

School Year: **24-25**

Facility:	S. Christa McAuliffe Elementary School		
Address:	12500 Wisteria Dr.		
	Germantown, MD 20874		
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 checked="" type="checkbox"/> Initial Testing -or- <input 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 (≥ 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	71	Lowest Value (pCi/L)	<0.3
Number of Rooms (≥ 4.0 -pCi/L)	0	Highest Value (pCi/L)	1.9

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 ≥ 2.0 -pCi/L; ≥ 2.7 -pCi/L; ≥ 4.0 -pCi/L; and ≥ 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)
<i>Other—Specify here:</i>		
Detector/Device Name:	Air Chek – Radon Test Kits	
Manufacturer:	Radon Labs	
Person(s) Deploying or Retrieving Test Devices and certification number		Organization/Company
Brittany Maas		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	Length of Test (days):	3	Date of Deployment and Retrieval (mm/dd/yy):	3/3/2025
<input type="checkbox"/> Long-Term				3/6/2025
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				Total
	Ground-Contact		Upper-Level(s)		
	Initial	Follow-Up	Initial	Follow-Up	
Test Locations ¹	70	0	1	0	71
Duplicates ²	8	0	0	0	8
Field Blanks ³	4	0	0	0	4
Grand Total					83

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 ¹	Not applicable		10
Trip Blanks ²	1	0	1
Office Blanks ^{3, 4}	1	0	1
			12

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
	Initial Follow-Up
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"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No
For all Duplicate Samples ¹ , the higher value is $\leq 2x$ the lower value?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No
For all Duplicate Samples ¹ , Relative Percent Difference(s) (RPD) ² are less than the Warning Level ³ ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No
For all Duplicate Samples ¹ , Relative Percent Difference(s) (RPD) ² are less than the Control Level ³ ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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
≥ 4.0 -pCi/L	28% RPD	36% RPD

Summary of Test Results¹ and Determination of Valid Measurements²

Round of Testing	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Number of test locations:	70	0	1	00	71
Number of locations ≥ 8.0 -pCi/L:	0	0	0	0	0
Number of locations ≥ 4.0 and ≤ 8 -pCi/L:	0	0	0	0	0
Number of locations ≥ 2.7 and < 4 -pCi/L:	0	0	0	0	0
Number of locations ≥ 2.0 and < 2.7 -pCi/L:	0	0	0	0	0
Number of missing required test locations ³ :	1	0	0	0	1
Number of failed duplicate control locations:	0	0	0	0	0
Percentage of missing test locations for the facility ^{4,5} :	1.4%	0	0	0	1.4%

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 ≥ 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 ≥ 4.0 -pCi/L and the total number of test locations are ≥ 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 Results¹ and Determination of Valid Measurements² (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 type="checkbox"/> Yes <input checked="" 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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<i>If Yes to both above – then Testing Status – ‘No Further Testing Needed’ mark ‘NA’ below and complete Conclusions section</i>			
If No to either above, were all results obtained under 4.0-pCi/L and were sufficient valid measurements obtained?^{1,2} <i>If Yes, then - ‘No Further Testing Needed’ complete Conclusion section on first page. If No, then - ‘Follow-up Testing Required’ continue below.</i>		<input checked="" type="checkbox"/> Yes <input 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		
S. Christa McAuliffe Elementary School		
Test Period: 3/3/2025 - 3/6/2025		
Kit Number	Room / Area	Result
11886797	1	1.2
11886798	2	0.7
11886772	3	0.9
11886771	4	0.7
11886770	5	0.9
11886765	6	0.5
11886769	7	0.5
11886778	7	< 0.3
11886774	8	< 0.3
11886788	9	1.8
11886777	10	< 0.3
11886749	12	< 0.3
11886750	14	< 0.3
11886757	14	0.5
11886760	14	< 0.3
11886709	15	0.8
11886755	16	0.6
11886735	18	1.1
11886740	25	1.6
11886745	25	1.6
11886746	26	0.7
11886748	27	1.8
11886747	28	1.1
11886727	29	1.8
11886720	30	< 0.3
11886733	31	1.1
11886726	32	0.7
11886730	33	0.7
11886731	34	0.7
11886718	35	0.7
11886732	36	0.7
11886711	37	< 0.3
11886712	37	< 0.3
11886719	37	< 0.3
11886722	38	0.7
11886704	39	0.5
11886721	40	0.6
11886703	42	< 0.3

Table 1- Radon Testing Results		
S. Christa McAuliffe Elementary School		
Test Period: 3/3/2025 - 3/6/2025		
11886725	43	< 0.3
11886702	44	0.7
11886743	102	< 0.3
11886753	103	< 0.3
11886761	104	< 0.3
11886762	105	< 0.3
11886754	106	< 0.3
11886758	108	< 0.3
11886734	109	< 0.3
11886739	109	< 0.3
11886741	109	< 0.3
11886737	113	< 0.3
11886738	206	< 0.3
11886728	2A	0.6
11886744	ALVING	< 0.3
11886715	APR	1.9
11886716	APR	1.5
11886724	ART	0.7
11886701	BUILDING SERVICE MANAGER	0.8
11886710	BUILDING SERVICE MANAGER	0.5
11886708	COATES	< 0.3
11886713	CONFERENCE	0.7
11886742	COU	< 0.3
11886768	COU	< 0.3
11886787	COU	0.7
11886790	COU	0.7
11886756	DOUGHERTY	< 0.3
11886759	ELD	< 0.3
11886736	ESOL	< 0.3
11886723	GYM	1.1
11886729	GYM	1.4
11886717	GYM OFFICE	1.9
11886705	HEALTH ROOM	0.9
11886706	HEALTH ROOM OFFICE	0.8
11886751	IMC	< 0.3
11886752	ISM	< 0.3
11886763	ISM	< 0.3
11886779	LAWSON	< 0.3
11886707	MAIN OFFICE	Missing Kit

Table 1- Radon Testing Results		
S. Christa McAuliffe Elementary School		
Test Period: 3/3/2025 - 3/6/2025		
11886780	MATERIAL PREP	< 0.3
11886773	OBSERVATION OFFICE	0.9
11886764	SPT	< 0.3
11886781	TV STUDIO	< 0.3
11886786	VP	0.5
11886714	WORKROOM	0.9

Table 3 - QC Radon Testing Results			
S. Christa McAuliffe Elementary School			
Test Period: 3/3/2025 - 3/6/2025			
Kit Number	QC Type	Room / Area	Result
11886769	D	7	0.5
11886760	D	14	< 0.3
11886750	FB	14	< 0.3
11886745	D	25	1.6
11886712	D	37	< 0.3
11886719	FB	37	< 0.3
11886739	D	109	< 0.3
11886734	FB	109	< 0.3
11886701	D	Building Service Manager	0.8
11886787	D	COU	0.7
11886768	FB	COU	< 0.3
11886752	D	ISM	< 0.3
11886966	OB	OFFICE BLANK	< 0.3
11886999	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation

S. Christa McAuliffe Elementary School

Test Period: 3/3/2025 - 3/6/2025

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	
11886769	11886778	7	0.5	0.3	✓	0.6	PASS	0.4	<1-pCi/L	✓
11886760	11886757	14	0.5	0.3	✓	0.6	PASS	0.4	<1-pCi/L	✓
11886745	11886740	25	1.6	1.6	✓	3.2	PASS	1.6	<1-pCi/L	✓
11886712	11886711	37	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11886739	11886741	109	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11886701	11886710	Building Service Manager	0.8	0.5	✓	1.0	PASS	0.7	<1-pCi/L	✓
11886787	11886790	COU	0.7	0.7	✓	1.4	PASS	0.7	<1-pCi/L	✓
11886752	11886763	ISM	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓

NOTES:

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

Attachment 2:
Laboratory Reports

Radon test result report for:

**S. CHRISTA MCAULIFFE ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886797	1	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	1.2 ± 0.4	2025-03-10
11886777	10	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886743	102	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886753	103	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886761	104	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886762	105	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886754	106	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886758	108	2025-03-03 @ 11:00 am	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886741	109	2025-03-03 @ 11:00 am	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886739	109	2025-03-03 @ 11:00 am	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886734	109	2025-03-03 @ 11:00 am	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886737	113	2025-03-03 @ 11:00 am	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886749	12	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886760	14	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886757	14	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.5 ± 0.3	2025-03-10
11886750	14	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886709	15	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.8 ± 0.3	2025-03-10
11886755	16	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.6 ± 0.3	2025-03-10
11886735	18	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	1.1 ± 0.4	2025-03-10
11886798	2	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.7 ± 0.3	2025-03-10
11886738	206	2025-03-03 @ 11:00 am	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886740	25	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.6 ± 0.4	2025-03-10
11886745	25	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.6 ± 0.4	2025-03-10
11886746	26	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886748	27	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.8 ± 0.4	2025-03-10
11886747	28	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.1 ± 0.4	2025-03-10
11886727	29	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.8 ± 0.4	2025-03-10
11886728	2A	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.6 ± 0.3	2025-03-10
11886772	3	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.9 ± 0.3	2025-03-10
11886720	30	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886733	31	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.1 ± 0.3	2025-03-10
11886726	32	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886730	33	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886731	34	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886718	35	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886732	36	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886711	37	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10

Radon test result report for:

**S. CHRISTA MCAULIFFE ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886712	37	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886719	37	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886722	38	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886704	39	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.5 ± 0.3	2025-03-10
11886771	4	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.7 ± 0.3	2025-03-10
11886721	40	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.6 ± 0.3	2025-03-10
11886703	42	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886725	43	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886702	44	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886770	5	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.9 ± 0.3	2025-03-10
11886765	6	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.5 ± 0.3	2025-03-10
11886778	7	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886769	7	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.5 ± 0.3	2025-03-10
11886774	8	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886788	9	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	1.8 ± 0.4	2025-03-10
11886744	ALVING	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886716	APR	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	1.5 ± 0.4	2025-03-10
11886715	APR	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	1.9 ± 0.4	2025-03-10
11886724	ART	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886701	BUILDING SERVICE MANAGER	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.8 ± 0.3	2025-03-10
11886710	BUILDING SERVICE MANAGER	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	0.5 ± 0.3	2025-03-10
11886708	COATES	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886713	CONFERENCE	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886790	COU	2025-03-03 @ 12:00 pm	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886787	COU	2025-03-03 @ 12:00 pm	2025-03-06 @ 10:00 am	0.7 ± 0.3	2025-03-10
11886768	COU	2025-03-03 @ 12:00 pm	2025-03-06 @ 10:00 am	< 0.3	2025-03-10
11886742	COU	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886756	DOUGHERTY	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886759	ELD	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886736	ESOL	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886729	GYM	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.4 ± 0.3	2025-03-10
11886723	GYM	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.1 ± 0.3	2025-03-10
11886717	GYM OFFICE	2025-03-03 @ 11:00 am	2025-03-06 @ 10:00 am	1.9 ± 0.4	2025-03-10
11886705	HEALTH ROOM	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	0.9 ± 0.3	2025-03-10
11886706	HEALTH ROOM OFFICE	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	0.8 ± 0.3	2025-03-10
11886751	IMC	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886752	ISM	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10

