



Cascade Environmental LLC

4346 NE 73rd Avenue
Portland, OR 97218

Phone 503 984 9737

www.cascadenviro.com

August 2, 2019

Mr. Larry Hampton
Newberg School District 29J
703 South Blaine
Newberg, OR 97132

**Re: Radon Testing & Analysis Report
Springbrook Education Center
1421 Deborah Road
Newberg, Oregon 97132
Cascade Environmental Project No. 03112019-02**

Dear Mr. Hampton:

Cascade Environmental is pleased to present this letter report which details the findings of radon sampling conducted at the above referenced facility located in Newberg, Yamhill County, Oregon. The purpose of this study was to determine if levels of radon within the select subgrade and ground floor rooms are above the Environmental Protection Agency's (EPA) recommended action level for radon. The sampling was conducted in compliance with Oregon Revised Statute (ORS) 332.166-167. Sampling was conducted per the protocols provided in "Testing for Elevated Radon Levels in Oregon, A Protocol and Plan" (The protocol) produced by the Oregon Health Authority.

Introduction

Radon is a naturally occurring colorless, odorless gas that is a by-product of the decay of radioactive materials potentially present in bedrock and soil. Radon gas may enter the lowest level of a building through floor cracks, structural joints, or plumbing conduits. The EPA's recommended action level for annual exposure to radon gas is 4.0 picoCuries per liter of air (pCi/L). This recommended action level is not a regulatory requirement, but is the level at which the EPA recommends that building owners take action to reduce the level.

Sampling Methodology

Cascade Environmental conducted a survey for radon gas in all frequently occupied rooms in contact with the soil, whether the contact was slab-on-grade, a basement, a room above a crawl space or any combination of the above. A total of seventeen rooms were tested from March 11, 2019 through March 13, 2019. Sampling was conducted by Mr. Robert Burns, Industrial Hygienist with Cascade Environmental and Mr. Larry Hampton, District Risk Management Supervisor with Newberg School District. In addition, two duplicate samples, one blank sample and one spike samples were collected for quality control purposes per the protocol. The survey was performed to determine the potential presence of radon gas concentrations, and to develop recommendations for follow-up testing and/or potential mitigation systems as necessary. The canisters were left in place for no less than 48 hours and no longer than 96 hours, in accordance with the sampling protocol provided by the laboratory. The open canisters were placed at breathing air level under normal occupancy conditions. To ensure the canisters would be in place at the end of the sampling period, sample locations were identified in areas where the potential for disturbance was minimal. A total of twenty-one canisters (including duplicates, blanks, spikes and additional samples collected in rooms larger than 2,000 square feet) were collected, sealed, and forwarded for analysis to



AccuStar Labs in Medway, Massachusetts and were analyzed using EPA Method 402-R-92-004. The spike sample was submitted to the Kansas State University Radon Chamber, NRPP Certification ID Number SC-1006, to be "spiked" with a known amount of radon prior to submittal to AccuStar Labs for quality control purposes. The laboratory analytical reports are included in Appendix A.

The following tables summarize the results of the radon gas samples collected from the facility:

Table 1 Springbrook Education Center 1421 Deborah Road Newberg, Oregon 97132 Radon Survey Results 2019			
Sampler Number	Location	Floor	Results (pCi/L)
01	Staff	Main	1.6
02	Staff	Main	<0.4
03	Health Room?	Main	1.4
04	Conference Room	Main	1.7
05	Principal's Office	Main	1.3
06	Principal's Office	Main	1.3
07	Main Office	Main	1.4
08	Work Room	Main	1.5
09	Counseling	Main	1.4
10	Art	Main	2.3
11	Office, Community	Main	1.4
12	Office, Community	Main	1.6
13	Multipurpose	Main	1.8
14	Commons	Main	1.7
15	Room C1	Main	1.7
16	Room C2	Main	0.8
17	Room C3	Main	0.7
18	Science	Main	2.0
19	Room C4A	Main	2.1
20	Room C4B	Main	2.2



