRINCIPAL'S OFFICE	0.9
11132965	HEALTH ROOM	< 0.3
11132038	HEALTH ROOM OFFICE	< 0.3
11285379	MAIN OFFICE	0.5

Table 1- Radon Testing Results		
Diamond ES		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11285386	OFFICE CONFERENCE ROOM	< 0.3
11285378	OFFICE COPY ROOM	< 0.3
11285388	PRINCIPAL'S OFFICE	< 0.3

Table 2- Radon Testing Results			
Diamond ES			
Test Period: 01/09/23 - 01/12/23			
Kit Number	QC Type	Room / Area	Result
11132048	D	105	0.5
11132052	D	117	< 0.3
11132069	D	129	< 0.3
11132074	FB	129	< 0.3
11285376	D	132	< 0.3
11285367	FB	132	< 0.3
11132035	D	142	0.5
11132051	D	148	< 0.3
11132058	FB	148	< 0.3
11132087	D	181	< 0.3
11285160	OB	OFFICE BLANK	< 0.3
11285167	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Diamond ES		
Test Period: 01/09/23 - 01/12/23		
Kit Number	Room/Area	Result
	N/A	

Summary of Missing, Compromised and >= 4 piC/L Tests		
Diamond ES		
Test Period: 01/09/23 - 01/12/23		
Kit Number	Room/Area	Result
	N/A	

Table Note:  
\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:

**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285372	100	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11139396	106	2023-01-09 @ 11:00 am	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11285367	132	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285376	132	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285381	133	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	0.8 ± 0.4	2023-01-16
11285374	134A	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285373	135	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285377	136	2023-01-09 @ 10:00 am	2023-01-12 @ 11:00 am	0.6 ± 0.4	2023-01-16
11285382	138	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285368	139	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	1.4 ± 0.4	2023-01-16
11285380	140	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285375	141	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11139996	142	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285384	171	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	1.0 ± 0.4	2023-01-16
11285387	ASSISTANT PRINCIPAL'S OFFICE	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.9 ± 0.4	2023-01-16
11132965	HEALTH ROOM	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285379	MAIN OFFICE	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.5 ± 0.3	2023-01-16
11285386	OFFICE CONFERENCE ROOM	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285378	OFFICE COPY ROOM	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285388	PRINCIPAL'S OFFICE	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16

Radon test result report for:**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132044	101	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132042	103	2023-01-09 @ 11:00 am	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132047	104	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132040	104-106 FOYER	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132043	105	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132048	105	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.5 ± 0.3	2023-01-16
11132041	107	2023-01-09 @ 11:00 am	2023-01-12 @ 11:00 am	0.6 ± 0.3	2023-01-16
11132046	108	2023-01-09 @ 11:00 am	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132065	109	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132064	113	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132061	114A	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.3	2023-01-16
11132066	115	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16
11132063	116	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132060	117	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132052	117	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132059	118	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132068	120	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132032	122	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132067	123	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132073	126	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132071	127	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	0.5 ± 0.4	2023-01-16
11132072	128	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11132075	129	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132069	129	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132074	129	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132077	130	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132070	131	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132037	132	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132039	134 MEDIA CENTER	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132045	134 MEDIA CENTER	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132100	137	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.3	2023-01-16
11132035	142	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	0.5 ± 0.4	2023-01-16
11132036	143	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132055	146	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11132053	147	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11132051	148	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11132054	148	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.3	2023-01-16

Radon test result report for:**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132058	148	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11132050	151 ALL PURPOSE ROOM	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.9 ± 0.3	2023-01-16
11132049	151 ALL PURPOSE ROOM	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11132056	155 GYM	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11132057	155 GYM	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132062	155A	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	1.0 ± 0.4	2023-01-16
11132099	160	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132094	163	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132098	164	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11132096	166	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132095	166	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132093	166	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132091	169	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11132092	170	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132085	172	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	0.5 ± 0.3	2023-01-16
11132088	173	2023-01-09 @ 1:00 pm	2023-01-12 @ 10:00 am	0.9 ± 0.3	2023-01-16
11132089	174	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132097	176	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132090	178	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132080	179	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132084	181	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132087	181	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132086	183	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132076	184	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132081	185	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132082	186	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132083	187	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132079	189	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	0.7 ± 0.3	2023-01-16
11132078	191	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	0.8 ± 0.4	2023-01-16
11132038	HEALTH ROOM OFFICE	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16



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January 16, 2023

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

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Radon test result report for:

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11132198	B151	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132136	B153	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132199	B161	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132145	B172	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11132158	B172A	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11132157	SHOP AREA	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16

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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:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132179	1009	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16
11132177	1009	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.4	2023-01-16
11132188	1010	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.8 ± 0.3	2023-01-16
11132150	1010	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132180	1015	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16
11132156	1018	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132146	1019	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132148	1020	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132186	1020	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132195	1023	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132189	1023	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132143	1028	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132144	1039	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132192	1046	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16
11132155	1047	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.8 ± 0.3	2023-01-16
11132163	1055	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16
11132153	1056	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132187	1062	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16
11132194	1062	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.4	2023-01-16
11132147	1063	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132197	1064	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.3	2023-01-16
11132185	2007	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.3	2023-01-16
11132184	2012	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132178	2028	2023-01-09 @ 1:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11132154	WAREHOUSE	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.5 ± 0.3	2023-01-16

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132182	A100B	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	2.1 ± 0.3	2023-01-16
11132181	A100C	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	1.5 ± 0.3	2023-01-16
11131953	A100E	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	1.2 ± 0.3	2023-01-16
11131947	A101	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131978	A103	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131946	A104A	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	0.7 ± 0.3	2023-01-16
11132176	A104B	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	0.6 ± 0.3	2023-01-16
11131984	A106	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	0.9 ± 0.3	2023-01-16
11131983	A106	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	0.9 ± 0.3	2023-01-16
11132193	A204	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132167	A214	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132174	A214	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131948	B117	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131970	B119	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131988	B122	2023-01-10 @ 12:00 pm	2023-01-13 @ 8:00 am	0.6 ± 0.3	2023-01-16
11131986	B122	2023-01-10 @ 12:00 pm	2023-01-13 @ 8:00 am	< 0.3	2023-01-16
11131954	B130	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	< 0.3	2023-01-16
11131963	B130	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	< 0.3	2023-01-16
11131969	B132	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	1.7 ± 0.3	2023-01-16
11131956	B137	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.7 ± 0.3	2023-01-16
11131955	B141	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.7 ± 0.3	2023-01-16
11131962	B143	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.7 ± 0.3	2023-01-16
11132183	B232	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132170	BS OFFICE	2023-01-10 @ 11:00 am	2023-01-13 @ 8:00 am	0.5 ± 0.3	2023-01-16
11131979	C151	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131975	C152	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	1.2 ± 0.3	2023-01-16
11131980	C154	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131977	C155	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11131957	C155	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.7 ± 0.3	2023-01-16
11131949	C159	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132160	C169	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	1.3 ± 0.3	2023-01-16
11132159	C170	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132161	C171	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.6 ± 0.3	2023-01-16
11132190	C175	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.6 ± 0.3	2023-01-16
11132172	C175	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	0.7 ± 0.3	2023-01-16
11132165	C249	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132175	C266	2023-01-10 @ 12:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16