March 10, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**S. CHRISTA MCAULIFFE ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886763	ISM	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886779	LAWSON	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886780	MATERIAL PREP	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886773	OBSERVATION OFFICE	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	0.9 ± 0.3	2025-03-10
11886764	SPT	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886781	TV STUDIO	2025-03-03 @ 12:00 pm	2025-03-06 @ 9:00 am	< 0.3	2025-03-10
11886786	VP	2025-03-03 @ 12:00 pm	2025-03-06 @ 10:00 am	0.5 ± 0.3	2025-03-10
11886714	WORKROOM	2025-03-03 @ 10:00 am	2025-03-06 @ 10:00 am	0.9 ± 0.3	2025-03-10

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

March 10, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**OFFICE
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886966	OB	2025-03-03 @ 11:00 am	2025-03-06 @ 11:00 am	< 0.3	2025-03-10

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

March 10, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**TRAVEL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886999	TB	2025-03-03 @ 11:00 am	2025-03-06 @ 11:00 am	< 0.3	2025-03-10

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 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 μ 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

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 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 μ R/h Elevation = 820 ft**

March 19, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**QC
MAIN**

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing March 3rd – March 6th, 2025

Name of Schools:

1. Col. Zadok Magruder HS
2. S. Christa McAuliffe ES
3. Ronald McNair ES
4. Montgomery Village MS
5. Neelsville MS

	Date	Initials
Radon Test Kits Deployed	3/3/2025	DM
Radon Test Kits Collected	3/6/2025	AM
Radon Test Kits Shipped to Lab*	3/6/2025	AM
Radon Test Kits Received by Lab*	3/8/2025	DM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	S. Christa McAuliffe Elementary School
Date of Test Report	1/25/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.7 pCi/L

Project Status:

1. Post mitigation testing completed.



January 25, 2023

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

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

Location: S. Christa McAuliffe Elementary School
12500 Wisteria Drive
Germantown, MD 20874

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the S. Christa McAuliffe Elementary School located at 12500 Wisteria Dr. Germantown, MD 20874 (subject site).

Scope of Services:

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

KCI visited the site on December 19, 2022 and deployed three (3) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

KCI returned to the site on December 22, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA for analysis by gamma-ray spectroscopy.

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

Evaluation of Testing Conditions:

These tests represent:

- Follow up to post mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate temperatures ranged from 23°F to 55°F. Maximum sustained winds ranged from 0-18 miles per hour. Average humidity was around 75% with 0.0 inches of precipitation (rain) was recorded during testing period.

Results:

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	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		
S. Christa McAuliffe ES		
Test Period: 12/19/2022 - 12/22/2022		
Kit Number	Room / Area	Result
11287878	108	< 0.3
11288511	108	0.7
11288535	108	< 0.3

Table 2- Radon Testing Results			
S. Christa McAuliffe ES			
Test Period: 12/19/22 - 12/22/22			
Kit Number	QC Type	Room / Area	Result
11288511	D	108	0.7
11288535	FB	108	< 0.3
11288518	OB	OFFICE BLANK	< 0.3
11287685	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

December 28, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
S CHRISTA MCAULIFFE
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11287878	108	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28
11288511	108	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	0.7 ± 0.5	2022-12-28
11288535	108	2022-12-19 @ 2:00 pm	2022-12-22 @ 12:00 pm	< 0.3	2022-12-28

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KC1 TECHNOLOGIES, INC Job Number 208343

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

Date Start: 12/24/22 Date Stop: 12/27/22 Date Start: _____ Date Stop: _____

Time Start: 0810 Time Stop: 0810 Time Start: _____ Time Stop: _____

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

11285109, 11285110, 11285101

THRU 11285103

BY LEFT

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

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

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

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

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

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

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

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MAIN

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Week 3 December Schools

Name of Schools:

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

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

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	S. Christa McAuliffe Elementary School
Date of Test Report	05/27/2022
Round of Testing	Initial <u>Follow-up</u> Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	3
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	3.3 pCi/L

Project Status

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

Mitigation needed - Room 108



May 27, 2022

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

Re: **Radon Testing Services**
KCI Job # 122108316

Location: S. Christa McAuliffe Elementary School
12500 Wisteria Dr.
Germantown, MD 20874

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the S. Christa McAuliffe Elementary School, located at 12500 Wisteria Dr. Germantown, MD 20874 (subject site).

Scope of Services:

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

KCI visited the site on March 28, 2022 and deployed five (5) 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.

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

1. Rooms with missing test kits from the Radon 2022 testing period (i.e. test kit was deployed but not recovered),
2. Rooms with invalidated test kits from the Radon 2022 testing period (e.g. an open window in the room or disturbed test kit),
3. Rooms which were locked/inaccessible during the Radon 2022 testing period,
4. Rooms with elevated radon results (i.e. ≥ 3.5 pCi/L),
5. Rooms previously tested for radon but not tested in Radon 2022, and
6. Additional rooms that require testing (if applicable.)

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 March 31, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- 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 during the time of deployment and collection of the radon test kits:

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the mid 20°Fs and high temperatures ranged from the low 50°Fs to the mid 70°Fs. Maximum sustained winds ranged from 0-33 miles per hour. Average humidity was around 47% with 0.23 inches of precipitation (rain) was recorded during testing period.

Results:

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
S. Christa McAuliffe ES RT		
Test Period: 03/28/2022 - 03/31/2022		
Kit Number	Room / Area	Result
11139808	32	< 0.3
11139809	32	0.6
11139811	32	0.7
11139803	108	3.3
11139807	109	< 0.3

Table 2- Radon Testing Results			
S. Christa McAuliffe ES RT			
Test Period: 03/28/2022 - 03/31/2022			
Kit Number	QC Type	Room / Area	Result
11139811	D	32	0.7
11139808	FB	32	< 0.3
11139883	OB	OFFICE BLANK	< 0.3
11139841	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

April 4, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139808	32	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	< 0.3	2022-04-04
11139809	32	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	0.6 ± 0.3	2022-04-04
11139811	32	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	0.7 ± 0.3	2022-04-04

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

April 4, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**S. CHRISTA MCAULIFFE
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139803	108	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	3.3 ± 0.4	2022-04-04
11139807	109	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	< 0.3	2022-04-04

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 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: _____ Date Stop: _____

Time Start: 0705 Time Stop: 0705 Time Start: _____ Time Stop: _____

Device No.'s: (5) Char Bags - Device No.'s: _____

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 light

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

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

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

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

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

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

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

March 30, 2022

**** 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
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 \pm 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 \pm 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 \pm 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 \pm 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 \pm 2.0	2022-03-30

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools – Retesting

Name of Schools:

1. Rock Terrace School
2. S. Christa McAuliffe ES
3. Cedar Grove ES
4. DuFief ES
5. Emory Grove Center
6. Gaithersburg ES
7. Gaithersburg MS
8. Jones Lane ES
9. Rachel Carson ES
10. Rosemont ES
11. Shady Grove MS
12. Summit Hall ES
13. Albert Einstein HS
14. Eastern MS
15. Montgomery Blair HS
16. Newport Mill MS
17. Strawberry Knoll ES

	Date	Initials
Radon Test Kits Deployed	03/28/2022	BMM
Radon Test Kits Collected	03/31/2022	BMM
Radon Test Kits Shipped to Lab*	04/01/2022	BMM
Radon Test Kits Received by Lab*	04/04/2022	BMM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	S. Christa McAuliffe Elementary School
Date of Test Report	4/6/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	73
# Rooms \geq 4.0 pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	5.8 pCi/L

Project Status:

Initial testing completed; Missing, Elevated, or compromised kits need re-sampling.



April 6, 2022

Brian T. Croyle, PG, CHMM
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122108316

Location: S. Christa McAuliffe ES
12500 Wisteria Dr.
Germantown, MD 20874

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the S. Christa McAuliffe ES, located at 12500 Wisteria Dr. Germantown, MD 20874 (subject site).

Scope of Services:

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

KCI visited the site on February 15, 2022 and deployed eighty five (85) 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 February 18, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

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

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to post-mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 20s and high temperatures ranged from the high 30s to the high 40s Fahrenheit. Maximum sustained winds ranged from 5-18 miles per hour. Average humidity was around 15% with 1.5 inches of precipitation (rain) was recorded during testing period.

Results:

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	108	5.8
<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		
S. Christa McAuliffe ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123211	1	0.7
11123210	2	1.0
11123218	3	< 0.3
11123201	4	0.7
11123217	5	1.0
11123226	6	0.7
11123228	7	< 0.3
11123214	8	0.7
11123235	8	< 0.3
11123273	9	1.8
11123274	9	2.2
11123264	10	< 0.3
11123249	12	< 0.3
11123237	14	< 0.3
11123220	15	0.9
11123257	16	0.6
11123233	25	0.8
11123204	26	< 0.3
11123240	27	1.3
11123205	28	2.6
11123259	29	< 0.3
11123260	30	2.4
11123262	31	0.6
11123222	32	2.8
11123231	33	1.0
11123224	34	1.3
11123239	34	< 0.3
11123254	34	1.2
11123206	35	0.5
11123232	36	1.3
11123243	37	0.6
11123216	38	0.9
11123223	40	0.9
11123253	42	0.6
11123246	43	< 0.3
11123248	102	1.1
11123255	102	0.5
11123256	102	1.2
11123247	103	0.9
11123261	104	1.4
11123270	105	1.2
11123258	106	1.2

