

School / Facility Radon Testing Report Form

School Year: **24-25**

Facility:	Cedar Grove Elementary School		
Address:	24001 Ridge Rd.		
	Germantown, MD 20876		
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 checked="" 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	50	Lowest Value (pCi/L)	<0.3
Number of Rooms (≥ 4.0 -pCi/L)	0	Highest Value (pCi/L)	2.2

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)
Other—Specify here:		
Detector/Device Name:	Air Chek – Radon Test Kits	
Manufacturer:	Radon Labs	
Person(s) Deploying or Retrieving Test Devices and certification number		Organization/Company
Tyler McCleaf, CSP Cert. # 111004-RMP		KCI Technologies, Inc.
If noncertified individuals, the qualified measurement professional providing oversight -		

Testing

<input checked="" type="checkbox"/> Short-Term	Length of Test (days):	3	Date of Deployment and Retrieval (mm/dd/yy):	2/18/2025
<input type="checkbox"/> Long-Term				2/21/2025
Does the test period include weekends, school breaks or holidays?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If “Yes” please explain/detail in the space below:				
Was HVAC operating under occupied conditions?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If “No” please explain/detail in the space below:				

Testing (continued)

Round of Testing	Detectors Deployed				
	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Test Locations ¹	50	0	0	0	50
Duplicates ²	5	0	0	0	5
Field Blanks ³	2	0	0	0	2
Grand Total					57

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
Round of Testing	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"/> No <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"/> No <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"/> No <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"/> No <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:	50	0	0	0	50
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:	1	0	0	0	1
Number of missing required test locations ³ :	0	0	0	0	0
Number of failed duplicate control locations:	0	0	0	0	0
Percentage of missing test locations for the facility ^{4,5} :	0	0	0	0	0

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

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

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

4 – if all valid measurements are < 4.0 -pCi/L and the total number of test locations are ≥ 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 checked="" type="checkbox"/> Yes <input 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.</i> <i>If No, then - ‘Follow-up Testing Required’ continue below.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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		
Cedar Grove Elementary School		
Test Period: 2/18/2025 - 2/21/2025		
Kit Number	Room / Area	Result
11951799	1	< 0.3
11951787	2	< 0.3
11951794	2	< 0.3
11951797	3	< 0.3
11951701	4	< 0.3
11951798	5	< 0.3
11951788	6	1.4
11951796	6	1.4
11951795	7	1.1
11951768	8	2.2
11951791	8	< 0.3
11951767	9	0.8
11951773	10	1.8
11951774	11	1.7
11951775	12	1.4
11951778	13	1.2
11951777	14	0.9
11951783	15	0.5
11951779	16	0.6
11951784	17	< 0.3
11951789	18	0.6
11930859	19	< 0.3
11951289	19	< 0.3
11951782	15A	0.8
11951781	15A	1.2
11930883	1A	< 0.3
11951292	APR	< 0.3
11951771	APR	< 0.3
11951288	ASSISTANT PRINCIPAL	< 0.3
11951297	BSO	< 0.3
11951770	BSO	< 0.3
11951294	CONFERENCE ROOM	< 0.3
11951291	ELD	< 0.3
11951776	FLEX	1.5
11951785	GYM	0.8
11951786	GYM	1.2
11951790	GYM OFFICE	0.7

Table 1- Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 2/18/2025 - 2/21/2025		
Kit Number	Room / Area	Result
11951284	HEALTH	< 0.3
11930862	HEALTH OFFICE	< 0.3
11930849	K1	< 0.3
11930873	K2	< 0.3
11930868	K3	< 0.3
11951295	K3	< 0.3
11930884	MAIL ROOM	< 0.3
11951283	MAIN OFFICE	< 0.3
11951769	MEDIA	< 0.3
11951298	MEDIA OFFICE	< 0.3
11951765	MEDIA WORKROOM	< 0.3
11951766	MUSIC	< 0.3
11951772	OT	0.6
11951290	PRINCIPAL	< 0.3
11930899	RES 1	0.8
11951792	RES 2	0.9
11951780	RES 3	1.1
11951793	SPEECH	0.8
11951296	STALL LOUNGE	< 0.3
11951265	TV	< 0.3

[illegible]

Table 3 - QC Radon Testing Results			
Cedar Grove Elementary School			
Test Period: 2/18/2025 - 2/21/2025			
Kit Number	QC Type	Room / Area	Result
11951794	D	2	< 0.3
11951788	D	6	1.4
11951791	FB	8	< 0.3
11951289	D	19	< 0.3
11951782	D	15a	0.8
11951770	D	BSO	< 0.3
11951295	FB	K3	< 0.3
11919902	OB	OFFICE BLANK	< 0.3
11919963	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation										
Cedar Grove Elementary School										
Test Period: 2/18/2025 - 2/21/2025										
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
11951794	11951787	2	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11951788	11951796	6	1.4	1.4	✓	2.8	PASS	1.4	<1-pCi/L	✓
11951289	11930859	19	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11951782	11951781	15A	1.2	0.8	✓	1.6	PASS	1.0	<1-pCi/L	✓
11951770	11951297	BSO	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:
CEDAR GROVE ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11951799	1	2025-02-18 @ 10:00 am	2025-02-21 @ 11:00 am	< 0.3	2025-02-24
11951773	10	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.8 ± 0.3	2025-02-24
11951774	11	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.7 ± 0.3	2025-02-24
11951775	12	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.4 ± 0.3	2025-02-24
11951778	13	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.2 ± 0.3	2025-02-24
11951777	14	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.9 ± 0.3	2025-02-24
11951783	15	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.5 ± 0.3	2025-02-24
11951781	15A	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.2 ± 0.3	2025-02-24
11951782	15A	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.8 ± 0.3	2025-02-24
11951779	16	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.6 ± 0.3	2025-02-24
11951784	17	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951789	18	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.6 ± 0.3	2025-02-24
11930859	19	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951289	19	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930883	1A	2025-02-18 @ 10:00 am	2025-02-21 @ 11:00 am	< 0.3	2025-02-24
11951787	2	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951794	2	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951797	3	2025-02-18 @ 10:00 am	2025-02-21 @ 11:00 am	< 0.3	2025-02-24
11951701	4	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951798	5	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951788	6	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.4 ± 0.3	2025-02-24
11951796	6	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.4 ± 0.3	2025-02-24
11951795	7	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.1 ± 0.3	2025-02-24
11951768	8	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	2.2 ± 0.3	2025-02-24
11951791	8	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951767	9	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.8 ± 0.3	2025-02-24
11951771	APR	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951292	APR	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951288	ASSISTANT PRINCIPAL	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951770	BSO	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951297	BSO	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951294	CONFERENCE ROOM	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951291	ELD	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951776	FLEX	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.5 ± 0.3	2025-02-24
11951785	GYM	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.8 ± 0.3	2025-02-24
11951786	GYM	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.2 ± 0.3	2025-02-24
11951790	GYM OFFICE	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.7 ± 0.3	2025-02-24

February 24, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
CEDAR GROVE ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11951284	HEALTH	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930862	HEALTH OFFICE	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930849	K1	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930873	K2	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951295	K3	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930868	K3	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930884	MAIL ROOM	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951283	MAIN OFFICE	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951769	MEDIA	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951298	MEDIA OFFICE	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951765	MEDIA WORKROOM	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951766	MUSIC	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951772	OT	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.6 ± 0.3	2025-02-24
11951290	PRINCIPAL	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11930899	RES 1	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.8 ± 0.3	2025-02-24
11951792	RES 2	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.9 ± 0.3	2025-02-24
11951780	RES 3	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	1.1 ± 0.3	2025-02-24
11951793	SPEECH	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	0.8 ± 0.3	2025-02-24
11951296	STALL LOUNGE	2025-02-18 @ 9:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24
11951265	TV	2025-02-18 @ 10:00 am	2025-02-21 @ 10:00 am	< 0.3	2025-02-24

February 26, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**OFFICE
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11919902	OB	2025-02-18 @ 11:00 am	2025-02-21 @ 11:00 am	< 0.3	2025-02-24

February 26, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**TRAVEL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11919963	TB	2025-02-18 @ 11:00 am	2025-02-21 @ 11:00 am	< 0.3	2025-02-24

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

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



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

Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing February 18th – February 21st, 2025

Name of Schools:

1. Cashell ES
2. Cedar Grove ES
3. Clarksburg ES
4. Clarksburg HS
5. Clarksburg Annex
6. Damascus ES
7. Darnestown ES

	Date	Initials
Radon Test Kits Deployed	2/18/2025	on
Radon Test Kits Collected	2/21/2025	Sm
Radon Test Kits Shipped to Lab*	2/21/2025	dm
Radon Test Kits Received by Lab*	2/24/2025	Sm

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Cedar Grove Elementary School
Date of Test Report	05/27/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.7 pCi/L

Project Status

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



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: Cedar Grove Elementary School
24001 Ridge Rd.
Germantown, MD 20876

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 Cedar Grove Elementary School, located at 24001 Ridge Rd. Germantown, MD 20876 (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 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.