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January 16, 2023

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

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Radon test result report for:

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11131985	GYM OFFICE	2023-01-10 @ 12:00 pm	2023-01-13 @ 8:00 am	1.8 ± 0.3	2023-01-16

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

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January 16, 2023

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

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Radon test result report for:

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11132168	CLASSROOM 1	2023-01-10 @ 1:00 pm	2023-01-13 @ 9:00 am	2.2 ± 0.3	2023-01-16
11132164	CLASSROOM 2	2023-01-10 @ 1:00 pm	2023-01-13 @ 9:00 am	< 0.3	2023-01-16
11132171	CLASSROOM 2	2023-01-10 @ 1:00 pm	2023-01-13 @ 9:00 am	2.0 ± 0.3	2023-01-16
11131976	FIRST AID	2023-01-10 @ 1:00 pm	2023-01-13 @ 9:00 am	2.1 ± 0.3	2023-01-16
11132162	OFFICE	2023-01-10 @ 1:00 pm	2023-01-13 @ 9:00 am	1.3 ± 0.3	2023-01-16

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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 KC1 TECHNOLOGIES, INC Job Number 208343

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

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

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

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

11285109, 11285110, 11285101

THRU 11285103

BY LEFT

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

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

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

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

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

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

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December 29, 2022

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

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Radon test result report for:

**OFFICE**

**MAIN**

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

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



### Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Week 1 January Schools

Name of Schools:

1. Diamond ES
2. Lakelands Park MS
3. Quince Orchard HS
4. Facilities Maintenance Depot – Building A MCPS
5. Facilities Maintenance Depot – Building B MCPS
6. Food and Nutrition Services
7. Hadley Farms
8. Goshen ES
9. Forest Knolls ES

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	Date	Initials
Radon Test Kits Deployed	01/09/2023	BMM
Radon Test Kits Collected	01/12/2023	BMM
Radon Test Kits Shipped to Lab*	01/12/2023	BMM
Radon Test Kits Received by Lab*	01/17/2023	BMM

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





## MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

### Executive Summary: Diamond Elementary School

4 Marquis Drive  
Gaithersburg, MD 20878

Date of Test Report:	12/18/2018
Round of Testing:	Initial Follow-up <b>Post Remediation</b> 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested:	72
# of Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	1.9

#### Project Status

**Initial testing complete:** No further action at this time.



December 18, 2018

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

Re: Radon Testing Services

Location: Diamond Elementary School  
4 Marquis Drive  
Gaithersburg, MD 20878

Dear Mr. Cox:

Intertek-PSI (PSI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) for completion of a "short-term" 3-day radon test for Diamond Elementary School, located at 4 Marquis Drive, Gaithersburg, MD 20878 (subject site).

**Scope of Services:**

PSI 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. PSI 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 #14SS007) 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).

PSI visited the site on November 27, 2018 and deployed eighty-seven (87) activated charcoal (AC) radon test kits. PSI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. PSI returned to the site on November 30, 2018 to retrieve the radon sampling test kits. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, PSI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, PSI submitted ten (10) 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.

PSI shipped all radon tests via overnight delivery to AccuStar Labs for analysis by gamma-ray spectroscopy. Accustar Labs is a NRSB certified analytical laboratory for radon analysis located at 929 Mount Zion Road, Lebanon, Pennsylvania (certification # ARL0007) and 2 Saber Way, Haverhill, Massachusetts (certification # ARL0017).



### **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  $\leq 65^{\circ}\text{F}$ .

PSI 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.

PSI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. PSI 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	NA
$\leq 4.0$ pCi/L	See Attachment B	

Notes:

D -Duplicate Sample

The office blank and lab transit blanks had test results of less than the laboratory detection limit of 0.4 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 (703) 698-9300.



Respectfully Submitted,

**INTERTEK-PSI**

A handwritten signature in black ink that reads "Nand Kaushik". The signature is written in a cursive, flowing style.

Nand Kaushik, P.E.  
Department Manager, Environmental Services  
[Nand.Kaushik@intertek.com](mailto:Nand.Kaushik@intertek.com)

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

# **ATTACHMENT B**

Radon Test Summary Spreadsheet

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Testing period: 11/27/18 - 11/30/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3917588	100	0.5
3917515	102	0.5
3917709	104	0.4
3917512	105	0.6
3917514	106	0.4
3917513	107	0.5
3917516	108	< 0.4
3917520	109	< 0.4
3917722	113	0.4
3917723	115	0.4
3917724	116	< 0.4
3917725	117	< 0.4
3917726	118	0.4
3917727	120	< 0.4
3917729	121	< 0.4
3917501	122	< 0.4
3917730	123	< 0.4
3917504	126	0.4
3917502	127	0.5
3917505	128	0.4
3917506	129	0.4
3917507	130	0.4
3917508	131	< 0.4
3917509	132	0.4
3917585	133	0.4
3917583	135	0.6
3917584	136	< 0.4
3917582	137	< 0.4
3917581	138	< 0.4
3917718	139	1.9
3917720	140	0.4
3917717	141	< 0.4
3917716	142	0.5
3917715	143	0.5
3917708	146	< 0.4
3917707	147	0.9
3917706	148	0.7
3917711	160	< 0.4
3917645	163	< 0.4
3917670	164	< 0.4
3917669	166	< 0.4
3917668	169	< 0.4
3917667	170	0.4