Table 1- Radon Testing Results		
S. Christa McAuliffe ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123269	106	1.2
11123268	107	1.1
11123267	108	5.8
11123250	109	3.7
11123276	113	1.4
11123275	205	0.8
11123266	102A	1.1
11123277	1B	< 0.3
11123227	2A	0.8
11123278	ALVING	< 0.3
11123213	APR	< 0.3
11123238	APR	1.0
11123244	APR	1.6
11123252	APR	1.4
11123207	ART	0.6
11123208	ART	< 0.3
11123219	ART	< 0.3
11123251	BSO	0.8
11123279	CONFERENCE	0.8
11123230	COU	< 0.3
11123236	ESOL	< 0.3
11123234	GYM	1.3
11123245	GYM	1.4
11123225	GYM OFFICE	2.0
11123242	HR	1.4
11123286	HR EXAM	1.4
11123272	IMC	< 0.3
11123283	IMC	< 0.3
11123271	IMC OFFICE	< 0.3
11123265	ISM	< 0.3
11123209	KITCHEN OFFICE	< 0.3
11123203	MAIN OFFICE	0.8
11123281	MAIN OFFICE	0.7
11123282	MAIN OFFICE	< 0.3
11123215	MU	1.0
11123202	OBSERVATION OFFICE	0.6
11123280	OFFICE 1	1.2
11123291	OFFICE 2	0.7
11123229	PSYCH	< 0.3
11123221	TRIAGE	0.7
11123284	TV	< 0.3
11123263	WR	< 0.3

Table 1- Radon Testing Results		
S. Christa McAuliffe ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123285	WR	1.3

Table 2- Radon Testing Results			
S. Christa McAuliffe ES			
Test Period: 02/15/2022 - 02/18/2022			
Kit Number	QC Type	Room / Area	Result
11123235	D	8	< 0.3
11123244	D	APR	1.6
11123213	FB	APR	< 0.3
11123207	D	Art	0.6
11123224	D	34	1.3
11123239	FB	34	< 0.3
11123269	D	106	1.2
11123248	D	102	1.1
11123255	FB	102	0.5
11123273	D	9	1.8
11123203	D	Main Office	0.8
11123282	FB	Main Office	< 0.3
11131660	OB	OFFICE BLANK	< 0.3
11131661	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

S. CHRISTA MCAULIFFE ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123264	10	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123256	102	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.2 ± 0.3	2022-02-22
11123255	102	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.5 ± 0.3	2022-02-22
11123248	102	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.1 ± 0.3	2022-02-22
11123266	102A	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.1 ± 0.3	2022-02-22
11123247	103	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.9 ± 0.3	2022-02-22
11123261	104	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.4 ± 0.3	2022-02-22
11123270	105	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.2 ± 0.3	2022-02-22
11123269	106	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	1.2 ± 0.3	2022-02-22
11123258	106	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	1.2 ± 0.3	2022-02-22
11123268	107	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	1.1 ± 0.3	2022-02-22
11123267	108	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	5.8 ± 0.5	2022-02-22
11123250	109	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	3.7 ± 0.4	2022-02-22
11123276	113	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.4 ± 0.4	2022-02-22
11123249	12	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123257	16	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.6 ± 0.3	2022-02-22
11123277	1B	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123275	205	2022-02-15 @ 12:00 pm	2022-02-18 @ 9:00 am	0.8 ± 0.3	2022-02-22
11123259	29	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11123260	30	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	2.4 ± 0.4	2022-02-22
11123262	31	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11123273	9	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.8 ± 0.4	2022-02-22
11123274	9	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	2.2 ± 0.4	2022-02-22
11123278	ALVING	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123279	CONFERENCE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.8 ± 0.3	2022-02-22
11123242	HR	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.4 ± 0.4	2022-02-22
11123286	HR EXAM	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.4 ± 0.3	2022-02-22
11123272	IMC	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123283	IMC	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123271	IMC OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123265	ISM	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123203	MAIN OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.8 ± 0.3	2022-02-22
11123281	MAIN OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123282	MAIN OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123280	OFFICE 1	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.2 ± 0.3	2022-02-22
11123291	OFFICE 2	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123284	TV	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22

February 23, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

S. CHRISTA MCAULIFFE ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123263	WR	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123285	WR	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.3 ± 0.4	2022-02-22

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

Radon test result report for:

S. CHRISTA MCAULIFFE ES**1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123211	1	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123237	14	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123220	15	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.9 ± 0.3	2022-02-22
11123210	2	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	1.0 ± 0.3	2022-02-22
11123233	25	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.8 ± 0.3	2022-02-22
11123204	26	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11123240	27	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.3 ± 0.4	2022-02-22
11123205	28	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	2.6 ± 0.4	2022-02-22
11123227	2A	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.8 ± 0.3	2022-02-22
11123218	3	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123222	32	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	2.8 ± 0.4	2022-02-22
11123231	33	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.0 ± 0.3	2022-02-22
11123239	34	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11123224	34	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.3 ± 0.3	2022-02-22
11123254	34	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.2 ± 0.3	2022-02-22
11123206	35	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.5 ± 0.3	2022-02-22
11123232	36	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.3 ± 0.3	2022-02-22
11123243	37	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11123216	38	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.9 ± 0.3	2022-02-22
11123201	4	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123223	40	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.9 ± 0.3	2022-02-22
11123253	42	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11123246	43	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11123217	5	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	1.0 ± 0.3	2022-02-22
11123226	6	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123228	7	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123235	8	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123214	8	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123213	APR	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123238	APR	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	1.0 ± 0.3	2022-02-22
11123252	APR	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	1.4 ± 0.3	2022-02-22
11123244	APR	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	1.6 ± 0.4	2022-02-22
11123208	ART	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11123207	ART	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11123219	ART	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11123251	BSO	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	0.8 ± 0.3	2022-02-22
11123230	COU	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22

Radon test result report for:**S. CHRISTA MCAULIFFE ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123236	ESOL	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123245	GYM	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.4 ± 0.3	2022-02-22
11123234	GYM	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.3 ± 0.3	2022-02-22
11123225	GYM OFFICE	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	2.0 ± 0.3	2022-02-22
11123209	KITCHEN OFFICE	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123215	MU	2022-02-15 @ 11:00 am	2022-02-18 @ 9:00 am	1.0 ± 0.3	2022-02-22
11123202	OBSERVATION OFFICE	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	0.6 ± 0.3	2022-02-22
11123229	PSYCH	2022-02-15 @ 10:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123221	TRIAGE	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204186

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 50.1 % Temp. 70.9 F

Date Start: 2/18/22 Date Stop: 2/21/22 Date Start: _____ Date Stop: _____

Time Start: 0911 Time Stop: 0911 Time Start: _____ Time Stop: _____

Device No.'s: (3) Char Bags -
11113484, 1112998, 20107126 Device No.'s: _____

23 Right

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

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

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

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

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

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

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

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

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11113484	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK1		1	27.9
11122998	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK2		1	26.0
20107126	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK3		1	27.6



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – February 2022 Schools

Name of Schools:

1. Damascus HS
2. Germantown ES
3. Great Seneca Creek ES
4. Lake Seneca ES
5. S. Christa McAuliffe ES
6. Northwest HS
7. Waters Landing ES
8. Seneca Valley HS
9. Cedar Grove ES
10. Capt. James E. Daly ES
11. Neelsville MS
12. Dr. Sally K. Ride ES

	Date	Initials
Radon Test Kits Deployed	02/15/2022	DM
Radon Test Kits Collected	02/18/2022	DM
Radon Test Kits Shipped to Lab*	02/18/2022	DM
Radon Test Kits Received by Lab*	02/21/2022	DM

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



Soil and Land Use Technology, Inc.

1818 New York NE, Suite 231 • Washington, DC 20002

(301) 595-3783
www.SaLUTinc.com

MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	McAuliffe Elementary School
Date of Report	12/24/2020
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	7
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	3.6 pCi/L

Project Status

Current Project Status at this time: Testing Complete



Soil and Land Use Technology, Inc.

(301) 595-3783
1818 New York NE, Suite 231 • Washington, DC 20002

www.SaLUTinc.com

12/24/2020

Brian Croyle, PG, CHMM
Environmental Specialist
Environmental Services/Indoor Air Quality
Montgomery County Public Schools
Division of Sustainability and Compliance
Gaithersburg, Maryland 20879

Re: Radon Testing Services

SaLUT Job #20-173

Location: McAuliffe Elementary School
12500 Wisteria Dr. Germantown, MD 20874

Dear Mr. Croyle:

Soil and Land Use Technology, Inc. (SaLUT) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a "Post Remediation radon test for the McAuliffe Elementary School, located at 12500 Wisteria Dr. Germantown, MD 20874 (subject site).

SCOPE OF SERVICES

SaLUT 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. SaLUT 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*. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

SaLUT visited the site on 12/8/2020 and deployed twelve (12) activated charcoal (AC) radon test kits. SaLUT deployed radon test kits in remediated 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, SaLUT included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, SaLUT submitted one (1) test kit 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.

SaLUT returned to the site on 12/11/2020 to retrieve the radon sampling test kits. SaLUT shipped all radon tests via overnight delivery to EMSL Analytical, Inc. for analysis by gamma-ray spectroscopy. EMSL Analytical, Inc. is a National Radon Safety Board (NRSB) radon measurement provider and is a certified analytical laboratory for radon analysis (certification #109000 AL) located at 200 Route 130 North, Cinnaminson, NJ 08077.

EVALUATION OF TESTING CONDITIONS

These tests represent:

- Post Remediation 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, SaLUT concludes that this test was conducted during ideal testing conditions.

SaLUT 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.

SaLUT 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 mid-30s and high temperatures were in the mid-50s. Maximum sustained winds ranged from 10-15 miles per hour. Average humidity was around 57%. 0.0 inches of precipitation (rain) was recorded during the testing period.

RESULTS

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	N/A	N/A
≤4.0 pCi/L	See Attachment B	See Attachment B

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

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at 301-595-3783.