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		
Cedar Grove ES RT		
Test Period: 03/28/2022 - 03/31/2022		
Kit Number	Room / Area	Result
11139801	10	2.7
11139804	10	< 0.3
11139805	10	2.5

Table 2- Radon Testing Results			
Cedar Grove ES RT			
Test Period: 03/28/2022 - 03/31/2022			
Kit Number	QC Type	Room / Area	Result
11139805	D	10	2.5
11139804	FB	10	< 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:

**CEDAR GROVE ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139801	10	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	2.7 ± 0.4	2022-04-04
11139804	10	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	< 0.3	2022-04-04
11139805	10	2022-03-28 @ 9:00 am	2022-03-31 @ 9:00 am	2.5 ± 0.4	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 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 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



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

Radon Test Kit Chain of Custody

Project Name: MCPS Radon – 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	Cedar Grove Elementary School
Date of Test Report	3/17/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	49
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	3.8 pCi/L

Project Status:

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

March 17, 2022

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

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

Location: Cedar Grove ES
24001 Ridge Rd.
Germantown, MD 20876

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 Cedar Grove ES, located at 24001 Ridge Rd. Germantown, MD 20876 (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 fifty seven (57) 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	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		
Cedar Grove ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123513	1	< 0.3
11123512	2	< 0.3
11123505	3	< 0.3
11123511	4	< 0.3
11123506	5	< 0.3
11123523	6	1.3
11123524	7	0.8
11123525	8	1.6
11123526	9	< 0.3
11123531	10	3.8
11123533	10	2.8
11123532	11	2.3
11123534	12	1.0
11123541	13	1.8
11123540	14	< 0.3
11123545	15	1.6
11123528	16	< 0.3
11123539	17	< 0.3
11123535	18	0.9
11123542	18	0.9
11123550	19	< 0.3
11123527	15A	0.6
11123514	1A	< 0.3
11123504	AP GERMAN	< 0.3
11123536	BUILDING SERVICE	< 0.3
11123551	CAFETERIA	0.5
11123552	CAFETERIA	< 0.3
11123503	CONFERENCE ROOM	< 0.3
11123501	ESOL ROOM	< 0.3
11123546	GYM	0.6
11123565	GYM	1.3
11123556	GYM OFFICE	0.7
11123572	GYM OFFICE	< 0.3
11123507	HEALTH ROOM	< 0.3
11123508	HEALTH ROOM OFFICE	< 0.3
11123553	HIRSCHMAN WILSON	< 0.3
11123529	JOHNSON READING INIT	2.7
11123549	K1	< 0.3
11123547	K2	< 0.3
11123555	K3	< 0.3
11123563	K4MUSIC	< 0.3
11123558	KITCHEN OFFICE	< 0.3

Table 1- Radon Testing Results		
Cedar Grove ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123502	MAIN OFFICE	< 0.3
11123509	MAIN ROOM NEAR AP ROOM	< 0.3
11123554	MEDIA CENTER	< 0.3
11123548	MEDIA OFFICE	< 0.3
11123557	MEDIA OFFICE	< 0.3
11123530	OT	< 0.3
11123510	PRINCIPAL	< 0.3
11123518	RESOURCE MEETING	< 0.3
11123520	RESOURCE PHILLIPS	< 0.3
11123517	RESOURCE WARMACK	< 0.3
11123519	RESOURCE WARMACK	0.8
11123521	SPEECH MATTSON	0.7
11123522	SPEECH MATTSON	0.7
11123515	STAFF LOUNGE 1B	< 0.3
11123516	STAFF LOUNGE 1B	< 0.3

Table 2- Radon Testing Results			
Cedar Grove ES			
Test Period: 02/15/2022 - 02/18/2022			
Kit Number	QC Type	Room / Area	Result
11123515	D	Staff lounge 1B	< 0.3
11123522	D	Speech mattsen	0.7
11123517	FB	Resource warmack	< 0.3
11123533	D	10	2.8
11123535	D	18	0.9
11123572	FB	Gym office	< 0.3
11123557	D	Media 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:
CEDAR GROVE ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123513	1	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123531	10	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	3.8 ± 0.4	2022-02-22
11123533	10	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	2.8 ± 0.4	2022-02-22
11123532	11	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	2.3 ± 0.4	2022-02-22
11123534	12	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.0 ± 0.3	2022-02-22
11123541	13	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.8 ± 0.3	2022-02-22
11123540	14	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123545	15	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.6 ± 0.3	2022-02-22
11123527	15A	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.6 ± 0.3	2022-02-22
11123528	16	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123539	17	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123535	18	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.9 ± 0.3	2022-02-22
11123542	18	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.9 ± 0.3	2022-02-22
11123550	19	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123514	1A	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123512	2	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123505	3	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123511	4	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123506	5	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123523	6	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.3 ± 0.3	2022-02-22
11123524	7	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.8 ± 0.3	2022-02-22
11123525	8	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.6 ± 0.3	2022-02-22
11123526	9	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123504	AP GERMAN	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123536	BUILDING SERVICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123551	CAFETERI	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.5 ± 0.3	2022-02-22
11123552	CAFETERIA	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123503	CONFERENCE ROOM	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123501	ESOL ROOM	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123546	GYM	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.6 ± 0.3	2022-02-22
11123565	GYM	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	1.3 ± 0.3	2022-02-22
11123556	GYM OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123572	GYM OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123507	HEALTH ROOM	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123508	HEALTH ROOM OFFICE	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123553	HIRSCHMAN WILSON	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123529	JOHNSON READING INIT	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	2.7 ± 0.4	2022-02-22

Radon test result report for:
CEDAR GROVE ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123549	K1	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123547	K2	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123555	K3	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123563	K4MUSIC	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123558	KITCHEN OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123502	MAIN OFFICE	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123509	MAIN ROOM NEAR AP ROOM	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123554	MEDIA CENTER	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123548	MEDIA OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123557	MEDIA OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123530	OT	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123510	PRINCIPAL	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123518	RESOURCE MEETING	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123520	RESOURCE PHILLIPS	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123517	RESOURCE WARMACK	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123519	RESOURCE WARMACK	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.8 ± 0.3	2022-02-22
11123522	SPEECH MATTSON	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123521	SPEECH MATTSON	2022-02-15 @ 12:00 pm	2022-02-18 @ 10:00 am	0.7 ± 0.3	2022-02-22
11123516	STAFF LOUNGE 1B	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 0.3	2022-02-22
11123515	STAFF LOUNGE 1B	2022-02-15 @ 11:00 am	2022-02-18 @ 10:00 am	< 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 - Device No.'s: _____

11113484, 1112998, 20107126 _____

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

March 14, 2022

**** LABORATORY ANALYSIS REPORT ****

Pg 1 of 1

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

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



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

Radon Test Kit Chain of Custody

Project Name: MCPS Radon – 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



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary:
Cedar Grove Elementary School
24001 Ridge Road,
Germantown, MD 20876

Date of Test Report:	02/14/2019
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:	60
# of Rooms ≥ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	2.3

Project Status

Initial testing complete: No further action at this time.



