



MCPS RADON TESTING – EXECUTIVE SUMMARY

| | |
|--------------------------|---|
| Site Name | Downcounty Maintenance and Operations Service Center (Formerly Randolph Maintenance and Transportation Depot) |
| Date of Test Report | 01/20/2022 |
| Round of Testing | Initial Follow-up Post Remediation 2 Year Testing <u>5 Year Testing</u> HVAC Upgrade Window Replacement New Addition New Facility |
| # Rooms Tested | 23 |
| # Rooms \geq 4.0 pCi/L | 0 |
| Lowest Value | <0.3 pCi/L |
| Highest Value | 2.4 pCi/L |

Project Status

Current Project Status at this time: Testing Complete; no further action.



January 20, 2022

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
Gaithersburg, MD 20879

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

Location: Downcounty Maintenance and Operations Service Center
1801 Old Randolph Rd.
Silver Spring, MD 20901

Dear Mr. Cox:

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 Downcounty Maintenance and Operations Service Center (Formerly Randolph Maintenance and Transportation Depot), located at 1801 Old Randolph Rd. Silver Spring, MD 20901 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon 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 December 13, 2021 and deployed twenty-seven (27) 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 16, 2021 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the low 30°Fs and high temperatures ranged from the mid 50°Fs to the high 60°Fs. Maximum sustained winds ranged from 3-12 miles per hour. Average humidity was around 50% with 0.0 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 | NA | NA |
| <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 Spreadsheets

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 | | |
|------------------------------------|----------------|--------|
| Randolph Maintenance Depot | | |
| Test Period: 12/13/2021-12/16/2021 | | |
| | | |
| Kit Number | Room / Area | Result |
| 9339923 | OFFICE 4 | 2.4 |
| 9341763 | OFFICE 2 | 1.5 |
| 9348002 | CARPENTER SHOP | 2.3 |
| 9348003 | CARPENTER SHOP | 2 |
| 9348005 | BREAKROOM 2 | < 0.3 |
| 9348006 | LEFT OFFICE | 1.5 |
| 9348015 | BREAKROON 2 | 1.4 |
| 9348021 | CARPENTER SHOP | 2.3 |
| 9348022 | OFFICE 1 | 1.5 |
| 9348024 | OFFICE 3 | 1.4 |
| 9348028 | CARPENTER SHOP | 2 |
| 9348031 | FRONT OFFICE | 0.9 |
| 9348032 | BREAKROOM | 0.9 |

| Table 1- Radon Testing Results | | |
|------------------------------------|--------------|--------|
| Randolph Transportation Depot | | |
| Test Period: 12/13/2021-12/16/2021 | | |
| Kit Number | Room / Area | Result |
| 9339704 | OFFICE 1 | < 0.3 |
| 9339910 | FRONT OFFICE | 0.5 |
| 9348007 | OFFICE 3 | < 0.3 |
| 9348008 | BREAKROOM | < 0.3 |
| 9348009 | BREAKROOM | < 0.3 |
| 9348010 | MAIN OFFICE | 0.5 |
| 9348011 | OFFICE 1 | < 0.3 |
| 9348012 | OFFICE 4 | < 0.3 |
| 9348013 | BREAK ROOM | 0.6 |
| 9348014 | OFFICE 2 | < 0.3 |
| 9348017 | OFFICE 2 | < 0.3 |
| 9348018 | OFFICE 4 | 0.5 |
| 9348019 | BREAKROOM | < 0.3 |
| 9348020 | BREAKROOM | < 0.3 |

| Table 2- Radon Testing Results | | | |
|------------------------------------|---------|----------------|--------|
| Randolph Maintenance Depot | | | |
| Test Period: 12/13/2021-12/16/2021 | | | |
| | | | |
| Kit Number | QC Type | Room / Area | Result |
| 9348021 | D | Carpenter Shop | 2.3 |
| 9348005 | FB | Breakroom | < 0.3 |
| 9347000 | OB | OFFICE BLANK | < 0.3 |
| 9347992 | TB | TRAVEL BLANK | < 0.3 |

| Table 2- Radon Testing Results | | | |
|------------------------------------|---------|--------------|--------|
| Randolph Transportation Depot | | | |
| Test Period: 12/13/2021-12/16/2021 | | | |
| | | | |
| Kit Number | QC Type | Room / Area | Result |
| 9348012 | D | Office 4 | < 0.3 |
| 9348020 | FB | Breakroom | < 0.3 |
| 9347000 | OB | OFFICE BLANK | < 0.3 |
| 9347992 | TB | TRAVEL BLANK | < 0.3 |

| Summary of Missed Locations | | |
|--------------------------------------|-----------|--------|
| Randolph Maintenance Depot | | |
| Test Period: 12/13/2021 - 12/16/2021 | | |
| Kit Number | Room/Area | Result |
| | NA | |
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| Summary of Missing, Compromised and >= 4 piC/L Tests | | |
|--|-----------|--------|
| Randolph Maintenance Depot | | |
| Test Period: 12/13/2021 - 12/16/2021 | | |
| Kit Number | Room/Area | Result |
| | NA | |
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Table Note:
* Missing or Compromised Sample

| Summary of Missed Locations | | |
|--------------------------------------|-----------|--------|
| Randolph Transportation Depot | | |
| Test Period: 12/13/2021 - 12/16/2021 | | |
| Kit Number | Room/Area | Result |
| | NA | |
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| Summary of Missing, Compromised and ≥ 4 piC/L Tests | | |
|--|-----------|--------|
| Randolph Transportation Depot | | |
| Test Period: 12/13/2021 - 12/16/2021 | | |
| Kit Number | Room/Area | Result |
| | NA | |
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Table Note:
 * Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

