Cascade Radon, Inc.
Testing, Mitigation,
Systems Design
CCB 180537 / CASCARI927C1
Fed ID 26-1809992

12839 NE Airport Way Bldg. 9
Portland, Oregon 97230
Phone: (503) 421-4813
Fax: (503) 281-6170
Office@CascadeRadon.com

Lane Middle School

(C-65388)

7200 SE 60th Ave., Portland, OR 97206

May 25, 2018

Cascade Radon, Inc.
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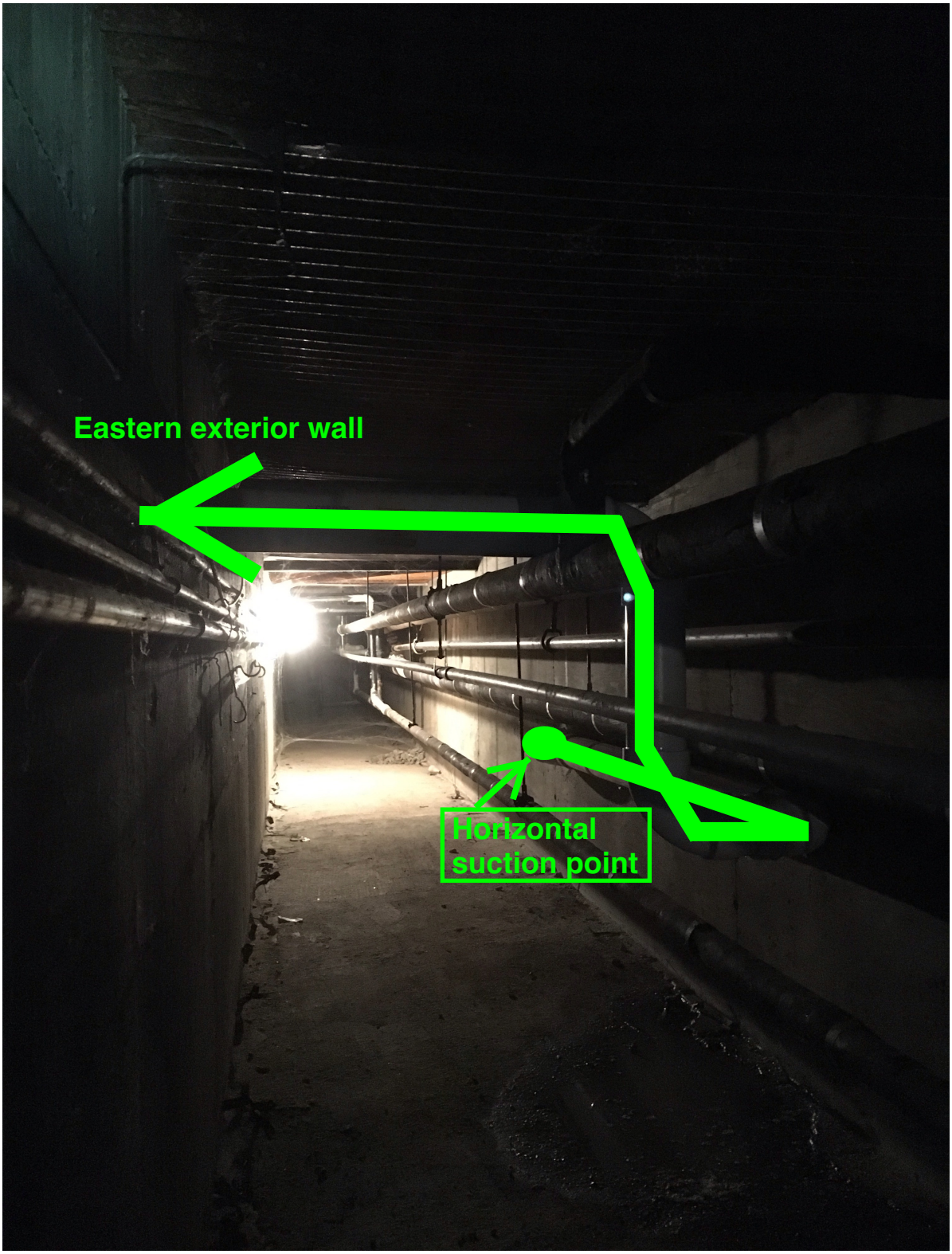
Purpose

