



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Food & Nutrition Services Building
Date of Test Report	2/16/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	28
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.8 pCi/L

Project Status:

1. 5-Year retesting completed.



February 16, 2023

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

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

Location: Food & Nutrition Services Building
8401 Turkey Thicket Drive
Gaithersburg, MD 20879

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 Food & Nutrition Services Building, located at 8401 Turkey Thicket Dr. Gaithersburg, MD 20879 (subject site).

Scope of Services:

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

KCI visited the site on January 9, 2023 and deployed thirty-two (32) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

KCI returned to the site on January 12, 2023 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA for analysis by gamma-ray spectroscopy.

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

Evaluation of Testing Conditions:

These tests represent:

- Follow up to 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 ranged from the 26°F to the mid 56°F. Maximum sustained winds ranged from 0-21 miles per hour. Average humidity was around 68% with .09 inches of precipitation (rain) was recorded during testing period.

Results:

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Food and Nutrition Services		
Test Period: 01/09/2023 - 01/12/2023		
Kit Number	Room / Area	Result
11132177	1009	0.6
11132179	1009	0.5
11132150	1010	< 0.3
11132188	1010	0.8
11288222	1012	< 0.3
11132180	1015	0.5
11288245	1016	0.6
11288250	1017	< 0.3
11132156	1018	< 0.3
11132146	1019	< 0.3
11132148	1020	< 0.3
11132186	1020	< 0.3
11132189	1023	< 0.3
11132195	1023	< 0.3
11132143	1028	< 0.3
11288237	1033	< 0.3
11132144	1039	< 0.3
11132192	1046	0.5
11132155	1047	0.8
11132163	1055	0.5
11132153	1056	< 0.3
11288253	1058	0.7
11288252	1061	< 0.3
11132187	1062	0.5
11132194	1062	0.6
11132147	1063	< 0.3
11132197	1064	0.6
11132185	2007	0.6
11132184	2012	< 0.3
11132178	2028	< 0.3
11132154	WAREHOUSE	0.5
11288221	WAREHOUSE	< 0.3

Table 2- Radon Testing Results			
Food and Nutrition Services			
Test Period: 01/09/23 - 01/12/23			
Kit Number	QC Type	Room / Area	Result
11132177	D	1009	0.6
11132150	D	1010	< 0.3
11132186	FB	1020	< 0.3
11132187	D	1062	0.5
11285160	OB	OFFICE BLANK	< 0.3
11285167	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Food and Nutrition Services		
Test Period: 01/09/23 - 01/12/23		
Kit Number	Room/Area	Result
	N/A	

Summary of Missing, Compromised and ≥ 4 piC/L Tests		
Food and Nutrition Services		
Test Period: 01/09/23 - 01/12/23		
Kit Number	Room/Area	Result
	N/A	

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

January 16, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11288222	1012	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11288245	1016	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.6 ± 0.3	2023-01-16
11288250	1017	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11288237	1033	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11288253	1058	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	0.7 ± 0.4	2023-01-16
11288252	1061	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16
11288221	WAREHOUSE	2023-01-09 @ 12:00 pm	2023-01-12 @ 11:00 am	< 0.3	2023-01-16

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KC1 TECHNOLOGIES, INC Job Number 208343

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

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

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

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

11285109, 11285110, 11285101

THRU 11285103

BY LEFT

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

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

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

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

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

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

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

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285110	SK1	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	31.7 ± 2.5	2022-12-29
11285101	SK2	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.1 ± 2.4	2022-12-29
11285103	SK3	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	34.0 ± 2.7	2022-12-29
11285102	SK4	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.9 ± 2.5	2022-12-29
11285109	SK5	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	32.0 ± 2.6	2022-12-29

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Week 1 January Schools

Name of Schools:

1. Diamond ES
2. Lakelands Park MS
3. Quince Orchard HS
4. Facilities Maintenance Depot – Building A MCPS
5. Facilities Maintenance Depot – Building B MCPS
6. Food and Nutrition Services
7. Hadley Farms
8. Goshen ES
9. Forest Knolls ES

	Date	Initials
Radon Test Kits Deployed	01/09/2023	BMM
Radon Test Kits Collected	01/12/2023	BMM
Radon Test Kits Shipped to Lab*	01/12/2023	BMM
Radon Test Kits Received by Lab*	01/17/2023	BMM

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



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary: Division of Food & Nutrition Services

8401 Turkey Thicket Drive
Montgomery Village, MD 20879

Date of Test Report:	2/2/2019
Round of Testing:	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested:	25
# of Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	< 0.4

Project Status

Initial testing complete: No further action at this time



February 2, 2019

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

Re: Radon Testing Services

Location: Division of Food & Nutrition Services
8401 Turkey Thicket Drive
Montgomery Village, MD 20879

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 Division of Food & Nutrition Services, located at 8401 Turkey Thicket Drive, Montgomery Village, MD 20879 (subject site).

