



## School / Facility Radon Testing Report Form

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

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

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

Attachment 2 – Laboratory Report(s)

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

School Year: **23-24**

Facility:	Highland View Elementary School
Address:	9010 Providence Avenue
	Silver Spring, MD 20901

Reason for Testing:	<input checked="" type="checkbox"/> Scheduled Re-Testing (2 or 5-year schedule) <input type="checkbox"/> Clearance Testing (Post-Mitigation) <input type="checkbox"/> System(s) Performance Testing (Post-Mitigation) <input type="checkbox"/> New Construction/Facility
Facility Current Radon Status:	<input type="checkbox"/> Active Mitigation (2-year regular schedule) <input checked="" type="checkbox"/> No Active Mitigation (5-year regular schedule) <input type="checkbox"/> Not Previously Tested
Round of Testing:	<input checked="" type="checkbox"/> Initial Testing <b>-or-</b> <input type="checkbox"/> Follow-up Testing
Testing Status:	<input checked="" type="checkbox"/> No Further Testing Needed <b>-or-</b> <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 or Considered <input type="checkbox"/> Required ( $>8.0$ -pCi/L) <input type="checkbox"/> Required ( $\geq 4.0$ -pCi/L) <input type="checkbox"/> Consider ( $\geq 2.0$ & $<4.0$ -pCi/L)	<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)

**Detector and Deployment**

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

**Testing**

<input checked="" type="checkbox"/> Short-Term	Length of Test (days):	3	Date of Deployment and Retrieval (mm/dd/yy):	01/22/24
<input type="checkbox"/> Long-Term				01/25/24
Does the test period include weekends, school breaks or holidays?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<i>If "Yes" please explain/detail in the space below:</i>				
Was HVAC operating under occupied conditions?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<i>If "No" please explain/detail in the space below:</i>				

Testing (continued)

	Detectors Deployed		
	Ground-Contact	Upper-Level(s)	Total
Test Locations <sup>1</sup>	31	3	34
Duplicates <sup>2</sup>	4	0	4
Field Blanks <sup>3</sup>	2	0	2
Grand Total			40

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.

Spike Samples <sup>1</sup>	6	Trip Blank(s) <sup>2</sup>	2	Office Blank(s) <sup>3,4</sup>	2
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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.

Spike Sample Lab Results. Measured values are satisfactory, i.e., within ± 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 QA plan previously submitted?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

## Quality Assurance / Quality Control (QA/QC) (continued)

If “No” to either, please describe any QC measurements that were missing or outside of control tolerances established in the QAP here:

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

	Ground-Contact	Upper-Level(s)	Total
Number of test locations:	31	3	34
Number of locations $\geq 8.0$ -pCi/L:	0	0	0
Number of locations $\geq 4.0$ and $\leq 8$ -pCi/L:	0	0	0
Number of locations $\geq 2.7$ and $\leq 4$ -pCi/L:	0	0	0
Number of locations $\geq 2.0$ and $\leq 4$ -pCi/L:	2	0	2
Number of missing required test locations <sup>3</sup> :	0	0	0
Percentage of missing test locations for the facility <sup>4,5</sup> :	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  $\geq 18$ , there is an allowance of  $\leq 33\%$ . If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023;

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

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

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
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
<i>If Yes to both above – then Testing Status – ‘No Further Testing Needed’ mark ‘NA’ below and complete Conclusions section</i>	
<b>If No to either above</b> , were all results obtained under 4.0-pCi/L <b>and</b> were there sufficient valid measurements obtained? <sup>1,2</sup> <i>If Yes – then Testing Status - ‘No Further Testing Needed’ complete Conclusion section</i> <i>If No, then Testing Status - ‘Follow-up Testing Required’ continue below</i>	<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.

- **If ‘No Further Testing Needed’** complete conclusions section on first page.
- **If ‘Follow-up Testing Required’** – complete Follow-up Testing described below and the conclusion section on the first page for only the valid measurements/results obtained

**Follow-Up Testing (if required)**

Required if –

- 1- Not enough valid results were obtained from a facility (table above);
- 2- Any results ≥ 4.0 – pCi/L; and
- 3- At the discretion of MCPS IAQ Staff

Follow-up Testing:

- 1- If an insufficient number of valid measurements obtained during initial round:
  - return to facility to test locations that require valid measurements
- 2- Follow-up Testing for valid measurements ≥ 4.0-pCi/L

Initial Result(s)	Procedure	Follow-up Result	Conclusion
≥ 4.0-pCi/L	1- Short-term follow-up test 2- Average the results of the two tests	≥4.0	Mitigation Required
		<4.0 but >2.0	Consider Mitigation
		<2.0	Not Required or Considered