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Testing period: 11/27/18 - 11/30/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3917666	171	< 0.4
3917665	172	< 0.4
3917587	173	< 0.4
3917664	174	< 0.4
3917662	176	< 0.4
3917661	178	< 0.4
3917680	179	< 0.4
3917679	181	< 0.4
3917678	183	< 0.4
3917677	184	< 0.4
3917586	185	< 0.4
3917676	186	< 0.4
3917675	187	< 0.4
3917672	189	< 0.4
3917510	191	0.4
3917589	100A	0.5
3917642	100B	0.7
3917590	100C	0.4
3917643	100D	0.4
3917644	100E	< 0.4
3917511	100F	0.5
3917721	114A	0.4
3917702	APR	0.6
3917701	APR	1.4
3917703	APR Stage	0.7
3917712	Gym	0.6
3917713	Gym	0.7
3917714	Gym Office	0.8
3917517	IMC	< 0.4
3917518	IMC	< 0.4
3917519	IMC Office	0.4
3917704	Kitchen	0.6

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Testing period: 11/27/18 - 11/30/18</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result (pCi/L)</b>
3917641	100C (D)	0.5
3917710	104 (D)	0.6
3917728	120 (D)	< 0.4
3917503	127 (D)	< 0.4
3917719	139 (D)	1.6
3917663	176 (D)	< 0.4
3917613	189 (D)	< 0.4
3917705	Kitchen (D)	1.0
3917671	Field Blank	< 0.4
3917554	Field Blank	< 0.4
3917542	Office Blank	< 0.4
3947544	Transit Blank	< 0.4



**Table Notes:**

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control

# **ATTACHMENT C**

Laboratory Analytical Results

NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199213	3917544	11/27/2018 6:00 am 11/30/2018 6:00 pm	Floor NA Room Transit Blank	< 0.4
3199214	3917701	11/27/2018 10:00 am 11/30/2018 8:40 am	Floor 1st Room APR	1.4
3199215	3917702	11/27/2018 10:02 am 11/30/2018 8:41 am	Floor 1st Room APR	0.6
3199216	3917703	11/27/2018 10:04 am 11/30/2018 8:42 am	Floor 1st Room APR Stage	0.7
3199217	3917704	11/27/2018 10:06 am 11/30/2018 8:43 am	Floor 1st Room Kitchen	0.6
3199218	3917705	11/27/2018 10:06 am 11/30/2018 8:43 am	Floor 1st Room Kitchen Duplicate	1.0
3199219	3917706	11/27/2018 10:10 am 11/30/2018 8:45 am	Floor 1st Room 148	0.7
3199220	3917707	11/27/2018 10:12 am 11/30/2018 8:46 am	Floor 1st Room 147	0.9
3199221	3917708	11/27/2018 10:14 am 11/30/2018 8:47 am	Floor 1st Room 146	< 0.4
3199222	3917709	11/27/2018 10:16 am 11/30/2018 8:48 am	Floor 1st Room 104	0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

The uncertainty of this radon measurement is +/- 10 %. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

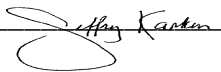
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199223	3917710	11/27/2018 10:16 am 11/30/2018 8:48 am	Floor 1st Room 104 Duplicate	0.6
3199224	3917511	11/27/2018 10:20 am 11/30/2018 8:50 am	Floor 1st Room 100F	0.5
3199225	3917512	11/27/2018 10:22 am 11/30/2018 8:51 am	Floor 1st Room 105	0.6
3199226	3917513	11/27/2018 10:24 am 11/30/2018 8:52 am	Floor 1st Room 107	0.5
3199227	3917514	11/27/2018 10:26 am 11/30/2018 8:53 am	Floor 1st Room 106	0.4
3199228	3917515	11/27/2018 10:28 am 11/30/2018 8:54 am	Floor 1st Room 102	0.5
3199229	3917516	11/27/2018 10:30 am 11/30/2018 8:55 am	Floor 1st Room 108	< 0.4
3199230	3917517	11/27/2018 10:32 am 11/30/2018 8:56 am	Floor 1st Room IMC	< 0.4
3199231	3917518	11/27/2018 10:34 am 11/30/2018 8:57 am	Floor 1st Room IMC	< 0.4
3199232	3917519	11/27/2018 10:36 am 11/30/2018 8:58 am	Floor 1st Room IMC Office	0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199233	3917520	11/27/2018 10:38 am 11/30/2018 8:59 am	Floor 1st Room 109	< 0.4
3199234	3917721	11/27/2018 10:40 am 11/30/2018 9:00 am	Floor 1st Room 114A	0.4
3199235	3917722	11/27/2018 10:42 am 11/30/2018 9:01 am	Floor 1st Room 113	0.4
3199236	3917723	11/27/2018 10:44 am 11/30/2018 9:02 am	Floor 1st Room 115	0.4
3199237	3917724	11/27/2018 10:46 am 11/30/2018 9:03 am	Floor 1st Room 116	< 0.4
3199238	3917725	11/27/2018 10:48 am 11/30/2018 9:04 am	Floor 1st Room 117	< 0.4
3199239	3917726	11/27/2018 10:50 am 11/30/2018 9:05 am	Floor 1st Room 118	0.4
3199240	3917727	11/27/2018 10:52 am 11/30/2018 9:06 am	Floor 1st Room 120	< 0.4
3199241	3917728	11/27/2018 10:52 am 11/30/2018 9:06 am	Floor 1st Room 120 Duplicate	< 0.4
3199242	3917729	11/27/2018 10:56 am 11/30/2018 9:08 am	Floor 1st Room 121	< 0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

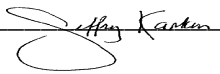
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199243	3917730	11/27/2018 10:58 am 11/30/2018 9:09 am	Floor 1st Room 123	< 0.4
3199244	3917501	11/27/2018 11:00 am 11/30/2018 9:10 am	Floor 1st Room 122	< 0.4
3199245	3917502	11/27/2018 11:02 am 11/30/2018 9:11 am	Floor 1st Room 127	0.5
3199246	3917503	11/27/2018 11:02 am 11/30/2018 9:11 am	Floor 1st Room 127 Duplicate	< 0.4
3199247	3917504	11/27/2018 11:06 am 11/30/2018 9:13 am	Floor 1st Room 126	0.4
3199248	3917505	11/27/2018 11:08 am 11/30/2018 9:14 am	Floor 1st Room 128	0.4
3199249	3917506	11/27/2018 11:10 am 11/30/2018 9:15 am	Floor 1st Room 129	0.4
3199250	3917507	11/27/2018 11:12 am 11/30/2018 9:16 am	Floor 1st Room 130	0.4
3199251	3917508	11/27/2018 11:14 am 11/30/2018 9:17 am	Floor 1st Room 131	< 0.4
3199252	3917509	11/27/2018 11:16 am 11/30/2018 9:18 am	Floor 1st Room 132	0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