February 14, 2019

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

Re: Radon Testing Services

Location: Cedar Grove Elementary School
24001 Ridge Road,
Germantown, MD 20876

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 Cedar Grove Elementary School, located 24001 Ridge Road, Germantown, MD 20876 (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 January 8, 2019 and deployed sixty (60) 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 January 11, 2019 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	None	NA
≤ 4.0 pCi/L	See Attachment B	

Notes:

D -Duplicate Sample

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

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

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



Respectfully Submitted,

INTERTEK-PSI

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

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		
Cedar Grove Elementary School		
Testing period: 1/08/19 - 1/11/19		
Kit Number	Room / Area	Result (pCi/L)
3927781	1B (Staff Lounge)	0.5
3927890	Room 1	< 0.4
3927889	Room 1A	0.5
3927887	Room 2	< 0.4
3927888	Room 3	0.4
3927886	Room 4	< 0.4
3927885	Room 5	0.7
3928577	Room 6	0.5
3928578	Room 7	0.7
3928576	Room 8	0.5
3928575	Room 9	1.1
3928572	Room 10	1.8
3928571	Room 11	1.5
3928541	Room 12	1.3
3928543	Room 13	< 0.4
3928544	Room 14	0.8
3928547	Room 15	< 0.4
3928546	Room 15A	< 0.4
3928545	Room 16	0.4
3928548	Room 17	0.7
3928549	Room 18	< 0.4
3928564	Room 19	< 0.4
3928559	APR	< 0.4
3928558	APR	< 0.4
3927790	Asst Principal	< 0.4
3928555	BSM	< 0.4
3927789	Conference Room	< 0.4
3927783	ESOL	< 0.4
3928561	Gym	1.0
3928562	Gym	1.2
3928550	Gym Office	< 0.4
3927786	Health	< 0.4
3927787	Health Office	< 0.4
3928568	IMC	< 0.4
3928567	IMC	< 0.4
3928565	IMC Office	< 0.4
3928566	IMC Workroom	< 0.4
3928552	K1	< 0.4
3928569	K2	< 0.4
3928563	K3	< 0.4
3928553	K4	0.4
3928557	Kitchen	0.4
3927784	Main Office	< 0.4

Radon Testing Results		
Cedar Grove Elementary School		
Testing period: 1/08/19 - 1/11/19		
Kit Number	Room / Area	Result (pCi/L)
3928542	Math Closet	1.7
3927603	Office Storage	< 0.4
3928560	OT/PT	< 0.4
3928573	PARA	2.3
3927788	Principal Office	< 0.4
3928580	Resource Room	0.7
3927884	Resource Room	< 0.4
3928551	Copier Room	< 0.4
3927785	Main Office Workroom	< 0.4
3927882	Resource Room	< 0.4
3928579	Speech Therapy (SPT)	< 0.4

Radon Testing Results		
Cedar Grove Elementary School		
Testing period: 1/08/19 - 1/11/19		
Kit Number	QC Type	Result (pCi/L)
3927782	1B (Staff Lounge) (D)	0.9
3928570	Copier Room (D)	< 0.4
3928554	BSM (D)	< 0.4
3928556	Kitchen (D)	< 0.4
3928574	PARA (D)	1.9
3927883	Resource Room (D)	0.5
3926547	Field Blank	< 0.4
3926502	Field Blank	< 0.4
3926504	Office Blank	< 0.4
3926501	Transit Blank	< 0.4

Table Notes:

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control

ATTACHMENT C

Laboratory Analytical Results

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

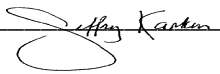
Cedar Grove ES
24001 Ridge Road
Germantown MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3208953	3928558	01/08/2019	9:31 am	01/11/2019	8:01 am	Floor First Room APR 110008170	<0.4
3208954	3928560	01/08/2019	9:30 am	01/11/2019	8:00 am	Floor First Room OT/PT 110008149	< 0.4
3208955	3928559	01/08/2019	9:32 am	01/11/2019	8:02 am	Floor First Room APR 110008170	< 0.4
3208956	3928557	01/08/2019	9:33 am	01/11/2019	8:03 am	Floor First Room Kitchen 110008173	0.4
3208957	3928556	01/08/2019	9:33 am	01/11/2019	8:03 am	Floor First Room Kitchen 110008173 Duplicate	< 0.4
3208958	3928555	01/08/2019	9:35 am	01/11/2019	8:05 am	Floor First Room BSM 110008144	< 0.4
3208959	3928554	01/08/2019	9:35 am	01/11/2019	8:05 am	Floor First Room BSM 110008144 Duplicate	< 0.4
3208960	3928553	01/08/2019	9:37 am	01/11/2019	8:07 am	Floor First Room K4 110008142	0.4
3208961	3928552	01/08/2019	9:38 am	01/11/2019	8:08 am	Floor First Room K1 110008106	< 0.4
3208962	3928551	01/08/2019	9:39 am	01/11/2019	8:09 am	Floor First Copier Room 110008139	< 0.4
3208963	3928570	01/08/2019	9:39 am	01/11/2019	8:09 am	Floor First Copier Room 110008139 Duplicate	< 0.4

Test Performed By: Rinzo Renthlei

Distributed by: Intertek-PSI (VA)

Date Received: 01/14/2019 Date Logged: 01/14/2019 Date Analyzed: 01/14/2019 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

Cedar Grove ES
24001 Ridge Road
Germantown MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3208964	3928569	01/08/2019	9:41 am	01/11/2019	8:11 am	Floor First Room K2 110008110	< 0.4
3208965	3928568	01/08/2019	9:42 am	01/11/2019	8:12 am	Floor First Room IMC 110008135	< 0.4
3208966	3928567	01/08/2019	9:43 am	01/11/2019	8:13 am	Floor First Room IMC 110008135	< 0.4
3208967	3928566	01/08/2019	9:44 am	01/11/2019	8:14 am	Floor First Room IMC Workroom 110008136	< 0.4
3208968	3928565	01/08/2019	9:45 am	01/11/2019	8:15 am	Floor First Room IMC Office 110008138	< 0.4
3208969	3928564	01/08/2019	9:46 am	01/11/2019	8:16 am	Floor First Room Room 19 110008131	< 0.4
3208970	3928563	01/08/2019	9:47 am	01/11/2019	8:17 am	Floor First Room K3 110008116	< 0.4
3208971	3928562	01/08/2019	9:48 am	01/11/2019	8:18 am	Floor First Room Gym 110008121	1.2
3208972	3928561	01/08/2019	9:49 am	01/11/2019	8:19 am	Floor First Room Gym 110008121	1.0
3208973	3928550	01/08/2019	9:50 am	01/11/2019	8:20 am	Floor First Room Gym Office 110008121	< 0.4
3208974	3928549	01/08/2019	9:51 am	01/11/2019	8:21 am	Floor First Room Room 18 110008122	< 0.4

Test Performed By: Rinzo Renthlei

Distributed by: Intertek-PSI (VA)

Date Received: 01/14/2019 Date Logged: 01/14/2019 Date Analyzed: 01/14/2019 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