- **Complete second School/Facility Radon Testing Report Form for only Follow-up Testing locations.**

**Attachment 1:**  
**Summary Data Tables**

<b>Table 1- Radon Testing Results</b>		
<b>Highland View Elementary School</b>		
<b>Test Period: 01/22/2024 - 01/25/2024</b>		
Kit Number	Room / Area	Result
11284083	2	1.4
11284084	3	0.8
11287132	5	< 0.3
11284091	7	1.2
11287131	8	2.6
11284093	9	1.0
11287138	14	1.2
11287155	14	1.1
11284094	15	1.2
11284088	21	1.9
11284087	22	< 0.3
11284078	23	< 0.3
11284092	23	1.0
11284076	101	< 0.3
11284079	104	0.7
11284077	105	0.9
11284081	105	0.7
11287148	205	< 0.3
11287147	213	1.1
11287156	311	0.7
11284085	APR	0.6
11284085	APR	N/A
11284099	ASP	2.1
11287139	BLDG SERVICES	1.4
11287140	BLDG SERVICES	1.3
11284100	CONFERENCE	< 0.3
11284089	GYM	0.9
11284090	GYM	0.9
11284086	GYM OFFICE	1.1
11284095	MAIN OFFICE	1.2
11287173	MEDIA CENTER	0.7
11284097	NURSE	0.8
11284098	NURSE OFFICE	0.7
11284096	PRINCIPAL	< 0.3
11284080	STAFF LOUNGE	0.7
11284075	WORKROOM	1.2
11477862	APR	< 0.3
11477864	APR	< 0.3

<b>Table 1- Radon Testing Results</b>		
<b>Highland View Elementary School</b>		
<b>Test Period: 01/22/2024 - 01/25/2024</b>		
11477881	APR	< 0.3
11477888	APR	< 0.3





<b>Table 3 - QC Radon Testing Results</b>			
<b>Highland View Elementary School</b>			
<b>Test Period: 01/22/2024 - 01/25/2024</b>			
<b>Kit Number</b>	<b>QC Type</b>	<b>Room / Area</b>	<b>Result</b>
11287155	D	14	1.1
11284078	FB	23	< 0.3
11284077	D	105	0.9
11287139	D	Bldg services	1.4
11463686	OB	OFFICE BLANK	< 0.3
11463685	TB	TRAVEL BLANK	< 0.3



**Attachment 2:**  
**Laboratory Reports**

Radon test result report for:  
**HIGHLAND VIEW ES**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11284076	101	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284079	104	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.7 ± 0.3	2024-01-29
11284077	105	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.9 ± 0.3	2024-01-29
11284081	105	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.7 ± 0.3	2024-01-29
11287138	14	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.2 ± 0.3	2024-01-29
11287155	14	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.1 ± 0.3	2024-01-29
11284094	15	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.2 ± 0.3	2024-01-29
11284083	2	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.4 ± 0.3	2024-01-29
11287148	205	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284088	21	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.9 ± 0.4	2024-01-29
11287147	213	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.1 ± 0.3	2024-01-29
11284087	22	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284092	23	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.0 ± 0.3	2024-01-29
11284078	23	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284084	3	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.8 ± 0.3	2024-01-29
11287156	311	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.7 ± 0.3	2024-01-29
11287132	5	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284091	7	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.2 ± 0.3	2024-01-29
11287131	8	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	2.6 ± 0.4	2024-01-29
11284093	9	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.0 ± 0.3	2024-01-29
11284085	APR	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.6 ± 0.3	2024-01-29
11284099	ASP	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	2.1 ± 0.4	2024-01-29
11287139	BLDG SERVICES	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.4 ± 0.3	2024-01-29
11287140	BLDG SERVICES	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.3 ± 0.3	2024-01-29
11284100	CONFERENCE	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284090	GYM	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.9 ± 0.3	2024-01-29
11284089	GYM	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.9 ± 0.3	2024-01-29
11284086	GYM OFFICE	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.1 ± 0.3	2024-01-29
11284095	MAIN OFFICE	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.2 ± 0.3	2024-01-29
11287173	MEDIA CENTER	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.7 ± 0.3	2024-01-29
11284097	NURSE	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.8 ± 0.3	2024-01-29
11284098	NURSE OFFICE	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.7 ± 0.3	2024-01-29
11284096	PRINCIPAL	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	< 0.3	2024-01-29
11284080	STAFF LOUNGE	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	0.7 ± 0.3	2024-01-29
11284075	WORKROOM	2024-01-22 @ 1:00 pm	2024-01-25 @ 12:00 pm	1.2 ± 0.3	2024-01-29