Scope of Services:

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

PSI visited the site on December 3, 2018 and deployed twenty-eight (28) activated charcoal (AC) radon test kits. PSI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. PSI returned to the site on December 6, 2018 to retrieve the radon sampling test kits. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

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



Evaluation of Testing Conditions:

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

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

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

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

Results:

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	None	NA
≤ 4.0 pCi/L	See Attachment B	

Notes:

D -Duplicate Sample

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

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

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



Respectfully Submitted,

INTERTEK-PSI

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

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

ATTACHMENT B

Radon Test Summary Spreadsheet

Radon Testing Results		
Division of Food & Nutrition		
Testing period: 12/3/18 - 12/6/18		
Kit Number	Room / Area	Result (pCi/L)
3926359	1009	<0.4
3926356	1010	<0.4
3926355	1012	<0.4
3926348	1015	<0.4
3926352	1016	<0.4
3926353	1017	<0.4
3926360	1018	<0.4
3926354	1019	<0.4
3926351	1020	<0.4
3926364	1023	<0.4
3926346	1028	<0.4
3926343	1039	<0.4
3926358	1046	<0.4
3926344	1055	<0.4
3926341	1061	<0.4
3926347	1062	<0.4
3926342	1063	<0.4
3926350	1064	<0.4
3926365	2012	<0.4
3926361	2027	<0.4
3926366	2031	<0.4

Radon Testing Results		
Division of Food & Nutrition		
Testing period: 12/3/18 - 12/6/18		
Kit Number	QC Type	Result (pCi/L)
3926349	1010 (D)	<0.4
3926357	1016 (D)	<0.4
3926363	1023 (D)	<0.4
3926345	1061 (D)	<0.4
3926206	Field Blank	<0.4
3926202	Office Blank	<0.4
3926201	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

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

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

Property Tested: Project # 04481387-1


MCPS Radon Survey
Food and Nutrition Services
8401 Turkey Thicket Drive
Montgomery Village MD 20879 USA


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
2403595	3926366	12/03/2018 5:07 pm - 12/06/2018 1:41 pm	Bldg Division of Food & Nutrition Flr 2 Rm 2031	< 0.4
2403596	3926356	12/03/2018 4:37 pm - 12/06/2018 1:13 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1010	< 0.4
2403597	3926349	12/03/2018 4:37 pm - 12/06/2018 1:13 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1010	< 0.4
2403598	3926351	12/03/2018 4:38 pm - 12/06/2018 1:14 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1020	< 0.4
2403599	3926354	12/03/2018 4:39 pm - 12/06/2018 1:14 pm	Bldg Division of Food & Nutrition Flr 1Rm 1019	< 0.4
2403600	3926355	12/03/2018 4:40 pm - 12/06/2018 1:15 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1012	< 0.4
2403601	3926353	12/03/2018 4:42 pm - 12/06/2018 1:17 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1017	< 0.4
2403602	3926352	12/03/2018 4:43 pm - 12/06/2018 1:18 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1016	< 0.4
2403603	3926357	12/03/2018 4:43 pm - 12/06/2018 1:19 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1016	< 0.4
2403604	3926348	12/03/2018 4:45 pm - 12/06/2018 1:20 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1015	< 0.4
2403605	3926359	12/03/2018 4:46 pm - 12/06/2018 1:22 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1009	< 0.4

Comment: AMENDED REPORT for 3926366 and 3926360 on 2/1/19 to update test dates and times and areas tested. A copy of this report was emailed to Intertek-PSI (VA).

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/09/2018 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, 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.

