

## School / Facility Radon Testing Report Form

School Year: **24-25**

Facility:	Quince Orchard High School		
Address:	15800 Quince Orchard Road		
	Gaithersburg, MD 20878		
Reason for Testing:	Scheduled Re-Testing - <input checked="" type="checkbox"/> 2-year or <input type="checkbox"/> 5-year schedule <input type="checkbox"/> Clearance Testing (Post-Mitigation) <input type="checkbox"/> Building Envelope or HVAC Upgrades <input type="checkbox"/> New Construction – Addition or Facility		
Current Radon Status:	<input checked="" type="checkbox"/> Active Mitigation (2-year regular schedule) <input type="checkbox"/> No Active Mitigation (5-year regular schedule) <input type="checkbox"/> Not Previously Tested (New Facility)		
Round of Testing:	<input type="checkbox"/> Initial Testing -or- <input checked="" type="checkbox"/> Follow-up Testing		
Testing Status:	<input checked="" type="checkbox"/> No Further Testing Needed -or- <input type="checkbox"/> Follow-Up Testing Required		

### Conclusion (When Testing Status is - No Further Testing Needed)

Mitigation -	Facility Radon Status:		
<input checked="" type="checkbox"/> Not Required <input type="checkbox"/> Required ( $\geq 4.0$ -pCi/L) Rooms:	<input checked="" type="checkbox"/> No Change in Status <input type="checkbox"/> Active Mitigation (2-year regular schedule) <input type="checkbox"/> No Active Mitigation (5-year regular schedule)		
Number of Rooms Tested	60	Lowest Value (pCi/L)	< 0.3
Number of Rooms ( $\geq 4.0$ -pCi/L)	0	Highest Value (pCi/L)	0.7

**Instructions:** Submit one testing report form per-facility. Include the following as attachments:

Attachment 1- Summary Data Tables – containing the following: (see attached samples tables)

- Testing Results – lab/detector Identification, by room number/name (alpha-numeric order) as depicted on facility map/floor plan provided by the facility/school at the time of test device deployment;
- Summary Results – list of rooms by test result  $\geq 2.0$ -pCi/L;  $\geq 2.7$ -pCi/L;  $\geq 4.0$ -pCi/L; and  $\geq 8.0$ -pCi/L;
- QA/QC Results - (field blanks and duplicates) indicating location collected; trip and office blanks; and spike sample results;
- Invalid Measurement Locations – missed locations, missing and or damaged/compromised testing devices.

Attachment 2 – Laboratory Report(s)

Attachment 3 – Sampling Location Map(s) – indicating approximate location of samples, duplicates and blanks.

**Detector and Deployment**

Detector/Device Type:	<input checked="" type="checkbox"/> Passive	<input checked="" type="checkbox"/> Charcoal Absorption (CAD) <input type="checkbox"/> Alpha Track (ATD) <input type="checkbox"/> Other
	<input type="checkbox"/> Continuous	<input type="checkbox"/> Electret ion Chamber (EIC) <input type="checkbox"/> Electronic Integration (EID)
Other—Specify here:		
Detector/Device Name:	Air Chek – Radon Test Kits	
Manufacturer:	Radon Lab	
Person(s) Deploying or Retrieving Test Devices and certification number		Organization/Company
Shannon King		KCI Technologies, Inc.
Shakia Dawkins		KCI Technologies, Inc.
<i>If noncertified individuals, the qualified measurement professional providing oversight -</i>		
Tyler McCleaf, CSP – Cert. #111004 – RMP		KCI Technologies, Inc.

**Testing**

<input checked="" type="checkbox"/> Short-Term <input type="checkbox"/> Long-Term	Length of Test (days):	3	Date of Deployment and Retrieval (mm/dd/yy):	03/04/25 03/07/25	03/31/25 04/03/25
Does the test period include weekends, school breaks or holidays?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<i>If “Yes” please explain/detail in the space below:</i>					
Was HVAC operating under occupied conditions?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If “No” please explain/detail in the space below:</i>					

**Testing** (continued)

Round of Testing	Detectors Deployed				
	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Test Locations <sup>1</sup>	47	0	13	2	62
Duplicates <sup>2</sup>	5	0	2	1	8
Field Blanks <sup>3</sup>	2	0	1	1	4
Grand Total					74

1 – include all detectors deployed (duplicates, field blanks); 1 detector per occupied (or intended to be occupied) ground-contact space ≤ 2,000-square feet; large spaces ≥ 2,000-square feet - 1 detector per 2,000-square feet or part thereof; and upper floors - 10% of all occupied or intended to be occupied rooms per floor (these are in addition to ground contact locations)

2 - 10% of all locations tested, per floor

3 – 5% of all locations tested, per floor

**Quality Assurance / Quality Control (QA/QC)**

A Quality Assurance plan that is consistent with ANSI/AARST MS-QA (Radon Measurement Systems Quality Assurance) was submitted under separate cover, and is available to review at the MCPS Radon Testing and Mitigation Program website. The following number of QA/QC samples are associated this facility.

Round of Testing	QA/QC Samples		Total
	Initial	Follow-Up	
Spikes <sup>1</sup>	Not applicable		10
Trip Blanks <sup>2</sup>	1	1	2
Office Blanks <sup>3, 4</sup>	1	1	2
			14

1 - 3% of EIC detectors; and 3% from each LOT of CAD and ATD detectors; a maximum of 6-spiked measurements per month for both EIC detectors and each LOT of CAD and ATD detectors.

2 – One per shipping container from start of detector deployment

3 – One per facility tested as devices are removed/allocated from the storage location for deployment;

4 - One additional blank, analyzed prior to deployment, for storage locations that have not been evaluated or monitored, for detectors that have been stored for more than 30-day durations.

**Quality Assurance / Quality Control** (continued)

Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Quality Control measurements comply with QA/QC requirements in the submitted testing organization's/company's QA plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Round of Testing</b>	<b>Initial</b> <b>Follow-Up</b>
All Field, Trip and Office Blanks are $\leq$ (less than or equal to) to the Method Detection Limit?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For all Duplicate Samples <sup>1</sup> , the higher value is $\leq 2x$ the lower value?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For all Duplicate Samples <sup>1</sup> , Relative Percent Difference(s) (RPD) <sup>2</sup> are less than the Warning Level <sup>3</sup> ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For all Duplicate Samples <sup>1</sup> , Relative Percent Difference(s) (RPD) <sup>2</sup> are less than the Control Level <sup>3</sup> ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

1 – Duplicate Control – a “NO” response constitute a control failure and the space/location represented by the duplicate sample becomes an invalid measurement location and should be listed in the “Invalid Measurement Locations” Table attached to this report.

2 - The objective of duplicate tests is to assess the precision error of the measurement method or, how well two side-by-side measurements agree or disagree. Precision involving duplicates is calculated by using Relative Percent Difference (RPD). RPD is equal to the difference between the higher test result minus the lower value test result divided by the average of the two duplicate test results, multiplied by 100. The RPD result is then compared to the warning and control limits.

3 - The Warning Level is set at the deviation from ideal performance that would be expected to occur by chance only 5% of the time, and Control Limits are set at that deviation from ideal performance that would be expected to occur by chance only 1% of the time. The Warning Level indicates a potential problem, which should be investigated. The Control Level indicates that the measurement system should be subject to corrective action.

The control and warning levels for duplicates, based on the averaged duplicate test result, are -

Average concentration of the two duplicate test results	Warning Level	Control Level
< 2.0-pCi/L	1-pCi/L	Not applicable
Between 2.0 and 3.9-pCi/L	50% RPD	67% RPD
$\geq 4.0$ -pCi/L	28% RPD	36% RPD



## Summary of Test Results<sup>1</sup> and Determination of Valid Measurements<sup>2</sup>

Round of Testing	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Number of test locations:	47	0	13	1	61
Number of locations $\geq 8.0$ -pCi/L:	0	0	0	0	0
Number of locations $\geq 4.0$ and $\leq 8$ -pCi/L:	0	0	0	0	0
Number of locations $\geq 2.7$ and $< 4$ -pCi/L:	0	0	0	0	0
Number of locations $\geq 2.0$ and $< 2.7$ -pCi/L:	0	0	0	0	0
Number of missing required test locations <sup>3</sup> :	0	0	1	0	1
Number of failed duplicate control locations:	0	0	0	0	0
Percentage of missing test locations for the facility <sup>4,5</sup> :	0	0	7.69%	0	0

1 – for locations with multiple test results, report consistent with Section 7.2(When Two Test Results Disagree) and 8.1.2 (Averaging) of ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings;

2 - the allowance is to be calculated individually for Ground-Contact and Upper-Level(s) Test Locations;

3 – includes missed or inaccessible locations upon deployment or retrieval, damaged (not able to analyze) and missing detectors upon retrieval;

4 – if all valid measurements are  $< 4.0$ -pCi/L and the total number of test locations are  $\geq 18$ , there is an allowance of  $\leq 33\%$ . If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023;

5 – if any valid measurements are  $\geq 4.0$ -pCi/L and the total number of test locations are  $\geq 20$ , there is an allowance of  $\leq 25\%$  of the total locations tested. If less than 20 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023.

## Summary of Test Results<sup>1</sup> and Determination of Valid Measurements<sup>2</sup> (continued)

Round of Testing	Initial	Follow-Up
Were test devices deployed in all occupied and intended to be occupied rooms in contact with the ground, and, if applicable, 10% of upper floor rooms?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Were valid measurements obtained in all occupied and intended to be occupied rooms in contact with the ground, and, if applicable, 10% of upper floor rooms?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<i>If Yes to both above – then Testing Status – ‘No Further Testing Needed’ mark ‘NA’ below and complete Conclusions section</i>		
<b>If No to either above, were all results obtained under 4.0-pCi/L and were sufficient valid measurements obtained?<sup>1,2</sup></b> <b><i>If Yes, then - ‘No Further Testing Needed’ complete Conclusion section on first page.</i></b> <b><i>If No, then - ‘Follow-up Testing Required’ continue below.</i></b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA

1 – if all valid measurements are <4.0-pCi/L and the total number of test locations are ≥18, there is an allowance of ≤33%. If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings to determine the allowance;  
 2 – if any valid measurements are ≥4.0-pCi/L and the total number of test locations are ≥20, there is an allowance of ≤25% of the total locations tested. If less than 20 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings to determine the number the allowance.

## Follow-Up Testing

### Required –

- If an insufficient number (greater than the allowance provided above) of valid measurements were obtained during the initial round of testing (the “missing required test locations” in the table above);
- Any location test results ≥ 4.0-pCi/L;
- Any location where duplicates fail QC checks; and or
- At the discretion of MCPS IAQ Staff

Reason for Follow-Up Testing	Testing Procedure	Follow-up Result	Conclusion
Insufficient Number of Measurements	Follow same procedures as Initial Testing	Not Applicable	Follow Initial Testing procedures
Results ≥ 4.0-pCi/L	Deploy two Short-term follow-up tests and required blanks and duplicates; Average the results of the two tests	≥4.0	Mitigation Required
Failed QC checks		≥2.0 and <4.0	Consider Mitigation
		<2.0	Mitigation Not Required

- ***If follow-up testing identifies additional spaces requiring additional testing it will be performed as part of the ongoing follow-testing round.***

# **Attachment 1:**

## **Summary Data Tables**

Table 1- Radon Testing Results		
Quince Orchard High School		
Test Period: 3/4/2025 - 3/7/2025		
Kit Number	Room / Area	Result
11892610	100	< 0.3
11892611	100	0.6
11892613	101	< 0.3
11892612	102	< 0.3
11892609	103	< 0.3
11892614	105	< 0.3
11892629	112	< 0.3
11892630	116	0.5
11892631	116	< 0.3
11892635	117	< 0.3
11892633	118	< 0.3
11892639	119	< 0.3
11892640	121	< 0.3
11892641	121	< 0.3
11892642	122	< 0.3
11892643	122	< 0.3
11892644	124	< 0.3
11892645	125	< 0.3
11892646	126	< 0.3
11892647	128	< 0.3
11892648	129	< 0.3
11892649	130	< 0.3
11892652	132	< 0.3
11892650	133	< 0.3
11892651	133	< 0.3
11892604	138	< 0.3
11892605	140	< 0.3
11892606	143	< 0.3
11892608	144	< 0.3
11892601	145	0.6
11892607	152	0.7
11892602	153	< 0.3
11892658	210	< 0.3
11892659	210	< 0.3
11892661	218	< 0.3
11892657	227	< 0.3
11892656	238	< 0.3
11892655	245	< 0.3