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February 27, 2024

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

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Radon test result report for:

**MAIN**

**MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11477862	APR	2024-02-20 @ 11:00 am	2024-02-23 @ 10:00 am	< 0.3	2024-02-27
11477864	APR	2024-02-20 @ 11:00 am	2024-02-23 @ 10:00 am	< 0.3	2024-02-27
11477881	APR	2024-02-20 @ 11:00 am	2024-02-23 @ 10:00 am	< 0.3	2024-02-27
11477888	APR	2024-02-20 @ 11:00 am	2024-02-23 @ 10:00 am	< 0.3	2024-02-27

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

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January 30, 2024

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

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Radon test result report for:

**KCI  
MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11463691	OB	2024-01-23 @ 8:00 am	2024-01-26 @ 2:00 pm	< 0.3	2024-01-30
11463647	TB	2024-01-23 @ 8:00 am	2024-01-26 @ 2:00 pm	< 0.3	2024-01-30

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

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February 27, 2024

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

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Radon test result report for:

**KCI  
MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11477832	OB	2024-02-23 @ 8:00 am	2024-02-26 @ 11:00 am	< 0.3	2024-02-27
11482793	OB	2024-02-23 @ 8:00 am	2024-02-26 @ 11:00 am	< 0.3	2024-02-27
11477841	TB	2024-02-23 @ 8:00 am	2024-02-26 @ 11:00 am	< 0.3	2024-02-27
11482795	TB	2024-02-23 @ 8:00 am	2024-02-26 @ 11:00 am	< 0.3	2024-02-27

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January 29, 2024

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

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Radon test result report for:  
**STORAGE**  
**KCI**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11635097	Storage	2024-01-07 @ 9:00 am	2024-01-11 @ 9:00 am	< 0.3	2024-01-15

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

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 213327

NOMINAL Conditions: Radon Conc 49.5 pCi/L Rel. Hum 24.7 % Temp. 69.8 F

Date Start: 1/19/24 Date Stop: 1/22/24 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0831 Time Stop: 0831 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (6) CHAR BAGS - Device No.'s: \_\_\_\_\_

11284003, 11284005, 11284006

11284007, 11284008, 11284013

F3 Left

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

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

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

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

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

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

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

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January 29, 2024

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

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Radon test result report for:  
**BOWSER MORNER  
MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11284003	SK	2024-01-19 @ 9:00 am	2024-01-22 @ 9:00 am	47.0 ± 3.8	2024-01-29
11284005	SK	2024-01-19 @ 9:00 am	2024-01-22 @ 9:00 am	43.4 ± 3.5	2024-01-29
11284006	SK	2024-01-19 @ 9:00 am	2024-01-22 @ 9:00 am	42.1 ± 3.4	2024-01-29
11284007	SK	2024-01-19 @ 9:00 am	2024-01-22 @ 9:00 am	46.4 ± 3.7	2024-01-29
11284008	SK	2024-01-19 @ 9:00 am	2024-01-22 @ 9:00 am	46.2 ± 3.7	2024-01-29
11284013	SK	2024-01-19 @ 9:00 am	2024-01-22 @ 9:00 am	45.6 ± 3.6	2024-01-29

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

**EXPOSURE IN BOWSER-MORNER RADON CHAMBER**

CLIENT KCI TECHNOLOGIES, Inc Job Number 213819

NOMINAL Conditions: Radon Conc 50.0 pCi/L Rel. Hum 28.9 % Temp. 69.1 F

Date Start: 2/23/24 Date Stop: 2/26/24 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0812 Time Stop: 0812 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (6) CHAR BAGS Device No.'s: \_\_\_\_\_

11478400, 11477842, 11477845, \_\_\_\_\_

11477852, 11477996, 11477999 \_\_\_\_\_

E3 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 µR/h Elevation = 820 ft**

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March 1, 2024

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

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Radon test result report for:

**FEB SK**

**MAIN**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11477842	NA	2024-02-23 @ 8:00 am	2024-02-26 @ 8:00 am	50.3 ± 4.0	2024-03-01
11477845	NA	2024-02-23 @ 8:00 am	2024-02-26 @ 8:00 am	55.3 ± 4.4	2024-03-01
11477852	NA	2024-02-23 @ 8:00 am	2024-02-26 @ 8:00 am	49.4 ± 4.0	2024-03-01
11477996	NA	2024-02-23 @ 8:00 am	2024-02-26 @ 8:00 am	49.8 ± 4.0	2024-03-01
11477999	NA	2024-02-23 @ 8:00 am	2024-02-26 @ 8:00 am	55.4 ± 4.4	2024-03-01
11478400	NA	2024-02-23 @ 8:00 am	2024-02-26 @ 8:00 am	47.0 ± 3.8	2024-03-01

