



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Meadow Hall Elementary School
Date of Test Report	1/12/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	48
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.9 pCi/L

Project Status:

1. 5-Year retesting completed.



January 12, 2023

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

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

Location: Meadow Hall Elementary School  
951 Twinbrook Parkway  
Rockville, MD 20851

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 Meadow Hall Elementary School, located at 951 Twinbrook Parkway Rockville, MD 20851 (subject site).

**Scope of Services:**

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

KCI visited the site on December 12, 2022 and deployed fifty-four (54) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

KCI returned to the site on December 15, 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 concentration levels 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 temperatures were between 22°F and 53°F. Maximum sustained winds ranged from 0-20 miles per hour. Average humidity was around 70% with 1.98 inches of precipitation (rain) was recorded during testing period.

**Results:**

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,



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

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

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

Table 1- Radon Testing Results		
Meadow Hall ES		
Test Period: 12/12/2022 - 12/15/2022		
Kit Number	Room / Area	Result
11285416	2	1.3
11285415	4	1.6
11285426	7	1.3
11285405	8	1.0
11285419	9	1.0
11285427	9	1.4
11285420	10	1.3
11285404	11	1.0
11285411	11	1.3
11285403	12	1.4
11285412	13	1.8
11285425	14	1.6
11285407	16	1.4
11285423	18	1.5
11285424	18	1.4
11285432	18	< 0.3
11285422	20	0.8
11285428	21	0.9
11285431	22	0.9
11285435	23	0.8
11285434	24	< 0.3
11285442	25	1.4
11285436	26	1.2
11285429	27	0.6
11285443	28	1.0
11285430	30	1.1
11285444	30	0.8
11285441	31	1.5
11285421	32	1.1
11285402	44	1.2
11285406	13 OFFICE	1.9
11285409	AP	0.7
11285401	APR	1.4
11285413	APR	1.6
11285414	APR	1.6
11285449	APR	< 0.3
11285457	G1	1.1
11285446	G3	0.8
11285439	G6	0.7
11285458	G6 OFFICE	1.6
11285459	G6 OFFICE	0.9
11285438	G7	0.9

Table 1- Radon Testing Results		
Meadow Hall ES		
Test Period: 12/12/2022 - 12/15/2022		
Kit Number	Room / Area	Result
11285437	G8	0.9
11285408	G9	0.9
11285447	GYM	0.9
11285448	GYM	0.6
11285440	GYM OFFICE	0.6
11285417	HEALTH ROOM	1.9
11285433	KITCHEN	1.1
11285418	MAIN OFFICE	1.1
11285451	MC	1.4
11285452	MC	1.8
11285450	MC OFFICE	1.3
11285410	PRINCIPAL	1.1



Table 2- Radon Testing Results			
Meadow Hall ES			
Test Period: 12/12/22 - 12/15/22			
Kit Number	QC Type	Room / Area	Result
11285411	D	11	1.3
11285424	D	18	1.4
11285432	FB	18	< 0.3
11285430	D	30	1.1
11285413	D	APR	1.6
11285449	FB	APR	< 0.3
11286981	OB	OFFICE BLANK	< 0.3
11286982	TB	TRAVEL BLANK	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:  
**MEADOW HALL ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285420	10	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.3 ± 0.4	2022-12-19
11285404	11	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.0 ± 0.4	2022-12-19
11285411	11	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.3 ± 0.4	2022-12-19
11285403	12	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.4 ± 0.4	2022-12-19
11285412	13	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.8 ± 0.4	2022-12-19
11285406	13 OFFICE	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.9 ± 0.4	2022-12-19
11285425	14	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.6 ± 0.4	2022-12-19
11285407	16	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.4 ± 0.4	2022-12-19
11285432	18	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	< 0.3	2022-12-19
11285423	18	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	1.5 ± 0.4	2022-12-19
11285424	18	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	1.4 ± 0.4	2022-12-19
11285416	2	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.3 ± 0.4	2022-12-19
11285422	20	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	0.8 ± 0.4	2022-12-19
11285428	21	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285431	22	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285435	23	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	0.8 ± 0.4	2022-12-19
11285434	24	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	< 0.3	2022-12-19
11285442	25	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	1.4 ± 0.4	2022-12-19
11285436	26	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	1.2 ± 0.4	2022-12-19
11285429	27	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.6 ± 0.4	2022-12-19
11285443	28	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	1.0 ± 0.4	2022-12-19
11285444	30	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	0.8 ± 0.4	2022-12-19
11285430	30	2022-12-12 @ 9:00 am	2022-12-15 @ 10:00 am	1.1 ± 0.4	2022-12-19
11285441	31	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.5 ± 0.4	2022-12-19
11285421	32	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.1 ± 0.4	2022-12-19
11285415	4	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.6 ± 0.4	2022-12-19
11285402	44	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.2 ± 0.4	2022-12-19
11285426	7	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.3 ± 0.4	2022-12-19
11285405	8	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.0 ± 0.4	2022-12-19
11285419	9	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.0 ± 0.4	2022-12-19
11285427	9	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.4 ± 0.4	2022-12-19
11285409	AP	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	0.7 ± 0.4	2022-12-19
11285401	APR	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.4 ± 0.4	2022-12-19
11285413	APR	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.6 ± 0.4	2022-12-19
11285449	APR	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	< 0.3	2022-12-19
11285414	APR	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.6 ± 0.4	2022-12-19
11285457	G1	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.1 ± 0.4	2022-12-19