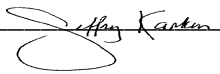
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199253	3917510	11/27/2018 11:18 am 11/30/2018 9:19 am	Floor 1st Room 191	0.4
3199254	3917672	11/27/2018 11:20 am 11/30/2018 9:20 am	Floor 1st Room 189	< 0.4
3199255	3917613	11/27/2018 11:20 am 11/30/2018 9:20 am	Floor 1st Room 189 Duplicate	< 0.4
3199256	3917675	11/27/2018 11:24 am 11/30/2018 9:22 am	Floor 1st Room 187	< 0.4
3199257	3917676	11/27/2018 11:26 am 11/30/2018 9:23 am	Floor 1st Room 186	< 0.4
3199258	3917677	11/27/2018 11:28 am 11/30/2018 9:24 am	Floor 1st Room 184	< 0.4
3199259	3917678	11/27/2018 11:30 am 11/30/2018 9:25 am	Floor 1st Room 183	< 0.4
3199260	3917679	11/27/2018 11:32 am 11/30/2018 12:00 am	Floor 1st Room 181	< 0.4
3199261	3917680	11/27/2018 11:34 am 11/30/2018 9:27 am	Floor 1st Room 179	< 0.4
3199262	3917661	11/27/2018 11:36 am 11/30/2018 9:28 am	Floor 1st Room 178	< 0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

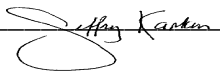
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199263	3917662	11/27/2018 11:38 am 11/30/2018 9:29 am	Floor 1st Room 176	< 0.4
3199264	3917663	11/27/2018 11:38 am 11/30/2018 9:29 am	Floor 1st Room 176 Duplicate	< 0.4
3199265	3917664	11/27/2018 11:42 am 11/30/2018 9:31 am	Floor 1st Room 174	< 0.4
3199266	3917665	11/27/2018 11:44 am 11/30/2018 9:32 am	Floor 1st Room 172	< 0.4
3199267	3917666	11/27/2018 11:46 am 11/30/2018 9:33 am	Floor 1st Room 171	< 0.4
3199268	3917667	11/27/2018 11:48 am 11/30/2018 9:34 am	Floor 1st Room 170	0.4
3199269	3917668	11/27/2018 11:50 am 11/30/2018 9:35 am	Floor 1st Room 169	< 0.4
3199270	3917669	11/27/2018 11:52 am 11/30/2018 9:36 am	Floor 1st Room 166	< 0.4
3199271	3917670	11/27/2018 11:54 am 11/30/2018 9:37 am	Floor 1st Room 164	< 0.4
3199272	3917711	11/27/2018 11:56 am 11/30/2018 9:38 am	Floor 1st Room 160	< 0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

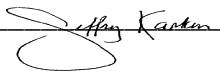
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199273	3917712	11/27/2018 11:58 am 11/30/2018 9:39 am	Floor 1st Room Gym	0.6
3199274	3917713	11/27/2018 12:00 pm 11/30/2018 9:40 am	Floor 1st Room Gym	0.7
3199275	3917714	11/27/2018 12:02 pm 11/30/2018 9:41 am	Floor 1st Room Gym Office	0.8
3199276	3917715	11/27/2018 12:04 pm 11/30/2018 9:42 am	Floor 1st Room 143	0.5
3199277	3917716	11/27/2018 12:06 pm 11/30/2018 9:43 am	Floor 1st Room 142	0.5
3199278	3917717	11/27/2018 12:08 pm 11/30/2018 9:44 am	Floor 1st Room 141	< 0.4
3199279	3917718	11/27/2018 12:10 pm 11/30/2018 9:45 am	Floor 1st Room 139	1.9
3199280	3917719	11/27/2018 12:10 pm 11/30/2018 9:45 am	Floor 1st Room 139 Duplicate	1.6
3199281	3917720	11/27/2018 12:14 pm 11/30/2018 9:47 am	Floor 1st Room 140	0.4
3199282	3917581	11/27/2018 12:16 pm 11/30/2018 9:48 am	Floor 1st Room 138	< 0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

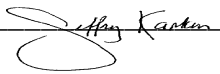
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199283	3917582	11/27/2018 12:18 pm 11/30/2018 9:49 am	Floor 1st Room 137	< 0.4
3199284	3917583	11/27/2018 12:20 pm 11/30/2018 9:50 am	Floor 1st Room 135	0.6
3199285	3917584	11/27/2018 12:22 pm 11/30/2018 9:51 am	Floor 1st Room 136	< 0.4
3199286	3917585	11/27/2018 12:24 pm 11/30/2018 9:52 am	Floor 1st Room 133	0.4
3199287	3917586	11/27/2018 12:26 pm 11/30/2018 9:53 am	Floor 1st Room 185	< 0.4
3199288	3917587	11/27/2018 12:28 pm 11/30/2018 9:54 am	Floor 1st Room 173	< 0.4
3199289	3917588	11/27/2018 12:30 pm 11/30/2018 9:55 am	Floor 1st Room 100	0.5
3199290	3917589	11/27/2018 12:32 pm 11/30/2018 9:56 am	Floor 1st Room 100A	0.5
3199291	3917590	11/27/2018 12:34 pm 11/30/2018 9:57 am	Floor 1st Room 100C	0.4
3199292	3917641	11/27/2018 12:34 pm 11/30/2018 9:57 am	Floor 1st Room 100C Duplicate	0.5

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey Diamond ES  
Not Indicated  
Gaithersburg MD 20878

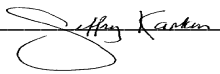
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199293	3917642	11/27/2018 12:38 pm 11/30/2018 9:59 am	Floor 1st Room 100B	0.7
3199294	3917643	11/27/2018 12:40 pm 11/30/2018 10:00 am	Floor 1st Room 100D	0.4
3199295	3917645	11/27/2018 12:42 pm 11/30/2018 10:01 am	Floor 1st Room 163	< 0.4
3199296	3917644	11/27/2018 12:44 pm 11/30/2018 10:02 am	Floor 1st Room 100E	< 0.4
3199297	3917542	11/27/2018 6:00 am 11/30/2018 6:00 pm	Floor NA Room Office Blank	< 0.4
3199298	3917671	11/27/2018 10:00 am 11/30/2018 10:02 am	Floor NA Room Field Blank	< 0.4
3199299	3917554	11/27/2018 10:00 am 11/30/2018 10:02 am	Floor NA Room Field Blank	< 0.4