---

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



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing January 22<sup>nd</sup> to January 25<sup>th</sup>

Name of Schools:

1. Fields Road ES
2. Germantown ES
3. Highland View ES
4. Westbrook ES
5. John T. Baker MS
6. Herbert Hoover MS

---

	Date	Initials
Radon Test Kits Deployed	01/22/2024	BMM
Radon Test Kits Collected	01/25/2024	BMM
Radon Test Kits Shipped to Lab*	01/25/2024	BMM
Radon Test Kits Received by Lab*	01/29/2024	BMM

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



### Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Retesting February 20<sup>th</sup> to the 23<sup>rd</sup> 2024

Name of Schools:

- |                      |                          |
|----------------------|--------------------------|
| 1. Fields Road ES    | 8. Thomas Wooton HS      |
| 2. Highland View ES  | 9. Fairland ES           |
| 3. John T. Baker MS  | 10. Cabin Branch ES      |
| 4. Sligo MS          | 11. John F. Kennedy HS   |
| 5. White Oak MS      | 12. Jackson Road ES      |
| 6. Laytonsville ES   | 13. Clarksburg HS        |
| 7. Herbert Hoover MS | 14. North Chevy Chase ES |

---

	Date	Initials
Radon Test Kits Deployed	02/20/2024	JM
Radon Test Kits Collected	02/23/2024	JM
Radon Test Kits Shipped to Lab*	02/23/2024	JM
Radon Test Kits Received by Lab*	02/27/2024	JM

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

**Attachment 3:**  
**Sampling Location Map**





## MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

### Executive Summary: Highland View Elementary School

9010 Providence Avenue  
Silver Spring, MD 20901

Date of Test Report:	1/15/2019
Round of Testing:	Initial Follow-up Post Remediation 2 Year Testing <b>5 Year Testing</b> HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested:	31
# of Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	3.2

#### Project Status

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



January 15, 2019

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

Re: Radon Testing Services

Location: Highland View Elementary School  
9010 Providence Avenue  
Silver Spring, MD 20901

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 Highland View Elementary School, located at 9010 Providence Avenue, Silver Spring, MD 20901 (subject site).

**Scope of Services:**

PSI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. PSI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS007) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from [www.montgomerycountymd.gov/dep/air/radon](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

PSI visited the site on November 13, 2018 and deployed forty-three (43) 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. 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 returned to the site on November 16, 2018 to retrieve the radon sampling test kits. PSI shipped all radon tests via overnight delivery to AccuStar Labs for analysis by gamma-ray spectroscopy. Accustar Labs is a NRSB certified analytical laboratory for radon analysis located at 929 Mount Zion Road, Lebanon, Pennsylvania (certification # ARL0007) and 2 Saber Way, Haverhill, Massachusetts (certification # ARL0017).



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

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

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

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

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

### **Results:**

The results of the radon test analysis indicated the following:

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

Notes:

D -Duplicate Sample

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

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

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



Respectfully Submitted,

**INTERTEK-PSI**

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

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

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

# **ATTACHMENT B**

Radon Test Summary Spreadsheet

<b>Radon Testing Results</b>		
<b>Highland View ES Elementary School</b>		
<b>Testing period: 11/13/18 - 11/16/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3918936	1	0.8
3918938	2	1.2
3918939	3	< 0.4
3918940	5	< 0.4
3918941	7	< 0.4
3918942	8	0.7
3918943	9	0.4
3918944	14	< 0.4
3918946	15	0.6
3918947	21	0.5
3918948	22	0.5
3918949	23	0.6
3918933	101	< 0.4
3918925	102A	0.9
3918926	102C	1.0
3918927	102E	1.0
3918928	102F	0.8
3918932	105	0.7
3918884	204	0.5
3918886	212	0.7
3918887	311	0.5
3881241	APR	0.6
3881171	APR	0.5
3918935	APR - Stage	0.7
3918931	Art	0.7
3918945	Auxillary Music Room	1.0
3918881	Gym	3.2
3918882	Gym	2.6
3918883	Gym Office	2.4
3918921	Health	0.9
3918922	Health Office	1.0
3918934	Kitchen	0.5
3918923	Main Office	1.0
3918929	Staff Lounge	0.8