Sincerely,

Mark McGrath

Soil and Land Use Technology, Inc. (SaLUT)
1818 New York Avenue, NE, Suite 231
Washington, DC 20002
202-446-7211 Mobile
301-595-3783
202-379-9504 fax

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

D- Duplicate

FB- Field Blank

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
McAuliffe Elementary School		
Test Period: 12/8/2020-12/11/2020		
Kit Number	Room / Area	Result
440189	Classroom 12	0.1
437300	Classroom 12	0.7
437257	Classroom 12	0.5
437240	Classroom 12	0.2
441494	Classroom 14	0.5
440164	Bathroom	0.5
440202	PE Room	1.5
440345	PE Room	2
433870	PE Room	0.1
440144	PE Room	1.5
437281	Gym	0.6
440234	Gym Storage 1	3.6
440196	Gym Storage 2	3.6

Table 2- Radon Testing Results			
McAuliffe Elementary School			
Test Period: 12/8/2020-12/11/2020			
Kit Number	QC Type	Room / Area	Result
440189	FB	Classroom 12	0.1
437257	D	Classroom 12	0.5
440202	D	PE Room	1.5
433870	FB	PE Room	0.1
440153	TRANSIT BLANK	N/A	-0.1

ATTACHMENT C

Laboratory Analytical Results

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-0327
<http://www.EMSL.com> cinnaminsonradonlab@emsl.com

EMSL Order: 382013261
 CustomerID: SALU50
 CustomerPO:
 ProjectID:

Attn: **Indika Jayatilake**
SaLUT
1818 New York Avenue, NE
Suite 231
Washington, DC 20002

Phone: (301) 595-3783
 Fax: (301) 595-3787
 Received: 12/13/2020 11:58 AM
 Analysis Date: 12/13/2020
 Collected: 12/11/2020

Project: **S. Christa McAuliffe ES / MCPS / 12500 Wisteria Dr.**

Test Site: **12500 Wisteria Dr.**
Germantown, MD 20874

Test Report: Radon in Air Test Results**Samples for EMSL Kit 252516**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440189	C/R 12	0.1	12/8/2020	12/11/2020	32.9	60.8	Blank
382013261-0001			8:15:00 AM	8:25:00 AM			

Sample Notes:

Samples for EMSL Kit 250638

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
437300	C/R 12	0.7	12/8/2020	12/11/2020	32.9	60.8	Customer
382013261-0002			8:15:00 AM	8:25:00 AM			

Sample Notes:

Samples for EMSL Kit 250632

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
437257	C/R 12	0.5	12/8/2020	12/11/2020	32.9	60.8	Duplicate
382013261-0003			8:15:00 AM	8:25:00 AM			

Sample Notes:

437240	C/R 12	0.2	12/8/2020	12/11/2020	32.9	60.8	Customer
382013261-0004			8:15:00 AM	8:25:00 AM			

Sample Notes:

Duplicate RPD = 85.7%

Samples for EMSL Kit 252756

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
441494	C/R 14	0.5	12/8/2020	12/11/2020	30.7	60.5	Customer
382013261-0005			8:15:00 AM	8:25:00 AM			

Sample Notes:

Samples for EMSL Kit 252523

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440164	Toilet	0.5	12/8/2020	12/11/2020	29.7	64.4	Customer
382013261-0006			8:15:00 AM	8:25:00 AM			

Sample Notes:

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-0327
<http://www.EMSL.com> cinnaminsonradonlab@emsl.com

EMSL Order: 382013261
 CustomerID: SALU50
 CustomerPO:
 ProjectID:

Attn: **Indika Jayatilake**
SaLUT
1818 New York Avenue, NE
Suite 231
Washington, DC 20002

Phone: (301) 595-3783
 Fax: (301) 595-3787
 Received: 12/13/2020 11:58 AM
 Analysis Date: 12/13/2020
 Collected: 12/11/2020

Project: **S. Christa McAuliffe ES / MCPS / 12500 Wisteria Dr.**

Test Site: **12500 Wisteria Dr.**
Germantown, MD 20874

Test Report: Radon in Air Test Results**Samples for EMSL Kit 252518**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440202	PE Room	1.5	12/8/2020	12/11/2020	32.6	65.3	Duplicate
382013261-0007			8:45:00 AM	8:50:00 AM			

Sample Notes:

440345	PE Room	2	12/8/2020	12/11/2020	32.6	65.3	Customer
382013261-0008			8:45:00 AM	8:50:00 AM			

Sample Notes:**Duplicate RPD = 28.6%****Samples for EMSL Kit 248587**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
433870	PE Room	0.1	12/8/2020	12/11/2020	32.6	65.3	Blank
382013261-0009			8:45:00 AM	8:50:00 AM			

Sample Notes:**Samples for EMSL Kit 252538**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440144	PE Room	1.5	12/8/2020	12/11/2020	32.6	65.3	Customer
382013261-0010			8:45:00 AM	8:50:00 AM			

Sample Notes:**Samples for EMSL Kit 250634**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
437281	Gym	0.6	12/8/2020	12/11/2020	29.8	66.2	Customer
382013261-0011			8:50:00 AM	8:50:00 AM			

Sample Notes:**Samples for EMSL Kit 252529**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440234	Gym Storage 1	3.6	12/8/2020	12/11/2020	29.7	63.5	Customer
382013261-0012			8:50:00 AM	8:50:00 AM			

Sample Notes:



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0327
<http://www.EMSL.com> cinnaminsonradonlab@emsl.com

EMSL Order: 382013261
CustomerID: SALU50
CustomerPO:
ProjectID:

Attn: **Indika Jayatilake**
SaLUT
1818 New York Avenue, NE
Suite 231
Washington, DC 20002

Phone: (301) 595-3783
Fax: (301) 595-3787
Received: 12/13/2020 11:58 AM
Analysis Date: 12/13/2020
Collected: 12/11/2020

Project: **S. Christa McAuliffe ES / MCPS / 12500 Wisteria Dr.**

Test Site: **12500 Wisteria Dr.**
Germantown, MD 20874

Test Report: Radon in Air Test Results

Samples for EMSL Kit 252510

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440196	Gym Storage 2	3.6	12/8/2020	12/11/2020	29	63.4	Customer
382013261-0013			8:50:00 AM	8:50:00 AM			

Sample Notes:

Samples for EMSL Kit 252534

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440232	Storage Samp	-1	12/1/2020	12/11/2020	32.1	60	Customer
382013261-0014			8:15:00 AM	8:55:00 AM			

Sample Notes: Sample exposure period >96 hours. Humidity changed due to calibration factor.
Radon device exposed >96 hours

Samples for EMSL Kit 252519

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
440153	Shipping Samp	-0.1	12/11/2020	12/13/2020	29	63	Blank
382013261-0015			8:55:00 AM	11:58:00 AM			

Sample Notes:

The radon test was performed using a liquid scintillation radon detector/s and counted on a liquid scintillation counter using approved EPA testing protocols for Radon in Air testing. The EPA recommends fixing your home if the average of two short-term tests taken in the lowest lived-in level of the home show radon levels that are equal to or greater than 4.0pCi/L. The EPA recommends retesting your home every two years.

Please contact EMSL Analytical, Inc. or your State Health Department for further information.
All procedures used for generating this report are in complete accordance with the current EPA protocols for the analysis of Radon in Air.

Report Note



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0327
<http://www.EMSL.com> cinnaminsonradonlab@emsl.com

EMSL Order: 382013261
CustomerID: SALU50
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ProjectID:

Attn: **Indika Jayatilake**
SaLUT
1818 New York Avenue, NE
Suite 231
Washington, DC 20002

Phone: (301) 595-3783
Fax: (301) 595-3787
Received: 12/13/2020 11:58 AM
Analysis Date: 12/13/2020
Collected: 12/11/2020

Project: **S. Christa McAuliffe ES / MCPS / 12500 Wisteria Dr.**

Test Site: **12500 Wisteria Dr.**
Germantown, MD 20874

Test Report: Radon in Air Test Results

Analyst(s)

Racquel Hafiz (15)

Dominic Gehret, Radiochemistry Laboratory Manager, NJ Radon
Measurement Specialist MES 13910
or other approved signatory

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. In no event shall EMSL be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder. The test results meets all NELAC requirements unless otherwise specified.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ FL RB2034/R2687,IL RNL2008202,IN RTL00935,IA RNLAB10005,KS KS-LB-0005/KS-MS-0482,ME SPC202,MN RL-0005,NE 474/RMB-1083,NJ 03036/MEB92525/MES13910,NY 10872,OH RL39,OK D9952,PA 2573/3393/68-00367,RI RMB-108/RI00179,WV RL000220,NRSB-ARL6006,NRPP

Initial report from 01/06/2021 16:41:38

Please visit www.radontestinglab.com



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	McAuliffe Elementary School
Date of Report	2/28/2020
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	3
# Rooms \geq 4.0 pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	5.4 pCi/L

Project Status

Current Project Status at this time: Retesting completed; Remediation Plan



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: McAuliffe Elementary School

12500 Wisteria Drive
Germantown, Maryland 20874

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 McAuliffe Elementary School, located at 12500 Wisteria Drive in Germantown, Maryland 20874 (subject site).

SCOPE OF SERVICES

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #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 or www.epa.gov/radon.

KCI visited the site on 2/4/2020 and deployed five (5) 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. ≥ 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.

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

RESULTS

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	12	5.4
≤4.0 pCi/L	See Attachment B	See Attachment B

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

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

Sincerely,

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

Attachments:

A- Floor Plan with Test Locations

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

Floor Plan Legend

X-Sample Location (in red)

X- Previous Sample Location

1- Not Samled; No Ground Contact

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

3- Not Samled; High Humidity/Moisture

4- Not Samled; Bathroom/Hallway

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
McAuliffe Elementary School		
Test Period: 02/04/20-02/07/20		
Kit Number	Room / Area	Result
9348544	12	5.4
9348534	36	1.4
9348537	GYM OFFICE	2.8
9334909	OFFICE BLANK	<0.3
9334910	OFFICE BLANK	<0.3

Table 2- Radon Testing Results			
McAuliffe Elementary School			
Test Period: 02/04/20-02/07/20			
Kit Number	QC Type	Room / Area	Result
9334902	TRANSIT BLANK	NA	<0.3

ATTACHMENT C

Laboratory Analytical Results

February 11, 2020

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
MCAULIFFE
110

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9348544	12	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	5.4 ± 0.4	2020-02-11
9348534	36	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	1.4 ± 0.3	2020-02-11
9348537	GYM OFFICE	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	2.8 ± 0.4	2020-02-11

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 194523

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

Date Start: 2/21/20 Date Stop: 2/24/20 Date Start: _____ Date Stop: _____

Time Start: 0745 Time Stop: 0745 Time Start: _____ Time Stop: _____

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

9341725 thru 9341733

52 ccp

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

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

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

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

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

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

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

Radon test result report for:

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1 Retesting

Name of Schools:

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

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

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



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	S. Christa McAuliffe Elementary School
Date of Report	1/28/2020
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	37
# Rooms \geq 4.0 pCi/L	2
Lowest Value	<0.3 pCi/L
Highest Value	4.4 pCi/L

Project Status

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



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: S. Christa McAuliffe Elementary School

12500 Wisteria Dr
Germantown, Maryland 20874

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 S. Christa McAuliffe Elementary School, located at 12500 Wisteria Dr in Germantown, Maryland 20874 (subject site).

SCOPE OF SERVICES

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon 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.

KCI visited the site on 12/10/2019 and deployed forty-three (43) 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:

- new addition, partial HVAC upgrade and post mitigation 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 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.