Table 1- Radon Testing Results		
Quince Orchard High School		
Test Period: 3/4/2025 - 3/7/2025		
11892663	307	< 0.3
11892664	314	< 0.3
11892665	320	< 0.3
11892667	331	< 0.3
11892668	342	< 0.3
11892669	342	< 0.3
11892660	355	< 0.3
11892662	355	< 0.3
11892615	105B	< 0.3
11892616	105C	< 0.3
11892617	105D	< 0.3
11892618	105E	< 0.3
11892619	105F	< 0.3
11892624	105G	< 0.3
11892620	105H	< 0.3
11892621	105H	< 0.3
11892625	105I	< 0.3
11892622	105J	< 0.3
11892623	105J	< 0.3
11892627	105K	< 0.3
11892626	105L	< 0.3
11892628	105M	< 0.3
11892632	116A	< 0.3
11892634	118A	< 0.3
11892636	119B	0.7
11892637	119E	< 0.3
11892638	119G	0.5
11892666	323F	< 0.3
11892654	AUDITORIUM	0.5
11892603	MAIN OFFICE	< 0.3
11892653	STAGE	< 0.3

[illegible]

Table 3 - QC Radon Testing Results			
Quince Orchard High School			
Test Period: 3/4/2025 - 3/7/2025			
Kit Number	QC Type	Room / Area	Result
11892611	D	100	0.6
11892631	D	116	< 0.3
11892643	FB	122	< 0.3
11892651	D	133	< 0.3
11892659	D	210	< 0.3
11892669	D	342	< 0.3
11892662	FB	355	< 0.3
11892620	D	105H	< 0.3
11892623	FB	105J	< 0.3
11887000	OB	OFFICE BLANK	< 0.3
11886974	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation											
Quince Orchard High School											
Test Period: 3/4/2025 - 3/7/2025											
Sample ID			Duplicate Concentrations (pCi/L) and OC Checks								
Kit Numbers		Room / Area	Higher	Lower	Check #1 (Pass/Fail)	2x the Lower	Check #2 (Pass/Fail)	Average	Relative Percent Difference (RPD)	Check #3	
11892611	11892610	100	0.6	0.3	✓	0.6	PASS	0.5	<1-pCi/L	✓	
11892631	11892630	116	0.5	0.3	✓	0.6	PASS	0.4	<1-pCi/L	✓	
11892651	11892650	133	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓	
11892659	11892658	210	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓	
11892669	11892668	342	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓	
11892620	11892621	105H	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓	
<b>NOTES:</b> QC Check #1 - Data Entry QC Check #2 - Higher duplicate concentration is < or = to 2x the Lower QC Check #3 - Meets RPD Limits, by average duplicate concentration - enter 2 if RPD is BELOW warning and control levels, AND passes QC Check 1 and 2 - enter 1 if RPD is ABOVE warning and BELOW control levels, AND passes QC Check 1 and 2 - enter 0 if RPD is ABOVE control level, or 'FAILS' QC Check 1 or 2							Average (pCi/L)		Warning Level	Control Level	
							< 2.0		1-pCi/L	NA	
							Between 2.0 and 3.9		50% RPD	67% RPD	
							≥ 4.0		28% RPD	36% RPD	



[illegible]

Table 1- Radon Testing Results		
Quince Orchard High School RT		
Test Period: 3/31/2025 - 4/3/2025		
Kit Number	Room / Area	Result
11887252	238	< 0.3
11887255	238	< 0.3
11887257	238	< 0.3
11887269	238	< 0.3

[illegible]

Table 3 - QC Radon Testing Results			
Quince Orchard High School RT			
Test Period: 3/31/2025 - 4/3/2025			
Kit Number	QC Type	Room / Area	Result
11887252	D	238	< 0.3
11887255	FB	238	< 0.3
11886694	OB	OFFICE BLANK	< 0.3
11886589	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation										
Quince Orchard High School RT										
Test Period: 3/31/2025 - 4/3/2025										
Sample ID			Duplicate Concentrations (pCi/L) and QC Checks							
Kit Numbers		Room / Area	Higher	Lower	Check #1 (Pass/Fail)	2x the Lower	Check #2 (Pass/Fail)	Average	Relative Percent Difference (RPD)	Check #3
11887252	11887257 11887269	238	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
<b>NOTES:</b> QC Check #1 - Data Entry QC Check #2 - Higher duplicate concentration is < or = to 2x the Lower QC Check #3 - Meets RPD Limits, by average duplicate concentration - enter 2 if RPD is BELOW warning and control levels, AND passes QC Check 1 and 2 - enter 1 if RPD is ABOVE warning and BELOW control levels, AND passes QC Check 1 and 2 - enter 0 if RPD is ABOVE control level, or 'FAILS' QC Check 1 or 2							Average (pCi/L)		Warning Level	Control Level
							< 2.0		1-pCi/L	NA
							Between 2.0 and 3.9		50% RPD	67% RPD
							≥ 4.0		28% RPD	36% RPD

[illegible]

# **Attachment 2:**

## **Laboratory Reports**

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11892611	100	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	0.6 ± 0.3	2025-03-11
11892610	100	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892613	101	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892612	102	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892609	103	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892614	105	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892615	105B	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892616	105C	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892617	105D	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892618	105E	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892619	105F	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892624	105G	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892621	105H	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892620	105H	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892625	105I	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892623	105J	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892622	105J	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892627	105K	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892626	105L	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892628	105M	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892629	112	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892630	116	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	0.5 ± 0.3	2025-03-11
11892631	116	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892632	116A	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892635	117	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892633	118	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892634	118A	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892639	119	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892636	119B	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	0.7 ± 0.3	2025-03-11
11892637	119E	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892638	119G	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	0.5 ± 0.3	2025-03-11
11892640	121	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892641	121	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892643	122	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892642	122	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892644	124	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892645	125	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11



Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11892646	126	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892647	128	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892648	129	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892649	130	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892652	132	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892650	133	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892651	133	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892604	138	2025-03-04 @ 8:00 am	2025-03-07 @ 10:00 am	< 0.3	2025-03-11
11892605	140	2025-03-04 @ 8:00 am	2025-03-07 @ 10:00 am	< 0.3	2025-03-11
11892606	143	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892608	144	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892601	145	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	0.6 ± 0.3	2025-03-11
11892607	152	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	0.7 ± 0.3	2025-03-11
11892602	153	2025-03-04 @ 8:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892659	210	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892658	210	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892661	218	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892657	227	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892656	238	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892655	245	2025-03-04 @ 9:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892663	307	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892664	314	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892665	320	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892666	323F	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892667	331	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892669	342	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892668	342	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892660	355	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892662	355	2025-03-04 @ 10:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11
11892654	AUDITORIUM	2025-03-04 @ 9:00 am	2025-03-07 @ 10:00 am	0.5 ± 0.3	2025-03-11
11892603	MAIN OFFICE	2025-03-04 @ 8:00 am	2025-03-07 @ 10:00 am	< 0.3	2025-03-11
11892653	STAGE	2025-03-04 @ 9:00 am	2025-03-07 @ 10:00 am	< 0.3	2025-03-11

March 11, 2025

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

Radon test result report for:

**OFFICE  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11887000	OB	2025-03-04 @ 11:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11

March 11, 2025

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

Radon test result report for:

**TRAVEL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886974	TB	2025-03-04 @ 11:00 am	2025-03-07 @ 11:00 am	< 0.3	2025-03-11

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20001560

NOMINAL Conditions: Radon Conc 50.6 pCi/L Rel. Hum 50.6 % Temp. 70.8 F

Date Start: 12/14/24 Date Stop: 12/17/24 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0815 Time Stop: 0815 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (3) CHAR BAGS Device No.'s: \_\_\_\_\_

11477880, 11477883, 11477896 \_\_\_\_\_

B4 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

December 23, 2024

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

Radon test result report for:

**SK  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11477880	SK1	2024-12-14 @ 8:00 am	2024-12-17 @ 8:00 am	52.0 ± 4.2	2024-12-23
11477883	SK2	2024-12-14 @ 8:00 am	2024-12-17 @ 8:00 am	54.6 ± 4.4	2024-12-23
11477896	SK3	2024-12-14 @ 8:00 am	2024-12-17 @ 8:00 am	45.5 ± 3.6	2024-12-23



## Radon Test Kit Chain of Custody

**Project Name:** MCPS Radon – Testing March 4<sup>th</sup> – March 7<sup>th</sup>, 2025

**Name of Schools:**

1. Poolesville HS
2. Quince Orchard HS
3. Redland MS
4. Ridgeview MS
5. Rocky Hill MS
6. Rosemont ES
7. Poolesville ES

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	Date	Initials
Radon Test Kits Deployed	3/4/2025	PM
Radon Test Kits Collected	3/7/2025	PM
Radon Test Kits Shipped to Lab*	3/7/2025	PM
Radon Test Kits Received by Lab*	3/10/2025	PM

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

**P4792 / TYLER MCCLEAF**

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11887252	2025-03-31	7:00 am	2025-04-03	12:00 pm	70			238	QUINCE ORCHARD HS - RETESTING	2	< 0.3
11887255	2025-03-31	7:00 am	2025-04-03	12:00 pm	70			238	QUINCE ORCHARD HS - RETESTING	2	< 0.3
11887257	2025-03-31	7:00 am	2025-04-03	12:00 pm	70			238	QUINCE ORCHARD HS - RETESTING	2	< 0.3
11887269	2025-03-31	7:00 am	2025-04-03	12:00 pm	70			238	QUINCE ORCHARD HS - RETESTING	2	< 0.3

April 7, 2025

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

Radon test result report for:

**KCI**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886694	OB	2025-03-31 @ 11:00 am	2025-04-04 @ 9:00 am	< 0.3	2025-04-07
11886589	TB	2025-03-31 @ 11:00 am	2025-04-04 @ 9:00 am	< 0.3	2025-04-07



# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20002919

NOMINAL Conditions: Radon Conc 7.0 pCi/L Rel. Hum 51.4 % Temp. 70.7 F

Date Start: 3/7/25 Date Stop: 3/10/25 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0832 Time Stop: 0832 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (7) CHAR BAGS Device No.'s: \_\_\_\_\_

11886401 thru 11886406,

11886410

G3 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

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March 19, 2025

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

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Radon test result report for:

**QC**  
**MAIN**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886401	SK1	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.8 ± 1.1	2025-03-19
11886405	SK2	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.1 ± 1.1	2025-03-19
11886406	SK3	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.7 ± 1.1	2025-03-19
11886403	SK4	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.9 ± 1.2	2025-03-19
11886404	SK5	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.6 ± 1.2	2025-03-19
11886410	SK6	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.0 ± 1.1	2025-03-19
11886402	SK7	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	8.6 ± 1.2	2025-03-19

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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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ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS  
Corporate Office: 936 Ridgebrook road • Sparks, Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

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## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing March 31<sup>st</sup> – April 3<sup>rd</sup>, 2025

Name of Schools:

1. Hallie Wells MS
2. Neelsville MS
3. Quince Orchard HS
4. Redland MS
5. Ridgeview MS
6. Rosemont ES

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	Date	Initials
Radon Test Kits Deployed	3/31/2025	BMM
Radon Test Kits Collected	4/03/2025	BMM
Radon Test Kits Shipped to Lab*	4/03/2025	BMM
Radon Test Kits Received by Lab*	4/07/2025	BMM

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

### MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Quince Orchard High 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	94
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.8 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: Quince Orchard High School  
15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Rd. 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 one hundred six (106) 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	

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

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

Sincerely,



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

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

# ATTACHMENT A

## Floor Plan With Test Locations



## ATTACHMENT B

### Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Quince Orchard HS		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11285878	100	< 0.3
11285868	101	< 0.3
11285876	102	0.5
11284853	103	< 0.3
11284864	105	< 0.3
11285886	106	1.1
11285888	108	1.2
11285837	112	< 0.3
11285830	116	0.7
11285843	117	< 0.3
11285822	118	< 0.3
11285809	119	< 0.3
11285817	119	0.8
11285825	120	< 0.3
11285846	120	< 0.3
11284871	121	< 0.3
11284870	122	0.6
11285815	124	< 0.3
11284866	125	< 0.3
11285852	126	0.6
11285834	128	0.5
11285853	129	< 0.3
11285854	130	0.8
11285840	131	1.0
11285841	132	< 0.3
11285842	133	0.6
11285863	138	0.7
11285864	140	< 0.3
11285869	140	< 0.3
11285861	141	0.7
11285860	143	< 0.3
11285859	144	< 0.3
11285871	145	1.1
11285870	148	< 0.3
11285872	148	< 0.3
11284867	149	1.0
11285857	149	0.9
11284865	150	0.6
11285867	151	0.9
11285858	152	0.7
11285849	153	1.1
11285850	154	0.8