Radon test result report for:  
**MEADOW HALL ES**

**1**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11285446	G3	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.8 ± 0.4	2022-12-19
11285439	G6	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.7 ± 0.4	2022-12-19
11285459	G6 OFFICE	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285458	G6 OFFICE	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.6 ± 0.4	2022-12-19
11285438	G7	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285437	G8	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285408	G9	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285447	GYM	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.9 ± 0.4	2022-12-19
11285448	GYM	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.6 ± 0.4	2022-12-19
11285440	GYM OFFICE	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	0.6 ± 0.4	2022-12-19
11285417	HEALTH ROOM	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.9 ± 0.4	2022-12-19
11285433	KITCHEN	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.1 ± 0.4	2022-12-19
11285418	MAIN OFFICE	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.1 ± 0.4	2022-12-19
11285452	MC	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.8 ± 0.4	2022-12-19
11285451	MC	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.4 ± 0.4	2022-12-19
11285450	MC OFFICE	2022-12-12 @ 10:00 am	2022-12-15 @ 10:00 am	1.3 ± 0.4	2022-12-19
11285410	PRINCIPAL	2022-12-12 @ 9:00 am	2022-12-15 @ 9:00 am	1.1 ± 0.4	2022-12-19



## Radon Test Kit Chain of Custody

**Project Name:** MCPS Radon – April 2022 Schools – Retesting

**Name of Schools:**

1. Meadow Hall ES
2. Bayard Rustin ES
3. Lucy V. Barnsley ES
4. Cashell ES
5. Wheaton Woods ES
6. Winston Churchill HS

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	Date	Initials
Radon Test Kits Deployed	12/12/2022	BMM
Radon Test Kits Collected	12/15/2022	BMM
Radon Test Kits Shipped to Lab*	12/15/2022	BMM
Radon Test Kits Received by Lab*	12/19/2022	BMM

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



**MONTGOMERY COUNTY PUBLIC SCHOOLS  
RADON TESTING**

**Executive Summary:**  
**Meadow Hall Elementary School**  
951 Twinbrook Parkway,  
Rockville, MD 20851

Date of Test Report:	3/15/2019
Round of Testing:	Initial <b>Follow-up</b> Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested:	2
# of Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	0.4
High Value:	1.1

**Project Status**

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



March 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: Meadow Hall Elementary School  
951 Twinbrook Parkway,  
Rockville, MD 20851

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 Meadow Hall Elementary School, located at 951 Twinbrook Parkway, Rockville, MD 20851 (subject site).

**Scope of Services:**

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

PSI visited the site on February 26, 2019 and deployed two (2) activated charcoal (AC) radon test kit. PSI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. PSI returned to the site on March 01, 2019 to retrieve the radon sampling test kit. A floor plan map of the building with the test location is included as Attachment A of this report.

PSI shipped all radon tests via overnight delivery to AccuStar Labs for analysis by gamma-ray spectroscopy. Accustar Labs is a NRSB certified analytical laboratory for radon analysis located at 929 Mount Zion Road, Lebanon, Pennsylvania (certification # ARLO007).

**Evaluation of Testing Conditions:**

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

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





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

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

**Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥ 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.



# **ATTACHMENT B**

Radon Test Summary Spreadsheet

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Testing period: 2/26/19 - 3/01/19</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3923383	G1	0.4
3923384	13	1.1

**Table Notes:**

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control

# **ATTACHMENT C**

Laboratory Analytical Results

NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

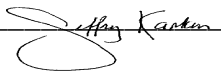
MCPS Radon Survey Meadow Hall ES  
951 Twinbrook Parkway  
Rockville MD 20851

Log Number	Device Number	Test Date	Exposure Start	Exposure End	Duration	Area Tested	Result pCi/L
3220805	3923383	02/26/2019	9:10 am	03/01/2019	8:40 am	Floor Lower Level Room G1	0.4
3220806	3923384	02/26/2019	9:13 am	03/01/2019	8:44 am	Floor Main Level Room 13	1.1

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

Distributed by: Intertek-PSI (VA)

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

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

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

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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



**MONTGOMERY COUNTY PUBLIC SCHOOLS  
RADON TESTING**

**Executive Summary:  
Meadow Hall Elementary School**

951 Twinbrook Parkway,  
Rockville, MD 20851

Date of Test Report:	2/5/2019
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:	48
# of Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	1.6

**Project Status**

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





February 5, 2019

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

Re: Radon Testing Services

Location: Meadow Hall Elementary School  
951 Twinbrook Parkway,  
Rockville, MD 20851

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 Meadow Hall Elementary School, located at 951 Twinbrook Parkway, Rockville, MD 20851 (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 12, 2018 and deployed sixty-one (61) activated charcoal (AC) radon test kits. PSI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. PSI returned to the site on November 15, 2018 to retrieve the radon sampling test kits. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, PSI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, PSI submitted ten (10) test kits to Bowser-Morner Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner Inc. prior to being returned to the laboratory for analysis.

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



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

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

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

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

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

### **Results:**

The results of the radon test analysis indicated the following:

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

Notes:

D -Duplicate Sample

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

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

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



Respectfully Submitted,

**INTERTEK-PSI**

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

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

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

# **ATTACHMENT B**

Radon Test Summary Spreadsheet

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Testing period: 11/12/18 - 11/15/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3917013	1	1.1
3917019	2	0.7
3917014	3	1.5
3917111	4	1.1
3917112	8	1.2
3917115	9	0.9
3917114	10	0.8
3917118	11	1.5
3917117	12	1.0
3917135	13 (TAMPERED)	1.2
3917120	13A	1.2
3916947	14	1.5
3917136	16	1.2
3917001	17	1.5
3917010	17	1.6
3916946	18	0.7
3917020	20	0.6
3917182	21	0.5
3917140	22	0.8
3917129	23	0.9
3917139	24	0.9
3917061	25	1.0
3917132	26	0.7
3916943	27	0.6
3916941	28	0.8
3917184	30	0.6
3917131	31	0.7
3917124	32	0.8
3917062	33	1.2
3881274	34	0.5
3881256	34	0.7
3917171	35	1.2
3917172	40	0.5
3917175	40A	0.9
3917173	43	0.6
3917177	45	0.9
3917174	46	0.9
3917180	47	1.0
3917176	48	0.8
3917178	50	0.6
3917179	52	0.8
3917018	Conference	0.9
3917009	G6	0.9