<b>Radon Testing Results</b>		
<b>Highland View Elementary School</b>		
<b>Testing period: 11/13/18 - 11/16/18</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result (pCi/L)</b>
3918937	1 (D)	0.9
3918950	23 (D)	0.5
3918885	204 (D)	< 0.4
3918924	Main Office (D)	1.1
3918930	Staff Lounge (D)	1.1
3918825	Field Blank	< 0.4
3918815	Field Blank	< 0.4
3917864	Office Blank	< 0.4
3918824	Transit Blank	< 0.4

**Table Notes:**

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank



# **ATTACHMENT C**

Laboratory Analytical Results

NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey Highland View ES  
Not Indicated  
Silver Spring MD 20901

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3195646	3918921	11/13/2018 4:37 pm	11/16/2018 1:00 pm	Floor Main Room Health	0.9
3195647	3918922	11/13/2018 4:38 pm	11/16/2018 1:01 pm	Floor Main Room Health Office	1.0
3195648	3918923	11/13/2018 4:39 pm	11/16/2018 1:03 pm	Floor Main Room Main Office	1.0
3195649	3918924	11/13/2018 4:39 pm	11/16/2018 1:03 pm	Floor Main Room Main Office Duplicate	1.1
3195650	3918925	11/13/2018 4:41 pm	11/16/2018 1:04 pm	Floor Main Room 102A	0.9
3195651	3918926	11/13/2018 4:43 pm	11/16/2018 1:05 pm	Floor Main Room 102C	1.0
3195652	3918927	11/13/2018 4:45 pm	11/16/2018 1:06 pm	Floor Main Room 102E	1.0
3195653	3918928	11/13/2018 4:47 pm	11/16/2018 1:07 pm	Floor Main Room 102F	0.8
3195654	3918929	11/13/2018 4:50 pm	11/16/2018 1:09 pm	Floor Main Room Staff Lounge	0.8
3195655	3918930	11/13/2018 4:50 pm	11/16/2018 1:09 pm	Floor Main Room Staff Lounge Duplicate	1.1

**Comment:** A copy of this report was e-mailed to PSI - VA.

Test Performed By: Not Indicated

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/28/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey Highland View ES  
Not Indicated  
Silver Spring MD 20901

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3195656	3918931	11/13/2018 4:52 pm 11/16/2018 1:10 pm	Floor Main Room Art	0.7
3195657	3918932	11/13/2018 4:54 pm 11/16/2018 1:11 pm	Floor Main Room 105	0.7
3195658	3918933	11/13/2018 4:58 pm 11/16/2018 1:12 pm	Floor Main Room 101	< 0.4
3195659	3918934	11/13/2018 5:00 pm 11/16/2018 1:13 pm	Floor Main Room Kitchen	0.5
3195660	3918935	11/13/2018 5:05 pm 11/16/2018 1:14 pm	Floor Main Room APR	0.7
3195661	3918936	11/13/2018 5:15 pm 11/16/2018 1:18 pm	Floor Lower Room 1	0.8
3195662	3918937	11/13/2018 5:15 pm 11/16/2018 1:18 pm	Floor Lower Room 1 Duplicate	0.9
3195663	3918938	11/13/2018 5:16 pm 11/16/2018 1:19 pm	Floor Lower Room 2	1.2
3195664	3918939	11/13/2018 5:17 pm 11/16/2018 1:20 pm	Floor Lower Room 3	< 0.4
3195665	3918940	11/13/2018 5:18 pm 11/16/2018 1:21 pm	Floor Lower Room 5	< 0.4

**Comment:** A copy of this report was e-mailed to PSI - VA.

Test Performed By: Not Indicated

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018 Date Logged: 11/17/2018 Date Analyzed: 11/17/2018 Date Reported: 11/28/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey Highland View ES  
Not Indicated  
Silver Spring MD 20901