Cedar Grove ES
24001 Ridge Road
Germantown MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3208975	3928548	01/08/2019	9:52 am	01/11/2019	8:22 am	Floor First Room Room 17 110008433	0.7
3208976	3928547	01/08/2019	9:53 am	01/11/2019	8:23 am	Floor First Room Room 15 110008431	< 0.4
3208977	3928546	01/08/2019	9:54 am	01/11/2019	8:24 am	Floor First Room Room 15 A 110008219	< 0.4
3208978	3928545	01/08/2019	9:55 am	01/11/2019	8:25 am	Floor First Room Room 16 110008437	0.4
3208979	3928544	01/08/2019	9:56 am	01/11/2019	8:26 am	Floor First Room Room 14 110008439	0.8
3208980	3928543	01/08/2019	9:57 am	01/11/2019	8:27 am	Floor First Room Room 13 110008217	< 0.4
3208981	3928542	01/08/2019	9:58 am	01/11/2019	8:28 am	Floor First Room Math Closet 110008187	1.7
3208982	3928541	01/08/2019	9:59 am	01/11/2019	8:29 am	Floor First Room Room 12 110008441	1.3
3208983	3928571	01/08/2019	10:00 am	01/11/2019	8:30 am	Floor First Room Room 11 110008209	1.5
3208984	3928572	01/08/2019	10:01 am	01/11/2019	8:31 am	Floor First Room Room 10 110008211	1.8
3208985	3928573	01/08/2019	10:02 am	01/11/2019	8:32 am	Floor First Room PARA 110008190	2.3

Test Performed By: Rinzo Renthlei

Distributed by: Intertek-PSI (VA)

Date Received: 01/14/2019 Date Logged: 01/14/2019 Date Analyzed: 01/14/2019 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

Cedar Grove ES
24001 Ridge Road
Germantown MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3208986	3928574	01/08/2019	10:02 am	01/11/2019	8:32 am	Floor First Room PARA 110008190 Duplicate	1.9
3208987	3928575	01/08/2019	10:04 am	01/11/2019	8:34 am	Floor First Room Room 9 110008205	1.1
3208988	3928576	01/08/2019	10:05 am	01/11/2019	8:35 am	Floor First Room Room 8 110008213	0.5
3208989	3928577	01/08/2019	10:06 am	01/11/2019	8:36 am	Floor First Room Room 6 110008215	0.5
3208990	3928578	01/08/2019	10:07 am	01/11/2019	8:37 am	Floor First Room Room 7 110008202	0.7
3208991	3928579	01/08/2019	10:08 am	01/11/2019	8:38 am	Floor First Speech Therapy (SPT) 110008191	< 0.4
3208992	3928580	01/08/2019	10:09 am	01/11/2019	8:39 am	Floor First Room Resource Room 110008185	0.7
3208993	3927882	01/08/2019	10:10 am	01/11/2019	8:40 am	Floor First Resource Room 110008184	< 0.4
3208994	3927883	01/08/2019	10:10 am	01/11/2019	8:41 am	Floor First Resource Room 110008184 Duplicate	0.5
3208995	3927884	01/08/2019	10:12 am	01/11/2019	8:41 am	Floor First Room Resource Room 110008183	< 0.4
3208996	3927885	01/08/2019	10:13 am	01/11/2019	8:43 am	Floor First Room 5 110008196	0.7

Test Performed By: Rinzo Renthlei

Distributed by: Intertek-PSI (VA)

Date Received: 01/14/2019 Date Logged: 01/14/2019 Date Analyzed: 01/14/2019 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

Cedar Grove ES
24001 Ridge Road
Germantown MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3208997	3927886	01/08/2019	10:14 am	01/11/2019	8:44 am	Floor First Room 4 110008194	< 0.4
3208998	3927887	01/08/2019	10:15 am	01/11/2019	8:45 am	Floor First Room 2 110008192	< 0.4
3208999	3927888	01/08/2019	10:16 am	01/11/2019	8:46 am	Floor First Room 3 110008198	0.4
3209000	3927889	01/08/2019	10:17 am	01/11/2019	8:47 am	Floor First Room 1A 110008181	0.5
3209001	3927890	01/08/2019	10:18 am	01/11/2019	8:48 am	Floor First Room 1 110008200	< 0.4
3209002	3927781	01/08/2019	10:19 am	01/11/2019	8:49 am	Floor First Room 1B (Staff Lounge)	0.5
3209003	3927782	01/08/2019	10:19 am	01/11/2019	8:50 am	Floor First Room 1B (Staff Lounge) Duplicate	0.9
3209004	3927783	01/08/2019	10:21 am	01/11/2019	8:50 am	Floor First Room ESOL	< 0.4
3209005	3927784	01/08/2019	10:22 am	01/11/2019	8:52 am	Floor First Room Main Office 110008156	< 0.4
3209006	3927785	01/08/2019	10:23 am	01/11/2019	8:53 am	Floor First Main Office Workroom 110008157	< 0.4
3209007	3927786	01/08/2019	10:24 am	01/11/2019	8:54 am	Floor First Room Health 110008158	< 0.4

Test Performed By: Rinzo Renthlei

Distributed by: Intertek-PSI (VA)

Date Received: 01/14/2019 Date Logged: 01/14/2019 Date Analyzed: 01/14/2019 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

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

Property Tested:

Cedar Grove ES
24001 Ridge Road
Germantown MD 20876

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
3209008	3927787	01/08/2019	10:25 am	01/11/2019	8:55 am	Floor First Room Health Office 110008161	< 0.4
3209009	3927788	01/08/2019	10:26 am	01/11/2019	8:56 am	Floor First Room Principal Office 110008162	< 0.4
3209010	3927789	01/08/2019	10:27 am	01/11/2019	8:57 am	Floor First Conference Room 110008166	< 0.4
3209011	3927790	01/08/2019	10:27 am	01/11/2019	8:57 am	Floor First Room Asst Principal 110008167	< 0.4
3209012	3927603	01/08/2019	10:30 am	01/11/2019	8:59 am	Floor First Room Office Storage 110008168	< 0.4
3209013	3926504	01/08/2019	8:00 am	01/11/2019	10:45 am	Floor First Room Office Blank	< 0.4
3209014	3926501	01/08/2019	8:00 am	01/11/2019	10:45 am	Floor First Room Transit Blank	< 0.4
3209015	3926547	01/08/2019	8:00 am	01/11/2019	9:00 am	Floor First Room Field Blank	< 0.4
3209016	3926502	01/08/2019	8:00 am	01/11/2019	9:00 am	Floor First Room Field Blank	< 0.4

Test Performed By: Rinzo Renthlei

Distributed by: Intertek-PSI (VA)

Date Received: 01/14/2019 Date Logged: 01/14/2019 Date Analyzed: 01/14/2019 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

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:

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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

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

RADON SCREENING SURVEY – FOLLOW-UP CEDAR GROVE SCHOOL

24001 Ridge Rd., Germantown, Maryland 20876

EXECUTIVE SUMMARY

Date of Test Report:	3/9/18
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	10
# Rooms \geq 4.0 pCi/L:	1
Low Value:	<0.3
High Value:	9.7
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) 2/2/18	Result (pCi/L) 3/9/18	Average Result (pCi/L)
Assistant Principal	7.0	9.7	8.4

MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Cedar Grove Elementary School
Date of Report	March 9, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	10
# Rooms ≥ 4.0 pCi/L	1
Lowest Value	< 0.3 pCi/L
Highest Value	9.7 pCi/L

Project Status

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.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

March 9, 2018

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

Re: Radon Testing Services

KCI Job #1214634188

Location: Cedar Grove Elementary School
24001 Ridge Rd.
Germantown, Maryland 20876

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 Cedar Grove Elementary School, located at 24001 Ridge Rd., in Germantown, Maryland 20876 (subject site).

SCOPE OF SERVICES

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

KCI visited the site on February 12, 2018 and deployed twelve (12) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

1. Rooms not successfully tested,
2. Rooms with elevated November 2017 results (i.e. ≥ 3.5 pCi/L).

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

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

KCI returned to the site on February 15, 2018 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

EVALUATION OF TESTING CONDITIONS

These tests represent:

- Follow-up to 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 at the time of deployment and collection of the radon test kits:

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures ranged from the mid-20s to upper 40s and high temperatures ranged from the high-30s to the high-60s. Maximum sustained winds ranged from 10-15 miles per hour. Average humidity was around 69%. 0.05 Inches of precipitation was recorded during the testing period.