RESULTS

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	12, Gym Office	4, 4.4
≤4.0 pCi/L	See Attachment B	See Attachment B

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

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

Sincerely,

Mr. Tyler P. McCleaf
Radon Measurement Provider
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		
McAuliffe Elementary School		
Test Period: 12/10/2019-12/13/2019		
Kit Number	Room / Area	Result
9334601	37	< 0.3
9334602	35	< 0.3
9334603	102	< 0.3
9334604	102	0.6
9334605	42	< 0.3
9334606	GYM	2.4
9334607	OFFICE	< 0.3
9334608	44	< 0.3
9334609	PRINCIPAL	0.9
9334610	39	< 0.3
9334611	38	< 0.3
9334612	40	< 0.3
9334613	VICE P	0.5
9334614	APR	1.8
9334615	HEALTH	1.1
9334616	STAFF WORK	0.8
9334617	CONFERENCE	0.8
9334618	APR	1.6
9334619	15	0.7
9334620	44	0.6
9334621	1	0.8
9334622	4	1.3
9334623	2	1
9334624	7	< 0.3
9334625	10	2.3
9334628	COU 1	0.6
9334630	6	1.3
9334633	8	0.5
9334635	TV	< 0.3
9334636	LIB OFFICE	< 0.3
9334639	MEDIA	< 0.3
9334640	9	2
9334643	7	< 0.3
9334644	5	1.1
9334645	3	0.8
9334983	OFFICE BLANK	< 0.3
9335101	14	2.7
9335102	12	4
9335103	IB	< 0.3
9335104	ISM	0.6
9335105	25	< 0.3
9335106	109	< 0.3
9335107	PSY	< 0.3
9335108	SPEECH	< 0.3
9335109	18	1.9
9335110	203	< 0.3
9335111	29	< 0.3
9335112	28	1.4
9335113	34	0.8
9335114	36	MISSING

9335115	108	0.7
9335116	106	< 0.3
9335117	43	< 0.3
9335118	GYM OFFICE	4.4
9335119	GYM	2.3
9335120	27	0.7
9335121	33	0.5
9335122	38	< 0.3
9335123	2A/2B	< 0.3
9335124	26	0.9
9335125	31	< 0.3
9335126	30	2.1
9335127	105	0.5
9335128	104	< 0.3
9335129	103	< 0.3
9335130	102	< 0.3
9335131	110	< 0.3
9335132	100	< 0.3
9335133	PCC	< 0.3
9335134	MEDIA PREP	< 0.3
9335135	113	< 0.3
9335136	26	1.4
9335137	MEDIA PREP	< 0.3
9335138	16	1.3
9335149	MEDIA PREP	< 0.3
9335150	100	< 0.3
9335748	41	< 0.3
9335750	38	< 0.3

Table 2- Radon Testing Results			
Mcauliffe Elementary School			
Test Period: 12/10/2019-12/13/2019			
Kit Number	QC Type	Room / Area	Result
9334608	D	44	<0.3
9334611	D	38	<0.3
9335750	FB	38	<0.3
9335136	D	26	1.4
9334604	D	102	0.6
9334603	FB	102	<0.3
9335150	D	100	<0.3
9335134	D	MEDIA PREP	<0.3
9335137	FB	MEDIA PREP	<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:**MCAULIFFE****MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334621	1	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.8 ± 0.3	2019-12-16
9334625	10	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	2.3 ± 0.4	2019-12-16
9335132	100	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335150	100	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335130	102	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334604	102	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334603	102.	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335129	103	2019-12-10 @ 9:00 am	2019-12-13 @ 12:00 pm	< 0.3	2019-12-16
9335128	104	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335127	105	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.5 ± 0.3	2019-12-16
9335116	106	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335115	108	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-16
9335106	109	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335131	110	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9335135	113	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9335102	12	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	4.0 ± 0.4	2019-12-16
9335101	14	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	2.7 ± 0.4	2019-12-17
9334619	15	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-16
9335138	16	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.3 ± 0.4	2019-12-16
9335109	18	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.9 ± 0.3	2019-12-16
9334623	2	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.0 ± 0.4	2019-12-17
9335110	203	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335105	25	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9335136	26	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.4 ± 0.3	2019-12-16
9335124	26	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.9 ± 0.3	2019-12-16
9335120	27	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-16
9335112	28	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.4 ± 0.4	2019-12-17
9335111	29	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335123	2A/2B	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334645	3	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.8 ± 0.3	2019-12-17
9335126	30	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	2.1 ± 0.4	2019-12-16
9335125	31	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9335121	33	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.5 ± 0.3	2019-12-16
9335113	34	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.8 ± 0.3	2019-12-16
9334602	35	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335114	36	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	???? UI	2019-12-17
9334601	37	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17

Radon test result report for:
MCAULIFFE
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9335122	38	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335750	38	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334611	38	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334610	39	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334622	4	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.3 ± 0.4	2019-12-16
9334612	40	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335748	41	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334605	42	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335117	43	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334620	44	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	0.6 ± 0.3	2019-12-17
9334608	44	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334644	5	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.1 ± 0.3	2019-12-16
9334630	6	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.3 ± 0.4	2019-12-16
9334643	7	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334624	7	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334633	8	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.5 ± 0.3	2019-12-17
9334640	9	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	2.0 ± 0.4	2019-12-16
9334618	APR	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.6 ± 0.3	2019-12-16
9334614	APR	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.8 ± 0.4	2019-12-16
9334617	CONFERENCE	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.8 ± 0.3	2019-12-17
9334628	COU 1	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	0.6 ± 0.3	2019-12-16
9335119	GYM	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	2.3 ± 0.3	2019-12-16
9334606	GYM	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	2.4 ± 0.4	2019-12-16
9335118	GYM OFFICE	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	4.4 ± 0.4	2019-12-17
9334615	HRALTH	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.1 ± 0.4	2019-12-17
9335103	IB	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9335104	ISM	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.4	2019-12-16
9334636	LIB OFFICE	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334639	MEDIA	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335134	MEDIA PREP	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335149	MEDIA PREP	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335137	MEDIA PREP	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334607	OFFICE	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335133	PCC	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334609	PRICIPAL	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.9 ± 0.3	2019-12-16
9335107	PSY	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9335108	SPEECH	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16

December 17, 2019

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCAULIFFE

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334616	STAFF WORK	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.8 ± 0.4	2019-12-16
9334635	TV	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334613	VICE P	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.5 ± 0.4	2019-12-17

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KEI Technologies Inc. Job Number 193475

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

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

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

Date Start: 12/16/19 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 μ 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

December 18, 2019

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

N/A

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
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

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

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1

Name of Schools:

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

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

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

RADON SCREENING SURVEY – FOLLOW-UP S. CHRISTA MCAULIFFE ELEMENTARY
SCHOOL

12500 Wisteria Drive,
Germantown, Maryland 20874

EXECUTIVE SUMMARY

Date of Test Report:	3/20/19
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L:	1
Low Value:	4.0
High Value:	4.0
Confirmed Rooms \geq 4.0 pCi/L US EPA Action Level	1

Summary of Sampling Events \geq 4.0 pCi/L

Room	Result (pCi/L) 2/21/19	Result (pCi/L) 3/20/19	Average Result (pCi/L)
43	4.0	4.0	4.0



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary:

S. Christa McAuliffe Elementary School

12500 Wisteria Drive,
Germantown, MD 20874

Date of Test Report:	3/20/2019
Round of Testing:	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested:	1
# of Rooms \geq 4.0 pCi/L:	1
Low Value:	4.0
High Value:	4.0

Project Status

Rooms with results \geq 4.0 pCi/L: Room 43 (4.0 pCi/L)

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



March 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: S. Christa McAuliffe Elementary School
12500 Wisteria Drive,
Germantown, MD 20874

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 S. Christa McAuliffe Elementary School, located at 12500 Wisteria Drive, Germantown, MD 20874 (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 or www.epa.gov/radon.

PSI visited the site on February 25, 2019 and deployed one (1) 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 # ARLO007).

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
≥ 4.0 pCi/L	Room 43	4.0 pCi/L
≤ 4.0 pCi/L	SSSS	

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.

ATTACHMENT B

Radon Test Summary Spreadsheet

Radon Testing Results		
McAullife Elementary School		
Testing period: 2/25/19 - 2/28/19		
Kit Number	Room / Area	Result (pCi/L)
3923427	43	4.0

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

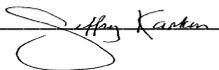
MCPS Radon Survey McAuliffe ES
12500 Wisteria Drive
Germantown MD 20874

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3220603	3923427	02/25/2019 10:30 am 02/28/2019 10:30 am	Floor Lower Level Room 43	4.0

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

Distributed by: Intertek-PSI (VA)

Date Received: 03/04/2019 Date Logged: 03/04/2019 Date Analyzed: 03/04/2019 Date Reported: 03/05/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

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



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary:

S. Christa McAuliffe Elementary School

12500 Wisteria Drive,
Germantown, MD 20874

Date of Test Report:	2/21/2019
Round of Testing:	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested:	58
# of Rooms \geq 4.0 pCi/L:	1
Low Value:	< 0.4
High Value:	4.0
Rooms with Results \geq 4.0 pCi/L:	43

Project Status

Initial testing complete: Re-test needed for results \geq 4.0 pCi/L



February 21, 2019

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

Re: Radon Testing Services

Location: S. Christa McAuliffe Elementary School
12500 Wisteria Drive,
Germantown, MD 20874

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 S. Christa McAuliffe Elementary School, located at 12500 Wisteria Drive, Germantown, MD 20874 (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 or www.epa.gov/radon.

PSI visited the site on December 4, 2018 and deployed seventy-three (73) 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 7, 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
≥ 4.0 pCi/L	43	4.0
≤ 4.0 pCi/L	See Attachment B	

Notes:

D -Duplicate Sample

The office blank and lab transit blanks had test results of less than the laboratory detection limit of 0.4 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C).

Laboratory results and exposure data for the spike samples are also included in Attachment C. Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (703) 698-9300.