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007  
Ohio RL41

EPA Method #402-R-92-004  
Charcoal Canister  
NRPP Device Code 6048  
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)  
2930 Eskridge Road  
Fairfax VA 22031

MCPS Radon Survey  
4514 Taylorsville Road  
Dayton OH 45424

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3204125	3926831	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	36.1
3204126	3926832	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.8
3204127	3926833	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	33.7
3204128	3926834	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	35.8
3204129	3926835	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	35.0
3204130	3926836	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.5
3204131	3926837	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.6
3204132	3926838	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.3
3204133	3926839	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	33.2
3204134	3926840	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.0

**Comment:** A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Unknown

Distributed by: Intertek-PSI (VA)

Date Received: 12/12/2018    Date Logged: 12/12/2018    Date Analyzed: 12/12/2018    Date Reported: 12/13/2018

Report Reviewed By: 

Report Approved By: 

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Intertek - PSI

Job Number 187732

NOMINAL Conditions: Radon Conc 32.6 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/7/18 Date Stop: 12/10/18

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0947 Time Stop: 0947

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

Device No.'s: (10) Char. Cans-

Device No.'s: \_\_\_\_\_

3926831 thru 3926840

G2 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 Survey 2018

Name of Schools:

1. Ashburton ES
2. Carderock Springs ES
3. Diamond ES
4. Fox Chapel ES
5. Baker MS
6. Damascus ES
7. Clemente MS
8. Clopper Mill ES
9. Broad Acres ES
10. Greencastle ES
11. Harmony Hills ES
12. Silver Spring International MS
13. Gaithersburg MS
14. Garrett Park ES
15. New Hampshire Estates ES
16. Georgian Forest ES

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	Date	Initials
Radon Test Kits Deployed	11/27/2018	NL
Radon Test Kits Sampled	11/30/2018	NL
Radon Test Kits Shipped to Lab*	11/30/2018	NL
Radon Test Kits Received by Lab*	12/01/2018; 12/02/2018; 12/03/2018	NL

\*All samples sent to AccuStar Laboratories, 929 Mount Zion Road, Lebanon, PA 17046 and 2 Saber Way, Haverhill, MA 01835

RADON SCREENING SURVEY – FOLLOW-UP DIAMOND ELEMENTARY SCHOOL

4 Marquis Dr., Gaithersburg, Maryland 20878

EXECUTIVE SUMMARY

Date of Test Report:	3/9/18
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	5
# Rooms $\geq$ 4.0 pCi/L:	1
Low Value:	<0.3
High Value:	6.4
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	1

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

Room	Result (pCi/L) 2/1/18	Result (pCi/L) 3/9/18	Average Result (pCi/L)
113	5.7	6.4	6.1
160	4.7	1.4	3.1

**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Diamond Elementary School Addition
Date of Report	March 9, 2018
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	5
# Rooms $\geq 4.0$ pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	6.4 pCi/L

**Project Status**

Room with results  $\geq 4.0$  pCi/L:  
113 (6.4 pCi/L), 113 Duplicate (6.0 pCi/L)

Current Project Status at this time: Retesting completed; use the average of the initial and re-test results in a room to determine if remediation is necessary.





March 9, 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: Diamond Elementary School Addition**

4 Marquis Dr.  
Gaithersburg, Maryland 20878

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 Diamond Elementary School Addition, located at 4 Marquis Dr. in Gaithersburg, Maryland 20878 (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 12, 2018 and deployed seven (7) 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.  $\geq 3.5$  pCi/L).

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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 15, 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 new addition testing

These tests were conducted to:

- Evaluate radon concentrations following the construction of a new building addition.

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 10-15 miles per hour. Average humidity was around 69%. 0.05 Inches of precipitation 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). 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>
$\geq 4.0$ pCi/L	113	6.4, 6.0 (D)
$\leq 4.0$ pCi/L	See Attachment B	See Attachment B

<b>Quality Control Samples</b>	
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

<b>Table 1 - Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 02/12/18-02/15/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7984217	113	6.4
7984223	160	1.4
7984222	171	< 0.3
7984225	151B STAGE	< 0.3
7984224	KITCHEN	0.6

Table Note:

\* Missing or Compromised Sample

<b>Table 2 - Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 02/12/18-02/15/18</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7984216	D (113)	6.0
7984221	FB (113)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results



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February 27, 2018

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

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Radon test result report for:

**DIAMOND ELEMENTARY SCHOOL  
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>
7984216	113	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	6.0 ± 0.6	2018-02-19
7984217	113	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	6.4 ± 0.6	2018-02-19
7984221	113	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	< 0.3	2018-02-19
7984225	151B STAGE	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	< 0.3	2018-02-19
7984223	160	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	1.4 ± 0.4	2018-02-19
7984222	171	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	< 0.3	2018-02-19
7984224	KITCHEN	2018-02-12 @ 9:00 am	2018-02-15 @ 8:00 am	0.6 ± 0.3	2018-02-19

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Air Chek, Inc. 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

Names of Schools:

1. Highland Elementary School
2. Stephen Knolls Elementary School
3. Silver Creek Middle School
4. Woodlin Elementary School
5. Sligo Creek Elementary School
6. Francis Scott Key Middle School
7. John T. Baker Middle School
8. Cedar Grove Elementary School
9. Clarksburg Elementary School
10. Clarksburg Elementary School Annex
11. Fields Road Elementary School
12. Dufief Elementary School
13. Brown Station Elementary School
14. Diamond Elementary School
15. Fallsmeade Elementary School
16. Thomas Whootton High School
17. Lake Seneca Elementary School
18. Redland Middle School
19. Newport Mill Middle School
20. Bethesda Trans. and Maint. Depot
21. Sequoyah Elementary School
22. Gaithersburg Middle School
23. Wayside Elementary School
24. Travilah Elementary School
25. Damascus High School
26. Jones Lane Elementary School
27. Greencastle Elementary School
28. Spring Brook High School
29. Montgomery Blair High School
30. Watkins Mill High School

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	Date	Initials
Radon Test Kits Deployed	2/12/18	JM
Radon Test Kits Collected	2/15/18	JM
Radon Test Kits Shipped to Lab*	2/15/18	JM
Radon Test Kits Received by Lab*	2/19/15	JM

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

Radon test result report for:  
**OFFICE BLANKS**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
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**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
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

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February 28, 2018

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

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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).**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
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

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

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	Diamond Elementary School Addition
Date of Report	February 1, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement <b>New Addition</b> New Facility
# of Rooms Tested	69
# Rooms $\geq 4.0$ pCi/L	2
Lowest Value	< 0.3 pCi/L
Highest Value	5.7 pCi/L

Rooms with results  $\geq 4.0$  pCi/L:

113 (5.7 pCi/L), 160 (4.7 pCi/L)

Current Project Status at this time: Testing Completed; retesting needed for results  $\geq 4.0$  pCi/L.