RANDOLPH MAINTENANCE DEPOT**1**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---------|----------------|-----------------------|----------------------|-----------|------------|
| 9348032 | BREAKROOM | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 0.9 ± 0.3 | 2021-12-17 |
| 9348005 | BREAKROOM 2 | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348015 | BREAKROON 2 | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 1.4 ± 0.3 | 2021-12-17 |
| 9348002 | CARPENTER SHOP | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 2.3 ± 0.3 | 2021-12-17 |
| 9348003 | CARPENTER SHOP | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 2.0 ± 0.3 | 2021-12-17 |
| 9348021 | CARPENTER SHOP | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 2.3 ± 0.3 | 2021-12-17 |
| 9348028 | CARPENTER SHOP | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 2.0 ± 0.3 | 2021-12-17 |
| 9348031 | FRONT OFFICE | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 0.9 ± 0.3 | 2021-12-17 |
| 9348006 | LEFT OFFICE | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 1.5 ± 0.3 | 2021-12-17 |
| 9348022 | OFFICE 1 | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 1.5 ± 0.3 | 2021-12-17 |
| 9341763 | OFFICE 2 | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 1.5 ± 0.3 | 2021-12-17 |
| 9348024 | OFFICE 3 | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 1.4 ± 0.3 | 2021-12-17 |
| 9339923 | OFFICE 4 | 2021-12-13 @ 11:00 am | 2021-12-16 @ 9:00 am | 2.4 ± 0.3 | 2021-12-17 |

December 18, 2021

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

RANDOLPH TRANSPORTATION DEPOT

1

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|--------------|----------------|-----------------------|----------------------|--------------|-----------------|
| 9348008 | BREAKROOM | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9339910 | FRONT OFFICE | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | 0.5 ± 0.3 | 2021-12-17 |
| 9339704 | OFFICE 1 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |

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

Radon test result report for:**RANDOLPH TRANSPORTATION DEPOT****2**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|--------------|----------------|-----------------------|----------------------|--------------|-----------------|
| 9348009 | BREAKROOM | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348010 | MAIN OFFICE | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | 0.5 ± 0.3 | 2021-12-17 |
| 9348011 | OFFICE 1 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348014 | OFFICE 2 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348017 | OFFICE 2 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348007 | OFFICE 3 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348012 | OFFICE 4 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348018 | OFFICE 4 | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | 0.5 ± 0.3 | 2021-12-17 |

December 18, 2021

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

RANDOLPH TRANSPORTATION DEPOT

3

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|--------------|----------------|-----------------------|----------------------|--------------|-----------------|
| 9348013 | BREAK ROOM | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | 0.6 ± 0.3 | 2021-12-17 |
| 9348019 | BREAKROOM | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |
| 9348020 | BREAKROOM | 2021-12-13 @ 10:00 am | 2021-12-16 @ 9:00 am | < 0.3 | 2021-12-17 |

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 203404

NOMINAL Conditions: Radon Conc 16.2 pCi/L Rel. Hum 28.8 % Temp. 59.9 F

Date Start: 12/24/21 Date Stop: 12/27/21 Date Start: _____ Date Stop: _____

Time Start: 0809 Time Stop: 0809 Time Start: _____ Time Stop: _____

Device No.'s: (2) Char Bags - Device No.'s: _____

9341721, 9341722

64 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 31, 2021

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

SK
MA MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (16.2 pCi/L).

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|--------------|----------------|----------------------|----------------------|----------------|-----------------|
| 9341721 | 1 | 2021-12-24 @ 8:00 am | 2021-12-27 @ 8:00 am | 11.6 \pm 0.9 | 2021-12-31 |
| 9341722 | 1 | 2021-12-24 @ 8:00 am | 2021-12-27 @ 8:00 am | 15.4 \pm 1.2 | 2021-12-31 |

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 - December 2021 Schools

Name of Schools:

1. 45 Gude
2. Concord Center
3. English Manor
4. Smith Education Center
5. Randolph Main. & Tran.
6. Rollingwood Center
7. Ewing at Plum Orchard

| | Date | Initials |
|----------------------------------|------------|----------|
| Radon Test Kits Deployed | 12/13/2021 | JM |
| Radon Test Kits Collected | 12/16/2021 | JM |
| Radon Test Kits Shipped to Lab* | 12/16/2021 | JM |
| Radon Test Kits Received by Lab* | 12/17/2021 | JM |

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