



### MCPS RADON TESTING

Executive Summary: Stonegate Elementary School

Date of Test Report:	4/6/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	33
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	2.4

Project Status:

Initial testing completed; one sample missing (Principal Office).  
No further action at this time based on the results for other rooms in the facility.



April 6, 2016 (Rev 1)

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: Stonegate Elementary School  
14811 Notley Road  
Silver Spring, MD 20905

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 Stonegate Elementary School, located at 14811 Notley Road in Silver Spring, Maryland 20905 (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 February 1, 2016 and deployed forty-three (43) 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 4, 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 blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

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

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,



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

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

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

<b>Radon Testing Results</b>		
<b>Stonegate Elementary School</b>		
<b>Test Period: 02/01/16-02/04/16</b>		
<b>Kit Number</b>	<b>Room / Area</b>	<b>Result</b>
7731608	1	1.5
7731617	2	1.7
7731613	3	0.8
7731606	4	0.7
7731604	5	1.7
7731614	6	0.7
7731620	10	0.8
7731621	11	0.6
7731623	12	< 0.3
7731605	13	0.7
7731603	14	0.6
7731602	15	0.6
7726780	17	0.7
7726785	21	0.6
7731625	22	< 0.3
7726776	26	0.9
7726790	CONF	1.5
7726772	FAC	0.9
7726787	G4	1.0
7726793	G4	1.3
7731619	GOF	1.5
7731622	HE	1.5
7726783	IMC	2.0
7726784	IMC	2.4
7731611	KIT	1.1
7731618	ML408	< 0.3
7731616	ML488	0.8
7731615	ML554	< 0.3
7731624	ML752	< 0.3
7726778	MPR	1.5
7726782	MPR	1.1
7731612	PE	1.9
7726794	PEO	1.0
7721409	* PRN (Missing)	-
7731601	SHARK SHACK	0.9
7726779	WR	1.5

Table Note:

\* Missing or Compromised Sample



<b>Radon Testing Results</b>		
<b>Stonegate Elementary School</b>		
<b>Test Period: 02/01/16-02/04/16</b>		
<b>Kit Number</b>	<b>QC Type</b>	<b>Result</b>
7731609	D (11)	0.8
7726774	D (17)	< 0.3
7731610	D (2)	1.3
7726777	D (GOF)	1.3
7731607	FB (3)	< 0.3
7726773	FB (PEO)	< 0.3
7726788	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:  
**STONEGATE ELEMENTARY SCHOOL  
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7726788	0	2016-02-01 @ 11:00 am	2016-02-04 @ 10:00 am	< 0.3	2016-02-09
7731608	1	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	1.5 ± 0.5	2016-02-09
7731620	10	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.8 ± 0.4	2016-02-08
7731609	11	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.8 ± 0.3	2016-02-08
7731621	11	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.6 ± 0.4	2016-02-09
7731623	12	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	< 0.3	2016-02-09
7731605	13	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.7 ± 0.4	2016-02-09
7731603	14	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.6 ± 0.3	2016-02-08
7731602	15	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.6 ± 0.4	2016-02-09
7726774	17	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	< 0.3	2016-02-08
7726780	17	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	0.7 ± 0.4	2016-02-08
7731610	2	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	1.3 ± 0.4	2016-02-09
7731617	2	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	1.7 ± 0.4	2016-02-09
7726785	21	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	0.6 ± 0.4	2016-02-09
7731625	22	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	< 0.3	2016-02-09
7726776	26	2016-02-01 @ 11:00 am	2016-02-04 @ 9:00 am	0.9 ± 0.4	2016-02-09
7731607	3	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	< 0.3	2016-02-09
7731613	3	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.8 ± 0.4	2016-02-09
7731606	4	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.7 ± 0.4	2016-02-08
7731604	5	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	1.7 ± 0.4	2016-02-09
7731614	6	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.7 ± 0.4	2016-02-09
7726790	CONF	2016-02-01 @ 10:00 am	2016-02-04 @ 8:00 am	1.5 ± 0.4	2016-02-09
7726772	FAC	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	0.9 ± 0.4	2016-02-09
7726787	G4	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	1.0 ± 0.4	2016-02-09
7726793	G4	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	1.3 ± 0.4	2016-02-09
7726777	GOF	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	1.3 ± 0.4	2016-02-09
7731619	GOF	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	1.5 ± 0.4	2016-02-09
7731622	HE	2016-02-01 @ 10:00 am	2016-02-04 @ 8:00 am	1.5 ± 0.4	2016-02-09
7726783	IMC	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	2.0 ± 0.5	2016-02-09
7726784	IMC	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	2.4 ± 0.5	2016-02-09
7731611	KIT	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	1.1 ± 0.4	2016-02-09
7726778	MPR	2016-02-01 @ 10:00 am	2016-02-04 @ 8:00 am	1.5 ± 0.4	2016-02-09
7726782	MPR	2016-02-01 @ 10:00 am	2016-02-04 @ 8:00 am	1.1 ± 0.4	2016-02-09
7731612	PE	2016-02-01 @ 10:00 am	2016-02-04 @ 8:00 am	1.9 ± 0.5	2016-02-09
7726773	PEO	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	< 0.3	2016-02-09
7726794	PEO	2016-02-01 @ 10:00 am	2016-02-04 @ 9:00 am	1.0 ± 0.4	2016-02-09
7721409	PRN	@	@		

February  
23,  
2016

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

Radon test result report for:  
**STONEGATE ELEMENTARY SCHOOL  
MAIN**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7731601	SHARK SHACK	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	0.9 ± 0.4	2016-02-09
7726779	WR	2016-02-01 @ 10:00 am	2016-02-04 @ 8:00 am	1.5 ± 0.4	2016-02-09

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

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February 23, 2016 **\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:  
**STONEGATE ELEMENTARY SCHOOL**  
**PORTABLE**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7731618	ML408	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	< 0.3	2016-02-09
7731616	ML488	2016-02-01 @ 8:00 am	2016-02-04 @ 8:00 am	0.8 ± 0.4	2016-02-09
7731615	ML554	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	< 0.3	2016-02-09
7731624	ML752	2016-02-01 @ 9:00 am	2016-02-04 @ 8:00 am	< 0.3	2016-02-09

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

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**

<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: 1/30/16 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: \_\_\_\_\_

\_\_\_\_\_

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





### Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 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          |                             |                            |

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

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	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