



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Damascus Elementary School
Date of Test Report	4/6/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	41
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.4 pCi/L

Project Status:  
Initial testing completed; no further action needed.



April 6, 2022

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

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

Location: Damascus ES  
10201 Bethesda Church Rd.  
Damascus, MD 20872

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 Damascus ES, located at 10201 Bethesda Church Rd. Damascus, MD 20871 (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 February 14, 2022 and deployed forty seven (47) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

KCI returned to the site on February 17, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

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

**Evaluation of Testing Conditions:**

These tests represent:

- Follow-up to post-mitigation biennial testing.

These tests were conducted to:

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

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

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

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

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

**Results:**

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

The results of the radon test analysis indicated the following:

<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 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		
Damascus ES		
Test Period: 02/14/2022 - 02/17/2022		
Kit Number	Room / Area	Result
11122787	6	< 0.3
11122800	7	< 0.3
11122798	8	< 0.3
11122791	9	< 0.3
11122792	10	< 0.3
11122784	11	< 0.3
11115097	12	< 0.3
11115095	13	0.6
11114992	14	< 0.3
11114991	15	< 0.3
11114993	16	< 0.3
11115096	17	< 0.3
11114998	18	< 0.3
11115081	18	< 0.3
11115082	18	< 0.3
11107398	102	< 0.3
11107399	103	< 0.3
11122794	113	< 0.3
11122799	114	< 0.3
11122795	119	0.7
11114994	APR	< 0.3
11115092	APR	0.6
11115089	ART	< 0.3
11122793	BSO	< 0.3
11122797	BSO	0.7
11114997	COU	< 0.3
11122774	CR-1	< 0.3
11122775	CR-2	0.7
11115374	GYM	< 0.3
11122766	GYM	< 0.3
11115098	GYM OFFICE	< 0.3
11122785	GYM OFFICE	0.7
11122789	GYM OFFICE	0.6
11122783	HOWARD	0.6
11107391	IMC	0.9
11107397	IMC OFFICE	1.4
11122781	K1	< 0.3
11122790	K2	< 0.3
11115091	KITCHEN OFFICE	< 0.3
11122796	MAIN OFFICE	0.5
11115066	MUSIC	0.9
11115100	OFFICE 1	0.6



Table 1- Radon Testing Results		
Damascus ES		
Test Period: 02/14/2022 - 02/17/2022		
Kit Number	Room / Area	Result
11122782	OT/PT	0.9
11115065	R	< 0.3
11115099	R	< 0.3
11115088	SPT	0.5
11107392	STAFF LOUNGE	0.8

Table 2- Radon Testing Results			
Damascus ES			
Test Period: 02/14/2022 - 02/17/2022			
Kit Number	QC Type	Room / Area	Result
11122793	D	BSO	< 0.3
11122785	D	Gym office	0.7
11115098	FB	Gym office	< 0.3
11115099	D	R	< 0.3
11115081	D	18	< 0.3
11115082	FB	18	< 0.3
11107385	OB	OFFICE BLANK	< 0.3
11123161	TB	TRAVEL BLANK	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:**DAMASCUS ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11122792	10	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11107398	102	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11107399	103	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122784	11	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122794	113	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122799	114	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122795	119	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.7 ± 0.3	2022-02-21
11115097	12	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115095	13	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.6 ± 0.3	2022-02-21
11114992	14	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11114991	15	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11114993	16	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115096	17	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11114998	18	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115081	18	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115082	18	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122787	6	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122800	7	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122798	8	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122791	9	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115092	APR	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.6 ± 0.3	2022-02-21
11114994	APR	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115089	ART	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122793	BSO	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122797	BSO	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.7 ± 0.3	2022-02-21
11114997	COU	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122774	CR-1	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122775	CR-2	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.7 ± 0.3	2022-02-21
11122766	GYM	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115374	GYM	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115098	GYM OFFICE	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122789	GYM OFFICE	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.6 ± 0.3	2022-02-21
11122785	GYM OFFICE	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.7 ± 0.3	2022-02-21
11122783	HOWARD	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.6 ± 0.3	2022-02-21
11107391	IMC	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.9 ± 0.3	2022-02-21
11107397	IMC OFFICE	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	1.4 ± 0.3	2022-02-21
11122781	K1	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21

Radon test result report for:**DAMASCUS ES****1**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11122790	K2	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115091	KITCHEN OFFICE	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122796	MAIN OFFICE	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.5 ± 0.3	2022-02-21
11115066	MUSIC	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.9 ± 0.3	2022-02-21
11115100	OFFICE 1	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.6 ± 0.3	2022-02-21
11122782	OT/PT	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.9 ± 0.3	2022-02-21
11115099	R	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115065	R	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11115088	SPT	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.5 ± 0.3	2022-02-21
11107392	STAFF LOUNGE	2022-02-14 @ 1:00 pm	2022-02-17 @ 10:00 am	0.8 ± 0.3	2022-02-21

**EXPOSURE IN BOWSER-MORNER RADON CHAMBER**

CLIENT KCI Technologies, Inc. Job Number 204186

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

Date Start: 2/18/22 Date Stop: 2/21/22 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0911 Time Stop: 0911 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (3) Char Bags - Device No.'s: \_\_\_\_\_

11113484, 1112998, 20107126 \_\_\_\_\_

23 Right

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

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

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

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

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

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

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

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

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

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## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – February 2022 Schools

Name of Schools:

1. Sherwood HS
2. Paint Branch HS
3. Clarksburg HS
4. Hallie Wells MS
5. Rocky Hill MS
6. Wilson Wims ES
7. John T. Baker MS
8. Clearspring ES
9. Damascus ES

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	Date	Initials
Radon Test Kits Deployed	02/14/2022	
Radon Test Kits Collected	02/17/2022	
Radon Test Kits Shipped to Lab*	02/17/2022	
Radon Test Kits Received by Lab*	02/19/2022	

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