Table 2 Springbrook Education Center 1421 Deborah Road Newberg, Oregon 97132 Spike Results		
Device Number	Spike Value (pCi/L) (Kansas State University)	Results (pCi/L) (AccuStar Labs)
4021136	13.4	13.4

CONCLUSION

The short-term radon sample results for Springbrook Education Center, located at 1421 Deborah Road in Newberg, Yamhill County, Oregon revealed concentrations of radon gas below the EPA's recommended action level of 4.0 pCi/L in all of the rooms tested. In addition, the results from the duplicates, blanks and spikes collected for quality control purposes were all within acceptable parameters per the protocol.

Based on the sample results, Cascade Environmental does not recommend further investigation at this time.

LIMITATIONS

This report provides a summary of the evidence collected and observations made by Cascade Environmental during this assessment. Cascade Environmental performed short-term radon testing to evaluate impacts to selected areas at this single point in time. Actual radon concentrations can vary between sample points, site conditions and usage. This report is based upon the information developed by Cascade Environmental as a result of this one-time sampling and does not guarantee that the site is free of radon or potentially hazardous materials or conditions, or that latent or undiscovered conditions will not become evident in the future.

Thank you for this opportunity to be of service to Newberg School District 29J. If you have any questions, please feel free to contact us at 503-984-9737 or via email at bob@cascadenviro.com.

Sincerely,
Cascade Environmental

Robert Burns
Principal

Attachments: Appendix A – Laboratory Results and Chain-of-Custody Documentation
Appendix B – Site Plan

APPENDIX A

LABORATORY RESULTS &
CHAIN OF CUSTODY DOCUMENTATION

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

EPA Method #402-R-92-004
Liquid Scintillation
NRPP Device Code 8088
NRSB Device Code 12193

Laboratory Report for:

Property Tested:

Cascade Environmental
4346 North East 73rd Avenue
Portland OR 97218

Springbrook Education Center
1421 Deborah Road
Newberg OR 97132

Log Number	Device Number	Test	Exposure	Duration:	Area Tested	Result pCi/L
2451321	4020983	03/11/2019	8:02 am	03/13/2019 8:05 am	Main Floor Staff Room	1.6
2451322	4020986	03/11/2019	8:02 am	03/13/2019 8:05 am	Main Floor Staff Room Blank	< 0.4
2451323	4020992	03/11/2019	8:03 am	03/13/2019 8:06 am	Main Floor Health Room	1.4
2451324	4020979	03/11/2019	8:04 am	03/13/2019 8:07 am	Main Floor Conference Room	1.7
2451325	4020974	03/11/2019	8:05 am	03/13/2019 8:08 am	Main Floor Principal's Office	1.3
2451326	4020994	03/11/2019	8:05 am	03/13/2019 8:08 am	Main Floor Principal's Office Duplicate	1.3
2451327	4020982	03/11/2019	8:05 am	03/13/2019 8:09 am	Main Floor Main Office	1.4
2451328	4020981	03/11/2019	8:06 am	03/13/2019 8:09 am	Main Floor Work Room	1.5
2451329	4020989	03/11/2019	8:07 am	03/13/2019 8:10 am	Main Floor Counseling	1.4
2451330	4020977	03/11/2019	8:08 am	03/13/2019 8:10 am	Main Floor Art	2.3
2451331	4020995	03/11/2019	8:08 am	03/13/2019 8:11 am	Main Floor Community	1.4

Comment: Confidential: Release results to client only. Cascade Environmental was e-mailed a copy of this report.