Initial testing was performed throughout the school on March 21, 2016 to March 24, 2016 by PBS Engineering and Environmental Inc. Testing indicated 5.5 pCi/L in room 126 of the building. PBS performed additional testing starting in October 2016 to June 2017 as a confirmation long-term test to determine if mitigation was needed. The result of this 8 month test was 4.9 pCi/L in room 126. Cascade Radon was hired to diagnose room 126 and develop a mitigation strategy to reduce the radon levels.

The installation of a sub-slab depressurization system was used to reduce the radon below the EPA action level of 4 pCi/L. See attached pages for a description of the system components and post-mitigation testing.



The suction point is located in the pipe tunnel drilled through the foundation wall to under the concrete slab of room 126. The vent piping exits the eastern exterior wall and then to fan location on the roof. The system includes a manometer (pressure gauge), which is a simple means of seeing the system is working mechanically. A manometer also shows how much negative pressure (depressurization) the system is creating. It is understood such a pressure gauge DOES NOT monitor radon levels.

Exterior vent pipe continues up the side of the building and over the parapet wall to the fan location on the roof. The vent pipe was shrouded to deter climbing.

This system required a Festa AMG Fury model fan, which is designed for the more porous rocky soil found beneath the concrete slab. If left to operate continuously the lifespan of this fan typically is 10 to 15 years.

Credentials

Cascade Radon, Inc.
12839 NE Airport Way Bldg. 9
Portland, OR 97230
(503)421-4813
office@cascaderadon.com
CCB180537
CASCARI977C1
NEHA/NRPP# 104815RMT
NRSB# 1G0008

Christensen Electric, Inc.
17201 NE Sacramento Street
Portland, OR 97230
(503)419-3300
info@christenson.com
CCB458

Accurate Concrete Cutting
6816 NE 40th Ave.
Vancouver, WA 98661
lj@accurate-concrete-cut.com
CCB191788
W.A. Contr. License# ACCURCC153M2

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May 25, 2018
C-65388

To: Portland Public Schools
501 N. Dixon Street
Portland, OR 97227

RE: Lane Middle School
7200 SE 60th Ave.
Portland, OR 97206

Effective: February 2, 2018

Cascade Radon, Inc. warrants that all work has been performed in a workmanlike manner and according to the best standard practices. All materials and equipment are new, unless otherwise specified, and of first quality.

Cascade Radon, Inc. guarantees that the installation will maintain average, long-term, indoor radon levels, based upon approved 9 month duration Alpha-Track testing at or below 4 pCi/L for a period of 10 years.

With the exception of the exhaust fan unit(s), Cascade Radon, Inc. warrants that all labor, work, materials and equipment will be free from faults in material or workmanship for period of ten (10) years from the date of substantial completion.

Includes 5-year manufactures replacement warranty on exhaust fan unit(s), beginning at time of initial activation, with any related work and materials provided at no cost to the Client.

All warranties and guarantees are transferable to future owners of the same property.

Warranty or service inquires, please call (503) 421-4813

Sincerely,
Wade Gervais
Division Manager
Cascade Radon, Inc.