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Testing period: 11/12/18 - 11/15/18</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result (pCi/L)</b>
3917003	G7	0.8
3917005	G8	0.8
3917008	G9	1.3
3881257	GYM	< 0.4
3881255	GYM	< 0.4
3917011	Kitchen	2.2
3917017	Office	1.2
3917016	Principal Office	0.8

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Testing period: 11/12/18 - 11/15/18</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result (pCi/L)</b>
3917015	3	1.3
3917116	9	0.9
3917119	11	1.1
3917138	24	0.7
3917123	32	0.6
3917004	G9	1.0
3917002	Field Blank	< 0.4
3917137	Field Blank	< 0.4
3917868	Office Blank	< 0.4
3916304	Transit Blank	< 0.4

**Table Notes:**

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control



# **ATTACHMENT C**

Laboratory Analytical Results

NRPP 105011 AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 04481837-1

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

MCPS Radon Survey Meadow Hall C.S.  
951 Twinbrook Parkway  
Rockville MD 20851

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
3195532	3917002	11/12/2018 8:42 pm	11/15/2018 4:10 pm	Not Indicated	< 0.4
3195533	3917137	11/12/2018 8:42 pm	11/15/2018 4:10 pm	Not Indicated	< 0.4
3195534	3917180	11/12/2018 8:42 pm	11/15/2018 3:01 pm	Floor Upper Room 47	1.0
3195535	3917179	11/12/2018 8:44 pm	11/15/2018 3:02 pm	Floor Upper Room 52	0.8
3195536	3917178	11/12/2018 8:45 pm	11/15/2018 3:05 pm	Floor Upper Room 50	0.6
3195537	3917177	11/12/2018 8:46 pm	11/15/2018 3:06 pm	Floor Upper Room 45	0.9
3195538	3917176	11/12/2018 8:47 pm	11/15/2018 3:07 pm	Floor Upper Room 48	0.8
3195539	3917174	11/12/2018 8:48 pm	11/15/2018 3:07 pm	Floor Upper Room 46	0.9
3195540	3917173	11/12/2018 8:49 pm	11/15/2018 3:08 pm	Floor Upper Room 43	0.6
3195541	3917172	11/12/2018 8:54 pm	11/15/2018 3:09 pm	Floor Upper Room 40	0.5
3195542	3917175	11/12/2018 8:54 pm	11/15/2018 3:10 pm	Floor Upper Room 40A	0.9

**Comment:** AMENDED REPORT for 3916304 on 1-15-19 to add date and time and reflect Transit Blank

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/29/2018

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 # 04481837-1

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

MCPS Radon Survey Meadow Hall C.S.  
951 Twinbrook Parkway  
Rockville MD 20851

Log Number	Device Number	Test	Exposure	Duration:	Area Tested	Result pCi/L
3195543	3917171	11/12/2018	8:55 am	11/15/2018 3:11 pm	Floor Upper Room 35	1.2
3195544	3917011	11/12/2018	8:59 pm	11/15/2018 3:15 pm	Floor Upper Room Kitchen	2.2
3195545	3917013	11/12/2018	9:01 pm	11/15/2018 3:16 pm	Floor Upper Room 1	1.1
3195546	3917014	11/12/2018	9:02 pm	11/15/2018 3:17 pm	Floor Upper Room 3	1.5
3195547	3917015	11/12/2018	9:02 pm	11/15/2018 2:17 pm	Floor Upper Room 3 Duplicate	1.3
3195548	3917017	11/12/2018	9:03 pm	11/15/2018 3:19 pm	Floor Upper Room Office	1.2
3195549	3917018	11/12/2018	9:04 pm	11/15/2018 3:20 pm	Floor Upper level Conference Rm.	0.9
3195550	3917016	11/12/2018	9:05 pm	11/15/2018 3:21 pm	Floor Upper level Principal Office	0.8
3195551	3917019	11/12/2018	9:07 pm	11/15/2018 3:22 pm	Floor Upper level Room 2	0.7
3195552	3917020	11/12/2018	9:08 pm	11/15/2018 3:24 pm	Floor Upper level Room 20	0.6
3195553	3917111	11/12/2018	9:10 pm	11/15/2018 3:25 pm	Floor Upper level Room 4	1.1

**Comment:** AMENDED REPORT for 3916304 on 1-15-19 to add date and time and reflect Transit Blank

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018 Date Logged: 11/17/2018 Date Analyzed: 11/17/2018 Date Reported: 11/29/2018

Report Reviewed By: 

Report Approved By: 

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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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 # 04481837-1

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

MCPS Radon Survey Meadow Hall C.S.  
951 Twinbrook Parkway  
Rockville MD 20851

Log Number	Device Number	Test	Exposure	Duration:	Area Tested	Result pCi/L
3195554	3917112	11/12/2018	9:12 pm	11/15/2018 3:26 pm	Floor Upper level Room 8	1.2
3195555	3917114	11/12/2018	9:14 pm	11/15/2018 3:30 pm	Floor Upper level Room 10	0.8
3195556	3917115	11/12/2018	9:18 pm	11/15/2018 3:32 pm	Floor Upper level Room 9	0.9
3195557	3917116	11/12/2018	9:18 pm	11/15/2018 3:32 pm	Floor Upper level Room 9 Duplicate	0.9
3195558	3917117	11/12/2018	9:19 pm	11/15/2018 3:33 pm	Floor Upper level Room 12	1.0
3195559	3917118	11/12/2018	9:21 pm	11/15/2018 3:34 pm	Floor Upper level Room 11	1.5
3195560	3917119	11/12/2018	9:21 pm	11/15/2018 3:34 pm	Floor Upper level Room 11 Duplicate	1.1
3195561	3917135	11/12/2018	9:24 pm	11/15/2018 3:35 pm	Floor Upper level Room 13	1.2
3195562	3917120	11/12/2018	9:25 pm	11/15/2018 3:36 pm	Floor Upper level Room 13A	1.2
3195563	3917136	11/12/2018	9:28 pm	11/15/2018 3:37 pm	Floor Upper level Room 16	1.2
3195564	3916947	11/12/2018	9:29 pm	11/15/2018 3:38 pm	Floor Upper level Room 14	1.5