RESULTS

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	Asst. Principal	9.7
≤ 4.0 pCi/L	See Attachment B	See Attachment B

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

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

Sincerely,



Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B - Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 02/12/18-02/15/18		
Kit Number	Room / Area	Result
7978815	171	0.6
7975997	ASST. PRINCIPAL	9.7
7978841	CO (CO is now Esol room)	0.6
7978864	COUNSELOR (1A)	1.0
7194191	GYM OFFICE	1.7
7978871	K4	< 0.3
7978865	KITCHEN	1.0
7978863	MAIL	2.6
7978870	PARAS	< 0.3
7978868	STAFF LOUNGE	1.9

Table Note:

* Missing or Compromised Sample

Table 2- Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 02/12/18-02/15/18		
Kit Number	QC Type	Result
7977266	D (ASST. PRINCIPAL)	8.3
7978869	FB (ASST. PRINCIPAL)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**CEDAR GROVE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7978815	171	2018-02-12 @ 11:00 am	2018-02-15 @ 9:00 am	0.6 ± 0.3	2018-02-19
7975997	ASST PRINCIPAL	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	9.7 ± 0.8	2018-02-19
7977266	ASST PRINCIPAL	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	8.3 ± 0.7	2018-02-19
7978869	ASST PRINCIPAL	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	< 0.3	2018-02-19
7978841	CO	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	0.6 ± 0.3	2018-02-19
7978864	COUNSELOR (1A)	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	1.0 ± 0.3	2018-02-19
7194191	GYM OFFICE	2018-02-12 @ 11:00 am	2018-02-15 @ 9:00 am	1.7 ± 0.4	2018-02-19
7978871	K4	2018-02-12 @ 11:00 am	2018-02-15 @ 9:00 am	< 0.3	2018-02-19
7978865	KITCHEN	2018-02-12 @ 11:00 am	2018-02-15 @ 9:00 am	1.0 ± 0.3	2018-02-19
7978863	MAIL	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	2.6 ± 0.4	2018-02-19
7978870	PARAS	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	< 0.3	2018-02-19
7978868	STAFF LOUNGE	2018-02-12 @ 10:00 am	2018-02-15 @ 9:00 am	1.9 ± 0.4	2018-02-19



Radon Test Kit Chain of Custody

Project Name: MCPS Radon

Names of Schools:

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

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

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

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE BLANKS

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

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

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
TRANSIT BLANKS

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

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

February 28, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 183530

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

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

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

MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Cedar Grove Elementary School
Date of Report	February 2, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	45
# Rooms ≥ 4.0 pCi/L	1
Lowest Value	< 0.3 pCi/L
Highest Value	7.0 pCi/L

Rooms with results ≥ 4.0 pCi/L:

Assistant Principal (7.0 pCi/L)

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

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

February 2, 2018

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

Re: Radon Testing Services

KCI Job #1214694182

Location: Cedar Grove Elementary School
24001 Ridge Rd.,
Germantown, Maryland 20876

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 Cedar Grove Elementary School, located at 24001 Ridge Rd., in Germantown, Maryland 20876 (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 5, 2017 and deployed fifty-one (51) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Appendix A of this report.

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

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

KCI returned to the site on December 8, 2017 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

EVALUATION OF TESTING CONDITIONS

These tests represent:

- 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 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 low-30s to mid-40s and high temperatures ranged from the upper-30s to mid-50s. Maximum sustained winds ranged from 4-17 miles per hour. Average humidity was around 60%. 0.16 Inches of precipitation was recorded during the testing period.

RESULTS

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	Asst Principal	7.0
≤ 4.0 pCi/L	See Attachment B	See Attachment B

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

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 Moulds, CHMM
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B- Table 1-Radon Test Summary Spreadsheet

C- Laboratory Analytical Results

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 12/05/17-12/08/17		
Kit Number	Room / Area	Result
7985641	1	2.5
7985634	2	1.4
7985639	3	1.3
7985640	4	2.5
7985642	5	1.0
7985615	6	1.7
7985607	7	1.6
7985608	8	2.1
7985610	9	1.2
7985617	10	1.8
7985612	11	1.4
7985611	12	1.5
7985603	13	1.9
7985616	14	1.2
7985621	15	0.9
7985622	16	1.1
7985606	17	0.8
7985613	18	< 0.3
7985620	19	0.5
7985618	15A	0.8
7984036	1A	0.7
7984035	1B	1.8
7984038	APR	0.5
7984061	APR	0.9
7985636	ASST PRINCIPLE	7.0
7984031	BSO OFFICE	< 0.3
7985635	CONF ROOM	3.5
7984032	ESOL	0.5
7985605	GYM	1.2
7985614	GYM	1.1
7985628	HEALTH	3.1
7985629	HEALTH OFFICE	3.2
7985627	K1	< 0.3
7985604	K2	< 0.3
7985624	K3	< 0.3
7984027	* K4 (Missing)	-
7985630	MAIN OFFICE	3.0
7985623	MEDIA	< 0.3
7985625	MEDIA	0.6
7985626	MEDIA OFFICE A	< 0.3
7984033	MEDIA OFFICE B	< 0.3
7985609	PARA OFFICE	1.9
7985619	PE OFFICE	1.2
7985633	PRINCIPLE	3.6
7985602	RESOURCE	1.5
7985601	RESOURCE ROOM	1.5

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 12/05/17-12/08/17		
Kit Number	Room / Area	Result
7985637	RR	1.0
7985638	SPT	1.1

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 12/05/17-12/08/17		
Kit Number	QC Type	Result
7985631	D (MAIN OFFICE)	3.0
7985632	FB (MAIN OFFICE)	< 0.3
7984086	OB (OFFICE BLANK)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7985641	1	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	2.5 ± 0.3	2017-12-12
7985617	10	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.8 ± 0.3	2017-12-12
7985612	11	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.4 ± 0.3	2017-12-12
7985611	12	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.5 ± 0.3	2017-12-12
7985603	13	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.9 ± 0.3	2017-12-12
7985616	14	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.2 ± 0.3	2017-12-12
7985621	15	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	0.9 ± 0.3	2017-12-11
7985618	15A	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	0.8 ± 0.3	2017-12-11
7985622	16	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.1 ± 0.3	2017-12-12
7985606	17	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	0.8 ± 0.3	2017-12-12
7985613	18	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7985620	19	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	0.5 ± 0.3	2017-12-11
7984036	1A	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	0.7 ± 0.3	2017-12-12
7984035	1B	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	1.8 ± 0.3	2017-12-12
7985634	2	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.4 ± 0.3	2017-12-12
7985639	3	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.3 ± 0.3	2017-12-12
7985640	4	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	2.5 ± 0.3	2017-12-12
7985642	5	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.0 ± 0.3	2017-12-12
7985615	6	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.7 ± 0.3	2017-12-12
7985607	7	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.6 ± 0.3	2017-12-12
7985608	8	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	2.1 ± 0.3	2017-12-12
7985610	9	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.2 ± 0.3	2017-12-12
7984061	APR	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	0.9 ± 0.3	2017-12-11
7984038	APR	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	0.5 ± 0.3	2017-12-12
7985636	ASST PRINCIPLE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	7.0 ± 0.4	2017-12-12
7984031	BSO OFFICE	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7985635	CONF ROOM	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	3.5 ± 0.3	2017-12-12
7984032	ESOL	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	0.5 ± 0.2	2017-12-12
7985614	GYM	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	1.1 ± 0.3	2017-12-12
7985605	GYM	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	1.2 ± 0.3	2017-12-12
7985628	HEALTH	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	3.1 ± 0.3	2017-12-12
7985629	HEALTH OFFICE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	3.2 ± 0.3	2017-12-12
7985627	K1	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7985604	K2	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7985624	K3	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7984027	K4	@	@		
7985630	MAIN OFFICE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	3.0 ± 0.3	2017-12-11