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3195666	3918941	11/13/2018 5:19 pm	11/16/2018 1:22 pm	Floor Lower Room 7	< 0.4
3195667	3918942	11/13/2018 5:21 pm	11/16/2018 1:23 pm	Floor Lower Room 8	0.7
3195668	3918943	11/13/2018 5:23 pm	11/16/2018 1:24 pm	Floor Lower Room 9	0.4
3195669	3918944	11/13/2018 5:25 pm	11/16/2018 1:25 pm	Floor Lower Room 14	< 0.4
3195670	3918945	11/13/2018 5:27 pm	11/16/2018 1:26 pm	Floor Lower Room Auxillary Music	1.0
3195671	3918946	11/13/2018 5:28 pm	11/16/2018 1:27 pm	Floor Lower Room 15	0.6
3195672	3918947	11/13/2018 5:30 pm	11/16/2018 1:28 pm	Floor Lower Room 21	0.5
3195673	3918948	11/13/2018 5:35 pm	11/16/2018 1:29 pm	Floor Lower Room 22	0.5
3195674	3918949	11/13/2018 5:37 pm	11/16/2018 1:31 pm	Floor Lower Room 23	0.6
3195675	3918950	11/13/2018 5:37 pm	11/16/2018 1:31 pm	Floor Lower Room 23 Duplicate	0.5

**Comment:** A copy of this report was e-mailed to PSI - VA.

Test Performed By: Not Indicated

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/28/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey Highland View ES  
Not Indicated  
Silver Spring MD 20901

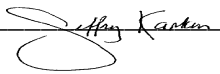
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3195676	3918881	11/13/2018 5:45 pm	11/16/2018 1:32 pm	Floor Lower Room Gym	3.2
3195677	3918882	11/13/2018 5:45 pm	11/16/2018 1:33 pm	Floor Lower Room Gym	2.6
3195678	3918883	11/13/2018 5:48 pm	11/16/2018 1:34 pm	Floor Lower Room Gym Office	2.4
3195679	3918884	11/13/2018 5:55 pm	11/16/2018 1:35 pm	Floor Second Room 204	0.5
3195680	3918885	11/13/2018 5:55 pm	11/16/2018 1:36 pm	Floor Second Room 204	< 0.4
3195681	3918886	11/13/2018 5:58 pm	11/16/2018 1:37 pm	Floor Second Room 212	0.7
3195682	3918887	11/13/2018 6:01 pm	11/16/2018 1:38 pm	Floor Third Room 311	0.5
3195683	3917864	11/13/2018 6:00 am	11/16/2018 4:00 pm	Floor NA Room Office Blank	< 0.4
3195684	3918824	11/13/2018 6:00 am	11/16/2018 4:00 pm	Floor NA Room Transit Blank	< 0.4
3195685	3918825	11/13/2018 4:37 pm	11/16/2018 1:38 pm	Floor NA Field Blank	< 0.4

**Comment:** A copy of this report was e-mailed to PSI - VA.

Test Performed By: Not Indicated

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/28/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey Highland View ES  
Not Indicated  
Silver Spring MD 20901

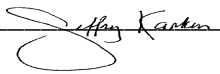
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3195686	3918815	11/13/2018 4:37 pm 11/16/2018 1:38 pm	Floor NA Field Blank	< 0.4

**Comment:** A copy of this report was e-mailed to PSI - VA.

Test Performed By: Not Indicated

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018 Date Logged: 11/17/2018 Date Analyzed: 11/17/2018 Date Reported: 11/28/2018

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Liquid Scintillation  
NRPP Device Code 8088  
NRSB Device Code 12193

Laboratory Report for:

Property Tested: Project # 04481387-1

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


MCPS Radon Survey  
Highland View ES  
Silver Spring MD 20901

Log Number	Device Number	Test	Exposure	Duration:	Area Tested	Result pCi/L
2393044	3881241	11/13/2018	5:06 pm	11/16/2018 1:17 pm	Floor Main Room APR	0.6
2393045	3881171	11/13/2018	5:07 pm	11/16/2018 1:15 pm	Floor Main Room APR	0.5

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

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018 Date Logged: 11/17/2018 Date Analyzed: 11/19/2018 Date Reported: 01/04/2019

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL  
NRSB ARL0007  
Ohio RL41

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

Laboratory Report for:

Property Tested:

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

MCPS Radon Survey  
4514 Taylorsville Road  
Dayton OH 45424

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

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

Test Performed By: Unknown

Distributed by: Intertek-PSI (VA)

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

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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

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  $\mu$ R/h Elevation = 820 ft



## Chain of Custody

Project Name: MCPS Radon Survey 2018

Name of Schools:

- |                     |                      |                    |
|---------------------|----------------------|--------------------|
| 1. Highland View ES | 6. EB Lee MS         | 11. Cannon Rd ES   |
| 2. Kemp Mill ES     | 7. Forest Knolls ES  | 12. Cloverly ES    |
| 3. Sligo Creek ES   | 8. Galway ES         | 13. Springbrook HS |
| 4. Highland ES      | 9. Wheaton HS        |                    |
| 5. Kennedy HS       | 10. Briggs Chaney MS |                    |

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	Date	Initials
Radon Test Kits Deployed	11/13/2018	NL
Radon Test Kits Sampled	11/16/2018	NL
Radon Test Kits Shipped to Lab*	11/16/2018	NL
Radon Test Kits Received by Lab*	11/17/2018; 11/18/2018; 11/20/2018	NL

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



### MCPS RADON TESTING

Executive Summary: Highland View Elementary School

Date of Test Report:	2/23/2016 (Rev 2)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	28
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	3.2

Project Status:

Initial testing completed; no further action at this time.