**Comment:** AMENDED REPORT for 3916304 on 1-15-19 to add date and time and reflect Transit Blank

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/29/2018

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 # 04481837-1

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

MCPS Radon Survey Meadow Hall C.S.  
951 Twinbrook Parkway  
Rockville MD 20851

Log Number	Device Number	Test Exposure Duration:			Area Tested	Result pCi/L
3195565	3916946	11/12/2018 9:32 pm	11/15/2018 3:41 pm	Floor Upper level Room 18	0.7	
3195566	3917140	11/12/2018 9:35 pm	11/15/2018 3:42 pm	Floor Upper level Room 22	0.8	
3195567	3917182	11/12/2018 9:35 pm	11/15/2018 3:43 pm	Floor Upper level Room 21	0.5	
3195568	3917139	11/12/2018 9:36 pm	11/15/2018 3:45 pm	Floor Upper level Room 24	0.9	
3195569	3917138	11/12/2018 9:36 pm	11/15/2018 3:45 pm	Floor Upper level Room 24 Duplicate	0.7	
3195570	3917129	11/12/2018 9:38 pm	11/15/2018 3:46 pm	Floor Upper level Room 23	0.9	
3195571	3917132	11/12/2018 9:40 pm	11/15/2018 3:47 pm	Floor Upper level Room 26	0.7	
3195572	3917061	11/12/2018 9:41 pm	11/15/2018 3:49 pm	Floor Upper level Room 25	1.0	
3195573	3916941	11/12/2018 9:42 pm	11/15/2018 3:50 pm	Floor Upper level Room 28	0.8	
3195574	3917184	11/12/2018 9:43 pm	11/15/2018 3:51 pm	Floor Upper level Room 30	0.6	
3195575	3916943	11/12/2018 9:44 pm	11/15/2018 3:52 pm	Floor Upper level Room 27	0.6	

**Comment:** AMENDED REPORT for 3916304 on 1-15-19 to add date and time and reflect Transit Blank

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/29/2018

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 # 04481837-1

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

MCPS Radon Survey Meadow Hall C.S.  
951 Twinbrook Parkway  
Rockville MD 20851

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3195576	3917131	11/12/2018 9:46 pm 11/15/2018 3:53 pm	Floor Upper level Room 31	0.7
3195577	3917124	11/12/2018 9:48 pm 11/15/2018 3:54 pm	Floor Upper level Room 32	0.8
3195578	3917123	11/12/2018 9:48 pm 11/15/2018 3:54 pm	Floor Upper level Room 32 Duplicate	0.6
3195579	3917005	11/12/2018 9:53 pm 11/15/2018 4:01 pm	Floor Lower Level Room G8	0.8
3195580	3917008	11/12/2018 9:54 pm 11/15/2018 4:03 pm	Floor Lower Level Room G9	1.3
3195581	3917004	11/12/2018 9:54 pm 11/15/2018 4:03 pm	Floor Lower Level Room G9 Duplicate	1.0
3195582	3917009	11/12/2018 9:56 pm 11/15/2018 4:05 pm	Floor Lower Level Room G6	0.9
3195583	3917003	11/12/2018 9:58 pm 11/15/2018 4:06 pm	Floor Lower Level Room G7	0.8
3195584	3917001	11/12/2018 10:02 pm 11/15/2018 4:07 pm	Floor Upper level Room 17	1.5
3195585	3917010	11/12/2018 10:03 pm 11/15/2018 4:08 pm	Floor Upper level Room 17	1.6
3195586	3917062	11/12/2018 10:04 pm 11/15/2018 4:10 pm	Floor Upper level Room 33	1.2

**Comment:** AMENDED REPORT for 3916304 on 1-15-19 to add date and time and reflect Transit Blank

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018 Date Logged: 11/17/2018 Date Analyzed: 11/17/2018 Date Reported: 11/29/2018

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 # 04481837-1

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

MCPS Radon Survey Meadow Hall C.S.  
951 Twinbrook Parkway  
Rockville MD 20851

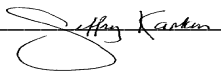
Log Number	Device Number	Test Date	Exposure Duration	Area Tested	Result pCi/L
3195587	3917868	11/12/2018	6:00 am - 4:10 pm	Not Indicated	< 0.4
3195588	3916304	11/12/2018	6:00 am - 4:10 pm	Transit Blank	<0.4

**Comment:** AMENDED REPORT for 3916304 on 1-15-19 to add date and time and reflect Transit Blank

Test Performed By: Lian Zadeng

Distributed by: Intertek-PSI (VA)

Date Received: 11/17/2018    Date Logged: 11/17/2018    Date Analyzed: 11/17/2018    Date Reported: 11/29/2018

Report Reviewed By: 

Report Approved By: 

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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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  
951 Twinbrook Parkway  
Rockville MD 20851


Log Number	Device Number	Test	Exposure	Duration:	Area Tested	Result pCi/L
2393088	3881256	11/12/2018	8:57 pm	11/15/2018 3:13 pm	Upper level Room 34	0.7
2393090	3881255	11/12/2018	9:51 pm	11/15/2018 4:01 pm	Lower Level Gym	<0.4
2393091	3881257	11/12/2018	9:51 pm	11/15/2018 4:00 pm	Lower Level Gym	<0.4
2393103	3881274	11/12/2018	8:56 pm	11/15/2018 3:12 pm	Upper Level Room 34	0.5

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

Distributed by: Intertek-PSI (VA)