Respectfully Submitted,

INTERTEK-PSI

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

Nand Kaushik, P.E.
Department Manager, Environmental Services
Nand.Kaushik@intertek.com

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		
S. Christa McAuliffe Elementary School		
Testing period: 12/4/18 - 12/7/18		
Kit Number	Room / Area	Result (pCi/L)
3927593	1	0.7
3927513	1A/1B	1.0
3927591	2	0.6
3927561	2A/2B	1.8
3927592	3	0.7
3927520	4	0.6
3927519	5	0.7
3927517	6	0.9
3927518	7	< 0.4
3927516	8	0.8
3927570	9	1.0
3927514	10	1.9
3927619	12	3.8
3927618	14	2.6
3927613	16	1.2
3927612	18	1.2
3927564	25	0.5
3927562	26	0.8
3927565	27	0.9
3927563	28	1.4
3927566	29	1.7
3927569	30	1.8
3927568	31	1.2
3927529	33	1.8
3918326	34	1.4
3927526	35	0.8
3927530	36	2.9
3927525	37	0.6
3927528	38	2.4
3927524	39	< 0.4
3927527	40	1.5
3927521	41	0.7
3927522	42	3.7
3927580	43	4.0
3888344	APR	< 0.4
3888364	APR	1.3
3927575	BSM	1.5
3927617	Communication Center	< 0.4
3927571	Conference Room	0.7
3927594	Counselor	0.4
3927611	ESOL	0.7
3927614	ESOL	0.9
3927595	General Office (GOF)	0.6

Radon Testing Results		
S. Christa McAuliffe Elementary School		
Testing period: 12/4/18 - 12/7/18		
Kit Number	Room / Area	Result (pCi/L)
3888354	Gym	< 0.4
3888384	Gym	< 0.4
3927579	Gym Office	2.0
3927599	Health Exam Room	0.9
3927598	Health Room	0.7
3918518	IMC	0.4
3918519	IMC	0.4
3918516	IMC Office	0.6
3918520	IMC Workroom	0.4
3927572	Kitchen	1.8
3927577	Music	0.6
3927511	OT	0.4
3927512	PCC	0.8
3927596	Principal	0.7
3927615	Speech	0.9
3927574	Staff Development	1.8
3927576	Staff Lounge	0.8
3927600	Vice Principal	0.6
3927597	Workroom	0.6

Radon Testing Results		
S. Christa McAuliffe Elementary School		
Testing period: 12/4/18 - 12/7/18		
Kit Number	QC Type	Result (pCi/L)
3927515	10 (D)	2.0
3927620	12 (D)	3.8
3927567	29 (D)	1.6
3927523	42 (D)	4.0
3927573	Kitchen (D)	1.8
3927578	Music (D)	0.6
3927616	Speech (D)	1.1
3917826	Field Blank	< 0.4
3918324	Field Blank	< 0.4
3918320	Transit Blank	< 0.4
3917825	Office 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:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

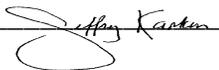
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202655	3927611	12/04/2018 9:25 am	12/07/2018 9:00 am	Floor Main Room ESOL	0.7
3202656	3918519	12/04/2018 10:51 am	12/07/2018 10:06 am	Floor Main Room IMC	0.4
3202657	3927612	12/04/2018 9:26 am	12/07/2018 9:01 am	Floor Main Room 18	1.2
3202658	3918320	12/04/2018 6:00 am	12/07/2018 6:00 pm	Transit Blank	< 0.4
3202659	3927613	12/04/2018 9:27 am	12/07/2018 9:02 am	Floor Main Room 16	1.2
3202660	3927614	12/04/2018 9:28 am	12/07/2018 9:03 am	Floor Main Room ESOL	0.9
3202661	3927615	12/04/2018 9:29 am	12/07/2018 9:05 am	Floor Main Room Speech	0.9
3202662	3927616	12/04/2018 9:29 am	12/07/2018 9:05 am	Floor Main Room Speech Duplicate	1.1
3202663	3927617	12/04/2018 9:31 am	12/07/2018 9:06 am	Floor Main Room Communication Center	< 0.4
3202664	3927618	12/04/2018 9:32 am	12/07/2018 9:07 am	Floor Main Room 14	2.6
3202665	3927619	12/04/2018 9:33 am	12/07/2018 9:09 am	Floor Main Room 12	3.8

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

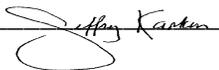
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202666	3927620	12/04/2018 9:33 am	12/07/2018 9:09 am	Floor Main Room 12 Duplicate	3.8
3202667	3927511	12/04/2018 9:35 am	12/07/2018 9:10 am	Floor Main Room OT	0.4
3202668	3927512	12/04/2018 9:36 am	12/07/2018 9:11 am	Floor Main Room PCC	0.8
3202669	3927513	12/04/2018 9:37 am	12/07/2018 9:12 am	Floor Main Room 1A/1B	1.0
3202670	3927514	12/04/2018 9:38 am	12/07/2018 9:14 am	Floor Main Room 10	1.9
3202671	3927515	12/04/2018 9:38 am	12/07/2018 9:14 am	Floor Main Room 10 Duplicate	2.0
3202672	3927516	12/04/2018 9:40 am	12/07/2018 9:15 am	Floor Main Room 8	0.8
3202673	3927517	12/04/2018 9:41 am	12/07/2018 9:16 am	Floor Main Room 6	0.9
3202674	3927518	12/04/2018 9:42 am	12/07/2018 9:17 am	Floor Main Room 7	< 0.4
3202675	3927519	12/04/2018 9:43 am	12/07/2018 9:18 am	Floor Main Room 5	0.7
3202676	3927520	12/04/2018 9:44 am	12/07/2018 9:19 am	Floor Main Room 4	0.6

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

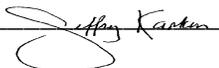
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202677	3927591	12/04/2018 9:45 am	12/07/2018 9:20 am	Floor Main Room 2	0.6
3202678	3927592	12/04/2018 9:46 am	12/07/2018 9:21 am	Floor Main Room 3	0.7
3202679	3927593	12/04/2018 9:47 am	12/07/2018 9:22 am	Floor Main Room 1	0.7
3202680	3927594	12/04/2018 9:48 am	12/07/2018 9:23 am	Floor Main Room Councilor	0.4
3202681	3927595	12/04/2018 9:49 am	12/07/2018 9:24 am	Floor Main Room GOF	0.6
3202682	3927596	12/04/2018 9:50 am	12/07/2018 9:25 am	Floor Main Room Principal Office	0.7
3202683	3927597	12/04/2018 9:51 am	12/07/2018 9:26 am	Floor Main Room Workroom	0.6
3202684	3927598	12/04/2018 9:52 am	12/07/2018 9:27 am	Floor Main Room Health Room	0.7
3202685	3927599	12/04/2018 9:53 am	12/07/2018 9:28 am	Floor Main Room Health Exam Room	0.9
3202686	3927600	12/04/2018 9:54 am	12/07/2018 9:29 am	Floor Main Room VP Office	0.6
3202687	3927571	12/04/2018 10:15 am	12/07/2018 9:30 am	Floor Main Room Conference Room	0.7

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202688	3927572	12/04/2018 10:18 am	12/07/2018 9:34 am	Floor Main Room Kitchen	1.8
3202689	3927573	12/04/2018 10:18 am	12/07/2018 9:34 am	Floor Main Room Kitchen Duplicate	1.8
3202690	3927574	12/04/2018 10:20 am	12/07/2018 9:35 am	Floor Main Room Staff Development	1.8
3202691	3927575	12/04/2018 10:21 am	12/07/2018 9:36 am	Floor Main Room BSM	1.5
3202692	3927576	12/04/2018 10:22 am	12/07/2018 9:37 am	Floor Main Room Staff Lounge	0.8
3202693	3927577	12/04/2018 10:23 am	12/07/2018 9:39 am	Floor Main Room Music	0.6
3202694	3927578	12/04/2018 10:23 am	12/07/2018 9:39 am	Floor Main Room Music Duplicate	0.6
3202695	3927579	12/04/2018 10:25 am	12/07/2018 9:40 am	Floor Main Room Gym Office	2.0
3202696	3927580	12/04/2018 10:28 am	12/07/2018 9:43 am	Floor Main Room 43	4.0
3202697	3927521	12/04/2018 10:29 am	12/07/2018 9:44 am	Floor Main Room 41	0.7
3202698	3927522	12/04/2018 10:30 am	12/07/2018 9:46 am	Floor Main Room 42	3.7

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202699	3927523	12/04/2018 10:30 am	12/07/2018 9:46 am	Floor Main Room 42 Duplicate	4.0
3202700	3927524	12/04/2018 10:32 am	12/07/2018 9:47 am	Floor Main Room 39	< 0.4
3202701	3927525	12/04/2018 10:33 am	12/07/2018 9:48 am	Floor Main Room 37	0.6
3202702	3927526	12/04/2018 10:34 am	12/07/2018 9:49 am	Floor Main Room 35	0.8
3202703	3927527	12/04/2018 10:35 am	12/07/2018 9:50 am	Floor Main Room 40	1.5
3202704	3927528	12/04/2018 10:36 am	12/07/2018 9:51 am	Floor Main Room 38	2.4
3202705	3927529	12/04/2018 10:37 am	12/07/2018 9:52 am	Floor Main Room 33	1.8
3202706	3927530	12/04/2018 10:38 am	12/07/2018 9:53 am	Floor Main Room 36	2.9
3202707	3918326	12/04/2018 10:39 am	12/07/2018 9:54 am	Floor Main Room 34	1.4
3202708	3927561	12/04/2018 10:40 am	12/07/2018 9:55 am	Floor Main Room 2A/2B	1.8
3202709	3927562	12/04/2018 10:41 am	12/07/2018 9:56 am	Floor Main Room 26	0.8

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

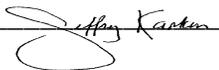
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202710	3927563	12/04/2018 10:42 am	12/07/2018 9:57 am	Floor Main Room 28	1.4
3202711	3927564	12/04/2018 10:43 am	12/07/2018 9:58 am	Floor Main Room 25	0.5
3202712	3927565	12/04/2018 10:44 am	12/07/2018 9:59 am	Floor Main Room 27	0.9
3202713	3927566	12/04/2018 10:45 am	12/07/2018 10:01 am	Floor Main Room 29	1.7
3202714	3927567	12/04/2018 10:45 am	12/07/2018 10:01 am	Floor Main Room 29 Duplicate	1.6
3202715	3927568	12/04/2018 10:47 am	12/07/2018 10:02 am	Floor Main Room 31	1.2
3202716	3927569	12/04/2018 10:48 am	12/07/2018 10:03 am	Floor Main Room 30	1.8
3202717	3927570	12/04/2018 10:49 am	12/07/2018 10:04 am	Floor Main Room 9	1.0
3202718	3918518	12/04/2018 10:50 am	12/07/2018 10:05 am	Floor Main Room IMC	0.4
3202719	3918516	12/04/2018 10:52 am	12/07/2018 10:07 am	Floor Main Room IMC Office	0.6
3202720	3918520	12/04/2018 10:53 am	12/07/2018 10:08 am	Floor Main Room IMC Workroom	0.4

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

MCPS Radon Survey
Christa McAuliffe Elementary School
Darnestown MD 20874

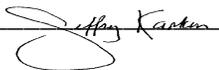
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3202721	3917825	12/04/2018 6:00 am	12/07/2018 6:00 pm	Floor NA Room Office Blank	< 0.4
3202722	3917826	12/04/2018 9:25 am	12/07/2018 10:15 am	Floor NA Room Field Blank	< 0.4
3202723	3918324	12/04/2018 9:25 am	12/07/2018 10:15 am	Floor NA Room Field Blank	< 0.4

Comment: AMENDED REPORT for 3918320 on 1-7-19 to add as Transit Blank.