December 29, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**CEDAR GROVE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7985631	MAIN OFFICE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	3.0 ± 0.3	2017-12-11
7985632	MAIN OFFICE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-11
7985625	MEDIA	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	0.6 ± 0.3	2017-12-12
7985623	MEDIA	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7985626	MEDIA OFFICE A	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-12
7984033	MEDIA OFFICE B	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	< 0.3	2017-12-11
7984086	OFFICE BLANK	2017-12-05 @ 12:00 pm	2017-12-08 @ 12:00 pm	< 0.3	2017-12-11
7985609	PARA OFFICE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.9 ± 0.3	2017-12-12
7985619	PE OFFICE	2017-12-05 @ 1:00 pm	2017-12-08 @ 11:00 am	1.2 ± 0.3	2017-12-11
7985633	PRINCIPLE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	3.6 ± 0.3	2017-12-12
7985602	RESOURCE	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.5 ± 0.3	2017-12-12
7985601	RESOURCE ROOM	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.5 ± 0.3	2017-12-12
7985637	RR	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.0 ± 0.3	2017-12-12
7985638	SPT	2017-12-05 @ 12:00 pm	2017-12-08 @ 11:00 am	1.1 ± 0.3	2017-12-12

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

- | | |
|--|---------------------------------|
| 1. John T. Baker Middle School | 15. Whetstone Elementary School |
| 2. Cedar Grove Elementary School | |
| 3. Clarksburg Elementary School | |
| 4. Clarksburg Elementary School Annex | |
| 5. Clarksburg High School | |
| 6. Clearspring Elementary School | |
| 7. Damascus Elementary School | |
| 8. Damascus High School | |
| 9. Dr. Charles R. Drew Elementary School | |
| 10. Facilities Maintenance Depot - Shop | |
| 11. Lake Seneca Elementary School | |
| 12. Laytonville Elementary School | |
| 13. Watkins Mill Elementary School | |
| 14. Watkins Mill High School | |

	Date	Initials
Radon Test Kits Deployed	12/05/17	JM
Radon Test Kits Collected	12/08/17	JM
Radon Test Kits Shipped to Lab*	12/08/17	JM
Radon Test Kits Received by Lab*	12/13/17	JM

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

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

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

December 19, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 182393

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

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

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

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

7975075, 7975064, 7975063, _____

7975065, 7975069, 7975070 _____

F4 Right

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

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

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

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

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

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

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



MCPS RADON TESTING

Executive Summary: Cedar Grove Elementary School

Date of Test Report:	10/18/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	9
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	0.5

Project Status:

Post remediation testing completed; no further action at this time.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

October 18, 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 # 12146341.54

Location: Cedar Grove Elementary School
24001 Ridge Road
Germantown, MD 20876

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 Cedar Grove Elementary School, located at 24001 Ridge Road in Germantown, Maryland 20876 (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 September 27, 2016 and deployed thirteen (13) 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 September 30, 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:

These tests represent:

- Post-mitigation testing for radon mitigation systems installed recently

To expedite the testing, tests were conducted in September as soon as students and staff returned to:

- Confirm the success of the mitigation system(s)

Future periodic testing should be conducted during the heating season in ideal conditions as described below. 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 cooling mode; therefore, KCI concludes that this test was not 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 50s and high temperatures in the mid-60s to mid-70s. Maximum sustained winds ranged from 3-15 miles per hour. Average humidity ranged from 71 to 89 percent. Rain (1.83 inches in Gaithersburg, MD) was recorded on 9/29/16. The weather conditions during the testing period may have resulted in atypical radon test results for this facility.

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. 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

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	Room / Area	Result
7802315	18	< 0.3
7802308	COMPUTER ROOM	< 0.3
7802305	COPIER ROOM	< 0.3
7802317	GYM	< 0.3
7802318	GYM	< 0.3
7802324	GYM OFFICE	< 0.3
7802309	LIBRARY OFFICE 1	< 0.3
7802310	LIBRARY OFFICE 2	< 0.3
7802316	LIBRARY OFFICE 3	< 0.3
7802307	MEDIA ROOM	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	QC Type	Result
7802325	D (GYM OFFICE)	0.5
7802322	D (LIBRARY OFFICE 3)	< 0.3
7802314	FB (LIBRARY OFFICE 3)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

October 7, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**CEDAR GROVE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802315	18	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802308	COMPUTER ROOM	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802305	COPIER ROOM	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802317	GYM	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802318	GYM	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802325	GYM OFFICE	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.5 ± 0.3	2016-10-03
7802324	GYM OFFICE	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802310	LIBRARY OFFICE 2	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802316	LIBRARY OFFICE 3	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802322	LIBRARY OFFICE 3	2016-09-27 @ 11:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802314	LIBRARY OFFICE 3	2016-09-27 @ 11:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802309	LIBRARY OFFICE 1	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802307	MEDIA ROOM	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03

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

October 7, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS Radon

Phase 18 Office Blanks

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802697	1	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7801899	10	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802932	11	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802935	12	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802915	13	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802941	2	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802942	3	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802919	4	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802918	5	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802917	6	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802916	7	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802952	8	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802928	9	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03

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

October 7, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS Radon

Phase 18 Transit Blanks

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7714274	1	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802962	10	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714295	11	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714299	12	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714273	13	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714270	14	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802965	2	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802696	3	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802690	4	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714275	5	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714298	6	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802990	7	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802974	8	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802694	9	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03

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

October 12, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
MCPS Radon
Spike Sample Results

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7769880	101	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	22.9 ± 1.0	2016-09-28
7769884	102	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	22.4 ± 1.0	2016-09-28
7769885	103	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	23.0 ± 1.0	2016-09-28
7769890	104	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	22.3 ± 1.0	2016-09-28
7769891	105	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	26.8 ± 1.2	2016-09-28
7769899	106	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	24.1 ± 1.1	2016-09-28

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 176788

NOMINAL Conditions: Radon Conc 26.1 pCi/L Rel. Hum 49.6 % Temp. 70.0 F

Date Start: 9/24/16 Date Stop: 9/26/16 Date Start: _____ Date Stop: _____

Time Start: 0758 Time Stop: 0758 Time Start: _____ Time Stop: _____

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

7769899, 7769884, 7769885, _____

7769889, 7769890, 7769891 _____

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

- | | |
|-------------------------------------|--|
| 1. Wood Acres Elementary School | 14. Lourie Center |
| 2. Walt Whitman High School | 15. Shriver Elementary School |
| 3. Burning Tree Elementary School | 16. Viers Mill Elementary School |
| 4. Ashburton Elementary School | 17. Highland Elementary School |
| 5. Bethesda Maintenance | 18. Newport Middle School |
| 6. Bethesda Transportation | 19. Albert Einstein High School |
| 7. Herbert Hoover Middle School | 20. Sligo Middle School |
| 8. Cold Spring Elementary School | 21. East Silver Spring Elementary School |
| 9. Garret Park Elementary School | 22. Oak View Elementary School |
| 10. Rock View Elementary School | 23. Roscoe Nix Elementary School |
| 11. Francis Scott Key Middle School | 24. Northwood High School |
| 12. Montgomery Blair High School | 25. Springbrook High School |
| 13. Stephen Knolls School | 26. John F. Kennedy High School |

	Date	Initials
Radon Test Kits Deployed	9/26/16	JM
Radon Test Kits Collected	9/29/16	JM
Radon Test Kits Shipped to Lab*	9/30/16	JM
Radon Test Kits Received by Lab*	10/03/16	JM