Date Received: 11/18/2018    Date Logged: 11/18/2018    Date Analyzed: 11/19/2018    Date Reported: 12/17/2018

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL  
NRSB ARL0007  
Ohio RL41

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

Laboratory Report for:

Property Tested:

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

MCPS Radon Survey  
4514 Taylorsville Road  
Dayton OH 45424

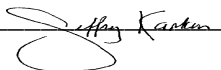
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3204125	3926831	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	36.1
3204126	3926832	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.8
3204127	3926833	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	33.7
3204128	3926834	12/07/2018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


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

Test Performed By: Unknown

Distributed by: Intertek-PSI (VA)

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

Report Reviewed By: 

Report Approved By: 

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# 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. Arcola ES      | 7. North Lake Center | 13. Cold Spring ES |
| 2. Glen Haven ES  | 8. Barnsley ES       | 14. Hoover MS      |
| 3. Jackson Road   | 9. Bayard Rustin ES  | 15. Wayside ES     |
| 4. Cashell ES     | 10. Julius West MS   | 16. English Manor  |
| 5. Frost MS       | 11. Rock Terrace HS  |                    |
| 6. Meadow Hall ES | 12. Churchill HS     |                    |

---

	Date	Initials
Radon Test Kits Deployed	11/12/2018	NL
Radon Test Kits Sampled	11/15/2018	NL
Radon Test Kits Shipped to Lab*	11/15/2018	NL
Radon Test Kits Received by Lab*	11/17/2018; 11/18/2018	NL

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

RADON SCREENING SURVEY – FOLLOW-UP MEADOW HALL ELEMENTARY SCHOOL

951 Twinbrook Parkway, Rockville Maryland 20851

EXECUTIVE SUMMARY

Date of Test Report:	4/6/16 Follow-Up
Round of Testing:	Initial <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">Follow-up</span> Post Remediation
# Rooms Tested	1
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	0.9
High Value:	0.9
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	0

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

Room	Result (pCi/L) 2/17/16 Initial	Result (pCi/L) 4/6/16 Follow-Up	Average Result (pCi/L)
G1	---Missing	0.9	0.9



## MCPS RADON TESTING

### Executive Summary: Meadow Hall Elementary School

Date of Test Report:	4/6/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	1
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	0.9
High Value:	0.9

#### Project Status:

Retesting completed; no further action at this time.



April 6, 2016

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

Re: **Radon Testing Services**  
KCI Job # 12146341.31

Location: Meadow Hall Elementary School  
951 Twinbrook Parkway  
Rockville, MD 20851

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 Meadow Hall Elementary School, located at 951 Twinbrook Parkway in Rockville, Maryland 20851 (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 March 21, 2016 and deployed one (1) 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 TCS Industries Inc. as spike samples. The spiked tests were exposed to a known radon concentration by TCS prior to being returned to the laboratory for analysis.

KCI returned to the site on March 24, 2016 to retrieve the radon sampling test kits. KCI 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 (certification # ARL0007) located at 929 Mount

Zion Road, Lebanon, Pennsylvania.

**Evaluation of Testing Conditions:**

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

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

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

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

**Results:**

The results of the radon test analysis indicated the following:

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

Notes:

D- Duplicate sample

The 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 (410) 316-7800.

Sincerely,



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

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



# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank\*

PM- Project Manager

QC- Quality Control

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

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Test Period: 03/21/16-03/24/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
3029260	G1	0.9

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

NRPP 10511AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 12146341

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152


Meadow Hall ES  
951 Twin Brook Parkway  
Rockville MD 20851

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3018366	3029260	03/21/2016	03/24/2016	Unit G1	0.9

**Comment:** A copy of this report was emailed to tehsin@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 03/28/2016    Date Logged: 03/28/2016    Date Analyzed: 03/28/2016    Date Reported: 03/29/2016

Report Reviewed By: 

Report Approved By:   
Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

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

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

**Radon Device Type Open Face Canister**

**Send Written Report To:**

Name: KCI Technologies, Inc  
 Address: 936 Ridgebrook Road  
 Address: Sparks  
 City / Town: Sparks  
 State/Province Postal Code: MD 21152  
 Report Country: Baltimore County  
 Email Address: tehsin@kci.com

**Site Tested:**

Site Name: Meadow Hill E.S.  
 Address: 951 Twin Brook Pkwy  
 Address: Rockville  
 City / Town: Rockville  
 State/Province Postal Code: MD 20851  
 Test Country: Montgomery County  
 Project Number: 12146341

**Contact Information:**

Contact: Tehsin Aurangabadwala  
 Telephone: 410-891-1726  
 Technician:  
 Cert. Number:  
 Signature:

Lab Use Only	Device Number	Building Number	Unit Number	Floor	Name of Room	Start Date mm/dd/yyyy	Start Time hh:mm am / pm	Stop Date mm/dd/yyyy	Stop Time hh:mm am / pm	Lab Use Only
	3029260		61	6	Temp 72	3/21/2016	2:30 - PM	3/24/16	12:20 - PM	

NRPP 10511AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested: Project # 12146341

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

MCPS Radon Phase 11 (re-testing) Office Blank

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3018362	3029232	03/21/2016 8:00 am 03/24/2016 8:00 am	Unit O First Floor Main Room	<0.4

**Comment:** A copy of this report was emailed to tehsin@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 03/28/2016 Date Logged: 03/28/2016 Date Analyzed: 03/28/2016 Date Reported: 03/29/2016

Report Reviewed By: Grace Heubling

Report Approved By: Carolyn D. Koke

Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

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Radon Device Type Open Face Canister

Send Written Report To:

Name: KCI Technologies, Inc  
 Address: 936 Ridgebrook Road  
 Address:   
 City / Town: Sparks  
 State/Province Postal Code: MD 21152  
 Report Country: Baltimore County  
 Email Address: fehsin@kci.com

Site Tested:

Site Name: KCI OFFICE  
 Address: 936 RIDGEBROOK RD  
 Address:   
 City / Town: SPARKS  
 State/Province Postal Code: MD 21152  
 Test Country: Montgomery County  
 Project Number: 12146341

Contact Information:

Contact: Tehsin Aurangabadwala  
 Telephone: 410-891-1726  
 Technician:   
 Cert. Number:   
 Signature:   
 Signature:   
 Signature:

Lab Use Only	Device Number	Building Number	Unit Number	Floor	Name of Room	Temp	Start Date mm/dd/yyyy	Start Time hh:mm am / pm	Stop Date mm/dd/yyyy	Stop Time hh:mm am / pm	Lab Use Only
	3029232		0	1	MAIN	72	3/21/2016	8:00 AM	3/24/2016	8:00 AM	

NRPP 10511AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested:

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

MCPS  
Transit Blanks

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3010588	3028953	01/19/2016 1:00 pm	01/22/2016 9:30 am	1	< 0.4
3010589	3028955	01/19/2016 1:00 pm	01/22/2016 9:30 am	2	< 0.4
3010590	3028954	01/19/2016 1:00 pm	01/22/2016 9:30 am	3	< 0.4
3010591	3028997	01/19/2016 1:00 pm	01/22/2016 9:30 am	4	< 0.4

**Comment:** AMENDED REPORT for 3028953-8955, 3028997 on 2/22/16 to add all missing information from the blank datasheet. A copy of this report was emailed to james.mouldsdales@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 01/27/2016    Date Logged: 01/27/2016    Date Analyzed: 01/28/2016    Date Reported: 01/28/2016

Report Reviewed By: Christie Bates

Report Approved By: Carolyn D. Koke

Carolyn D. Koke, President, AccuStar Labs

**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.

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Return canisters for analysis to:  
**AccuStar Labs**  
 929 Mt. Zion Rd., Lebanon, PA 17046  
 800-523-4964

AccuStar Labs – Lebanon, PA  
**INFORMATION FORM - Large Buildings -**  
 Projects - Apartments

Instructions on back of form  
 Read instructions carefully  
 Discrepancies will invalidate tests

**Test Site Info**

Name of Building/Project or Owner: Transit  
 Site Address: Transit  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ County: \_\_\_\_\_  
 Projects Contact Name: Don Coale Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Do not use this form in  
 New Jersey or Florida  
 Call for correct forms.

Multi-Page Report Y-N

LAB USE ONLY	
Wgt. Gain	pCi/L
	LOH
	LOH
	LOH
	LOH

Detector Serial#	ROOM NAME & NUMBER - LOCATION OF DETECTOR IN ROOM (indicate duplicates and blanks)	Floor	Start Date	Start Time Include AM/PM	Stop Date	Stop Time Include AM/PM
3028953	Transit	1	1/19/16	approx: 00pm 1/23/16		9:30am
8955	Transit	1	1/19/16			
8954	Transit	1	1/19/16			
8997	Transit	1	1/19/16			

1/27/2016

KCI Technologies, Inc.

3010588 3028953 ACPC275B EXP12/31/2018

**Structure Type:** (circle one or more) Basement - Crawlspace - Slab on Grade - Other  
**Test Purpose:** (Circle all that apply) Initial Screening - Follow Up Test - Post Mitigation - Real Estate - Other  
**Building Type:** (Circle One) Residential - Non Residential Private Day Care - Private School Day Care in Public School - Public School

Both Placed by and Retrieved by signatures are required  
 Canisters placed by \_\_\_\_\_ # \_\_\_\_\_  
 Canisters retrieved by \_\_\_\_\_ # \_\_\_\_\_

Send Results To: \_\_\_\_\_  
 Company Name: KCI Tech  
 Address: 936 Ridgebrook  
 City: Sparks State: MD Zip: 21152  
 Phone: 410-599-3826  
 EMAIL Results to: James.Mouldale@kci.com

Were general operating conditions maintained?	Yes - No	explain if NO
Were closed building conditions maintained?	Yes - No	explain if NO
Normal Temp.	Yes - No	
Normal Humidity	Yes - No	
Windy Y-N	Rainy Y-N	

Make sure information is complete and correct.  
 If a recalculation is requested there is a \$10.00 recalc fee PER Canister.

Mailing: PO Box 990 Jonestown, PA 17038  
 Shipping: 929 Mt Zion Road, Lebanon, PA 17046  
 800-523-4964 fax 717-274-5662  
 NEHA 10511AL NRSB ARL 0007



# TCS INDUSTRIES, INC.

(717) 657-7032

RADON GAS DETECTION

www.radondetek.com

4326 Crestview Road, Harrisburg, PA 17112

James Mouldale  
KCI  
936 Ridgebrook Rd.  
Sparks, MD 21152

April 04, 2016

Dear Mr. Mouldale:

The spike exposure data were:

Start 04/04/16 @ 1110 hrs EDT  
End 04/06/16 @ 1113 hrs EDT

AC 3029218, 3029219, 3029220, 3029217, 3029214, 3029217, and 3029166

Average radon concentration was 10.6 pCi/L +/- 5%

Avg. Temp. was 71F  
Avg. RH was 51%  
Elevation was 490 feet above sea level

Sincerely,



Carl H. Distenfeld, CHP

\*\*\*\*\*  
TCS Radon Chamber NRSB CHM 0002  
\*\*\*\*\*

NRPP 10511AL  
NRSB ARL0007

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

Laboratory Report for:

Property Tested:

KCI Technologies  
936 Ridgebrook Rd  
Sparks MD 21152

MCPS  
Radon Spike Sample Laboratory Results


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3020102	3029166	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.9
3020103	3029214	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.5
3020104	3029217	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	10.7
3020105	3029218	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.3
3020106	3029219	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	11.0
3020107	3029220	04/04/2016 11:10 am 04/06/2016 11:13 am	Not Indicated	10.5