Table 1- Radon Testing Results		
Quince Orchard HS		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11285806	200	< 0.3
11285811	206	0.6
11285827	206	< 0.3
11285819	207	1.0
11285828	207	0.5
11285829	207	< 0.3
11285812	214	< 0.3
11285813	214	< 0.3
11285805	217	0.7
11285804	219	< 0.3
11284861	256	< 0.3
11285836	259	< 0.3
11285891	301	0.7
11285877	101A	0.8
11285875	104A	0.8
11285865	104B	0.6
11285866	104B	0.8
11284860	105B	< 0.3
11284854	105C	< 0.3
11285807	105D	0.6
11284862	105E	< 0.3
11284872	105E	0.6
11285844	105E	< 0.3
11285892	105F	< 0.3
11285808	105G	0.7
11285873	105H	< 0.3
11285881	105I	< 0.3
11285814	105J	< 0.3
11285802	105K	0.5
11285835	105L	< 0.3
11285874	105M	< 0.3
11285882	105M	< 0.3
11285887	105M	0.6
11285885	106B	1.1
11285879	108A	0.8
11285880	108B	1.1
11285883	110A	0.6
11285893	110B	< 0.3
11285884	110C	0.5
11285818	116A	0.5
11285824	116A	< 0.3
11285838	118A	0.7

Table 1- Radon Testing Results		
Quince Orchard HS		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11285823	119B	0.8
11285845	119E	0.6
11285831	119F	0.7
11285801	119G	0.9
11285816	119GA	1.1
11284869	120A	< 0.3
11284868	122B	< 0.3
11285832	125A	0.6
11285839	125A	0.9
11285826	134B	1.1
11285851	134B	0.8
11285855	134C	< 0.3
11285847	134D	1.0
11285848	134D	< 0.3
11285820	200D	0.5
11285821	200F	< 0.3
11285856	AUDITORIUM	0.7
11285862	AUDITORIUM	0.6
11285833	DIRECTOR OFFICE	1.8
11285803	KITCHEN OFFICE	1.3
11284846	STAGE	0.7
11285810	STAGE	0.9

Table 2- Radon Testing Results			
Quince Orchard HS			
Test Period: 01/09/23 - 01/12/23			
Kit Number	QC Type	Room / Area	Result
11285817	D	119	0.8
11285825	FB	120	< 0.3
11285870	FB	148	< 0.3
11284867	D	149	1.0
11285829	D	207	< 0.3
11285866	D	104b	0.8
11284862	FB	105E	< 0.3
11284872	D	105e	0.6
11285887	D	105m	0.6
11285832	D	125A	0.6
11285851	D	134b	0.8
11285848	FB	134d	< 0.3
11285160	OB	OFFICE BLANK	< 0.3
11285167	TB	TRAVEL BLANK	< 0.3



## ATTACHMENT C

### Laboratory Analytical Results



Radon test result report for:**QUINCE ORCHARD HS****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285878	100	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285868	101	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285877	101A	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.4	2023-01-16
11285876	102	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.5 ± 0.4	2023-01-16
11284853	103	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285875	104A	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.4	2023-01-16
11285865	104B	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11285866	104B	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.3	2023-01-16
11284864	105	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284860	105B	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284854	105C	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285807	105D	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.3	2023-01-16
11284862	105E	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285844	105E	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284872	105E	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.3	2023-01-16
11285892	105F	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285808	105G	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	0.7 ± 0.4	2023-01-16
11285873	105H	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285881	105I	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285814	105J	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285802	105K	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	0.5 ± 0.3	2023-01-16
11285835	105L	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285874	105M	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285887	105M	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11285882	105M	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285886	106	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	1.1 ± 0.4	2023-01-16
11285885	106B	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	1.1 ± 0.4	2023-01-16
11285888	108	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	1.2 ± 0.4	2023-01-16
11285879	108A	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.4	2023-01-16
11285880	108B	2023-01-09 @ 11:00 am	2023-01-12 @ 9:00 am	1.1 ± 0.4	2023-01-16
11285883	110A	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11285893	110B	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285884	110C	2023-01-09 @ 12:00 pm	2023-01-12 @ 9:00 am	0.5 ± 0.4	2023-01-16
11285837	112	2023-01-09 @ 9:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285830	116	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.7 ± 0.4	2023-01-16
11285824	116A	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285818	116A	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.5 ± 0.4	2023-01-16

Radon test result report for:**QUINCE ORCHARD HS****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285843	117	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285822	118	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285838	118A	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.7 ± 0.4	2023-01-16
11285817	119	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.4	2023-01-16
11285809	119	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285823	119B	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.4	2023-01-16
11285845	119E	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11285831	119F	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.7 ± 0.4	2023-01-16
11285801	119G	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.9 ± 0.4	2023-01-16
11285816	119GA	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	1.1 ± 0.4	2023-01-16
11285825	120	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285846	120	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284869	120A	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284871	121	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284870	122	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11284868	122B	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285815	124	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11284866	125	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285839	125A	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.9 ± 0.3	2023-01-16
11285832	125A	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11285852	126	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.6 ± 0.4	2023-01-16
11285834	128	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.5 ± 0.3	2023-01-16
11285853	129	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	< 0.3	2023-01-16
11285854	130	2023-01-09 @ 10:00 am	2023-01-12 @ 9:00 am	0.8 ± 0.4	2023-01-16
11285840	131	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	1.0 ± 0.3	2023-01-16
11285841	132	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285842	133	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11285826	134B	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	1.1 ± 0.4	2023-01-16
11285851	134B	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	0.8 ± 0.4	2023-01-16
11285855	134C	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285847	134D	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285848	134D	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	1.0 ± 0.4	2023-01-16
11285863	138	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.7 ± 0.4	2023-01-16
11285869	140	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285864	140	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285861	141	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.7 ± 0.4	2023-01-16
11285860	143	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16

Radon test result report for:

**QUINCE ORCHARD HS****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285859	144	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285871	145	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	1.1 ± 0.4	2023-01-16
11285870	148	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11285872	148	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	< 0.3	2023-01-16
11284867	149	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	1.0 ± 0.3	2023-01-16
11285857	149	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.9 ± 0.4	2023-01-16
11284865	150	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.6 ± 0.4	2023-01-16
11285867	151	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.9 ± 0.4	2023-01-16
11285858	152	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.7 ± 0.3	2023-01-16
11285858	152	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.7 ± 0.3	2023-01-16
11285849	153	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	1.1 ± 0.4	2023-01-16
11285850	154	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.8 ± 0.4	2023-01-16
11285806	200	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285820	200D	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	0.5 ± 0.4	2023-01-16
11285821	200F	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285827	206	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285811	206	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	0.6 ± 0.3	2023-01-16
11285829	207	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285819	207	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	1.0 ± 0.4	2023-01-16
11285828	207	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	0.5 ± 0.4	2023-01-16
11285812	214	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285813	214	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285805	217	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	0.7 ± 0.4	2023-01-16
11285804	219	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11284861	256	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285836	259	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	< 0.3	2023-01-16
11285891	301	2023-01-09 @ 12:00 pm	2023-01-12 @ 10:00 am	0.7 ± 0.4	2023-01-16
11285856	AUDITORIUM	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.7 ± 0.3	2023-01-16
11285862	AUDITORIUM	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.6 ± 0.3	2023-01-16
11285833	DIRECTOR OFFICE	2023-01-09 @ 10:00 am	2023-01-12 @ 10:00 am	1.8 ± 0.4	2023-01-16
11285803	KITCHEN OFFICE	2023-01-09 @ 9:00 am	2023-01-12 @ 8:00 am	1.3 ± 0.4	2023-01-16
11285810	STAGE	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.9 ± 0.4	2023-01-16
11284846	STAGE	2023-01-09 @ 11:00 am	2023-01-12 @ 10:00 am	0.7 ± 0.4	2023-01-16

# 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: 12/27/23 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 CPT

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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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
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



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Corporate Office: 936 Ridgebrook road • Sparks, Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

## 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



### **MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Quince Orchard High School
Date of Report	2/28/2020
Round of Testing	Initial <b>Follow-up</b> Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	3
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1 pCi/L

### **Project Status**

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



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2/28/2020

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

Re: Radon Testing Services

KCI Job #1214634188

**Location: Quince Orchard High School**

15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Road 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 #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on 2/4/2020 and deployed six (6) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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



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

A floor plan map of the building with the test locations is included as Appendix A of this report.

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

KCI returned to the site on 2/7/2020 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

#### **EVALUATION OF TESTING CONDITIONS**

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

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

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

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

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

## **RESULTS**

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,

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

Attachments:

A- Floor Plan with Test Locations

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

### Floor Plan Legend

X-Sample Location (in red)

X- Previous Sample Location

1- Not Samled; No Ground Contact

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

3- Not Samled; High Humidity/Moisture

4- Not Samled; Bathroom/Hallway

## ATTACHMENT B

### Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
Quince Orchard High School		
Test Period: 02/04/20-02/07/20		
Kit Number	Room / Area	Result
9348542	124	0.5
9348521	124	<0.3
9348541	339	<0.3
9348520	KITCHEN OFFICE	1
9334909	OFFICE BLANK	<0.3
9334910	OFFICE BLANK	<0.3

Table 2- Radon Testing Results			
Quince Orchard High School			
Test Period: 02/04/20-02/07/20			
Kit Number	QC Type	Room / Area	Result
9348521	FB	124	<0.3
9334902	TRANSIT BLANK	NA	<0.3

## ATTACHMENT C

### Laboratory Analytical Results



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February 11, 2020

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

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Radon test result report for:

**QUINCE ORCHARD HS  
125**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9348542	124	2020-02-04 @ 12:00 pm	2020-02-07 @ 11:00 am	0.5 ± 0.3	2020-02-11
9348521	124	2020-02-04 @ 12:00 pm	2020-02-07 @ 11:00 am	< 0.3	2020-02-11
9348541	339	2020-02-04 @ 12:00 pm	2020-02-07 @ 11:00 am	< 0.3	2020-02-11
9348520	KITCHEN OFFICE	2020-02-04 @ 12:00 pm	2020-02-07 @ 10:00 am	1.0 ± 0.3	2020-02-11

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# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 194523

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

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

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

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

9341725 thru 9341733 \_\_\_\_\_

52 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

February 28, 2020

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

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within  $\pm 25\%$  of the chamber's reference value (25.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9341725	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.9 $\pm$ 1.6	2020-02-26
9341730	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.1 $\pm$ 1.6	2020-02-26
9341728	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.9 $\pm$ 1.6	2020-02-26
9341726	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	25.8 $\pm$ 1.5	2020-02-26
9341731	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	25.1 $\pm$ 1.5	2020-02-26
9341729	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.2 $\pm$ 1.6	2020-02-26
9341727	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	27.2 $\pm$ 1.6	2020-02-26
9341732	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	27.3 $\pm$ 1.6	2020-02-26

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS  
Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

## Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1 Retesting

Name of Schools:

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

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

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

### **MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Quince Orchard High School
Date of Report	1/28/2020
Round of Testing	Initial Follow-up Post Remediation <b>2 year testing</b> 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	81
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.9 pCi/L

### **Project Status**

Current Project Status at this time: Testing Complete; missing/compromised tests to be sampled.



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1/28/2020

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

Re: Radon Testing Services

KCI Job #12146341126

**Location: Quince Orchard High School**

15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Road 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 Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org/departments/facilities/maintenance/default.aspx?id=458858> or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on 12/10/2019 and deployed ninety-seven (97) 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 sixty (60) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on 12/13/2019 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

### **EVALUATION OF TESTING CONDITIONS**

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the upper-30s and high temperatures ranged from the upper-30s to the mid-50s. Maximum sustained winds ranged from 7-21 miles per hour. Average humidity was around 75%. 0.52 inches of precipitation (rain) was recorded during the testing period.

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## **RESULTS**

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,

Mr. Tyler P. McCleaf  
Radon Measurement Provider  
111004 RT

KCI Technologies, Inc.