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

- | | |
|--|-----------------------------------|
| 1. Damascus High School | 17. Watkins Mills High School |
| 2. Cedar Grove Elementary School | 18. Forest Oak Middle School |
| 3. Hallie Wells Middle School | 19. Gaithersburg Middle School |
| 4. Clarksburg Elementary School | 20. Emory Grove |
| 5. Clarksburg High School | 21. Fields Road Elementary School |
| 6. Woodlin Elementary School | 22. Beall Elementary School |
| 7. Flora Singer Elementary School | 23. Julius West Middle School |
| 8. Spring Mill Center | 24. Thomas Wootton High School |
| 9. Dr. Charles Drew Elementary School | 25. Robert Frost High School |
| 10. William Farquah Middle School | 26. Travilah Elementary School |
| 11. Rosa Parks Middle School | 27. Jones Lane Elementary School |
| 12. Blair Ewing Center | 28. Longview School |
| 13. Lathrop Smith Environmental Center | 29. Rock Terrace High School |
| 14. Sequoyah Elementary School | 30. Germantown Elementary School |
| 15. Shady Grove Middle School | 31. Lake Seneca Elementary School |
| 16. Captain James Daly Elementary School | |

	Date	Initials
Radon Test Kits Deployed	9/27/16	JM
Radon Test Kits Collected	9/30/16	JM
Radon Test Kits Shipped to Lab*	9/30/16	JM
Radon Test Kits Received by Lab*	10/03/16	JM

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

RADON SCREENING SURVEY – FOLLOW-UP CEDAR GROVE ELEMENTARY SCHOOL

24001 Ridge Rd, Germantown, Maryland 20876

EXECUTIVE SUMMARY

Date of Test Report:	3/3/16
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	6
# Rooms \geq 4.0 pCi/L:	1
Low Value:	1.5
High Value:	5.0
Confirmed Rooms \geq 4.0 pCi/L US EPA Action Level	4

Summary of Sampling Events \geq 4.0 pCi/L

Room	Result (pCi/L) 1/22/16	Result (pCi/L) 3/3/16	Average Result (pCi/L)
Library Office	8.6	2.6	5.6
Gym Office	8.0	5.0	6.5
Library Office	5.9	2.9	4.4
Media	5.0	2.9	4.0
Library Office	4.4	2.9	3.7
Library Office	4.3	3.1	3.7



MCPS RADON TESTING

Executive Summary: Cedar Grove Elementary School

Date of Test Report:	3/3/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	6
# Rooms \geq 4.0 pCi/L:	1
Low Value:	1.5
High Value:	5.0

Rooms with results \geq 4.0 pCi/L:
Gym Office (5.0 pCi/L)

Project Status:

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

March 3, 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 # 12146341.28

Location: Cedar Grove Elementary School
24001 Ridge Road
Germantown, MD 20876

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 Cedar Grove Elementary School, located at 24001 Ridge Road in Germantown, Maryland 20876 (subject site).

Scope of Services:

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

KCI visited the site on February 8, 2016 and deployed eight (8) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on February 11, 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	Gym Office	5.0
< 4.0 pCi/L	See Attachment B	

Notes:

D- Duplicate sample

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

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

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

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank*

PM- Project Manager

QC- Quality Control

*Office blanks were submitted at a rate of 1% for all samples deployed in Phase 8 testing. Office blanks were not submitted under each school individually.

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 02/08/16-02/11/16		
Kit Number	Room / Area	Result
7729956	* GYM OFFICE (Ceiling Fan On)	5.0
7729943	LIBRARY COPY RM	1.5
7729936	LIBRARY OFFICE	2.6
7729953	LIBRARY OFFICE	2.9
7729954	LIBRARY OFFICE	3.1
7729930	MEDIA	2.9

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Cedar Grove Elementary School		
Test Period: 02/08/16-02/11/16		
Kit Number	QC Type	Result
7729935	D (LIBRARY OFFICE)	3.2
7729942	* FB (GYM OFFICE:Ceiling Fan On)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

February 25, 2016

****LABORATORY ANALYSIS
REPORT ****

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7729942	GYM OFFICE	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	< 0.3	2016-02-15
7729956	GYM OFFICE	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	5.0 ± 0.5	2016-02-15
7729943	LIBRARY COPY RM	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	1.5 ± 0.3	2016-02-15
7729935	LIBRARY OFFICE	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	3.2 ± 0.4	2016-02-15
7729936	LIBRARY OFFICE	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	2.6 ± 0.4	2016-02-15
7729953	LIBRARY OFFICE	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	2.9 ± 0.4	2016-02-15
7729954	LIBRARY OFFICE	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	3.1 ± 0.4	2016-02-15
7729930	MEDIA	2016-02-08 @ 9:00 am	2016-02-11 @ 9:00 am	2.9 ± 0.4	2016-02-15

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

February 25, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**MCPS RADON
PHASE 8
OFFICE BLANKS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7729754	0	2016-02-08 @ 4:00 pm	2016-02-11 @ 5:00 pm	< 0.3	2016-02-15
7729757	0	2016-02-08 @ 4:00 pm	2016-02-11 @ 5:00 pm	< 0.3	2016-02-15
7729758	0	2016-02-08 @ 4:00 pm	2016-02-11 @ 5:00 pm	< 0.3	2016-02-15

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

Radon test result report for:
TRANSIT- PHASE 7, 8, 9
NONE

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7734937	1	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734946	10	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734955	11	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734956	12	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734959	13	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734930	14	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734953	15	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734954	16	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734940	17	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734949	18	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734948	19	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734939	2	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734942	20	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734929	21	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734933	22	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734934	23	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734936	24	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734943	25	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734944	26	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734935	27	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734928	28	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734952	29	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734947	3	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734931	30	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734932	31	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718520	32	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718523	33	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718522	34	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718521	35	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734945	4	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734960	5	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734958	6	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734951	7	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734957	8	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734938	9	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23

February
15,
2016

**** LABORATORY ANALYSIS
REPORT ****

Spike Sample Laboratory Results

Radon test result report for:
MCPS

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCF Technologies Inc. Job Number 173704

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

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

Date Start: _____ Date Stop: _____

Time Start: 0926 Time Stop: 0926

Time Start: _____ Time Stop: _____

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

Device No.'s: _____

7718281, 7718282, 7718291,

7718288, 7718289, 7718273

3 Left

Date Start: _____ Date Stop: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Device No.'s: _____

Date Start: _____ Date Stop: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Device No.'s: _____

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



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

Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 8

Name of Schools:

- | | |
|--------------------------|--------------------------|
| 1. Blair G. Ewing Center | 12. Jackson Road ES |
| 2. Cedar Grove ES | 13. Jones Lane ES |
| 3. Clarksburg ES | 14. Lake Seneca ES |
| 4. Cloverly ES | 15. Laytonsville ES |
| 5. Cold Spring ES | 16. Montgomery Knolls ES |
| 6. Damascus ES | 17. North Chevy Chase ES |
| 7. Dufief ES | 18. Oakview ES |
| 8. East Silver Spring | 19. Randolph Maint |
| 9. Georgian Forest ES | 20. Robert Frost MS |
| 10. Germantown ES | 21. Shady Grove Maint |
| 11. Glenallen ES | 22. Viers Mill ES |

	Date	Initials
Radon Test Kits Deployed	2/8/16	JM
Radon Test Kits Collected	2/11/16	JM
Radon Test Kits Shipped to Lab*	12/11/16	JM
Radon Test Kits Received by Lab*	12/15/16	JM

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



MCPS RADON TESTING

Executive Summary: Cedar Grove Elementary School

Date of Test Report:	1/22/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	58
# Rooms \geq 4.0 pCi/L:	6
Low Value:	< 0.3
High Value:	8.6

Rooms with results \geq 4.0 pCi/L:

Library Office (8.6 pCi/L), Gym Office (8.0 pCi/L), Library Office (5.9 pCi/L), Library (5.0 pCi/L),
Library Office (4.4 pCi/L), Library Office (4.3 pCi/L),

Project Status:

Initial testing completed; re-test needed for results \geq 4.0 pCi/L.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

January 22, 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 # 12146341.21

Location: Cedar Grove Elementary School
24001 Ridge Road
Germantown, MD 20876

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 Cedar Grove Elementary School, located at 24001 Ridge Road in Germantown, Maryland 20876 (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 28, 2015 and deployed sixty-eight (68) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on December 31, 2015 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