Test Performed By: Robert Burns and Larry Hampton

Distributed by: Cascade Environmental

Date Received: 03/15/2019 Date Logged: 03/15/2019 Date Analyzed: 03/16/2019 Date Reported: 03/18/2019

Report Reviewed By: Michael Cleveland

Report Approved By: [Signature]

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
Liquid Scintillation
NRPP Device Code 8088
NRSB Device Code 12193

Laboratory Report for:

Property Tested:

Cascade Environmental
4346 North East 73rd Avenue
Portland OR 97218

Springbrook Education Center
1421 Deborah Road
Newberg OR 97132

Log Number	Device Number	Test Exposure	Duration	Area Tested	Result pCi/L
2451332	4020978	03/11/2019 8:08 am	03/13/2019 8:11 am	Main Floor Community Duplicate	1.6
2451333	4020970	03/11/2019 8:09 am	03/13/2019 8:12 am	Main Floor Multi Purpose	1.8
2451334	4020988	03/11/2019 8:10 am	03/13/2019 8:13 am	Main Floor Commons	1.7
2451335	4020973	03/11/2019 8:11 am	03/13/2019 8:13 am	Main Floor Room C1	1.7
2451336	4020975	03/11/2019 8:13 am	03/13/2019 8:14 am	Main Floor Room C2	0.8
2451337	4020991	03/11/2019 8:14 am	03/13/2019 8:15 am	Main Floor Room C3	0.7
2451338	4020996	03/11/2019 8:15 am	03/13/2019 8:17 am	Main Floor Science	2.0
2451339	4020971	03/11/2019 8:16 am	03/13/2019 8:18 am	Main Floor Rppm C4A	2.1
2451340	4020993	03/11/2019 8:17 am	03/13/2019 8:19 am	Main Floor Rppm C4B	2.2

Comment: Confidential: Release results to client only. Cascade Environmental was e-mailed a copy of this report.

Test Performed By: Robert Burns and Larry Hampton

Distributed by: Cascade Environmental

Date Received: 03/15/2019 Date Logged: 03/15/2019 Date Analyzed: 03/16/2019 Date Reported: 03/18/2019

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Laboratory Report for:

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Cascade Environmental
4346 North East 73rd Avenue
Portland OR 97218

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1421 Deborah Road
Newberg OR 97132


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result
2496805	4021136	05/15/2019 11:15 am 05/17/2019 11:15 am	First Floor Custodial Office	pCi/L 13.4

Comment: Confidential: Release results to client only. Cascade Environmental was e-mailed a copy of this report.

Test Performed By: Robert Burns

Distributed by: Cascade Environmental

Date Received: 05/22/2019 Date Logged: 05/22/2019 Date Analyzed: 05/23/2019 Date Reported: 05/23/2019

Report Reviewed By: 

Report Approved By: 

Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer:

The uncertainty of this radon measurement is $\sim \pm 10\%$. 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 Chamber

Kansas State University



KSU Radon Chamber

NRPP Certification ID Number SC-1006



Date: 5/17/2019

Robert Burns
 Cascade Environmental
 4346 NE 73rd Ave Portland OR 97218
bob@cascadenviro.com
 503.984.9737

These are the results of the spiking that we performed on the device(s) listed below:

Device Serial #	Start Date	Start Time	Stop Date	Stop Time	Chamber Value *
4021132	5/15/2019	11:15am	5/17/2019	11:15am	13.4
4021133	5/15/2019	11:15am	5/17/2019	11:15am	13.4
4021134	5/15/2019	11:15am	5/17/2019	11:15am	13.4
4021135	5/15/2019	11:15am	5/17/2019	11:15am	13.4
4021136	5/15/2019	11:15am	5/17/2019	11:15am	13.4

These devices were spiked in our chamber at an average relative humidity of avg/rh 37.7 %.
These devices were spiked in our chamber at a chamber temperature of 70.9 ° f.
This chamber is at an elevation of approximately 1020 feet.

The additional information below is provided as a service for our customers who have furnished KSU Radon Chamber with the customer's measured values for the above devices. This equation calculates the difference between our chamber value and the customer's measured value and is called the percent error. It is calculated as follows:

$$\% \text{ Error} = \frac{\text{Measured Value} - \text{Chamber Value}}{\text{Chamber Value}} * 100$$

Measured Value: pCi/L **Chamber Value:** pCi/L **Error:**

Thank you for your patronage. If we can be of further help, please email us at radonchamber@ksu.edu or call us at (785-532-4992).