Attachments:

A- Floor Plan with Test Locations

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results



# ATTACHMENT A

## Floor Plan With Test Locations

## ATTACHMENT B

### Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
Quince Orchard High School		
Test Period: 12/9/2019-12/12/2019		
Kit Number	Room / Area	Result
9334520	129	< 0.3
9334521	130	< 0.3
9334539	207	< 0.3
9334541	301	< 0.3
9334553	131	< 0.3
9334554	132	< 0.3
9334560	152	0.5
9334561	154	0.6
9334563	138	< 0.3
9334564	AUD	< 0.3
9334565	145	< 0.3
9334566	133	0.6
9334567	AUD	0.8
9334568	145	< 0.3
9334570	149	0.6
9334571	148	0.7
9334572	153	0.7
9334573	150	< 0.3
9334574	151	< 0.3
9334575	203	< 0.3
9334577	256	< 0.3
9334578	256	< 0.3
9334581	AUD OFF	1.9
9334582	141	< 0.3
9334586	206	< 0.3
9334587	145	0.8
9334588	144	< 0.3
9334589	143	< 0.3
9334590	140	< 0.3
9334592	207	< 0.3
9334595	210	< 0.3
9334596	206	< 0.3
9334600	AUD OFF	1.8
9334627	117	< 0.3
9334629	122	< 0.3
9334631	117A	< 0.3
9334632	125	< 0.3
9334634	124	MISSING
9334637	128	< 0.3
9334638	126	< 0.3
9334641	105J	< 0.3
9334642	105	< 0.3
9334646	105H	< 0.3
9334647	105G	< 0.3
9334648	105L	< 0.3
9334649	104B	0.6
9334650	108B	0.8
9334651	110B	< 0.3
9334652	110A	< 0.3
9334653	105M	0.6

9334654	104A	0.5
9334655	119BA	1.4
9334656	118	< 0.3
9334657	118A	< 0.3
9334658	123B	< 0.3
9334659	119F	< 0.3
9334660	119G	< 0.3
9334661	119B	0.6
9334662	119E	< 0.3
9334663	119BA	1.4
9334664	125A	< 0.3
9334665	116	< 0.3
9334666	119A	< 0.3
9334667	119	0.5
9334668	121	< 0.3
9334669	101	< 0.3
9334670	200A	< 0.3
9334671	124	< 0.3
9334672	105D	< 0.3
9334673	200D	< 0.3
9334674	200B	< 0.3
9334675	MAIN OFFICE	< 0.3
9334676	ASST PRINCIPAL	< 0.3
9334677	200C	< 0.3
9334678	200K	< 0.3
9334679	200E	< 0.3
9334680	200F	< 0.3
9334681	103	< 0.3
9334682	200G	< 0.3
9334683	200G	< 0.3
9334684	105D	< 0.3
9334685	100	< 0.3
9334686	105C	< 0.3
9334687	102	< 0.3
9334688	217A	< 0.3
9334689	105K	< 0.3
9334690	124	< 0.3
9334691	105I	< 0.3
9334692	112	< 0.3
9334693	105E	< 0.3
9334694	105F	< 0.3
9334695	105L	< 0.3
9334696	106B	< 0.3
9334697	116	< 0.3
9334698	116	< 0.3
9334699	105D	< 0.3
9334700	105B	< 0.3
9334982	OFFICE BLANK	< 0.3

Table 2- Radon Testing Results			
Quince Orchard High School			
Test Period: 12/9/2019-12/12/2019			
Kit Number	QC Type	Room / Area	Result
9334699	D	105D	<0.3
9334648	D	105L	<0.3
9334698	D	116	<0.3
9334655	D	119BA	1.4
9334671	D	124	<0.3
9334634	FB	124	MISSING
9334581	D	AUD OFF	1.9
9334565	D	145	<0.3
9334568	FB	145	<0.3
9334577	D	256	<0.3
9334850	TRANSIT BLANK	NA	< 0.3
9334914	TRANSIT BLANK	NA	< 0.3
9334916	TRANSIT BLANK	NA	< 0.3
9334963	TRANSIT BLANK	NA	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results



Radon test result report for:  
**QUIN ORCHARD HS**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334685	100	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334669	101	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334687	102	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334681	103	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334654	104A	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.5 ± 0.3	2019-12-16
9334649	104B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.6 ± 0.3	2019-12-16
9334642	105	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334700	105B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334686	105C	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334684	105D	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334672	105D	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334699	105D	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334693	105E	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334694	105F	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334647	105G	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334646	105H	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334691	105I	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334641	105J	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334689	105K	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334648	105L	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334695	105L	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334653	105M	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.6 ± 0.3	2019-12-16
9334696	106B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334650	108B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.8 ± 0.3	2019-12-16
9334652	110A	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334651	110B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334692	112	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334698	116	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334665	116	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334697	116	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334627	117	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334631	117A	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334656	118	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334657	118A	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334667	119	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.5 ± 0.3	2019-12-16
9334666	119A	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334661	119B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.6 ± 0.3	2019-12-16

Radon test result report for:  
**QUIN ORCHARD HS**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334655	119BA	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	1.4 ± 0.3	2019-12-16
9334663	119BA	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	1.4 ± 0.3	2019-12-16
9334662	119E	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334659	119F	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334660	119G	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334668	121	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334629	122	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334658	123B	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334690	124	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334634	124	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	???? UI	2019-12-16
9334671	124	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334632	125	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334664	125A	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334638	126	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334637	128	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334520	129	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334521	130	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334553	131	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334554	132	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334566	133	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.6 ± 0.3	2019-12-16
9334563	138	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334590	140	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334582	141	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334589	143	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334588	144	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334568	145	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334565	145	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334587	145	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	0.8 ± 0.3	2019-12-16
9334571	148	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	0.7 ± 0.3	2019-12-16
9334570	149	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	0.6 ± 0.3	2019-12-16
9334573	150	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334574	151	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334560	152	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	0.5 ± 0.3	2019-12-16
9334572	153	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	0.7 ± 0.3	2019-12-16
9334561	154	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	0.6 ± 0.3	2019-12-16
9334670	200A	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334674	200B	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16

Radon test result report for:  
**QUIN ORCHARD HS**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334677	200C	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334673	200D	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334679	200E	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334680	200F	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334682	200G	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334683	200G	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334678	200K	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334575	203	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334596	206	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334586	206	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334592	207	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334539	207	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334595	210	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334688	217A	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334578	256	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334577	256	2019-12-10 @ 12:00 pm	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334541	301	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334676	ASS PRINCIPAL	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334564	AUD	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16
9334567	AUD	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	0.8 ± 0.3	2019-12-16
9334581	AUD OFF	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	1.9 ± 0.3	2019-12-16
9334600	AUD OFF	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	1.8 ± 0.4	2019-12-16
9334675	MAIN OFFICE	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16

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December 17, 2019

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

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Radon test result report for:  
**QUIN ORCHARD HS**  
**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>
9334626	120	2019-12-10 @ 11:00 am	2019-12-13 @ 10:00 am	< 0.3	2019-12-16

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

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 193475

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

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

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
0811  
 Time Start: 0806 acm Time Stop: 0811 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
 (Group 2)  
 Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334529 thru 9334538,  
9334540,  
9334542 thru 9334550  
B3

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

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

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within  $\pm 25\%$  of the chamber's reference value (25.7 pCi/L).

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

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December 18, 2019

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

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Radon test result report for:

**N/A**

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

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

December 18, 2019

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

Radon test result report for:

**S**

**N/A**

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





ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS  
Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

## Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1

Name of Schools:

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

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

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



## MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

### Executive Summary: Quince Orchard High School

15800 Quince Orchard Road  
Gaithersburg, MD 20878

Date of Test Report:	3/20/2019
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:	8
# of Rooms $\geq 4.0$ pCi/L:	0
Low Value:	<0.4
High Value:	1.0

### Project Status

**Retesting completed:** No further action at this time.



March 20, 2019

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

Re: Radon Testing Services

Location: Quince Orchard High School  
15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Road, 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 February 25, 2019 and deployed eight (8) activated charcoal (AC) radon test kit. 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 February 28, 2019 to retrieve the radon sampling test kit. A floor plan map of the building with the test location is included as Attachment A of this report.

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).

#### **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:

Radon Concentration	Room	Result
$\geq 4.0$ 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, appearing to read "Nand Kaushik". The signature is fluid and cursive, with the first name "Nand" and last name "Kaushik" clearly distinguishable.

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

Radon Testing Results		
Quince Orchard High School		
Testing period: 2/25/19 - 2/28/19		
Kit Number	Room / Area	Result (pCi/L)
3923419	118A	<0.4
3923418	149	0.4
3923417	151	<0.4
3923412	216	<0.4
3923415	246	0.5
3923414	255	0.4
3923413	258	<0.4
3923411	Kitchen Office	1.0

**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: Project # 04481387-1

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

MCPS Radon Survey Quince Orchard HS  
15800 Quince Orchard Road  
Gaithersburg MD 20878

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
3220741	3923411	02/25/2019 1:00 pm	02/28/2019 1:00 pm	2nd floor Room Kitchen Office		1.0
3220742	3923413	02/25/2019 1:04 pm	02/28/2019 1:04 pm	2nd floor Room 258		< 0.4
3220743	3923414	02/25/2019 1:06 pm	02/28/2019 1:06 pm	2nd floor Room 255		0.4
3220744	3923415	02/25/2019 1:10 pm	02/28/2019 1:10 pm	2nd floor Room 246		0.5
3220745	3923412	02/25/2019 1:12 pm	02/28/2019 1:12 pm	2nd floor Room 216		< 0.4
3220746	3923417	02/25/2019 1:18 pm	02/28/2019 1:18 pm	1st floor Room 151		< 0.4
3220747	3923418	02/25/2019 1:22 pm	02/28/2019 1:22 pm	1st floor Room 149		0.4
3220748	3923419	02/25/2019 1:26 pm	02/28/2019 1:26 pm	1st floor Room 118A		< 0.4

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

Distributed by: Intertek-PSI (VA)

Date Received: 03/05/2019 Date Logged: 03/05/2019 Date Analyzed: 03/05/2019 Date Reported: 03/06/2019

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

The uncertainty of this radon measurement is  $\pm 10\%$ . 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.

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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.



## MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

### Executive Summary: Quince Orchard High School

15800 Quince Orchard Road  
Gaithersburg, MD 20878

Date of Test Report:	1/15/2019
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:	111
# of Rooms $\geq 4.0$ pCi/L:	0
Low Value:	< 0.4
High Value:	1.5

### Project Status

**Initial testing complete:** Missing or compromised samples need re-test.



January 15, 2019

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

Re: Radon Testing Services

Location: Quince Orchard High School  
15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Road, 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 December 04, 2018 and deployed one hundred-thirty (130) 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 December 07, 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:

Radon Concentration	Room	Result
$\geq 4.0$ 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**

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

Radon Testing Results		
Quince Orchard Highschool		
Testing period: 12/04/18 - 12/07/18		
Kit Number	Room / Area	Result (pCi/L)
3926637	100	< 0.4
3926611	101	< 0.4
3926612	102	< 0.4
3926639	103	< 0.4
3926640	105	< 0.4
3926518	104A	< 0.4
3926519	104C	< 0.4
3926613	105C	< 0.4
3926615	105D	< 0.4
3926614	105E	< 0.4
3926616	105F	< 0.4
3926618	105G	< 0.4
3926617	105H	< 0.4
3926619	105I	< 0.4
3926620	105J	< 0.4
3926512	105K	< 0.4
3926511	105L	< 0.4
3926513	105M	< 0.4
3926516	106B	0.5
3926515	108B	0.4
3926514	112	< 0.4
3928372	116	0.5
3928371	116A	< 0.4
3928374	117	< 0.4
3928375	118	< 0.4
--	118A (MISSED)	--
3926561	119	< 0.4
3928377	119B	0.5
3926198	119BA	1.0
3928380	119E	< 0.4
3928379	119F	< 0.4
3928378	119G	0.5
3926200	120	< 0.4
3926562	121	< 0.4
3926564	121A	< 0.4
3926563	121C	< 0.4
3926565	122	< 0.4
3926566	123B	< 0.4
3926568	124	< 0.4
3926591	124A	< 0.4
3926569	125	< 0.4
3926567	125A	< 0.4
3926592	128	< 0.4



Radon Testing Results		
Quince Orchard Highschool		
Testing period: 12/04/18 - 12/07/18		
Kit Number	Room / Area	Result (pCi/L)
3926593	129	< 0.4
3926594	130	< 0.4
3926595	131	< 0.4
3926596	132	< 0.4
3926597	133	< 0.4
3926600	134B	0.6
3926582	134C	0.8
3926581	134D	0.7
3926524	138	< 0.4
3926525	140	< 0.4
3926526	143	< 0.4
3926527	143A	< 0.4
3926528	143B	< 0.4
3926530	144A	< 0.4
3926529	144B	< 0.4
3926631	145	0.4
3926632	148	0.5
--	149 (MISSED)	--
3926635	150	< 0.4
--	151 (MISSED)	--
3926633	152	0.5
3926634	153	0.4
3926636	154	0.4
--	155 (INACCESSIBLE)	--
3926641	200	< 0.4
3926642	200A	< 0.4
3926643	200B	< 0.4
3926645	200C	< 0.4
3926644	200D	< 0.4
3926648	200E	< 0.4
3926646	200F	< 0.4
3926649	200G	< 0.4
3926647	200K	< 0.4
3928106	207	< 0.4
3928109	209	< 0.4
3926610	210	< 0.4
--	216 (INACCESSIBLE)	--
3926521	217A	< 0.4
3926522	217B	< 0.4
3926523	217C	< 0.4
3928337	218	< 0.4
3928338	219	< 0.4
3928339	220	< 0.4