**Comment:** A copy of this report was emailed to james.mouldsdale@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 04/07/2016 Date Logged: 04/07/2016 Date Analyzed: 04/07/2016 Date Reported: 04/08/2016

**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.

Report Reviewed By: 

Report Approved By:   
Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

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

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

**Radon Device Type Open Face Canister**

**Send Written Report To:**

Name: KCI Technologies, Inc  
 Address: 936 Ridgebrook Road  
 Address:   
 City / Town: Sparks  
 State/Province Postal Code: MD 21152  
 Report Country: Baltimore County  
 Email Address: tehsin@kci.com

**Site Tested:**

Site Name: MCRS  
 Address: 850 Hagerford Dr  
 Address:   
 City / Town: Rockville  
 State/Province Postal Code: MD 20850  
 Test Country: Montgomery County  
 Project Number: 12146341

**Contact Information:**

Contact: Tehsin Aurangabadwala  
 Telephone: 410-891-1726  
 Technician:   
 Cert. Number:   
 Signature: *Tehsin Aurangabadwala*

Lab Use Only	Device Number	Building Number	Unit Number	Floor	Name of Room	Temp	Start Date mm/dd/yyyy	Start Time hh:mm am / pm	Stop Date mm/dd/yyyy	Stop Time hh:mm am / pm	Lab Use Only
	3029166	1		1	1		4/4/16	11:10am	4/6/16	11:15am	
	3029214	1		1	2						
	3029217	1		1	3						
	3029218	1		1	4						
	3029219	1		1	5						
	3029220	1		1	6						



### MCPS RADON TESTING

Executive Summary: Meadow Hall Elementary School

Date of Test Report:	2/17/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	49
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	2.0

Project Status:

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



February 17, 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 # 12146341.25

Location: Meadow Hall Elementary School  
951 Twinbrook Parkway  
Rockville, MD 20851

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 Meadow Hall Elementary School, located at 951 Twinbrook Parkway in Rockville, Maryland 20851 (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 January 19, 2016 and deployed fifty-eight (58) 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 January 22, 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

The field blank, 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>Meadow Hall Elementary School</b>		
<b>Test Period: 01/19/16-01/22/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7719658	2	0.9
7704684	4	1.4
7719649	8	1.1
7719700	9	1
7719699	10	2
7719668	11	1.7
7717236	12	1.6
7719657	13	1.6
7719662	14	1.7
7719672	16	1.2
7718299	17	1.6
7718300	17	1.9
7719660	18	1.2
7719659	20	1.2
7719673	21	0.8
7719654	22	< 0.3
7719696	23	0.8
7719692	24	0.6
7719670	25	0.9
7719655	26	< 0.3
7719661	27	0.8
7722314	28	0.6
7722319	30	0.7
7722315	31	1
7722341	32	0.7
7719671	33	1.6
7722351	40	< 0.3
7722316	43	1
7722371	44	0.7
7722383	45	0.7
7719669	47	1.2
7722337	50	0.7
7722323	52	0.7
7717237	ASST PRIN	1.5
7722345	CAFE	1.3
7722349	CAFE	1.6
7719697	CONFERENCE	1.5
7712897	* G1 (missing)	0
7722208	G6	0.8
7719666	G7	0.9
7719665	G8	0.6
7722325	G9	1
7719667	GYM	< 0.3
7722312	GYM	0.6
7719698	HEALTH	1.7
7719695	MAIN OFFICE	1.3

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Test Period: 01/19/16-01/22/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7712896	PORT 1	< 0.3
7722322	PORT 2	< 0.3
7722321	PORT 3	< 0.3
7722238	PORT 4	< 0.3
7722320	PORT 5	< 0.3
7719663	PRINCIPLE	1.5

Table Note:

\* Missing or Compromised Sample

<b>Radon Testing Results</b>		
<b>Meadow Hall Elementary School</b>		
<b>Test Period: 01/19/16-01/22/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7719653	D (21)	1
7722317	D (31)	1
7722318	D (G7)	0.7
7722324	D (PRINCIPLE)	1.7
7722218	FB (31)	< 0.3
7719664	OB (0)	< 0.3

Table Note:

\* Missing or Compromised Sample



# ATTACHMENT C

## Laboratory Analytical Results

February 11, 2016  
**LABORATORY ANALYSIS REPORT**

Radon test result report for:  
**MEADOW HALL ELEMENTARY SCHOOL  
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7719664	0	2016-01-19 @ 5:00 pm	2016-01-22 @ 11:00 am	< 0.3	2016-01-27
7719699	10	2016-01-19 @ 1:00 pm	2016-01-22 @ 10:00 am	2.0 ± 0.4	2016-01-27
7719668	11	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.7 ± 0.4	2016-01-27
7717236	12	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.6 ± 0.4	2016-01-27
7719657	13	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.6 ± 0.4	2016-01-27
7719662	14	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.7 ± 0.4	2016-01-26
7719672	16	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.2 ± 0.4	2016-01-27
7718300	17	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	1.9 ± 0.4	2016-01-26
7718299	17	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	1.6 ± 0.4	2016-01-27
7719660	18	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.2 ± 0.4	2016-01-27
7719658	2	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.9 ± 0.3	2016-01-26
7719659	20	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	1.2 ± 0.4	2016-01-27
7719673	21	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.8 ± 0.3	2016-01-26
7719653	21	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	1.0 ± 0.4	2016-01-27
7719654	22	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7719696	23	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.8 ± 0.3	2016-01-27
7719692	24	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.6 ± 0.3	2016-01-27
7719670	25	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.9 ± 0.3	2016-01-26
7719655	26	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7719661	27	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.8 ± 0.3	2016-01-27
7722314	28	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	0.6 ± 0.3	2016-01-27
7722319	30	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.7 ± 0.3	2016-01-27
7722218	31	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7722315	31	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.0 ± 0.4	2016-01-27
7722317	31	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.0 ± 0.4	2016-01-27
7722341	32	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.7 ± 0.3	2016-01-27
7719671	33	2016-01-19 @ 2:00 pm	2016-01-22 @ 9:00 am	1.6 ± 0.4	2016-01-27
7704684	4	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.4 ± 0.4	2016-01-27
7722351	40	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-26
7722316	43	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.0 ± 0.3	2016-01-26
7722371	44	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.7 ± 0.3	2016-01-26
7722383	45	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.7 ± 0.3	2016-01-26
7719669	47	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.2 ± 0.4	2016-01-26
7722337	50	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.7 ± 0.4	2016-01-27
7722323	52	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.7 ± 0.3	2016-01-26
7719649	8	2016-01-19 @ 1:00 pm	2016-01-22 @ 10:00 am	1.1 ± 0.4	2016-01-27
7719700	9	2016-01-19 @ 2:00 pm	2016-01-22 @ 10:00 am	1.0 ± 0.3	2016-01-27