Test Performed By: Rinzo Renthlei

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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NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey
Christa McAuliffe Elementary School
MD 20874

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
2405261	3888364	12/04/2018 10:16 am 12/07/2018 9:31 am	Floor Main Room APR	1.3
2405262	3888344	12/04/2018 10:17 am 12/07/2018 9:32 am	Floor Main Room APR	1.6
2405263	3888354	12/04/2018 10:26 am 12/07/2018 9:41 am	Floor Main Room Gym	2.6
2405264	3888384	12/04/2018 10:27 am 12/07/2018 9:42 am	Floor Main Room Gym	3.0

Comment: A copy of this report was emailed to Intertek-PSI (VA).

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: Date Analyzed: 12/10/2018 Date Reported: 12/21/2018

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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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

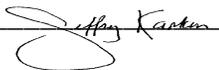
Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3204125	3926831	12/07/2018	9:47 am	12/10/2018	9:47 am	Spike	36.1
3204126	3926832	12/07/2018	9:47 am	12/10/2018	9:47 am	Spike	34.8
3204127	3926833	12/07/2018	9:47 am	12/10/2018	9:47 am	Spike	33.7
3204128	3926834	12/07/2018	9:47 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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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Intertek - PSI

Job Number 187732

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

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

Date Start: _____ Date Stop: _____

Time Start: 0947 Time Stop: 0947

Time Start: _____ Time Stop: _____

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

Device No.'s: _____

3926831 thru 3926840

G2 left

Date Start: _____ Date Stop: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Device No.'s: _____

Date Start: _____ Date Stop: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Device No.'s: _____

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



Chain of Custody

Project Name: MCPS Radon Survey 2018

Name of Schools:

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

12500 Wisteria Drive, Germantown, Maryland 20874

EXECUTIVE SUMMARY

Date of Test Report:	3/31/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	7
# Rooms \geq 4.0 pCi/L:	0
Low Value:	1.0
High Value:	2.7
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) 1/15/16 (Rev. 1 Initial)	Result (pCi/L) 3/31/16 Follow-Up	Average Result (pCi/L)
129 [42]	4.7	2.7	3.7
130 [43]	4.4	2.3	3.4
125 [36]	4.1	2.4	3.3
138 [PE]	3.6 Tampered	--- Missing	3.6
127 [38]	3.5	1.8	2.7
128 [40]	3.6	1.5	2.6
138 [PE]	3.9	1.0	2.5
138 Office	Not sampled	1.2	1.2



MCPS RADON TESTING

Executive Summary: S. Christa McAuliffe Elementary School

Date of Test Report:	3/31/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	7
# Rooms \geq 4.0 pCi/L:	0
Low Value:	1.0
High Value:	2.7

Retesting completed; use the average of the initial and re-test results in a room to determine if remediation is necessary.

Retesting completed; locked/inaccessible rooms need re-testing (Room 34).



March 31, 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 # 12146341.31

Location: S. Christa McAuliffe Elementary School
12500 Wisteria Drive
Germantown, MD 20874

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the S. Christa McAuliffe Elementary School, located at 12500 Wisteria Drive in Germantown, Maryland 20874 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on March 7, 2016 and deployed eleven (11) 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 March 10, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler

Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

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

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

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

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

Results:

The results of the radon test analysis indicated the following:

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

Notes:
D- Duplicate sample

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

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

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

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank*

PM- Project Manager

QC- Quality Control

*Office blanks were submitted at a rate of 1% for all samples deployed in Phase 11 testing. Office blanks were not submitted under each school individually.

Radon Testing Results		
McAuliffe Elementary School		
Test Period: 03/07/16-03/10/16		
Kit Number	Room / Area	Result
7735263	36	2.4
7735268	38	1.8
7735275	40	1.5
7735231	42	2.7
7735276	43	2.3
7735218	138	1.0
7735241	* 138 (Missing)	-
7735273	138 OFFICE	1.2

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
McAuliffe Elementary School		
Test Period: 03/07/16-03/10/16		
Kit Number	QC Type	Result
7735267	D (36)	2.0
7735271	D (40)	1.6
7735272	FB (42)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 30, 2016 **** LABORATORY ANALYSIS REPORT ****

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7735241	138	@	@		
7735218	138	2016-03-07 @ 2:00 pm	2016-03-10 @ 11:00 am	1.0 ± 0.3	2016-03-14
7735273	138 OFFICE	2016-03-07 @ 2:00 pm	2016-03-10 @ 11:00 am	1.2 ± 0.3	2016-03-14
7735263	36	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	2.4 ± 0.4	2016-03-14
7735267	36	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	2.0 ± 0.4	2016-03-14
7735268	38	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	1.8 ± 0.4	2016-03-14
7735271	40	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	1.6 ± 0.4	2016-03-14
7735275	40	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	1.5 ± 0.4	2016-03-14
7735231	42	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	2.7 ± 0.5	2016-03-14
7735272	42	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	< 0.3	2016-03-14
7735276	43	2016-03-07 @ 1:00 pm	2016-03-10 @ 11:00 am	2.3 ± 0.4	2016-03-14

March 29, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
MCPS RADON
Phase 11 Office Blank

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7730694	0	2016-03-07 @ 2:00 pm	2016-03-10 @ 2:00 pm	< 0.3	2016-03-14

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

March 22, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
TRANSIT - PHASE 10 & 11
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7735300	1	2016-03-18 @ 4:00 pm	2016-03-21 @ 4:00 pm	< 0.3	2016-03-22
7735296	2	2016-03-18 @ 4:00 pm	2016-03-21 @ 4:00 pm	< 0.3	2016-03-22
7735294	3	2016-03-18 @ 4:00 pm	2016-03-21 @ 4:00 pm	< 0.3	2016-03-22

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

March 24, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
MCPS
Spike Sample Results

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7735295	1	2016-03-18 @ 1:00 pm	2016-03-21 @ 1:00 pm	30.0 ± 2.0	2016-03-24
7735289	2	2016-03-18 @ 1:00 pm	2016-03-21 @ 1:00 pm	29.9 ± 2.0	2016-03-24
7735274	3	2016-03-18 @ 1:00 pm	2016-03-21 @ 1:00 pm	25.6 ± 1.7	2016-03-24
7735278	4	2016-03-18 @ 1:00 pm	2016-03-21 @ 1:00 pm	26.2 ± 1.8	2016-03-24
7735299	5	2016-03-18 @ 1:00 pm	2016-03-21 @ 1:00 pm	28.3 ± 1.9	2016-03-24
7735293	6	2016-03-18 @ 1:00 pm	2016-03-21 @ 1:00 pm	31.0 ± 2.0	2016-03-24

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 174430

NOMINAL Conditions: Radon Conc 26.1 pCi/L Rel. Hum 48.8 % Temp. 79.1 F

Date Start: 3/18/16 Date Stop: 3/21/16 Date Start: _____ Date Stop: _____

Time Start: 1250 Time Stop: 1250 Time Start: _____ Time Stop: _____

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

3029154 thru 3029157, _____

3029083, 3029086 _____

FS Right

Date Start: 3/18/16 Date Stop: 3/21/16 Date Start: _____ Date Stop: _____

Time Start: 1250 Time Stop: 1250 Time Start: _____ Time Stop: _____

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

7735299, 7735293, 7735295, _____

7735274, 7735278, 7735289 _____

FS Right

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

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

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 10

Name of Schools:

1. S. Christa McAuliffe ES
2. Northwest HS
3. Concord Center
4. 45 Gude

	Date	Initials
Radon Test Kits Deployed	3/7/16	JM
Radon Test Kits Collected	3/10/16	JM
Radon Test Kits Shipped to Lab*	3/10/16	JM
Radon Test Kits Received by Lab*	3/14/16	JM

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

MCPS RADON TESTING

Executive Summary: S. Christa McAuliffe Elementary School

Date of Test Report:	1/15/2016 (Rev1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	64
# Rooms \geq 4.0 pCi/L:	3
Low Value:	< 0.3
High Value:	4.7

Rooms with results \geq 4.0 pCi/L:

Room 129 [4 Chidakel, Room 42] (4.7 pCi/L), Room 130 [4 Middleton, Room 34] (4.4 pCi/L),
Room 125 [5 Snipes, Room 36] (4.1 pCi/L)

Project Status:

Initial testing completed; re-test needed for results \geq 4.0 pCi/L.
Initial testing completed; missing or compromised samples need re-test.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

January 15, 2016 (Rev1)

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

Re: Radon Testing Services
KCI Job # 12146341.20

Location: S. Christa McAuliffe Elementary School
12500 Wisteria Drive
Germantown, MD 20874

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a "short-term" 3 day radon test for the S. Christa McAuliffe Elementary School, located at 12500 Wisteria Drive in Germantown, Maryland 20874 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on December 21, 2015 and deployed seventy-six (76) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on December 24, 2015 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

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

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

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

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

Results:

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	129 [4 Chidakel, Room 42]	4.7
	130 [4 Middleton, Room 34]	4.7, 4.4(D)
	125 [5 Snipes, Room 36]	4.1
< 4.0 pCi/L	See Attachment B	

Notes:

D- Duplicate sample

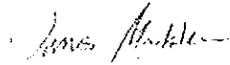
All field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is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