Radon Testing Results		
Quince Orchard Highschool		
Testing period: 12/04/18 - 12/07/18		
Kit Number	Room / Area	Result (pCi/L)
3928340	221	< 0.4
3926571	222	< 0.4
3926573	223	< 0.4
3926574	228G	< 0.4
3926575	239	< 0.4
--	246 (INACCESSIBLE)	--
3926589	247	< 0.4
3926602	247C	< 0.4
3926604	249	< 0.4
3926605	254	< 0.4
3926606	254D	< 0.4
--	255 (INACCESSIBLE)	--
3926607	256	< 0.4
--	258 (INACCESSIBLE)	--
3926608	259	0.4
3926609	259	0.4
3928334	308	< 0.4
3926580	318	< 0.4
3926579	325	< 0.4
3926576	338	< 0.4
3926577	339	< 0.4
3926578	352	< 0.4
3926584	Auditorium	0.4
3928110	Cafeteria	< 0.4
3926601	Computer Lab	< 0.4
3928336	Kitchen	0.4
--	Kitchen Office (INACCESSIBLE)	--
3928107	206 (Main Gym)	< 0.4
3928108	206 (Main Gym)	< 0.4
3926585	Media Center	< 0.4
3926588	Media Center Office	< 0.4
3926603	Production	< 0.4
3928335	Serving Area	< 0.4
3926583	Stage	0.6
3926599	Theatre Office	1.5
3926587	Workroom	< 0.4

Radon Testing Results		
Quince Orchard Highschool		
Testing period: 12/04/18 - 12/07/18		
Kit Number	QC Type	Result (pCi/L)
3926638	100 (D)	< 0.4
3926520	104C (D)	< 0.4
3928373	105J (D)	< 0.4
3926517	106B (D)	0.5
3928376	118 (D)	< 0.4
3926199	119BA (D)	0.7
3926570	125 (D)	< 0.4
3926598	133 (D)	< 0.4
3926650	200G (D)	< 0.4
3926572	222 (D)	< 0.4
3926590	247 (D)	< 0.4
3926586	Media Center (D)	< 0.4
3926708	Field Blank	< 0.4
3926707	Field Blank	< 0.4
3917553	Office Blank	< 0.4
3927554	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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

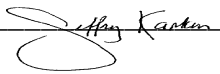
Log Number	Device Number	Test Exposure Duration:				Area Tested		Result pCi/L
3202478	3926590	12/04/2018	5:07 pm	12/07/2018	4:25 pm	Floor Second Floor	Room 247 Duplicate	<0.4
3202479	3926641	12/04/2018	3:11 pm	12/07/2018	3:37 pm	Floor Second Floor	Room 200	< 0.4
3202480	3926642	12/04/2018	3:12 pm	12/07/2018	3:38 pm	Floor Second Floor	Room 200A	< 0.4
3202481	3926644	12/04/2018	3:14 pm	12/07/2018	3:40 pm	Floor Second Floor	Room 200D	< 0.4
3202482	3926645	12/04/2018	3:15 pm	12/07/2018	3:41 pm	Floor Second Floor	Room 200C	< 0.4
3202483	3926646	12/04/2018	3:16 pm	12/07/2018	12:00 am	Floor Second Floor	Room 200F	< 0.4
3202484	3926647	12/04/2018	3:17 pm	12/07/2018	3:43 pm	Floor Second Floor	Room 200K	< 0.4
3202485	3926648	12/04/2018	3:17 pm	12/07/2018	3:44 pm	Floor Second Floor	Room 200E	< 0.4
3202486	3926649	12/04/2018	3:19 pm	12/07/2018	3:45 pm	Floor Second Floor	Room 200G	< 0.4
3202487	3926650	12/04/2018	3:19 pm	12/07/2018	3:45 pm	Floor Second Floor	Room 200G Duplicate	< 0.4
3202488	3926521	12/04/2018	3:21 pm	12/07/2018	3:46 pm	Floor Second Floor	Room 217A	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

The uncertainty of this radon measurement is  $\pm 10\%$ . 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.

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202489	3926522	12/04/2018	3:23 pm	12/07/2018	3:47 pm	Floor Second Floor Room 217B	< 0.4
3202490	3926523	12/04/2018	3:22 pm	12/07/2018	3:49 pm	Floor Second Floor Room 217C	< 0.4
3202491	3926524	12/04/2018	3:30 pm	12/07/2018	1:50 pm	Floor First Floor Room 138	< 0.4
3202492	3926525	12/04/2018	3:32 pm	12/07/2018	1:52 pm	Floor First Floor Room 140	< 0.4
3202493	3926526	12/04/2018	3:33 pm	12/07/2018	1:53 pm	Floor First Floor Room 143	< 0.4
3202494	3926527	12/04/2018	3:34 pm	12/07/2018	1:55 pm	Floor First Floor Room 143A	< 0.4
3202495	3926528	12/04/2018	3:36 pm	12/07/2018	1:58 pm	Floor First Floor Room 143B	< 0.4
3202496	3926529	12/04/2018	3:37 pm	12/07/2018	1:58 pm	Floor First Floor Room 144B	< 0.4
3202497	3926530	12/04/2018	3:38 pm	12/07/2018	1:59 pm	Floor First Floor Room 144A	< 0.4
3202498	3926631	12/04/2018	3:40 pm	12/07/2018	2:00 pm	Floor First Floor Room 145	0.4
3202499	3926632	12/04/2018	3:41 pm	12/07/2018	2:01 pm	Floor First Floor Room 148	0.5

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

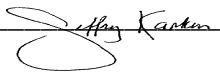
Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
3202500	3926633	12/04/2018 3:42 pm	12/07/2018 2:02 pm	Floor First Floor Room 152		0.5
3202501	3926634	12/04/2018 3:43 pm	12/07/2018 2:03 pm	Floor First Floor Room 153		0.4
3202502	3926635	12/04/2018 3:45 pm	12/07/2018 2:05 pm	Floor First Floor Room 150		< 0.4
3202503	3926636	12/04/2018 3:46 pm	12/07/2018 2:06 pm	Floor First Floor Room 154		0.4
3202504	3926637	12/04/2018 3:49 pm	12/07/2018 2:07 pm	Floor First Floor Room 100		< 0.4
3202505	3926638	12/04/2018 3:49 pm	12/07/2018 2:07 pm	Floor First Floor Room 100 Duplicate		< 0.4
3202506	3926639	12/04/2018 3:53 pm	12/07/2018 2:09 pm	Floor First Floor Room 103		< 0.4
3202507	3926640	12/04/2018 3:52 pm	12/07/2018 2:10 pm	Floor First Floor Room 105		< 0.4
3202508	3926612	12/04/2018 3:54 pm	12/07/2018 2:11 pm	Floor First Floor Room 102		< 0.4
3202509	3926613	12/04/2018 3:55 pm	12/07/2018 2:14 pm	Floor First Floor Room 105C		< 0.4
3202510	3926614	12/04/2018 3:56 pm	12/07/2018 2:15 pm	Floor First Floor Room 105E		< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

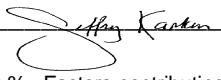
Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202511	3926615	12/04/2018	3:56 pm	12/07/2018	2:16 pm	Floor First Floor Room 105D	< 0.4
3202512	3926616	12/04/2018	3:57 pm	12/07/2018	2:17 pm	Floor First Floor Room 105F	< 0.4
3202513	3926617	12/04/2018	3:58 pm	12/07/2018	2:17 pm	Floor First Floor Room 105H	< 0.4
3202514	3926618	12/04/2018	3:59 pm	12/07/2018	2:18 pm	Floor First Floor Room 105G	< 0.4
3202515	3926619	12/04/2018	4:00 pm	12/07/2018	2:19 pm	Floor First Floor Room 105I	< 0.4
3202516	3926620	12/04/2018	4:02 pm	12/07/2018	2:20 pm	Floor First Floor Room 105J	< 0.4
3202517	3928373	12/04/2018	4:02 pm	12/07/2018	2:20 pm	Floor First Floor Room 105J Duplicate	< 0.4
3202518	3926511	12/04/2018	4:04 pm	12/07/2018	2:21 pm	Floor First Floor Room 105L	< 0.4
3202519	3926512	12/04/2018	4:05 pm	12/07/2018	2:22 pm	Floor First Floor Room 105K	< 0.4
3202520	3926513	12/04/2018	4:06 pm	12/07/2018	2:23 pm	Floor First Floor Room 105M	< 0.4
3202521	3926514	12/04/2018	4:09 pm	12/07/2018	2:24 pm	Floor First Floor Room 112	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

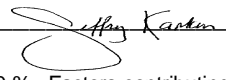
Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
3202522	3926515	12/04/2018 4:11 pm	12/07/2018 2:24 pm	Floor First Floor	Room 108B	0.4
3202523	3926517	12/04/2018 4:13 pm	12/07/2018 2:30 pm	Floor First Floor	Room 106B Duplicate	0.5
3202524	3926518	12/04/2018 4:15 pm	12/07/2018 2:32 pm	Floor First Floor	Room 104A	< 0.4
3202525	3926519	12/04/2018 4:16 pm	12/07/2018 2:33 pm	Floor First Floor	Room 104C	< 0.4
3202526	3926520	12/04/2018 4:16 pm	12/07/2018 2:33 pm	Floor First Floor	Room 104C Duplicate	< 0.4
3202527	3928371	12/04/2018 4:18 pm	12/07/2018 2:35 pm	Floor First Floor	Room 116A	< 0.4
3202528	3928372	12/04/2018 4:19 pm	12/07/2018 2:35 pm	Floor First Floor	Room 116	0.5
3202529	3928374	12/04/2018 4:21 pm	12/07/2018 2:36 pm	Floor First Floor	Room 117	< 0.4
3202530	3928375	12/04/2018 4:22 pm	12/07/2018 2:37 pm	Floor First Floor	Room 118	< 0.4
3202531	3928376	12/04/2018 4:22 pm	12/07/2018 2:38 pm	Floor First Floor	Room 118 Duplicate	< 0.4
3202532	3928377	12/04/2018 4:25 pm	12/07/2018 2:39 pm	Floor First Floor	Room 119B	0.5

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

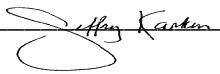
Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202533	3928378	12/04/2018	4:26 pm	12/07/2018	2:41 pm	Floor First Floor Room 119G	0.5
3202534	3928379	12/04/2018	4:27 pm	12/07/2018	2:41 pm	Floor First Floor Room 119F	< 0.4
3202535	3928380	12/04/2018	4:28 pm	12/07/2018	2:45 pm	Floor First Floor Room 119E	< 0.4
3202536	3926198	12/04/2018	4:30 pm	12/07/2018	2:46 pm	Floor First Floor Room 119BA	1.0
3202537	3926199	12/04/2018	4:30 pm	12/07/2018	2:47 pm	Floor First Floor Room 119BA Duplicate	0.7
3202538	3926200	12/04/2018	4:32 pm	12/07/2018	2:48 pm	Floor First Floor Room 120	< 0.4
3202539	3926561	12/04/2018	4:33 pm	12/07/2018	2:48 pm	Floor First Floor Room 119	< 0.4
3202540	3926562	12/04/2018	4:34 pm	12/07/2018	2:53 pm	Floor First Floor Room 121	< 0.4
3202541	3926563	12/04/2018	4:35 pm	12/07/2018	2:55 pm	Floor First Floor Room 121C	< 0.4
3202542	3926565	12/04/2018	4:38 pm	12/07/2018	2:57 pm	Floor First Floor Room 122	< 0.4
3202543	3926566	12/04/2018	4:39 pm	12/07/2018	2:58 pm	Floor First Floor Room 123B	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202544	3926567	12/04/2018	4:40 pm	12/07/2018	3:00 pm	Floor First Floor Room 125A	< 0.4
3202545	3926568	12/04/2018	4:42 pm	12/07/2018	3:02 pm	Floor First Floor Room 124	< 0.4
3202546	3926569	12/04/2018	4:43 pm	12/07/2018	3:06 pm	Floor First Floor Room 125	< 0.4
3202547	3926570	12/04/2018	4:43 pm	12/07/2018	3:06 pm	Floor First Floor Room 125 Duplicate	< 0.4
3202548	3926591	12/04/2018	4:45 pm	12/07/2018	3:08 pm	Floor First Floor Room 124A	< 0.4
3202549	3926592	12/04/2018	4:47 pm	12/07/2018	3:10 pm	Floor First Floor Room 128	< 0.4
3202550	3926593	12/04/2018	4:48 pm	12/07/2018	3:11 pm	Floor First Floor Room 129	< 0.4
3202551	3926594	12/04/2018	4:49 pm	12/07/2018	3:13 pm	Floor First Floor Room 130	< 0.4
3202552	3926595	12/04/2018	4:51 pm	12/07/2018	3:15 pm	Floor First Floor Room 131	< 0.4
3202553	3926596	12/04/2018	4:52 pm	12/07/2018	3:17 pm	Floor First Floor Room 132	< 0.4
3202554	3926597	12/04/2018	4:53 pm	12/07/2018	3:18 pm	Floor First Floor Room 133	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

The uncertainty of this radon measurement is  $\pm 10\%$ . 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.