Missing or compromised samples need re-test.



February 1, 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: Diamond Elementary School Addition**

4 Marquis Dr.  
Gaithersburg, Maryland 20878

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 Diamond Elementary School Addition, located at 4 Marquis Dr. in Gaithersburg, Maryland 20878 (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 4, 2017 and deployed eighty-three (83) 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:

- New addition testing.

These tests were conducted to:

- Evaluate radon concentrations following the construction of a new building addition.

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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥4.0 pCi/L	113	5.7
≥4.0 pCi/L	160	4.7
≤4.0 pCi/L	See Attachment B	See Attachment B

<b>Quality Control Samples</b>	
Results of Blank Canisters:	The field blanks, office blank, 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,



James Mouldale, CHMM  
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

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 12/04/17-12/07/17</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7194245	100	< 0.3
7194258	102	0.8
7194257	103	1.3
7194254	103	1.4
7194225	104	0.7
7976613	105	0.7
7194233	106	< 0.3
7978381	107	1.0
7978356	108	0.9
7976615	109	< 0.3
7976905	113	5.7
7976611	115	1.0
7976904	116	0.8
7978355	117	< 0.3
7976911	118	1.6
7194268	120	0.8
7976612	121	0.8
7194267	122	1.3
7976606	123	1.3
7194211	126	1.1
7194227	127	0.8
7194220	128	< 0.3
7194203	129	0.7
7194204	130	0.8
7194228	131	0.9
7194230	132	0.6
7194266	133	0.7
7194252	134	1.1
7194260	135	0.7
7194251	136	1.2
7194253	137	1.3
7194264	139	1.2
7194262	140	0.8
7194259	141	< 0.3
7194263	142	0.6
7978320	146	0.6
7978319	147	< 0.3
7976614	148	0.8
7194215	160	4.7
7194213	164	2.9
7194210	166	3.6
7194209	169	2.2
7194208	170	2.5
7194202	171	3.0
7194206	172	2.1
7194241	173	3.0

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 12/04/17-12/07/17</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7194242	174	3.2
7194205	176	2.8
7194222	178	2.2
7194240	179	2.2
7194239	181	2.6
7194269	183	2.3
7194237	184	2.8
7194238	185	2.7
7194231	186	2.2
7194224	187	2.7
7194229	189	2.4
7194223	191	2.7
7194247	100A	0.8
7194248	100B	0.9
7194249	100C	0.6
7194250	100D	1.4
7194246	100E	0.8
7194255	100F	1.1
7976607	114A	0.7
7194221	APR	0.7
7978387	APR	1.0
7194261	ASP	0.9
7194226	EXTRA ROOM	0.8
7194216	GYM	1.8
7194217	GYM	1.5
7194218	GYMOFF	0.9

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 12/04/17-12/07/17</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7194234	D (106)	< 0.3
7978350	D (118)	1.8
7976910	D (130)	1.1
7194256	D (136)	1.3
7194265	D (139)	0.9
7194214	D (148)	0.8
7194207	D (172)	2.3
7194232	D (184)	2.7
7978318	FB (107)	< 0.3
7194201	FB (183)	< 0.3
7194088	OB (OFFICE BLANK)	< 0.3

Table Note:

\* Missing or Compromised Sample





# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:

**DIAMOND ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7194245	100	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	< 0.3	2017-12-11
7194247	100A	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	0.8 ± 0.3	2017-12-11
7194248	100B	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	0.9 ± 0.3	2017-12-11
7194249	100C	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	0.6 ± 0.3	2017-12-11
7194250	100D	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	1.4 ± 0.4	2017-12-11
7194246	100E	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	0.8 ± 0.4	2017-12-12
7194255	100F	2017-12-04 @ 9:00 am	2017-12-07 @ 10:00 am	1.1 ± 0.4	2017-12-12
7194258	102	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	0.8 ± 0.3	2017-12-11
7194257	103	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.3 ± 0.4	2017-12-12
7194254	103	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.4 ± 0.4	2017-12-12
7194225	104	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.7 ± 0.3	2017-12-12
7976613	105	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.7 ± 0.3	2017-12-11
7194233	106	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7194234	106	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7978318	107	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7978381	107	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	1.0 ± 0.3	2017-12-11
7978356	108	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.9 ± 0.3	2017-12-11
7976615	109	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7976905	113	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	5.7 ± 0.5	2017-12-11
7976607	114A	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.7 ± 0.3	2017-12-11
7976611	115	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	1.0 ± 0.3	2017-12-11
7976904	116	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.8 ± 0.3	2017-12-11
7978355	117	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7978350	118	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	1.8 ± 0.4	2017-12-11
7976911	118	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	1.6 ± 0.4	2017-12-11
7194268	120	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.8 ± 0.3	2017-12-11
7976612	121	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.8 ± 0.3	2017-12-11
7194267	122	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	1.3 ± 0.3	2017-12-11
7976606	123	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	1.3 ± 0.4	2017-12-11
7194211	126	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	1.1 ± 0.3	2017-12-11
7194227	127	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	0.8 ± 0.3	2017-12-11
7194220	128	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	< 0.3	2017-12-11
7194203	129	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	0.7 ± 0.3	2017-12-11
7194204	130	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	0.8 ± 0.3	2017-12-11
7976910	130	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	1.1 ± 0.4	2017-12-12
7194228	131	2017-12-04 @ 11:00 am	2017-12-07 @ 10:00 am	0.9 ± 0.3	2017-12-11
7194230	132	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	0.6 ± 0.3	2017-12-11

Radon test result report for:

**DIAMOND ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7194266	133	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	0.7 ± 0.3	2017-12-11
7194252	134	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.1 ± 0.4	2017-12-12
7194260	135	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	0.7 ± 0.4	2017-12-12
7194256	136	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.3 ± 0.4	2017-12-12
7194251	136	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.2 ± 0.4	2017-12-12
7194253	137	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.3 ± 0.4	2017-12-12
7194264	139	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	1.2 ± 0.3	2017-12-11
7194265	139	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.9 ± 0.3	2017-12-11
7194262	140	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.8 ± 0.3	2017-12-11
7194259	141	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7194263	142	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.6 ± 0.3	2017-12-11
7978320	146	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.6 ± 0.3	2017-12-11
7978319	147	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7976614	148	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.8 ± 0.4	2017-12-12
7194214	148	2017-12-04 @ 1:00 pm	2017-12-07 @ 1:00 pm	0.8 ± 0.4	2017-12-12
7194215	160	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	4.7 ± 0.5	2017-12-11
7194213	164	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.9 ± 0.4	2017-12-11
7194210	166	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	3.6 ± 0.4	2017-12-11
7194209	169	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	2.2 ± 0.4	2017-12-11
7194208	170	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	2.5 ± 0.4	2017-12-11
7194202	171	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	3.0 ± 0.5	2017-12-12
7194206	172	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.1 ± 0.4	2017-12-11
7194207	172	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.3 ± 0.4	2017-12-11
7194241	173	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	3.0 ± 0.4	2017-12-11
7194242	174	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	3.2 ± 0.4	2017-12-11
7194205	176	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.8 ± 0.5	2017-12-12
7194222	178	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.2 ± 0.4	2017-12-11
7194240	179	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.2 ± 0.3	2017-12-11
7194239	181	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.6 ± 0.4	2017-12-11
7194269	183	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.3 ± 0.4	2017-12-11
7194201	183	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	< 0.3	2017-12-11
7194232	184	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.7 ± 0.4	2017-12-11
7194237	184	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.8 ± 0.4	2017-12-12
7194238	185	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.7 ± 0.4	2017-12-11
7194231	186	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.2 ± 0.4	2017-12-11
7194224	187	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.7 ± 0.4	2017-12-11
7194229	189	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.4 ± 0.4	2017-12-11

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December 29, 2017

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

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Radon test result report for:

**DIAMOND ELEMENTARY SCHOOL  
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>
7194223	191	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	2.7 ± 0.4	2017-12-11
7194221	APR	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.7 ± 0.3	2017-12-11
7978387	APR	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	1.0 ± 0.3	2017-12-11
7194261	ASP	2017-12-04 @ 10:00 am	2017-12-07 @ 11:00 am	0.9 ± 0.4	2017-12-11
7194226	EXTRA ROOM	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.8 ± 0.3	2017-12-11
7194217	GYM	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.5 ± 0.4	2017-12-11
7194216	GYM	2017-12-04 @ 10:00 am	2017-12-07 @ 10:00 am	1.8 ± 0.4	2017-12-12
7194218	GYMOFF	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	0.9 ± 0.4	2017-12-12
7194088	OFFICE BLANK	2017-12-04 @ 1:00 pm	2017-12-07 @ 1:00 pm	< 0.3	2017-12-11

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Air Chek, Inc. 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 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      |                                  |

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	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

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).**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
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

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# 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  $\mu$ R/h Elevation = 820 ft



RADON SCREENING SURVEY – FOLLOW-UP DIAMOND ELEMENTARY SCHOOL

4 Marquis Drive, Gaithersburg, Maryland 20878

EXECUTIVE SUMMARY

Date of Test Report:	3/15/16 Follow-Up
Round of Testing:	Initial <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">Follow-up</span> Post Remediation
# Rooms Tested	2
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	<0.3
High Value:	1.0
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) 3/11/16 (Rev 1 Initial)	Result (pCi/L) 3/15/16 Follow-Up	Average Result (pCi/L)
23	--- Missing	1.0	1.0
G-5	--- Missing	0.6	0.6



## MCPS RADON TESTING

### Executive Summary: Diamond Elementary School

Date of Test Report:	3/15/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	2
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.0

#### Project Status:

Retesting completed; no further action at this time.



March 15, 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: Diamond Elementary School  
4 Marquis Drive  
Gaithersburg, Maryland 20878

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 Diamond Elementary School, located at 4 Marquis Drive in Gaithersburg, Maryland 20878 (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 four (4) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on February 26, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

**Evaluation of Testing Conditions:**

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

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

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

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

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

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	None	N/A
$< 4.0$ pCi/L	See Attachment B	

Notes:

D- Duplicate sample

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

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

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,



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

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

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank\*

PM- Project Manager

QC- Quality Control

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



<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 02/22/16-02/25/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7726834	23	1.0
7726832	G5	0.6

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Diamond Elementary School</b>		
<b>Test Period: 02/22/16-02/25/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7726835	D (23)	< 0.3
7726833	FB (G5)	0.5

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

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

---

Radon test result report for:  
**DIAMOND ELEMENTARY SCHOOL  
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>
7726834	23	2016-02-22 @ 2:00 pm	2016-02-25 @ 10:00 am	1.0 ± 0.3	2016-02-29
7726835	23	2016-02-22 @ 2:00 pm	2016-02-25 @ 10:00 am	< 0.3	2016-02-29
7726832	G5	2016-02-22 @ 2:00 pm	2016-02-25 @ 10:00 am	0.6 ± 0.3	2016-02-29
7726833	G5	2016-02-22 @ 2:00 pm	2016-02-25 @ 10:00 am	0.5 ± 0.2	2016-02-29

---

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---

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

---

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

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
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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---

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

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

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

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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

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



# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCF Technologies Inc. Job Number 173704

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

Date Start: 1/30/16 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   |                        |

---

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

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



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 9

Name of Schools:

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

---

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

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



### MCPS RADON TESTING

#### Executive Summary: Diamond Elementary School

Date of Test Report:	3/11/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	50
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.1

#### Project Status:

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



March 11, 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 # 12146341.22

Location: Diamond Elementary School  
4 Marquis Drive  
Gaithersburg, MD 20878

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 Diamond Elementary School, located at 4 Marquis Drive in Gaithersburg, Maryland 20878 (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 28, 2015 and deployed sixty (60) 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 31, 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