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

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

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

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

Results:

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	Library Office	8.6
	Gym Office	8.0
	Library Office	5.9
	Library	5.0
	Library Office	4.4
	Library Office	4.3
< 4.0 pCi/L	See Attachment B	

Notes:

D- Duplicate sample

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

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

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

Sincerely,



James M. 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 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		
Cedar Grove ES		
Test Period: 12/28/15-12/31/15		
Kit Number	Room / Area	Result
7708459	1	1.5
7708022	2	0.5
7708028	3	0.9
7708029	4	1.1
7708458	5	< 0.3
7708455	6	0.6
7708009	7	2.4
7708467	8	0.6
7708454	9	0.9
7708016	10	< 0.3
7708014	11	0.6
7708013	12	1.5
7708468	13	0.8
7708447	14	1
7708480	15	0.6
7708460	16	0.6
7708472	17	0.7
7708474	18	0.8
7707148	171	0.6
7708452	15A	1.1
7708457	1A	1
7708023	ASST PRINCIPAL	2.3
7708024	BLDG SERVICES	1.6
7708038	CAFETERIA	1.5
7708042	CAFETERIA	1.8
7708033	CO	< 0.3
7708027	CONFERENCE	1.6
7708030	COUNSELOR	1.1
7708456	COUNSELOR	1
7708015	GYM	2.3
7708464	GYM	2.3
7708462	GYM OFFICE	8
7708032	HEALTH	1.5
7708006	K1	< 0.3
7708001	K2	0.8
7708010	K3	< 0.3
7708003	LIBRARY	5
7708007	LIBRARY OFF	8.6
7708008	LIBRARY OFF	5.9
7708004	LIBRARY OFFICE	4.3
7708005	LIBRARY OFFICE	4.4
7708045	MAIN OFFICE	1.9
7708047	MAIN OFFICE	1.6
7708002	MUSIC	< 0.3
7708025	P1	< 0.3
7708449	P2	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Cedar Grove ES		
Test Period: 12/28/15-12/31/15		
Kit Number	Room / Area	Result
7708495	P3	< 0.3
7708465	P4	< 0.3
7708011	P5	< 0.3
7708012	P6	< 0.3
7708475	P7	< 0.3
7708031	PRINCIPAL	1.6
7708018	RESOURCE	1.5
7708026	RESOURCE ROOM	0.9
7708017	RR	1.3
7708049	SDT	1.4
7708453	SPT	0.6
7708021	STAFF LOUNGE	1

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Cedar Grove ES		
Test Period: 12/28/15-12/31/15		
Kit Number	QC Type	Result
7708037	D (BLDG SERV)	1.6
7708035	D (CAFETERIA)	1.8
7708043	D (CAFETERIA)	3
7708476	D (GYM)	2.2
7708050	D (MAIN OFFICE)	1.9
7708044	D (STAFF LOUNGE)	0.6
7708034	FB (BLDG SERV)	< 0.3
7708461	FB (GYM)	< 0.3
7708055	FB (MAIN OFFICE)	< 0.3
7710530	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
**CEDAR GROVE ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7710530	0	2015-12-28 @ 3:00 pm	2015-12-31 @ 1:00 pm	< 0.3	2016-01-04
7708459	1	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.5 ± 0.3	2016-01-04
7708016	10	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708014	11	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708013	12	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.5 ± 0.3	2016-01-04
7708468	13	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.8 ± 0.3	2016-01-04
7708447	14	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.0 ± 0.3	2016-01-04
7708480	15	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708452	15A	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.1 ± 0.3	2016-01-04
7708460	16	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708472	17	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.7 ± 0.3	2016-01-04
7707148	171	2015-12-28 @ 9:00 am	2015-12-31 @ 8:00 am	0.6 ± 0.3	2016-01-04
7708474	18	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.8 ± 0.3	2016-01-04
7708457	1A	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.0 ± 0.3	2016-01-04
7708022	2	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.5 ± 0.3	2016-01-04
7708028	3	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.9 ± 0.3	2016-01-04
7708029	4	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.1 ± 0.3	2016-01-04
7708458	5	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708455	6	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708009	7	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	2.4 ± 0.4	2016-01-04
7708467	8	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708454	9	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.9 ± 0.3	2016-01-04
7708023	ASST PRINCIPAL	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	2.3 ± 0.4	2016-01-04
7708034	BLDG SERV	2015-12-28 @ 1:00 pm	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7708037	BLDG SERV	2015-12-28 @ 1:00 pm	2015-12-31 @ 11:00 am	1.6 ± 0.3	2016-01-04
7708024	BLDG SERVICES	2015-12-28 @ 1:00 pm	2015-12-31 @ 11:00 am	1.6 ± 0.3	2016-01-04
7708035	CAFATERIA	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.8 ± 0.3	2016-01-04
7708038	CAFATERIA	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.5 ± 0.3	2016-01-04
7708043	CAFATERIA	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	3.0 ± 0.4	2016-01-04
7708042	CAFEATERIA	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.8 ± 0.4	2016-01-04
7708033	CO	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708027	CONFERENCE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.6 ± 0.3	2016-01-04
7708030	COUNSELOR	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.1 ± 0.3	2016-01-04
7708456	COUNSELOR	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.0 ± 0.3	2016-01-04
7708461	GYM	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708464	GYM	2015-12-28 @ 12:00 pm	2015-12-31 @ 12:00 pm	2.3 ± 0.4	2016-01-04
7708015	GYM	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	2.3 ± 0.4	2016-01-04

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

Radon test result report for:
**CEDAR GROVE ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7708476	GYM	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	2.2 ± 0.4	2016-01-04
7708462	GYM OFFICE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	8.0 ± 0.6	2016-01-04
7708032	HEALTH	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.5 ± 0.3	2016-01-04
7708006	K1	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7708001	K2	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	0.8 ± 0.3	2016-01-04
7708010	K3	2015-12-28 @ 12:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708003	LIBRARY	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	5.0 ± 0.5	2016-01-04
7708007	LIBRARY OFF	2015-12-28 @ 12:00 pm	2015-12-31 @ 12:00 pm	8.6 ± 0.7	2016-01-04
7708008	LIBRARY OFF	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	5.9 ± 0.5	2016-01-04
7708004	LIBRARY OFFICE	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	4.3 ± 0.5	2016-01-04
7708005	LIBRARY OFFICE	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	4.4 ± 0.5	2016-01-04
7708045	MAIN OFFICE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.9 ± 0.4	2016-01-04
7708047	MAIN OFFICE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.6 ± 0.3	2016-01-04
7708050	MAIN OFFICE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.9 ± 0.4	2016-01-04
7708055	MAIN OFFICE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708002	MUSIC	2015-12-28 @ 12:00 pm	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7708025	P1	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708449	P2	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708495	P3	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708465	P4	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708011	P5	2015-12-28 @ 12:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708012	P6	2015-12-28 @ 12:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708475	P7	2015-12-28 @ 12:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7708031	PRINCIPAL	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.6 ± 0.4	2016-01-04
7708018	RESOURCE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.5 ± 0.3	2016-01-04
7708026	RESOURCE ROOM	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.9 ± 0.3	2016-01-04
7708017	RR	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.3 ± 0.3	2016-01-04
7708049	SDT	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.4 ± 0.3	2016-01-04
7708453	SPT	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708044	STAFF LOUNGE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	0.6 ± 0.3	2016-01-04
7708021	STAFF LOUNGE	2015-12-28 @ 1:00 pm	2015-12-31 @ 12:00 pm	1.0 ± 0.3	2016-01-04

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

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

December
23,
2015

****LABORATORY ANALYSIS
REPORT ****

Spike Sample Laboratory Results

Radon test result report for:
MCPS

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 173224

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

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

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

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

7706211, 7706366, _____

7706380, 7706381 _____

F3 Left

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

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

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

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

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

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

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



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

Chain of Custody

Project Name: MCPS Radon Phase III

Name of Schools:

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

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

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