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

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

Mr. Richard Cox
January 15, 2016
Page 4

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		
S Christa McAuliffe E.S.		
Test Period: 12/21/15-12/24/15		
Kit Number	Room / Area	Result
7707213	150	0.7
7707208	152	0.7
7707241	155	1.1
7707240	156	0.9
7707286	156	1.2
7707239	101 [Art, Room 1]	1.8
7707238	102 [Caplan, Room 2]	0.9
7707237	103 [Brown, Room 3]	1.6
7707215	104 [Bise, Room 4]	0.9
7707236	105 [Kahn, Room 5]	2.3
7707235	106 [Art Boswel, Room 6]	0.8
7707233	107 [K-2LAD Parris, Room 7]	1.5
7707242	108 [K Witt, Room 8]	0.8
7707234	109 [K Whittington, Room 10]	0.7
7707217	110 [K Speer, Room 12]	2.8
7707201	111 [K Chatillion, Room 14]	1.9
7707231	112 [K Rosario, Room 16]	1.1
7707226	113 [K Baker, Room 18]	1
7707229	114 [1 Selby, Room 25]	< 0.3
7707244	114 [1 Selby, Room 25]	0.7
7707248	114 [1 Selby, Room 25]	< 0.3
7707246	115 [1 Overby, Room 26]	0.7
7707249	117 [Computer Lab, Room 28]	1.2
7707251	118 [Toomey, Room 29]	1
7707247	119 [1 Sherman, Room 30]	0.8
7707253	120 [1 Lynch, Room 31]	< 0.3
7707252	121 [1 Keller, Room 32]	0.6
7707232	122 [5 Benedetti, Room 33]	2
7707243	123 [5 Parra, Room 34]	2.9
7707271	124 [4 Lord, Room 35]	1.7
7707273	125 [5 Snipes, Room 36]	4.1
7707274	126 [3-5 LAD Edwards, Room 37]	1.3
7707270	127 [5 Furano, Room 38]	3.5
7707269	128 [4 Toscano, Room 40]	3.6
7707267	129 [4 Chidakel, Room 42]	4.7
7707266	130 [4 Middleton, Room 34]	4.2
7707263	131 [Music -Monroe]	1.2
7707228	132 [HS Hart, Room 41]	0.8
7707272	133 [Art-Han, Room 39]	0.9
7707225	134 [Para's Room]	0.6
7707218	136 [Res-Markham]	0.7
7707222	137 [ESOL McGuire]	0.6
7707202	138 [PE /O'Connor, Smith, Jarczyński]	3.9
7707204	* 138 [PE/O'Connor, Smith, Jarczyński] (tampered)	3.6
7707227	145 [ESOL DiPeppe]	0.6
7707258	147 [Media Center, Gibbs Hou]	0.8

Table Note:

* Missing or Compromised Sample

Room numbers obtained from archived floor plan [onsite school provided floor plan]

Radon Testing Results		
S Christa McAuliffe E.S.		
Test Period: 12/21/15-12/24/15		
Kit Number	Room / Area	Result
7707255	147 [Media Center, Gibbs Hou]	< 0.3
7707216	147B [Media Center, Gibbs Hou]	1
7707203	149 [Multi Purpose Room]	1.2
7707207	149 [Multi Purpose Room]	1
7707205	150A	< 0.3
7707206	153 [Conf]	< 0.3
7707211	153 [Conf]	0.7
7707212	154 [Health]	0.7
7707210	158 [Office]	2.4
7707230	159 [IDA-Shaughnessy]	< 0.3
7707254	161A [Mollard Shaw, Room 31]	2.3
7707257	161B [Mollard Shaw, Room 31]	2
7707259	162 [ESOL DiPeppe]	< 0.3
7707219	163 [Res Markham]	0.6
7707285	165 [Staff Lounge]	1.3
7707223	171 [OT Pegler]	< 0.3
7707220	172 [Res-Cummins]	2.8
7707284	BSO 157 [BSO]	1.1

Table Note:

* Missing or Compromised Sample

Room numbers obtained from archived floor plan [onsite school provided floor plan]

Radon Testing Results		
S Christa McAuliffe E.S.		
Test Period: 12/21/15-12/24/15		
Kit Number	QC Type	Result
7707221	D (111 [K Chatillion, Room 14])	1.5
7707245	D (115 [1 Overby, Room 26])	< 0.3
7707250	D (117 [Computer Lab, Room 28])	1.3
7707265	D (130 [4 Middleton, Room 34])	4.4
7707261	D (147 [Media Center, Gibbs Hou])	0.8
7707214	D (150)	1
7707209	D (153 [Conf])	< 0.3
7707260	D (165 [Staff Lounge])	1.1
7707268	FB (129 [4 Chidakei, Room 42])	< 0.3
7707262	FB (147 [Media Center, Gibbs Hou])	< 0.3
7707256	FB (165 [Staff Lounge])	< 0.3
7707323	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

Room numbers obtained from archived floor plan [onsite school provided floor plan]

ATTACHMENT C

Laboratory Analytical Results

January 13, 2016
** LABORATORY ANALYSIS REPORT **

Radon test result report for:
S CHRISTA MCAULIFFE E.S.
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7707206	153	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-29

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

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

Radon test result report for:
S CHRISTA MCAULIFFE E.S.
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7707323	00	2015-12-22 @ 9:00 am	2015-12-24 @ 3:00 pm	< 0.3	2015-12-28
7707239	101	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	1.8 ± 0.4	2015-12-28
7707238	102	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7707237	103	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	1.6 ± 0.4	2015-12-28
7707215	104	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7707236	105	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	2.3 ± 0.4	2015-12-28
7707235	106	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7707233	107	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	1.5 ± 0.3	2015-12-28
7707242	108	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7707234	109	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7707217	110	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	2.8 ± 0.4	2015-12-28
7707201	111	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.9 ± 0.4	2015-12-28
7707221	111	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.5 ± 0.3	2015-12-28
7707231	112	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7707226	113	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.0 ± 0.4	2015-12-29
7707244	114	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7707229	114	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7707248	114	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-29
7707245	115	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7707246	115	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-29
7707249	117	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7707250	117	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.3 ± 0.3	2015-12-28
7707251	118	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.0 ± 0.3	2015-12-28
7707247	119	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7707253	120	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-29
7707252	121	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7707232	122	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	2.0 ± 0.4	2015-12-28
7707243	123	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	2.9 ± 0.4	2015-12-28
7707271	124	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.7 ± 0.4	2015-12-28
7707273	125	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	4.1 ± 0.5	2015-12-28
7707274	126	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.3 ± 0.3	2015-12-28
7707270	127	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	3.5 ± 0.4	2015-12-28
7707269	128	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	3.6 ± 0.4	2015-12-28
7707267	129	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	4.7 ± 0.5	2015-12-28
7707268	129	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7707265	130	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	4.4 ± 0.5	2015-12-28
7707266	130	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	4.2 ± 0.5	2015-12-28

January 13, 2016
LABORATORY ANALYSIS REPORT **

Radon test result report for:
S CHRISTA MCAULIFFE E.S.
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7707263	131	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.4	2015-12-29
7707228	132	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7707272	133	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7707225	134	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-29
7707218	136	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7707222	137	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-29
7707202	138	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.9 ± 0.5	2015-12-28
7707204	138	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.6 ± 0.4	2015-12-28
7707227	145	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7707258	147	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7707261	147	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7707262	147	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7707255	147	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-29
7707216	147B	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.0 ± 0.3	2015-12-29
7707203	149	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	1.2 ± 0.3	2015-12-28
7707207	149	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	1.0 ± 0.3	2015-12-28
7707213	150	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7707214	150	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	1.0 ± 0.3	2015-12-28
7707205	150A	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-28
7707208	152	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.7 ± 0.3	2015-12-29
7707209	153	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-29
7707211	153	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.7 ± 0.3	2015-12-29
7707212	154	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7707241	155	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7707240	156	2015-12-21 @ 12:00 pm	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7707286	156	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7707210	158	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	2.4 ± 0.4	2015-12-28
7707230	159	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7707254	161A	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	2.3 ± 0.4	2015-12-28
7707257	161B	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	2.0 ± 0.4	2015-12-28
7707259	162	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-29
7707219	163	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-29
7707285	165	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.3 ± 0.3	2015-12-28
7707256	165	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-29
7707260	165	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.4	2015-12-29
7707223	171	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7707220	172	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	2.8 ± 0.4	2015-12-28

January 13, 2016
** LABORATORY ANALYSIS REPORT **

Radon test result report for:
S CHRISTA MCAULIFFE E.S.
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7707284	BSO 157	2015-12-21 @ 9:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28

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

December
29,
2015

**LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
TRANSIT DEC 14 2015
NONE

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

December
23,
2015

**LABORATORY ANALYSIS
REPORT ****

Spike Sample Laboratory Results

Radon test result report for:
MCPS

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 173224

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

Date Start: 12/18/15 Date Stop: 12/21/15 Date Start: _____ Date Stop: _____

Time Start: 0929 Time Stop: 0929 Time Start: _____ Time Stop: _____

Device No.'s: 7705132, 7706208, Device No.'s: _____

7706211, 7706366, _____

7706380, 7706381 _____

F3 left

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

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

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

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

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

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

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



Chain of Custody

Project Name: MCPS Radon Phase II

School Names:

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

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

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

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

November 19, 2015

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

Re: Radon Evaluation- McAuliffe Elementary School

Dear Mr. Yarup:

Environmental radon testing has been completed at McAuliffe Elementary School.

Thirty-nine charcoal canisters were placed in various rooms throughout the school. The canisters were placed on October 30, 2015 and retrieved on November 2, 2015. The detected radon concentrations were below the EPA recommended level of 4.0 pico curries per liter (pCi/l) of air at all tested locations with the exception of Room 12 (6.8 pCi/l) and Room 33 (5.7 pCi/l). Test locations and results are summarized in the attached table.

Retesting of Rooms 12 and 33 is recommended in the near future.

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

Sincerely,

Michael A. Cecil
Michael A. Cecil, CIH

**McAuliffe Elementary School
Environmental Radon Results
October 30, 2015 - November 2, 2015**

Location	Detected Radon Concentration (pCi/l)
Art Room	2.0
Gym	3.0
IMC	0.7
Main Office	0.8
MPR	1.5
Music Room	1.1
Room 1	1.0
Room 2	2.2
Room 3	1.1
Room 4	2.4
Room 5	1.0
Room 6	2.3
Room 7	0.5
Room 8	2.7
Room 10	3.0
Room 12	6.8
Room 14	3.4
Room 16 A	1.9
Room 16 B (Quality control)	2.1
Room 18	1.9
Room 25	<0.5
Room 26	<0.5
Room 27	<0.5
Room 28	<0.5
Room 29 A	<0.5
Room 29 B (Quality control)	0.6
Room 30	1.0
Room 31	0.7
Room 32	0.9
Room 33	5.7
Room 34 A	3.3
Room 34 B (Quality control)	2.7
Room 35	3.9
Room 36	2.6
Room 37	2.9
Room 38	2.6
Room 40	2.1
Room 42	2.8
Room 43	2.4