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202555	3926598	12/04/2018	4:53 pm	12/07/2018	3:18 pm	Floor First Floor Room 133 Duplicate	< 0.4
3202556	3926599	12/04/2018	4:54 pm	12/07/2018	3:22 pm	Floor First Floor Room Theatre Office	1.5
3202557	3926600	12/04/2018	4:55 pm	12/07/2018	3:25 pm	Floor First Floor Room 134B	0.6
3202558	3926581	12/04/2018	4:55 pm	12/07/2018	3:26 pm	Floor First Floor Room 134D	0.7
3202559	3926582	12/04/2018	4:56 pm	12/07/2018	3:27 pm	Floor First Floor Room 134C	0.8
3202560	3926583	12/04/2018	4:57 pm	12/07/2018	3:30 pm	Floor First Floor Room Stage	0.6
3202561	3926584	12/04/2018	4:59 pm	12/07/2018	3:32 pm	Floor First Floor Room Auditorium	0.4
3202562	3926585	12/04/2018	5:04 pm	12/07/2018	4:18 pm	Floor Second Floor Media Center	< 0.4
3202563	3926586	12/04/2018	5:04 pm	12/07/2018	4:21 pm	Floor Second Floor Media Center Duplicate	< 0.4
3202564	3926587	12/04/2018	5:05 pm	12/07/2018	4:21 pm	Floor Second Floor Room Workroom	< 0.4
3202565	3926588	12/04/2018	5:06 pm	12/07/2018	4:23 pm	Floor Second Floor Room Media Center Office	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

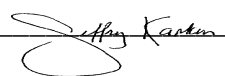
Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202566	3926589	12/04/2018 5:07 pm	12/07/2018 4:25 pm			Floor Second Floor Room 247	< 0.4
3202567	3926601	12/04/2018 5:08 pm	12/07/2018 4:26 pm			Floor Second Floor Room Computer Lab	< 0.4
3202568	3926602	12/04/2018 5:09 pm	12/07/2018 4:27 pm			Floor Second Floor Room 247C	< 0.4
3202569	3926603	12/04/2018 5:09 pm	12/07/2018 4:24 pm			Floor Second Floor Room Production	< 0.4
3202570	3926604	12/04/2018 5:11 pm	12/07/2018 4:24 pm			Floor Second Floor Room 249	< 0.4
3202571	3926605	12/04/2018 5:13 pm	12/07/2018 4:25 pm			Floor Second Floor Room 254	< 0.4
3202572	3926606	12/04/2018 5:15 pm	12/07/2018 4:26 pm			Floor Second Floor Room 254D	< 0.4
3202573	3926607	12/04/2018 5:15 pm	12/07/2018 4:27 pm			Floor Second Floor Room 256	< 0.4
3202574	3926608	12/04/2018 5:16 pm	12/07/2018 4:28 pm			Floor Second Floor Room 259 Concession	0.4
3202575	3926609	12/04/2018 5:17 pm	12/07/2018 4:28 pm			Floor Second Floor Room 259 Ticket Booth	0.4
3202576	3926610	12/04/2018 5:18 pm	12/07/2018 4:29 pm			Floor Second Floor Room 210	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202577	3928106	12/04/2018 5:20 pm	12/07/2018 4:31 pm			Floor Second Floor Room 207 Second Gym	< 0.4
3202578	3928107	12/04/2018 5:21 pm	12/07/2018 4:32 pm			Floor Second Floor Room Main GYM	< 0.4
3202579	3928108	12/04/2018 5:22 pm	12/07/2018 4:33 pm			Floor Second Floor Room Main GYM	< 0.4
3202580	3928109	12/04/2018 5:24 pm	12/07/2018 3:51 pm			Floor Second Floor Room 209	< 0.4
3202581	3928110	12/04/2018 5:25 pm	12/07/2018 3:52 pm			Floor Second Floor Room Cafeteria	< 0.4
3202582	3928335	12/04/2018 5:26 pm	12/07/2018 3:52 pm			Floor Second Floor Room Serving Area	< 0.4
3202583	3928336	12/04/2018 5:27 pm	12/07/2018 3:55 pm			Floor Second Floor Room Kitchen	0.4
3202584	3928337	12/04/2018 5:27 pm	12/07/2018 4:01 pm			Floor Second Floor Room 218	< 0.4
3202585	3928338	12/04/2018 5:28 pm	12/07/2018 4:03 pm			Floor Second Floor Room 219	< 0.4
3202586	3928339	12/04/2018 5:29 pm	12/07/2018 4:05 pm			Floor Second Floor Room 220	< 0.4
3202587	3928340	12/04/2018 5:31 pm	12/07/2018 4:06 pm			Floor Second Floor Room 221	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

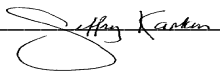
Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3202588	3926571	12/04/2018 5:31 pm	12/07/2018 4:10 pm			Floor Second Floor Room 222	< 0.4
3202589	3926572	12/04/2018 5:32 pm	12/07/2018 4:10 pm			Floor Second Floor Room 222 Duplicate	< 0.4
3202590	3926573	12/04/2018 5:33 pm	12/07/2018 4:11 pm			Floor Second Floor Room 223	< 0.4
3202591	3926574	12/04/2018 5:34 pm	12/07/2018 4:12 pm			Floor Second Floor Room 228G	< 0.4
3202592	3926575	12/04/2018 5:35 pm	12/07/2018 4:14 pm			Floor Second Floor Room 239	< 0.4
3202593	3926576	12/04/2018 5:37 pm	12/07/2018 4:23 pm			Floor Third Floor Room 338	< 0.4
3202594	3926577	12/04/2018 5:37 pm	12/07/2018 4:24 pm			Floor Third Floor Room 339 Office	< 0.4
3202595	3926578	12/04/2018 5:38 pm	12/07/2018 4:27 pm			Floor Third Floor Room 352	< 0.4
3202596	3926579	12/04/2018 5:39 pm	12/07/2018 4:30 pm			Floor Third Floor Room 325	< 0.4
3202597	3926580	12/04/2018 5:41 pm	12/07/2018 4:33 pm			Floor Third Floor Room 318	< 0.4
3202598	3928334	12/04/2018 5:43 pm	12/07/2018 4:35 pm			Floor Third Floor Room 308	< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey  
15800 Quince Orchard Road  
Gaithersburg MD 20876

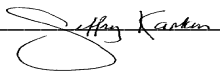
Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
3202599	3917553	12/04/2018 6:00 am	12/07/2018 4:35 pm	Blank		< 0.4
3202600	3926708	12/04/2018 6:50 am	12/07/2018 4:35 pm	Blank		< 0.4
3202601	3926707	12/04/2018 6:50 am	12/07/2018 4:35 pm	Blank		< 0.4
3202602	3927554	12/04/2018 6:00 am	12/07/2018 4:35 pm	Blank		< 0.4
3203160	3926516	12/04/2018 4:13 pm	12/07/2018 2:30 pm	First Floor Room 106B		0.5
3203161	3926611	12/04/2018 3:51 pm	12/07/2018 2:11 pm	First Floor Room 101		< 0.4
3203162	3926564	12/04/2018 4:37 pm	12/07/2018 3:56 pm	First Floor Room 121A		< 0.4

**Comment:** AMENDED REPORT on 12-19-18 and 1-7-19. Stop dates reflected as 12-7-18 for all. Device 3926590 amended to reflect correct device number.

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/08/2018 Date Reported: 12/17/2018

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

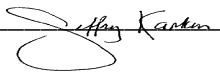
Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
3204125	3926831	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		36.1
3204126	3926832	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		34.8
3204127	3926833	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		33.7
3204128	3926834	12/07/2018 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: 

**Disclaimer:**

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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. Grosvenor Center (Luxmanor ES) | 12. Mill Creek Towne ES   |
| 2. Montrose Center                | 13. Martin Luther King MS |
| 3. Gibbs ES                       | 14. Montgomery Village MS |
| 4. Westbrook ES                   | 15. Great Seneca Creek ES |
| 5. Hadley Farms (Resnik ES)       | 16. Quince Orchard HS     |
| 6. Kingsview MS                   | 17. Redland MS            |
| 7. Longview School                | 18. North Bethesda MS     |
| 8. Lynnbrook Center               | 19. Spark Matsunaga ES    |
| 9. Magruder HS                    | 20. Whetstone ES          |
| 10. McAuliffe ES                  | 21. Wood Acres ES         |
| 11. McNair ES                     |                           |

---

	Date	Initials
Radon Test Kits Deployed	12/04/2018	ML
Radon Test Kits Sampled	12/07/2018	ML
Radon Test Kits Shipped to Lab*	12/07/2018	ML
Radon Test Kits Received by Lab*	12/08/2018; 12/09/2018	ML

\*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 QUINCE ORCHARD HIGH SCHOOL

15800 Quince Orchard Rd., Gaithersburg, Maryland 20878

### EXECUTIVE SUMMARY

Date of Test Report:	3/7/18
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	21
# Rooms $\geq$ 4.0 pCi/L:	1
Low Value:	<0.3
High Value:	4.5
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	2 (plus 1 location to be evaluated by mitigation contractor)

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

Room	Result (pCi/L) 2/1/18	Result (pCi/L) 3/7/18	Average Result (pCi/L)
151	6.4	2.6	4.5
152	5.1	2.5	3.8
154	4.6	4.5	4.6
131	4.3	Missing	----*
150	4.1	2.1	3.1
153	4.0	2.5	3.3
145	4.0	3.1	3.6

\* -- To be evaluated by mitigation contractor

**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Quince Orchard High School
Date of Report	March 7, 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	21
# Rooms $\geq 4.0$ pCi/L	1
Lowest Value	< 0.3 pCi/L
Highest Value	4.5 pCi/L

**Project Status**

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

154 (4.5 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.

Room 131 requires re-test.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

March 7, 2018

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

Re: Radon Testing Services

KCI Job #1214634188

**Location: Quince Orchard High School**

15800 Quince Orchard Rd.  
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 Quince Orchard High School, located at 15800 Quince Orchard Rd. 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 6, 2018 and deployed twenty-three (23) 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 9, 2018 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

### **EVALUATION OF TESTING CONDITIONS**

These tests represent:

- Follow-up to HVAC upgrade testing.

These tests were conducted to:

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

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the teens and 20s and high temperatures ranged from the mid-30s to low-40s. Maximum sustained winds ranged from 10-17 miles per hour. Average humidity was around 75%. 0.41 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>
≥4.0 pCi/L	154	4.5
≤4.0 pCi/L	See Attachment B	See Attachment B

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

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

Sincerely,



Radon Measurement Specialist  
KCI Technologies, Inc.

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Attachments:

B - Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

## ATTACHMENT B

### Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
Quince Orchard High School		
Test Period: 02/06/18-02/09/18		
Kit Number	Room / Area	Result
7193841	133	0.8
7983836	145	3.1
7983881	150	2.1
7983873	151	2.6
7983818	152	2.5
7193842	153	2.5
7983875	154	4.5
7193853	206	0.7
7193848	104A	0.7
7193845	104B	< 0.3
7193844	106B	1.1
7983870	* 110A (Missing)	-
7193849	110B	0.7
7983880	120A	< 0.3
7983885	* 121C (Missing)	-
7193839	123A-122A	< 0.3
7983815	125B	< 0.3
7983886	* 131 (Missing)	-
7193850	200C	< 0.3
7193854	ISI	< 0.3

Table Note:

\* Missing or Compromised Sample

Table 2- Radon Testing Results		
Quince Orchard High School		
Test Period: 02/06/18-02/09/18		
Kit Number	QC Type	Result
7983884	D (152)	2.3
7193852	D (206)	0.7

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

February 28, 2018

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

Radon test result report for:

**QUINCE ORCHARD HIGH SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7193848	104A	2018-02-06 @ 11:00 am	2018-02-09 @ 12:00 pm	0.7 ± 0.3	2018-02-12
7193845	104B	2018-02-06 @ 12:00 pm	2018-02-09 @ 12:00 pm	< 0.3	2018-02-12
7193844	106B	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	1.1 ± 0.3	2018-02-12
7983870	110A	@	@		
7193849	110B	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	0.7 ± 0.3	2018-02-12
7983880	120A	2018-02-06 @ 10:00 am	2018-02-09 @ 12:00 pm	< 0.3	2018-02-12
7983885	121C	@	@		
7193839	123A-122A	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	< 0.3	2018-02-12
7983815	125B	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	< 0.3	2018-02-12
7983886	131	@	@		
7193841	133	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	0.8 ± 0.3	2018-02-12
7983836	145	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	3.1 ± 0.4	2018-02-12
7983881	150	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	2.1 ± 0.4	2018-02-12
7983873	151	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	2.6 ± 0.4	2018-02-12
7983884	152	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	2.3 ± 0.4	2018-02-12
7983818	152	2018-02-06 @ 10:00 am	2018-02-09 @ 11:00 am	2.5 ± 0.4	2018-02-12
7193842	153	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	2.5 ± 0.4	2018-02-12
7983875	154	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	4.5 ± 0.5	2018-02-12
7193850	200C	2018-02-06 @ 11:00 am	2018-02-09 @ 12:00 pm	< 0.3	2018-02-12
7193852	206	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	0.7 ± 0.3	2018-02-12
7193853	206	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	0.7 ± 0.3	2018-02-12
7193854	ISI	2018-02-06 @ 11:00 am	2018-02-09 @ 11:00 am	< 0.3	2018-02-12





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Corporate Office: 936 Ridgebrook Road • Sparks, Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

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## Radon Test Kit Chain of Custody

Project Name: MCPS Radon

Names of Schools:

1. English Manor
2. Forest Oak Middle School
3. Robert Frost Middle
4. Damascus Elementary School
5. Quince Orchard High School
6. Blair G. Ewing Center

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	Date	Initials
Radon Test Kits Deployed	02/06/18	JM
Radon Test Kits Collected	02/09/18	JM
Radon Test Kits Shipped to Lab*	02/09/18	JM
Radon Test Kits Received by Lab*	02/12/18	JM

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

February 27, 2018

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

Radon test result report for:

**OFFICE BLANKS**

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

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

February 27, 2018

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

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

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

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

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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).**

---

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

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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  $\mu$ R/h Elevation = 820 ft

### MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Quince Orchard High School
Date of Report	February 1, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing <b>HVAC Upgrade</b> Window Replacement New Addition New Facility
# of Rooms Tested	79
# Rooms $\geq 4.0$ pCi/L	7
Lowest Value	< 0.3 pCi/L
Highest Value	6.4 pCi/L

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

151 (6.4 pCi/L), 152 (5.1 pCi/L), 154 (4.6 pCi/L), 131 (4.3 pCi/L), 150 (4.1 pCi/L), 153 (4.0 pCi/L),  
145 (4.0 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.