February 11, 2016  
**\*\*LABORATORY ANALYSIS REPORT\*\***

Radon test result report for:  
**MEADOW HALL ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7717237	ASST PRIN	2016-01-19 @ 1:00 pm	2016-01-22 @ 10:00 am	1.5 ± 0.4	2016-01-27
7722345	CAFE	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.3 ± 0.4	2016-01-26
7722349	CAFE	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	1.6 ± 0.4	2016-01-26
7719697	CONFERENCE	2016-01-19 @ 1:00 pm	2016-01-22 @ 10:00 am	1.5 ± 0.4	2016-01-27
7712897	G1	@	@		
7722208	G6	2016-01-19 @ 3:00 pm	2016-01-22 @ 10:00 am	0.8 ± 0.4	2016-01-27
7722318	G7	2016-01-19 @ 3:00 pm	2016-01-22 @ 10:00 am	0.7 ± 0.4	2016-01-26
7719666	G7	2016-01-19 @ 3:00 pm	2016-01-22 @ 10:00 am	0.9 ± 0.4	2016-01-27
7719665	G8	2016-01-19 @ 3:00 pm	2016-01-22 @ 10:00 am	0.6 ± 0.4	2016-01-27
7722325	G9	2016-01-19 @ 3:00 pm	2016-01-22 @ 10:00 am	1.0 ± 0.4	2016-01-27
7719667	GYM	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-26
7722312	GYM	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	0.6 ± 0.4	2016-01-27
7719698	HEALTH	2016-01-19 @ 1:00 pm	2016-01-22 @ 10:00 am	1.7 ± 0.4	2016-01-27
7719695	MAIN OFFICE	2016-01-19 @ 1:00 pm	2016-01-22 @ 10:00 am	1.3 ± 0.4	2016-01-27
7712896	PORT 1	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7722322	PORT 2	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7722321	PORT 3	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7722238	PORT 4	2016-01-19 @ 3:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-27
7722320	PORT 5	2016-01-19 @ 4:00 pm	2016-01-22 @ 9:00 am	< 0.3	2016-01-26
7722324	PRINCIPLE	2016-01-19 @ 4:00 pm	2016-01-22 @ 10:00 am	1.7 ± 0.4	2016-01-27
7719663	PRINCIPLE	2016-01-19 @ 4:00 pm	2016-01-22 @ 10:00 am	1.5 ± 0.4	2016-01-27

February 2, 2016  
**LABORATORY ANALYSIS REPORT**

Radon test result report for:  
**MCPS PHASE 5 & 6 TRANSIT BLANKS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7722194	1	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718494	10	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718475	11	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718495	12	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718496	13	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718497	14	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718498	15	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718499	16	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718500	17	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718296	18	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718295	19	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722195	2	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716789	20	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716785	21	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7716791	22	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716786	23	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716793	24	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718274	25	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716792	26	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718294	27	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718293	28	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718292	29	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722197	3	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718290	30	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722198	4	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722199	5	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722211	6	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718491	7	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718476	8	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7718479	9	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27

February  
15,  
2016

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

Spike Sample Laboratory Results

Radon test result report for:  
**MCPS**

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

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 \_\_\_\_\_

ε3 Left

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

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

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

\_\_\_\_\_

\_\_\_\_\_

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

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

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

\_\_\_\_\_

\_\_\_\_\_

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



### Chain of Custody

Project Name: MCPS Radon Phase VI

Name of Schools:

- |                          |                              |                           |
|--------------------------|------------------------------|---------------------------|
| 1. Francis Scott Key MS  | 12. Little Bennett ES        | 23. Rolling Terrace ES    |
| 2. Gaithersburg ES       | 13. Loiderman MS             | 24. Roscoe Nix ES         |
| 3. Gaithersburg MS       | 14. Longview ES              | 25. Sally K. Ride ES      |
| 4. Galway ES             | 15. Meadow Hall ES           | 26. Spark Matsunaga ES    |
| 5. Great Seneca Creek ES | 16. Neelsville MS            | 27. Tacoma Park ES        |
| 6. Harmony Hills ES      | 17. New Hampshire Estates ES | 28. Thomas Pyle MS        |
| 7. John Poole MS         | 18. North Bethesda MS        | 29. Wayside ES            |
| 8. Judith A. Resnik ES   | 19. Northwest HS             | 30. Westbrook ES (retest) |
| 9. Kemp Mill ES          | 20. Pine Crest ES            | 31. Westland MS (retest)  |
| 10. Kingsview MS         | 21. Radnor Center            | 32. William B. Gibbs ES   |
| 11. Lakelands Park MS    | 22. Ritchie Park ES          | 33. William Tyler Page ES |

	Date	Initials
Radon Test Kits Deployed	1/19/16	JM
Radon Test Kits Sampled	1/22/16	JM
Radon Test Kits Shipped to Lab*	1/22/16	JM
Radon Test Kits Received by Lab*	1/26/16	JM

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