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

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

Property Tested: Project # 04481387-1


MCPS Radon Survey
Food and Nutrition Services
8401 Turkey Thicket Drive
Montgomery Village MD 20879 USA


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
2403606	3926343	12/03/2018 4:47 pm - 12/06/2018 1:23 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1039	< 0.4
2403607	3926358	12/03/2018 4:48 pm - 12/06/2018 1:25 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1046	< 0.4
2403608	3926344	12/03/2018 4:49 pm - 12/06/2018 1:26 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1055	< 0.4
2403609	3926341	12/03/2018 4:51 pm - 12/06/2018 1:28 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1061	< 0.4
2403610	3926345	12/03/2018 4:51 pm - 12/06/2018 1:30 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1061	< 0.4
2403611	3926347	12/03/2018 4:53 pm - 12/06/2018 1:32 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1062	< 0.4
2403612	3926342	12/03/2018 4:55 pm - 12/06/2018 1:34 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1063	< 0.4
2403613	3926350	12/03/2018 4:57 pm - 12/06/2018 1:36 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1064	< 0.4
2403614	3926346	12/03/2018 5:00 pm - 12/06/2018 1:38 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1028	< 0.4
2403615	3926364	12/03/2018 5:02 pm - 12/06/2018 1:39 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1023	< 0.4
2403616	3926363	12/03/2018 5:02 pm - 12/06/2018 1:40 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1023	< 0.4

Comment: AMENDED REPORT for 3926366 and 3926360 on 2/1/19 to update test dates and times and areas tested. A copy of this report was emailed to Intertek-PSI (VA).

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/09/2018 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, 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.

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

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

Property Tested: Project # 04481387-1


MCPS Radon Survey
Food and Nutrition Services
8401 Turkey Thicket Drive
Montgomery Village MD 20879 USA


Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
2403617	3926360	12/03/2018 4:41 pm	12/06/2018 1:16 pm	Bldg Division of Food & Nutrition Flr 1 Rm 1018	< 0.4
2403618	3926361	12/03/2018 5:08 pm	12/06/2018 1:42 pm	Bldg Division of Food & Nutrition Flr 2 Rm 2027	< 0.4
2403619	3926365	12/03/2018 5:10 pm	12/06/2018 1:44 pm	Bldg Division of Food & Nutrition Flr 2 Rm 2012	< 0.4
2403620	3926206	12/03/2018 4:37 pm	12/06/2018 1:44 pm	Bldg Division of Food & Nutrition Flr NA Rm Field	< 0.4
2403621	3926201	12/03/2018 4:37 pm	12/06/2018 1:44 pm	Bldg Division of Food & Nutrition Flr NA Rm Tran	< 0.4
2403622	3926202	12/03/2018 6:00 am	12/06/2018 6:00 pm	Bldg Division of Food & Nutrition Flr NA Rm Offic	< 0.4

Comment: AMENDED REPORT for 3926366 and 3926360 on 2/1/19 to update test dates and times and areas tested. A copy of this report was emailed to Intertek-PSI (VA).

Distributed by: Intertek-PSI (VA)

Date Received: 12/08/2018 Date Logged: 12/08/2018 Date Analyzed: 12/09/2018 Date Reported: 01/15/2019

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer:

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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

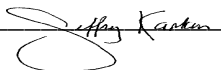
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3204125	3926831	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	36.1
3204126	3926832	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	34.8
3204127	3926833	12/07/2018 9:47 am - 12/10/2018 9:47 am	Spike	33.7
3204128	3926834	12/07/2018 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 μ R/h Elevation = 820 ft



Chain of Custody

Project Name: MCPS Radon Survey 2018

Name of Schools:

- | | |
|--|--------------------------------|
| 1. Ewing Center | 13. Garrett Park ES Annex |
| 2. Department of Food & Nutrition Services | 14. Goshen ES |
| 3. Damascus HS | 15. Kingsley Wilderness Center |
| 4. Edison HS | 16. Kensington Parkwood ES |
| 5. Emory Grove Center | 17. Monocacy ES |
| 6. John Poole MS | 18. Lakewood ES |
| 7. Lakelands Park MS | 19. Little Bennett ES |
| 8. Laytonsville ES | 20. Lois P. Rockwell ES |
| 9. Gaithersburg HS | 21. Olney ES |
| 10. Neelsville MS | 22. North Chevy Chase ES |
| 11. Sequoyah ES | 23. Woodfield ES |
| 12. Clarksburg ES Annex | 24. Wootton HS |