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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: Quince Orchard High School**

15800 Quince Orchard Rd.  
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 Quince Orchard High School, located at 15800 Quince Orchard Rd. 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 ninety-nine (99) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to

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

KCI returned to the site on December 7, 2017 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

### **EVALUATION OF TESTING CONDITIONS**

These tests represent:

- HVAC upgrade testing.

These tests were conducted to:

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

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the high-20s to mid-40s and high temperatures ranged from the low-40s to mid-50s. Maximum sustained winds ranged from 12-17 miles per hour. Average humidity was around 65%. 0.16 Inches of precipitation was recorded during the testing period.

### **RESULTS**

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Missing/compromised tests, missed rooms, and locked rooms are listed on Table 3 (Attachment B). The laboratory



analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
$\geq 4.0$ pCi/L	151	6.4
$\geq 4.0$ pCi/L	152	5.1
$\geq 4.0$ pCi/L	154	4.6
$\geq 4.0$ pCi/L	131	4.3
$\geq 4.0$ pCi/L	150	4.1
$\geq 4.0$ pCi/L	153	4.0
$\geq 4.0$ pCi/L	145	4.0
$\leq 4.0$ pCi/L	See Attachment B	See Attachment B

Quality Control Samples	
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 Moulds, 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

Radon Testing Results		
Quince Orchard High School		
Test Period: 12/04/17-12/07/17		
Kit Number	Room / Area	Result
7978220	100	1.6
7978582	101	0.7
7978219	102	0.9
7978264	105	0.7
7978260	112	0.8
7978277	116	< 0.3
7978285	117	< 0.3
7978271	118	0.5
7978295	119	0.5
7978298	120	< 0.3
7978276	121	< 0.3
7978283	122	0.7
7978292	125	0.6
7978291	128	2.1
7978290	129	2.6
7978293	130	1.1
7978288	131	4.3
7978289	132	1.4
7978213	138	< 0.3
7978043	140	0.5
7978600	143	< 0.3
7978227	145	4.0
7978597	148	3.5
7978598	149	3.2
7978250	150	4.1
7978202	151	6.4
7978585	152	5.1
7978591	153	4.0
7978592	154	4.6
7975377	200	< 0.3
7975378	206	1.0
7975379	206	1.1
7978084	207	0.9
7978214	207	0.9
7978085	207	1.0
7978090	207	0.7
7978588	210	< 0.3
7975397	339	0.7
7975385	340	< 0.3
7975383	341	0.6
7975389	342	< 0.3
7975380	344	0.6
7975381	345	0.5
7978262	105B	< 0.3
7978586	105C	0.6
7978595	105D	0.9

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Quince Orchard High School		
Test Period: 12/04/17-12/07/17		
Kit Number	Room / Area	Result
7978594	105E	< 0.3
7978280	105F	0.5
7978589	105G	0.5
7978279	105H	< 0.3
7978261	105I	< 0.3
7978590	105J	0.6
7978593	105K	< 0.3
7978278	105L	< 0.3
7978266	105M	0.7
7978265	108B	1.0
7978282	117A	< 0.3
7978281	118A	< 0.3
7978270	119B	1.3
7978296	119E	0.6
7978215	119F	< 0.3
7978297	119G	1.1
7978286	122B	< 0.3
7978284	124A	1.1
7978259	124B	0.5
7978294	125A	< 0.3
7978287	* 133 (Missing)	1.0
7978080	143A	< 0.3
7978092	143B	< 0.3
7978599	144A	< 0.3
7978587	144B	< 0.3
7975376	200A	< 0.3
7975375	200B	< 0.3
7975373	* 200C (Tampered)	< 0.3
7975374	200D	< 0.3
7975372	200F	< 0.3
7975399	200G	< 0.3
7975400	200K	< 0.3
7978238	* 206 (Missing)	-
7975396	339A	0.7
7975382	341A	< 0.3
7978273	AUDITORIUM	< 0.3
7978274	AUDITORIUM	0.8
7978272	AUDITORIUM	1.0
7975384	KIT OFF	1.1
7978275	THEATRE OFFICE	1.7

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Quince Orchard High School		
Test Period: 12/04/17-12/07/17		
Kit Number	QC Type	Result
7978596	D (105D)	0.8
7978268	D (105K)	< 0.3
7978300	D (119)	< 0.3
7978269	D (119G)	0.8
7978091	D (143A)	0.8
7978263	D (148)	3.9
7975398	D (200G)	< 0.3
7978249	D (206)	0.7
7978299	D (AUDITORIUM)	< 0.3
7978267	FB (105K)	< 0.3
7978093	FB (143A)	< 0.3
7975395	FB (339)	< 0.3
7983845	OB (OFFICE BLANK)	< 0.3

Table Note:

\* Missing or Compromised Sample





# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:**QUINCE ORCHARD HIGH SCHOOL  
MAIN**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7978220	100	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	1.6 ± 0.3	2017-12-11
7978582	101	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	0.7 ± 0.3	2017-12-11
7978219	102	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	0.9 ± 0.4	2017-12-12
7978264	105	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.7 ± 0.4	2017-12-12
7978262	105B	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978586	105C	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.6 ± 0.4	2017-12-12
7978596	105D	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.8 ± 0.4	2017-12-12
7978595	105D	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.9 ± 0.4	2017-12-12
7978594	105E	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978280	105F	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.5 ± 0.4	2017-12-12
7978589	105G	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.5 ± 0.3	2017-12-12
7978279	105H	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978261	105I	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978590	105J	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.6 ± 0.3	2017-12-12
7978267	105K	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-11
7978593	105K	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978268	105K	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978278	105L	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-11
7978266	105M	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.7 ± 0.3	2017-12-12
7978265	108B	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	1.0 ± 0.4	2017-12-12
7978260	112	2017-12-04 @ 10:00 am	2017-12-07 @ 7:00 am	0.8 ± 0.4	2017-12-12
7978277	116	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978285	117	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978282	117A	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978271	118	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	0.5 ± 0.4	2017-12-12
7978281	118A	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978300	119	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978295	119	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	0.5 ± 0.4	2017-12-12
7978270	119B	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	1.3 ± 0.4	2017-12-12
7978296	119E	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	0.6 ± 0.4	2017-12-12
7978215	119F	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978297	119G	2017-12-04 @ 9:00 am	2017-12-07 @ 9:00 am	1.1 ± 0.3	2017-12-12
7978269	119G	2017-12-04 @ 9:00 am	2017-12-07 @ 9:00 am	0.8 ± 0.3	2017-12-12
7978298	120	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978276	121	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978283	122	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	0.7 ± 0.4	2017-12-12
7978286	122B	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12

Radon test result report for:**QUINCE ORCHARD HIGH SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7978284	124A	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	1.1 ± 0.4	2017-12-12
7978259	124B	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	0.5 ± 0.4	2017-12-12
7978292	125	2017-12-04 @ 8:00 am	2017-12-07 @ 7:00 am	0.6 ± 0.4	2017-12-12
7978294	125A	2017-12-04 @ 9:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978291	128	2017-12-04 @ 8:00 am	2017-12-07 @ 9:00 am	2.1 ± 0.3	2017-12-11
7978290	129	2017-12-04 @ 8:00 am	2017-12-07 @ 7:00 am	2.6 ± 0.4	2017-12-12
7978293	130	2017-12-04 @ 8:00 am	2017-12-07 @ 7:00 am	1.1 ± 0.4	2017-12-12
7978288	131	2017-12-04 @ 8:00 am	2017-12-07 @ 7:00 am	4.3 ± 0.5	2017-12-12
7978289	132	2017-12-04 @ 8:00 am	2017-12-07 @ 7:00 am	1.4 ± 0.4	2017-12-12
7978287	133	2017-12-04 @ 8:00 am	2017-12-07 @ 9:00 am	1.0 ± 0.3	2017-12-12
7978213	138	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7978043	140	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	0.5 ± 0.3	2017-12-12
7978600	143	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7978091	143A	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	0.8 ± 0.3	2017-12-12
7978080	143A	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7978093	143A	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7978092	143B	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7978599	144A	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7978587	144B	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7978227	145	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	4.0 ± 0.5	2017-12-12
7978597	148	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	3.5 ± 0.4	2017-12-11
7978263	148	2017-12-04 @ 10:00 am	2017-12-07 @ 8:00 am	3.9 ± 0.5	2017-12-12
7978598	149	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	3.2 ± 0.4	2017-12-12
7978250	150	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	4.1 ± 0.5	2017-12-12
7978202	151	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	6.4 ± 0.6	2017-12-12
7978585	152	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	5.1 ± 0.4	2017-12-11
7978591	153	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	4.0 ± 0.5	2017-12-12
7978592	154	2017-12-04 @ 11:00 am	2017-12-07 @ 8:00 am	4.6 ± 0.5	2017-12-12
7975377	200	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7975376	200A	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975375	200B	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7975373	200C	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975374	200D	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975372	200F	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975398	200G	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975399	200G	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7975400	200K	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11

Radon test result report for:

**QUINCE ORCHARD HIGH SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7978238	206	@	@		
7978249	206	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	0.7 ± 0.4	2017-12-12
7975378	206	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	1.0 ± 0.4	2017-12-12
7975379	206	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	1.1 ± 0.4	2017-12-12
7978085	207	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	1.0 ± 0.3	2017-12-12
7978090	207	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	0.7 ± 0.3	2017-12-12
7978214	207	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	0.9 ± 0.3	2017-12-12
7978084	207	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	0.9 ± 0.3	2017-12-12
7978588	210	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975395	339	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7975397	339	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	0.7 ± 0.4	2017-12-12
7975396	339A	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	0.7 ± 0.4	2017-12-12
7975385	340	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975383	341	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	0.6 ± 0.4	2017-12-12
7975382	341A	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-11
7975389	342	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	< 0.3	2017-12-12
7975380	344	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	0.6 ± 0.4	2017-12-12
7975381	345	2017-12-04 @ 1:00 pm	2017-12-07 @ 8:00 am	0.5 ± 0.3	2017-12-12
7978272	AUDITORIUM	2017-12-04 @ 11:00 am	2017-12-07 @ 7:00 am	1.0 ± 0.4	2017-12-12
7978299	AUDITORIUM	2017-12-04 @ 11:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978273	AUDITORIUM	2017-12-04 @ 11:00 am	2017-12-07 @ 7:00 am	< 0.3	2017-12-12
7978274	AUDITORIUM	2017-12-04 @ 11:00 am	2017-12-07 @ 7:00 am	0.8 ± 0.4	2017-12-12
7975384	KIT OFF	2017-12-04 @ 12:00 pm	2017-12-07 @ 8:00 am	1.1 ± 0.4	2017-12-12
7983845	OFFICE BLANK	2017-12-04 @ 11:00 am	2017-12-07 @ 11:00 am	< 0.3	2017-12-11
7978275	THEATRE OFFICE	2017-12-04 @ 8:00 am	2017-12-07 @ 7:00 am	1.7 ± 0.4	2017-12-12



## 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

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December 19, 2017

**\*\* 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 (27.7 pCi/L).**

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

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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 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) Chan. 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 QUINCE ORCHARD HIGH SCHOOL

15800 Quince Orchard Road, Gaithersburg, Maryland 20878

## EXECUTIVE SUMMARY

Date of Test Report:	3/15/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	3
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	<0.3
High Value:	3.1
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	0

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

Room	Result (pCi/L) 2/29/16 (Rev 1 Initial)	Result (pCi/L) 3/15/16 Follow-Up	Average Result (pCi/L)
125B	<0.3 Tampered	<0.3	<0.3
ISI	<0.3 Tampered	<0.3	<0.3
Lower AUDI	--- Missing	3.0	3.0
Lower AUDI	2.5 Tampered	3.1	2.8



## MCPS RADON TESTING

### Executive Summary: Quince Orchard High School

Date of Test Report:	3/15/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	3
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	3.1

### Project Status:

Retesting completed; no further action at this time.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

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: Quince Orchard High School  
15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Road 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 six (6) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on February 25, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

### **Evaluation of Testing Conditions:**

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

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

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

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

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

### **Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
<b><math>\geq 4.0</math> pCi/L</b>	none	n/a
<b><math>&lt; 4.0</math> pCi/L</b>	See Attachment B	

Notes:

D- Duplicate sample

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

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

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

Sincerely,



James M. Moulds  
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.