Tamara Linde
Cascade Radon
12839 NE Airport Way
Portland, OR 97230
Phone: 503-421-4813 Fax: 503-281-6170
office@cascaderadon.com

TEST DETAILS:

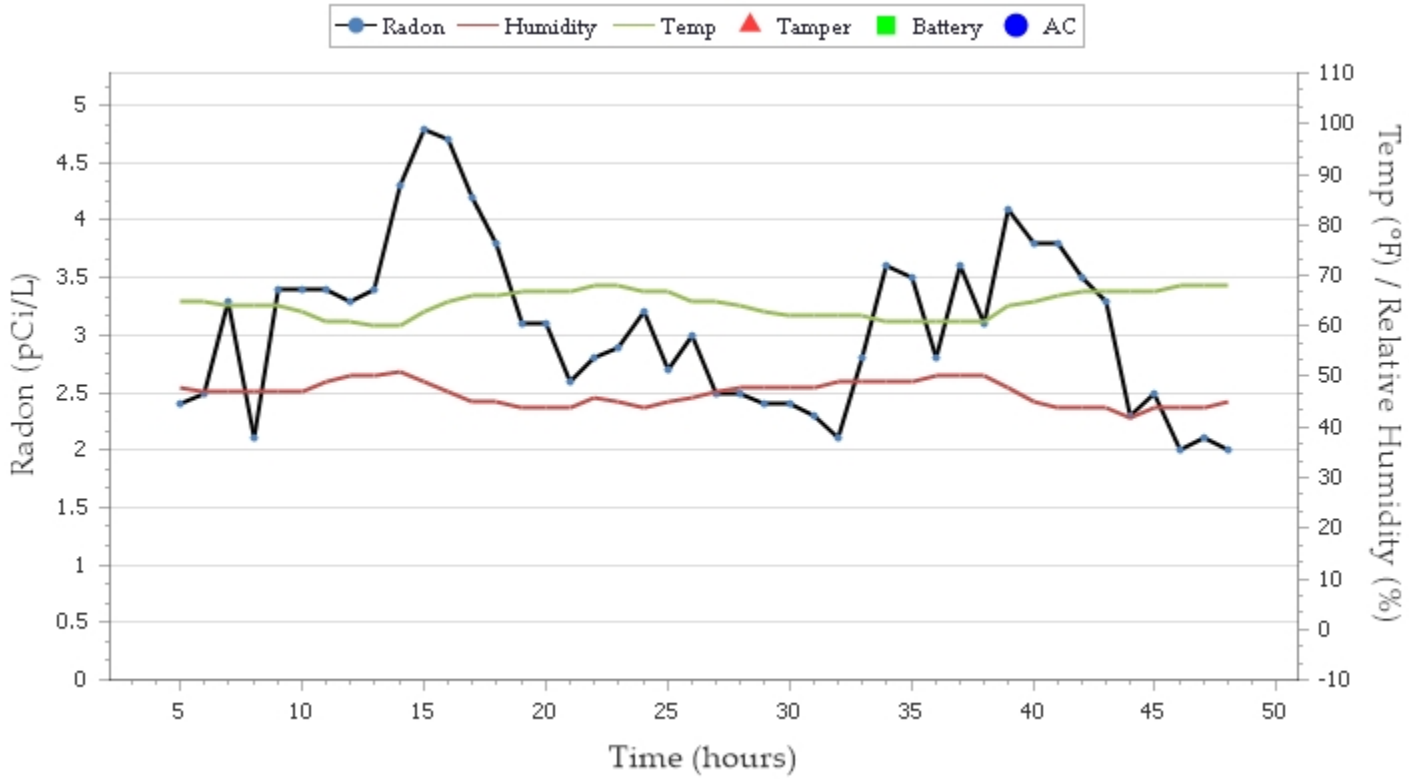
Lane Middle School
7200 SE 60th Ave
Portland, OR 97206

Portland Public Schools

Test Start Date/Time: Tuesday, January 30, 2018 // 3:30 PM
Test End Date/Time: Thursday, February 01, 2018 // 3:00 PM
Location of Instrument: Room 126
Notes:

TEST RESULTS:

Average: 3.0 pCi/L **Test ID#** 80043



Tamara C Linde 2/2/18
Tamara Linde Date
Certification #:
License 1: CCB 180537/ CASCARI927C1
License 2: NRPP 108946RT, 108953RT