	Date	Initials
Radon Test Kits Deployed	12/03/2018	ML
Radon Test Kits Sampled	12/06/2018	ML
Radon Test Kits Shipped to Lab*	12/06/2018	ML
Radon Test Kits Received by Lab*	12/07/2018; 12/08/2018	ML

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

RADON SCREENING SURVEY – FOLLOW-UP FOOD & NUTRITION SERVICES

8401 Turkey Thicket Drive, Gaithersburg, Maryland 20879

EXECUTIVE SUMMARY

Date of Test Report:	4/13/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L:	0
Low Value:	<0.4
High Value:	<0.4
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) 3/3/16 Initial	Result (pCi/L) 4/13/16 Follow-Up	Average Result (pCi/L)
1009	--- Missing	<0.4	<0.4



MCPS RADON TESTING

Executive Summary: Food & Nutrition Services

Date of Test Report:	4/13/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	1
# Rooms \geq 4.0 pCi/L:	0
Low Value:	<0.4
High Value:	<0.4

Project Status:

Retesting completed; no further action at this time.



April 13, 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 # 12146341.32

Location: Food & Nutrition Services
8401 Turkey Thicket Drive
Gaithersburg, Maryland 20879

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 Food & Nutrition Services located at 8401 Turkey Thicket Drive in Gaithersburg, Maryland 20879 (subject site).

Scope of Services:

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

KCI visited the site on March 14, 2016 and deployed two (2) 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 17, 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:

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

Notes:
D- Duplicate sample

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

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

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (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 9 testing. Office blanks were not submitted under each school individually.

Radon Testing Results		
Food & Nutrition Services		
Test Period: 03/14/16-03/17/16		
Kit Number	Room / Area	Result
3028732	1009	<0.4
3028733	1009	<0.4

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

Food & Nutrition Services
8401 Turkey Thicket Dr
Gaithersburg MD 20878

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3017563	3028733	03/14/2016 4:43 pm	03/17/2016 12:20 pm	Unit 1009	<0.4
3017564	3028732	03/14/2016 4:43 pm	03/17/2016 12:20 pm	Unit 1009	<0.4

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

Distributed by: KCI Technologies, Inc.

Date Received: 03/21/2016 Date Logged: 03/21/2016 Date Analyzed: 03/21/2016 Date Reported: 03/22/2016

Report Reviewed By: Grace Heubling

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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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 12 Office Blank

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3017546	3029151	03/14/2016 9:30 am 03/17/2016 9:30 am	Unit # 0 Office First Floor	<0.4

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

Distributed by: KCI Technologies, Inc.

Date Received: 03/21/2016 Date Logged: 03/21/2016 Date Analyzed: 03/21/2016 Date Reported: 03/22/2016

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: tehsin@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:

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
	3029151		0	1	OFFICE	70°	3/14/16	9:30AM	3/17/16	9:30AM	

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.mouldsdale@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

RECEIVED JAN 27 2016
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 County: _____
 Site Address: Transit State: _____ Zip: _____
 City: _____ Email: _____

Projects Contact Name: Don Coale Phone: _____

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	↓	↓	↓

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
	<0.4
	<0.4
	<0.4
	<0.4

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: _____ Date: 1/27/16
 Company Name: KCI Tech
 Address: 936 Ridgebrook
 City: Sparks State: MD Zip: 21152
 Phone: 410-599-3826
 EMAIL Results to: James.Mouldale@kci.com
 Attention: James Mouldale

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.

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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: 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: 

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: Food and Nutritional Services

Date of Test Report:	3/3/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	20
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	0.8

Project Status:

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



March 3, 2016

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

Re: **Radon Testing Services**
KCI Job # 12146341.26

Location: Food and Nutritional Services
8401 Turkey Thicket Drive
Gaithersburg, MD 20879

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 Food and Nutritional Services, located at 8401 Turkey Thicket Drive in Gaithersburg, Maryland 20879 (subject site).