February 23, 2016 (Rev 2)

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

Re: **Radon Testing Services**  
KCI Job # 12146341.19

Location: Highland View Elementary School  
9010 Providence Avenue  
Silver Spring, MD 20901

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 Damascus Elementary School, located at 9010 Providence Avenue in Silver Spring, Maryland 20901 (subject site).

**Scope of Services:**

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

KCI visited the site on December 15, 2016 and deployed thirty-eight (38) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on December 18, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

**Evaluation of Testing Conditions:**

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

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

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

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

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	none	n/a
$< 4.0$ pCi/L	See Attachment B	

Notes:  
D- Duplicate sample

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. Mouldale  
Radon Measurement Specialist  
KCI Technologies, Inc.

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

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet



**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

<b>Radon Testing Results</b>		
<b>Highland View Es</b>		
<b>Test Period: 12/15/15-12/18/15</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7704168	1	1.7
7704102	2	1.2
7705174	3	< 0.3
7704107	5	< 0.3
7704103	7	1.0
7704104	8	1.0
7705172	9	1.0
7705175	14	1.4
7704109	15	0.7
7704110	21	0.9
7704161	22	0.6
7704166	23	0.8
7704155	101	0.9
7704106	104	1.2
7704170	105	< 0.3
7704156	206	0.8
7704163	213	< 0.3
7704164	309	0.6
7704200	102-A	0.8
7704158	102-B	1.1
7704150	102-C	1.2
7704154	102-E	1.0
7704169	102-F	< 0.3
7704152	CAFE	< 0.3
7704151	CAFE	0.8
7704105	GYM	3.2
7704101	GYM	2.6
7704199	MAIN OFFICE	1.1
7704159	OT	1.8
7704160	STAFF LOUNGE	0.8

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Highland View Es</b>		
<b>Test Period: 12/15/15-12/18/15</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7704167	D (1)	1.6
7705170	D (15)	0.8
7704153	D (309)	1.0
7704165	D (STAFF LOUNGE)	1.1
7704198	FB (102-E)	< 0.3
7705167	FB (14)	< 0.3
7704162	FB (23)	< 0.3
7704393	OB (OFFICE BLANK)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

December 30, 2015  
**LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:  
**HIGHLAND VIEW ES**  
**HIGHLAND VIEW**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704167	1	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.6 ± 0.4	2015-12-22
7704168	1	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.7 ± 0.4	2015-12-22
7704155	101	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	0.9 ± 0.3	2015-12-22
7704200	102-A	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.8 ± 0.3	2015-12-22
7704158	102-B	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.1 ± 0.3	2015-12-22
7704150	102-C	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.2 ± 0.4	2015-12-22
7704154	102-E	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.0 ± 0.3	2015-12-22
7704198	102-E	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704169	102-F	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704106	104	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.2 ± 0.3	2015-12-22
7704170	105	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7705175	14	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.4 ± 0.3	2015-12-22
7705167	14	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704109	15	2015-12-15 @ 12:00 pm	2015-12-18 @ 10:00 am	0.7 ± 0.3	2015-12-22
7705170	15	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7704102	2	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.2 ± 0.3	2015-12-22
7704156	206	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.8 ± 0.3	2015-12-22
7704110	21	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.9 ± 0.3	2015-12-22
7704163	213	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704161	22	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.6 ± 0.3	2015-12-22
7704162	23	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704166	23	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.8 ± 0.3	2015-12-22
7705174	3	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704153	309	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	1.0 ± 0.3	2015-12-22
7704164	309	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	0.6 ± 0.3	2015-12-22
7704107	5	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704103	7	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.0 ± 0.3	2015-12-22
7704104	8	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.0 ± 0.3	2015-12-22
7705172	9	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.0 ± 0.3	2015-12-22
7704151	CAFE	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	0.8 ± 0.4	2015-12-22
7704152	CAFE	2015-12-15 @ 2:00 pm	2015-12-18 @ 10:00 am	< 0.3	2015-12-22
7704101	GYM	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	2.6 ± 0.4	2015-12-22
7704105	GYM	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	3.2 ± 0.4	2015-12-22
7704199	MAIN OFFICE	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.1 ± 0.3	2015-12-22
7704159	OT	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.8 ± 0.4	2015-12-22
7704160	STAFF LOUNGE	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	0.8 ± 0.3	2015-12-22
7704165	STAFF LOUNGE	2015-12-15 @ 1:00 pm	2015-12-18 @ 10:00 am	1.1 ± 0.3	2015-12-22