Tamara Linde
Cascade Radon
12839 NE Airport Way
Portland, OR 97230
Phone: 503-421-4813 Fax: 503-281-6170
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INTERVAL REPORT:

Hour	T	B	AC	pCi/L	Temp	Humd	Alpha
1				5.8	67	50	184
2				3.6	68	50	115
3				3.0	67	49	97
4				2.6	66	49	83
5				2.4	65	48	76
6				2.5	65	47	79
7				3.3	64	47	104
8				2.1	64	47	67
9				3.4	64	47	108
10				3.4	63	47	107
11				3.4	61	49	109
12				3.3	61	50	105
13				3.4	60	50	107
14				4.3	60	51	137
15				4.8	63	49	153
16				4.7	65	47	150
17				4.2	66	45	132
18				3.8	66	45	120
19				3.1	67	44	98
20				3.1	67	44	100
21				2.6	67	44	82
22				2.8	68	46	89
23				2.9	68	45	91
24				3.2	67	44	103
25				2.7	67	45	85
26				3.0	65	46	97
27				2.5	65	47	80
28				2.5	64	48	81
29				2.4	63	48	78
30				2.4	62	48	78
31				2.3	62	48	75
32				2.1	62	49	67
33				2.8	62	49	90
34				3.6	61	49	113
35				3.5	61	49	111
36				2.8	61	50	90
37				3.6	61	50	114
38				3.1	61	50	100
39				4.1	64	48	129
40				3.8	65	45	122
41				3.8	66	44	122
42				3.5	67	44	110
43				3.3	67	44	105
44				2.3	67	42	75
45				2.5	67	44	80
46				2.0	68	44	65
47				2.1	68	44	67
48				2.0	68	45	64

Minimum: 2.0 pCi/L **Maximum:** 4.8 pCi/L **Average:** 3.0 pCi/L

Tamara C Linde 2/2/18

Tamara Linde Date

Certification #:

License 1: CCB 180537/ CASCARI927C1

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License 2: NRPP 108946RT, 108953RT

RadonAway

CERTIFICATE OF CALIBRATION
RadStar RS800 Continuous Monitor

This instrument has been calibrated in accordance with the procedures set forth by the manufacturer.
Please retain this certificate for your records

Cal Date: 5-12-17 Last Cal Date: _____ Next Cal Date: 5-12-18

Device Serial Number: 2396 Device Type: RS800

Device Status: Passed [X] Failed [ ] Radon Chamber: TC 103 B

NRPP Chamber#TC103 Radon Gas Concentration: 16.6 pCi/l

CRM Serial Numbers: 4183 2173 2178

Chamber Temperature: 69.0 °F Chamber Humidity: 31.7 %RH

Start Chamber Exposure: 02/09/17 11:00 Stop Chamber Exposure: 02/13/17 08:00

Calibration Number (as found, if applicable) _____ *Calib#=(10240/(Hourly Counts/pCi/l))*

Calibration Number (Final) 327 Calibrated By: Ken Inuelli

RadonAway 3 Saber Way Ward Hill, Massachusetts 01835 978-521-3703

This RadStar Continuous Radon Monitor has been calibrated by the Manufacturer using a standard operating procedure for the calibration of the RS800, TP010 Rev E. This procedure provides for the following performance checks:

- System Functional Checks
- Battery Check
- Back Ground Check in Nitrogen 0.1 pCi/l 12 cph
- Chamber Exposure in known Radon Gas Concentration
- Adjustment to Calibration Number, if necessary
- Adjustment to Background, if necessary
- Verification Chamber Exposure, if necessary

*(As Tested Background is Integrated into Instrument Calculation Program, **Do Not Adjust** Readings by Background)*

The manufacturer, RadonAway performs quarterly inter-comparisons with a Secondary Chamber

NRPP Device Code 476 Device group 18 USEPA Verified

Radon Measurement Specialist:

NRSB #6SS0002, NRPP #100842RT

The RadStar RS800 is distributed by Accustar Labs 888-580-9596