Scope of Services:

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

KCI visited the site on February 2, 2016 and deployed twenty-two (22) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on February 5, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

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

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

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

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

Results:

The results of the radon test analysis indicated the following:

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

Notes:
D- Duplicate sample

The 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

Radon Testing Results		
Food And Nutritional Services		
Test Period: 02/02/16-02/05/16		
Kit Number	Room / Area	Result
7731065	1010	< 0.3
7731064	1012	< 0.3
7731090	1015	< 0.3
7731072	1016	0.7
7731096	1017	0.6
7731015	1018	< 0.3
7731063	1019	< 0.3
7731071	1020	< 0.3
7731100	1023	0.8
7731093	1028	< 0.3
7731057	1046	< 0.3
7731089	1055	< 0.3
7731095	1062	< 0.3
7731056	1063	< 0.3
7731099	1064	< 0.3
7731094	1094	< 0.3
7731058	2007	0.6
7731092	2017	< 0.3
7731091	2027	0.6
7731066	* 1009 (Missing)	-

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Food And Nutritional Services		
Test Period: 02/02/16-02/05/16		
Kit Number	QC Type	Result
7731098	D (1023)	0.6
7731087	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

February 23, 2016
LABORATORY ANALYSIS REPORT

Radon test result report for:
**FOOD AND NUTRITIONAL SERVICES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7731087	0	2016-02-02 @ 9:00 am	2016-02-05 @ 3:00 pm	< 0.3	2016-02-09
7731066	1009	@	@		
7731065	1010	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731064	1012	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731090	1015	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731072	1016	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	0.7 ± 0.3	2016-02-09
7731096	1017	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	0.6 ± 0.3	2016-02-09
7731015	1018	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731063	1019	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731071	1020	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731098	1023	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	0.6 ± 0.3	2016-02-09
7731100	1023	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	0.8 ± 0.3	2016-02-09
7731093	1028	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731057	1046	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731089	1055	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731095	1062	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731056	1063	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731099	1064	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731094	1094	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731058	2007	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	0.6 ± 0.3	2016-02-09
7731092	2017	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	< 0.3	2016-02-09
7731091	2027	2016-02-02 @ 8:00 am	2016-02-05 @ 9:00 am	0.6 ± 0.3	2016-02-09

February 23, 2016
LABORATORY ANALYSIS REPORT

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

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

February
15,
2016

****LABORATORY ANALYSIS
REPORT****

Spike Sample Laboratory Results

Radon test result report for:
MCPS

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCF Technologies Inc. Job Number 173704

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

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

Time Start: 0926 Time Stop: 0926 Time Start: _____ Time Stop: _____

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

7718281, 7718282, 7718291, _____

7718288, 7718289, 7718273 _____

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 μ R/h Elevation = 820 ft



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 7 (2-1-2016)

Name of School/Facility:

- | | | |
|----------------------------|-----------------------------|----------------------------|
| 1. Wyngate E.S. | 10. Bethesda Depot | 18. Stone Mill E.S. |
| 2. Seven Locks E.S. | 11. Bethesda Trans Depot | 19. Strawberry Knoll E.S. |
| 3. Takoma Park M.S. | 12. Sligo M.S. | 20. Shady Grove M.S. |
| 4. Somerset E.S. | 13. Stonegate E.S. | 21. Washington Grove E.S. |
| 5. Silver Spring Int. M.S. | 14. Randolph Transportation | 22. Sherwood E.S. |
| 6. Sligo Creek E.S. | 15. Earl B. Wood M.S. | 23. Woodfield E.S. |
| 7. Tilden M.S. | 16. Sargent Shriver E.S. | 24. Taylor Learning Center |
| 8. Tilden Center | 17. Thomas Wooten H.S. | 25. Kingsley Wilderness |
| 9. Bethesda Annex | | |

	Date	Initials
Radon Test Kits Deployed	2/1/16	JM
Radon Test Kits Collected	2/4/16	JM
Radon Test Kits Shipped to Lab*	2/4/16	JM
Radon Test Kits Received by Lab*	2/8/16	JM

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 7 (2-2-2016)

Name of School/Facility:

- | | |
|--------------------------------|--------------------------------|
| 1. Concord Center | 8. Food & Nutritional Services |
| 2. Lynnbrook Center | 9. Fairland Center |
| 3. Carver (CESC) | 10. Redland M.S. (retest) |
| 4. Spring Mill (area 1 Office) | 11. Clarksburg Trans Depot |
| 5. Wheaton H.S | 12. Clarksburg Main Depot |
| 6. Montrose Center | 13. Clarksburg E.S. |
| 7. West Farm Trans Depot | |

	Date	Initials
Radon Test Kits Deployed	2/2/16	JM
Radon Test Kits Collected	2/5/16	JM
Radon Test Kits Shipped to Lab*	2/5/16	JM
Radon Test Kits Received by Lab*	2/9/16	JM

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