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December  
30,  
2015

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

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Radon test result report for:  
**HIGHLAND VIEW ES  
OFFICE BLANK**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7704393	OFFICE BLANK	2015-12-15 @ 3:00 pm	2015-12-18 @ 3:00 pm	< 0.3	2015-12-22

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

December  
29,  
2015

**LABORATORY ANALYSIS  
REPORT \*\***

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

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

December  
23,  
2015

**LABORATORY ANALYSIS  
REPORT \*\***

Spike Sample Laboratory Results

Radon test result report for:  
**MCPS**

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

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

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



**EXPOSURE IN BOWSER-MORNER RADON CHAMBER**

CLIENT KCI Technologies Inc. Job Number 173224

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

Date Start: 12/18/15 Date Stop: 12/21/15 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0929 Time Stop: 0929 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: 7705132, 7706208, Device No.'s: \_\_\_\_\_

7706211, 7706366, \_\_\_\_\_

7706380, 7706381 \_\_\_\_\_

F3 Left

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

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

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

\_\_\_\_\_  
\_\_\_\_\_

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

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

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

\_\_\_\_\_  
\_\_\_\_\_

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



### Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase I

Name of Schools:

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

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

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

M. A. CECIL & ASSOCIATES, INC.

4475 Shannon Way, Port Republic, Maryland 20676 (301) 855-7710  
INDUSTRIAL HYGIENE AND ENVIRONMENTAL HEALTH

November 30, 2015

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

Re: Radon Evaluation- Highland Elementary School

Dear Mr. Yarup:

Environmental radon testing has been completed at Highland Elementary School.

A charcoal canister was placed in the gym of school as a follow-up to a previously completed survey. The canister was placed on November 13, 2015 and retrieved on November 16, 2015. The detected radon concentration (2.8) was below the EPA recommended level of 4.0 pico curries per liter (pCi/l) of air.

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

Sincerely,

*Michael A. Cecil*  
Michael A. Cecil, CIH

# A.B.E. Radiation Measurements Laboratory

Division of Health Physics Associates, Inc.

1005 Old 22 PO Box 214 Lenhartsville, PA 19534

dee@radprotection.com

(610) 756-4153 (Voice) (610) 756-0042 (FAX)

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November 24, 2015

MA Cecil & Associates, Inc.  
4475 Shannon Way  
Port Republic, MD 20676

Attn: Kimberly Tayman

re: **Radon Sampling**, Highland Elementary School,  
3100 Medway St., Silver Spring, MD 20902.

**Dates of tests:** November 13 to 16, 2015

**Chamber Spikes:** 2.9 % Deviation; September 19 to 21, 2015

Dear Ms. Tayman:

The following is a report of the radon sampling your company conducted at the referenced property using activated charcoal. The charcoal analysis procedures have passed the US EPA's Radon Measurement Proficiency Testing program, and A.B.E. Radiation Measurements Lab is certified by the PA DEP as a laboratory (certification number 0048). The table lists each sample location and the net radon levels in picocuries per liter (pCi/l). Screening testing should be conducted under "closed house" conditions; however, A.B.E. Radiation Measurements Laboratory has no control over how the test device is treated in our absence or the degree of ventilation at the property over the course of the test.

<b>Canister Number</b>	<b>Location</b>	<b>Start Time</b>	<b>End Time</b>	<b>pCi/l</b>
172523	Gym	15:08	08:33	2.8

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## CONCLUSIONS

The radon concentration measured during the test was below the US EPA screening guideline of less than 4.0 pCi/l and remedial action to reduce the radon concentration is not indicated based on the results of this test. Because of the variability of radon air concentrations over the course of a year, follow-up biannual testing during a different season, under occupied conditions, is recommended to better estimate the annual average air concentrations.

The results of this test are valid only for the date, time and conditions under which the test was conducted and only for the client ordering the test.

Should you wish to discuss this report, please do not hesitate to contact us at (610) 756-4153.

Thank you for the opportunity to serve you.

Sincerely,



A. LaMastra  
President