Radon Testing Results		
Quince Orchard HS		
Test Period: 02/22/16-02/25/16		
Kit Number	Room / Area	Result
7719459	125 B	< 0.3
7712552	ISI	< 0.3
7712564	Lower Auditorium	3.1
7712567	Lower Auditorium	3.0

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Quince Orchard HS		
Test Period: 02/22/16-02/25/16		
Kit Number	QC Type	Result
7712583	D (125B)	< 0.3
7712572	FB (125B)	< 0.3

Table Note:

\* Missing or Compromised Sample

## ATTACHMENT C

### Laboratory Analytical Results

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March 8, 2016

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

---

Radon test result report for:  
**QUINCE ORCHARD HS  
MAIN**

---

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7719459	125 B	2016-02-22 @ 2:00 pm	2016-02-25 @ 2:00 pm	< 0.3	2016-02-29
7712572	125B	2016-02-22 @ 2:00 pm	2016-02-25 @ 2:00 pm	< 0.3	2016-02-29
7712583	125B	2016-02-22 @ 2:00 pm	2016-02-25 @ 2:00 pm	< 0.3	2016-02-29
7712552	ISI	2016-02-22 @ 2:00 pm	2016-02-25 @ 2:00 pm	< 0.3	2016-02-29
7712564	Lower Audi.	2016-02-22 @ 2:00 pm	2016-02-25 @ 2:00 pm	3.1 ± 0.4	2016-02-29
7712567	Lower Audi.	2016-02-22 @ 2:00 pm	2016-02-25 @ 2:00 pm	3.0 ± 0.4	2016-02-29

---

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

---

March 9, 2016

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

---

Radon test result report for:

**MCPS**

**Phase 9 Office Blanks**

---

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

---

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

---

March 9, 2016

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

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Radon test result report for:

**MCPS**

**Phase 9 Office Blanks**

---

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

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

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**

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

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

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



# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCF Technologies Inc. Job Number 173704

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

Date Start: 11/30/16 Date Stop: 2/1/17

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

3 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



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E N G I N E E R S • P L A N N E R S • S C I E N T I S T S • C O N S T R U C T I O N M A N A G E R S  
Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

---

## 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: Quince Orchard High School

Date of Test Report:	2/29/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	70
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	2.6

### Project Status:

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



February 29, 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 # 12146341.19

Location: Quince Orchard High School  
15800 Quince Orchard Road  
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 Quince Orchard High School, located at 15800 Quince Orchard Road 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 15, 2016 and deployed ninth-two (92) 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 18, 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  $\leq 65^{\circ}\text{F}$ .

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>
<b><math>\geq 4.0</math> pCi/L</b>	none	n/a
<b><math>&lt; 4.0</math> pCi/L</b>	See Attachment B	

Notes:

D- Duplicate sample

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

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

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

Sincerely,



James M. Moulds  
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		
Quince Orchard HS		
Test Period: 12/15/15-12/18/15		
Kit Number	Room / Area	Result
7704349	100	< 0.3
7704348	101	< 0.3
7705078	102	< 0.3
7705076	103	< 0.3
7705081	105	< 0.3
7705074	112	< 0.3
7705082	116	< 0.3
7705088	116	< 0.3
7705087	117	< 0.3
7705092	117	< 0.3
7705040	118	< 0.3
7705133	118	< 0.3
7705138	118	< 0.3
7705072	119	0.5
7705130	120	< 0.3
7705145	121	0.8
7705123	122	0.5
7705073	124	0.6
7705077	125	< 0.3
7705046	128	0.6
7705048	129	< 0.3
7705042	130	< 0.3
7705094	131	0.7
7705044	132	0.6
7705066	133	< 0.3
7704324	138	0.5
7704375	140	< 0.3
7704284	143	< 0.3
7704323	145	2.6
7704380	145	2.5
7704321	148	1.1
7704283	149	1.1
7704383	150	1.2
7705136	151	1.9
7704357	152	1.5
7704384	153	1.4
7704388	153	1.5
7705028	200	< 0.3
7705003	216	< 0.3
7705015	221	< 0.3
7705058	226	< 0.3
7705067	232	< 0.3
7705096	252	< 0.3
7705016	254	< 0.3
7705049	352	< 0.3
7705090	105C	< 0.3

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Quince Orchard Hs		
Test Period: 12/15/15-12/18/15		
Kit Number	Room / Area	Result
7705045	105E	< 0.3
7705114	105F	< 0.3
7705101	105G	< 0.3
7705099	105H	< 0.3
7705086	105I	< 0.3
7705080	105J	< 0.3
7705093	105K	< 0.3
7705071	105L	< 0.3
7705098	105M	< 0.3
7705064	106B	1.1
7705025	108B	1.1
7705105	116A	< 0.3
7705115	118A	< 0.3
7705111	119A	< 0.3
7705089	119B	0.9
7705079	119BA	1.3
7705100	119E	< 0.3
7705075	119F	< 0.3
7705140	119G	0.6
7705055	120A	0.6
7705070	121C	< 0.3
7705054	123B	< 0.3
7705122	125A	< 0.3
7705112	* 125B (Tampered)	< 0.3
7704358	143A	< 0.3
7704362	143B	< 0.3
7704367	144A	< 0.3
7704281	144B	< 0.3
7705021	* ISI (Tampered)	< 0.3
7705030	* LOWER AUDI (Missing)	-
7705063	* LOWER AUDI (Tampered)	2.5

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Quince Orchard HS		
Test Period: 12/15/15-12/18/15		
Kit Number	QC Type	Result
7705083	D (100)	0.5
7705102	D (103)	0.6
7705059	D (108B)	0.9
7705091	D (112)	< 0.3
7705051	D (120)	< 0.3
7705041	D (124)	< 0.3
7705137	D (130)	< 0.3
7705017	D (131)	0.8
7705053	D (133)	< 0.3
7704322	D (143)	< 0.3
7705084	FB (100)	< 0.3
7705095	FB (105E)	< 0.3
7705141	FB (120)	< 0.3
7705085	FB (125)	< 0.3
7708213	OB (OFFICE BLANK)	< 0.3

Table Note:

\* Missing or Compromised Sample

## ATTACHMENT C

### Laboratory Analytical Results

Radon test result report for:  
**QUINCE ORCHARD HS  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704349	100	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705083	100	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	0.5 ± 0.3	2015-12-22
7705084	100	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704348	101	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705078	102	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705076	103	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705102	103	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.6 ± 0.3	2015-12-22
7705081	105	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705090	105C	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705095	105E	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705045	105E	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705114	105F	2015-12-15 @ 11:00 am	2015-12-18 @ 12:00 pm	< 0.3	2015-12-22
7705101	105G	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705099	105H	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705086	105I	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705080	105J	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705093	105K	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705071	105L	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705098	105M	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705064	106B	2015-12-15 @ 3:00 pm	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7705025	108B	2015-12-15 @ 3:00 pm	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7705059	108B	2015-12-15 @ 3:00 pm	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7705091	112	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705074	112	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705082	116	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705088	116	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705105	116A	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705087	117	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705092	117	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705040	118	2015-12-15 @ 12:00 pm	2015-12-18 @ 12:00 pm	< 0.3	2015-12-22
7705133	118	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705138	118	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705115	118A	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705072	119	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	0.5 ± 0.3	2015-12-22
7705111	119A	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705089	119B	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7705079	119BA	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.3 ± 0.3	2015-12-22

Radon test result report for:  
**QUINCE ORCHARD HS  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7705100	119E	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705075	119F	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705140	119G	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	0.6 ± 0.3	2015-12-22
7705051	120	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705130	120	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705141	120	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705055	120A	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.6 ± 0.3	2015-12-22
7705145	121	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.8 ± 0.3	2015-12-22
7705070	121C	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705123	122	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.5 ± 0.2	2015-12-22
7705054	123B	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705041	124	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705073	124	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.6 ± 0.3	2015-12-22
7705077	125	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705085	125	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705122	125A	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705112	125B	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705046	128	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	0.6 ± 0.3	2015-12-22
7705048	129	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705042	130	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705137	130	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705017	131	2015-12-15 @ 2:00 pm	2015-12-18 @ 11:00 am	0.8 ± 0.3	2015-12-22
7705094	131	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	0.7 ± 0.3	2015-12-22
7705044	132	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	0.6 ± 0.3	2015-12-22
7705053	133	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705066	133	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704324	138	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	0.5 ± 0.3	2015-12-22
7704375	140	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704284	143	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704322	143	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704358	143A	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704362	143B	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704367	144A	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704281	144B	2015-12-15 @ 9:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704380	145	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	2.5 ± 0.3	2015-12-22
7704323	145	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	2.6 ± 0.3	2015-12-22
7704321	148	2015-12-15 @ 10:00 am	2015-12-18 @ 10:00 am	1.1 ± 0.3	2015-12-22



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2015

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

Radon test result report for:  
**QUINCE ORCHARD HS  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704283	149	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7704383	150	2015-12-15 @ 10:00 am	2015-12-18 @ 10:00 am	1.2 ± 0.3	2015-12-22
7705136	151	2015-12-15 @ 10:00 am	2015-12-18 @ 10:00 am	1.9 ± 0.3	2015-12-22
7704357	152	2015-12-15 @ 10:00 am	2015-12-18 @ 10:00 am	1.5 ± 0.3	2015-12-22
7704384	153	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	1.4 ± 0.3	2015-12-22
7704388	153	2015-12-15 @ 9:00 am	2015-12-18 @ 10:00 am	1.5 ± 0.3	2015-12-22
7705028	200	2015-12-15 @ 3:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705003	216	2015-12-15 @ 3:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705015	221	2015-12-15 @ 3:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705058	226	2015-12-15 @ 3:00 pm	2015-12-18 @ 11:00 am	< 0.3	2015-12-22
7705067	232	2015-12-15 @ 3:00 pm	2015-12-18 @ 11:00 am	< 0.3	2015-12-22
7705096	252	2015-12-15 @ 3:00 pm	2015-12-18 @ 11:00 am	< 0.3	2015-12-22
7705016	254	2015-12-15 @ 3:00 pm	2015-12-18 @ 11:00 am	< 0.3	2015-12-22
7705049	352	2015-12-15 @ 3:00 pm	2015-12-18 @ 11:00 am	< 0.3	2015-12-22
7705021	ISI	2015-12-15 @ 3:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705063	LOWER AUDITORIUM	2015-12-15 @ 2:00 pm	2015-12-18 @ 11:00 am	2.5 ± 0.3	2015-12-22

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2015

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

Radon test result report for:

**QUINCE ORCHARD HS  
OFFICE BLANK**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7708213	OFFICE BLANK	2015-12-15 @ 3:00 pm	2015-12-18 @ 3:00 pm	< 0.3	2015-12-22

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

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

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

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

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**\*\*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



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ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS  
Corporate Office: 936 Ridgebrook road • Sparks, Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

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## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase I

Name of Schools:

- |                            |                        |                        |                       |
|----------------------------|------------------------|------------------------|-----------------------|
| 1. Westland M.S.           | 6. South Lake E.S.     | 11. Highland View E.S. | 16. Ridgeview M.S.    |
| 2. East Silver Spring E.S. | 7. Jones Lane E.S.     | 12. Cresthaven E.S.    | 17. Rockwell E.S.     |
| 3. Oakland Terrace E.S.    | 8. Quince Orchard H.S. | 13. Viers Mill E.S.    | 18. Oak View E.S.     |
| 4. Rocking Horse Road E.S. | 9. Damascus E.S.       | 14. Smith Center       | 19. Jackson Road E.S. |
| 5. Beall E.S.              | 10. Westbrooke E.S.    | 15. Rosemont E.S.      | 20. Highland E.S.     |
|                            |                        |                        | 21. Watkins Mill E.S. |

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	Date	Initials
Radon Test Kits Deployed	12/15/15	KM
Radon Test Kits Collected	12/18/15	KM
Radon Test Kits Shipped to Lab*	12/18/15	KM
Radon Test Kits Received by Lab*	12/22/15	KM

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