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		
Diamond ES		
Test Period: 12/28/15-12/31/15		
Kit Number	Room / Area	Result
7708881	1	< 0.3
7708882	2	< 0.3
7708883	3	< 0.3
7708884	4	< 0.3
7708885	5	< 0.3
7708886	6	< 0.3
7708887	7	< 0.3
7708888	8	< 0.3
7708889	9	< 0.3
7708890	10	< 0.3
7708891	11	< 0.3
7708892	12	< 0.3
7708895	13	< 0.3
7708893	14	0.6
7708894	15	< 0.3
7708897	16	< 0.3
7708898	17	< 0.3
7708902	18	< 0.3
7708901	19	< 0.3
7708903	20	< 0.3
7708904	21	< 0.3
7708905	22	< 0.3
7708899	24	< 0.3
7708918	14-A	< 0.3
7708896	* 23 (missing)	-
7708921	ART	< 0.3
7708865	ASP	0.6
7708917	BSO	< 0.3
7708879	COMP	< 0.3
7708870	CONF	0.6
7708872	CONF2	< 0.3
7708874	COPY	0.6
7708906	G-1	< 0.3
7708909	G-2	< 0.3
7708910	G-3	< 0.3
7708907	G-4	< 0.3
7708908	* G-5 (missing)	-
7708911	GYM	1.0
7708913	GYM	0.9
7708862	HEALTH	< 0.3
7708880	IMC	< 0.3
7708864	MAIN OFFICE	< 0.3
7708914	MPR	1.1
7708916	MPR	< 0.3
7708877	MS	< 0.3
7708920	MUSIC	< 0.3

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Diamond ES</b>		
<b>Test Period: 12/28/15-12/31/15</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7708900	OFFICE 1	< 0.3
7708876	OFFICE 2	0.6
7708912	PE	0.6
7708868	PR	< 0.3
7708919	SPEECH	0.6
7708878	SR	< 0.3

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Diamond ES</b>		
<b>Test Period: 12/28/15-12/31/15</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7708867	D (ASP)	< 0.3
7708871	D (CONF)	0.7
7708866	D (HEALTH)	< 0.3
7708863	D (MAIN OFFICE)	0.9
7708869	D (PR)	0.8
7708873	FB (CONF2)	< 0.3
7708875	FB (COPY)	< 0.3
7708966	OB (0)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

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January 16, 2016  
**\*\* LABORATORY ANALYSIS REPORT \*\***

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

---

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7708885	5	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05

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

January 16, 2016  
**LABORATORY ANALYSIS REPORT**

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7708966	0	2015-12-28 @ 12:00 pm	2015-12-31 @ 1:00 pm	< 0.3	2016-01-05
7708881	1	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708890	10	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708891	11	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708892	12	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708895	13	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708893	14	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.4	2016-01-05
7708918	14-A	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708894	15	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708897	16	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708898	17	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708902	18	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708901	19	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708882	2	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708903	20	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708904	21	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708905	22	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708896	23	@	@		
7708899	24	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708883	3	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708884	4	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708886	6	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708887	7	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708888	8	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708889	9	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708921	ART	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708865	ASP	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-05
7708867	ASP	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708917	BSO	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708879	COMP	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708870	CONF	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.4	2016-01-05
7708871	CONF	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.7 ± 0.4	2016-01-05
7708872	CONF2	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708873	CONF2	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708874	COPY	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-05
7708875	COPY	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708906	G-1	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05



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

Radon test result report for:

**DIAMOND ES**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7708909	G-2	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708910	G-3	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708907	G-4	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708908	G-5	@	@		
7708911	GYM	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	1.0 ± 0.4	2016-01-05
7708913	GYM	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	0.9 ± 0.4	2016-01-05
7708862	HEALTH	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708866	HEALTH	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708880	IMC	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708863	MAIN OFFICE	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.9 ± 0.4	2016-01-05
7708864	MAIN OFFICE	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708914	MPR	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	1.1 ± 0.4	2016-01-05
7708916	MPR	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708877	MS	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708920	MUSIC	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708900	OFFICE 1	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708876	OFFICE 2	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-05
7708912	PE	2015-12-28 @ 1:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-05
7708868	PR	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7708869	PR	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	0.8 ± 0.3	2016-01-05
7708919	SPEECH	2015-12-28 @ 2:00 pm	2015-12-31 @ 10:00 am	0.6 ± 0.4	2016-01-05
7708878	SR	2015-12-28 @ 12:00 pm	2015-12-31 @ 10:00 am	< 0.3	2016-01-05

January 15, 2016  
\*\* LABORATORY ANALYSIS REPORT \*\*

Radon test result report for:  
**MCPS PHASE 3 & 4  
TRANSIT BLANKS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7708218	TRANSIT 4	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708200	TRANSIT 1	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708190	TRANSIT 10	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708189	TRANSIT 11	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708191	TRANSIT 12	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708188	TRANSIT 13	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708197	TRANSIT 14	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708186	TRANSIT 15	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708185	TRANSIT 16	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708184	TRANSIT 17	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708182	TRANSIT 18	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708187	TRANSIT 18	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708199	TRANSIT 2	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708181	TRANSIT 20	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708180	TRANSIT 21	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708183	TRANSIT 22	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708178	TRANSIT 23	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708179	TRANSIT 24	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708177	TRANSIT 25	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708176	TRANSIT 26	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708174	TRANSIT 27	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708173	TRANSIT 28	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708175	TRANSIT 29	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708198	TRANSIT 3	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708172	TRANSIT 30	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708194	TRANSIT 5	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708196	TRANSIT 6	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708193	TRANSIT 7	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708192	TRANSIT 8	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708195	TRANSIT 9	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23

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  $\mu$ R/h Elevation = 820 ft



## Chain of Custody

Project Name: MCPS Radon Phase III

Name of Schools:

- |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
| 1. Burnt Mills ES     | 13. Georgian Frost ES | 25. Northlake Center  |
| 2. Burtonsville ES    | 14. Germantown ES     | 26. Olney ES          |
| 3. Cedar Grove ES     | 15. Goshen ES         | 27. Rosa Parks MS     |
| 4. Cloverly ES        | 16. Greencastle ES    | 28. Poolesville ES    |
| 5. Cold Spring ES     | 17. Greenwood ES      | 29. Poolesville HS    |
| 6. Damascus HS        | 18. Lake Seneca ES    | 30. Potomac ES        |
| 7. Darnestown ES      | 19. Laytonsville ES   | 31. Rock Terrace HS   |
| 8. Diamond ES         | 20. Col. E. Brooke MS | 32. Rosemary Hills ES |
| 9. Charles R. Drew ES | 21. Luxmanor ES       | 33. Carl Sandburg     |
| 10. DuFief ES         | 22. Magruder HS       | 34. Sequoyah ES       |
| 11. Thomas Edison HS  | 23. Thur. Marshall ES | 35. Stedwick ES       |
| 12. Robert Frost MS   | 24. Monocacy ES       | 36. Whetstone ES      |

	Date	Initials
Radon Test Kits Deployed	12/28/15	JM
Radon Test Kits Sampled	12/31/15	JM
Radon Test Kits Shipped to Lab*	12/31/15	JM
Radon Test Kits Received by Lab*	1/4/16	JM

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