Sincerely,

Bruce Snead

Springbrook Education Center
 1421 Deborah Road
 Newberg, Oregon 97132
 Radon Testing 2019

Start Date: 3.11.19

Stop Date: 3.13.19

Tester Name(s): Robert Burns & Larry Hampton

Lab Use Only	Sample #	Device #	Floor	Room	Start Time	Stop Time	Comments	Lab Use
	1	4020 985	Main	Staff	0802	0805	desktop copy	
	2	4020 986	Main	Staff	0802	0805	Blank	
	3	4020 992	Main	Health Room?	0805	0806	calibration	
	4	4020 979	Main	Conference Room	0805	0807	Phone	
	5	4020 974	Main	Principal's Office	0805	0808		
	6	4020 994	Main	Principal's Office	0805	0808	Duplicate	
	7	4020 982	Main	Office 17 - McIneroff	0805	0809		
	8	4020 981	Main	Work Room	0806	0809		
	9	4020 989	Main	Office 28 - Counseling	0807	0810		
	10	4020 977	Main	Art Rm	0808	0810		
	11	4020 995	Main	Office 32, Community	0808	0811		
	12	4020 978	Main	Office 32	0808	0811	Duplicate	

Springbrook Education Center
 1421 Deborah Road
 Newberg, Oregon 97132
 Radon Testing 2019

Lab Use Only	Sample #	Device #	Floor	Room	Start Time	Stop Time	Comments	Lab Use
	13	4020 970	Main	Multi 2 Multi 2 Report	0809	0812		
	14	4020 999	Main	Commons	0810	0813	to right of sign up by appointment	
	15	4020 973	Main	Room C1	0811	0813	under desk	
	16	4020 975	Main	Room C2	0813	0814	behind teacher	
	17	4020 991	Main	Room C3	0814	0815	Back side of	
	18	4020 996	Main	Science	0815	0817		
	19	4020 971	Main	Room C4A	0816	0818		
	20	4020 995	Main	Room C4B	0817	0819		
		4020						
		4020						
		4020						
		4020						
		4020						
		4020						

Robert Burns
Cascade Environmental
503-984-9737
bob@cascadenviro.com

Address
4346 NE 73rd Avenue
Portland, OR. 97218

I have read and understand the Disclaimer for KSU Radon Chamber Services.
Yes

NRPP/State Certification Number
NA

Type of Service
Spike

Number of Devices to Spike
5

Device 1 Details (Make and Model and Serial Number)
liquid scintillation Canister #4021132

Device 2 Details (Make and Model and Serial Number)
liquid scintillation Canister #4021133

Device 3 Details (Make and Model and Serial Number)
liquid scintillation Canister #4021134

Device 4 Details (Make and Model and Serial Number)
liquid scintillation Canister #4021135

Device 5 Details (Make and Model and Serial Number)
liquid scintillation Canister #4021136

Length of Exposure
48 Hours

Date On or Before Which Your Device Will Arrive at KSU Radon Chamber

- Tue, 05/14/2019

Disclaimer for Spiking or Performance Testing Using KSU Radon Chamber

To all potential customers considering having a spiking or performance test done by the AARST-NRPP approved chamber operated by KSU Radon Chamber:

KSU Radon Chamber pledges to perform all performance tests as accurately as current science allows and to do so regardless of which device the client provides. We will follow your instructions regarding the methodology used to expose your device. We will monitor the radon, temperature, humidity and barometric pressure during the exposure period and report these numbers to you. If, for some reason, we do not maintain the chamber to within specs during the exposure, or if we do not expose your device per your instructions, we will redo the spike or performance test at no cost to you, including paying for any shipping. **Our liability is limited to the above costs.**

Specifications that are currently in place for our chamber are:

- 1) The radon will be kept at a constant value (within 10% COV) during the exposure.
- 2) The temperature will be kept at a constant value (72 degrees +/- 2 degrees) during the exposure.
- 3) The humidity will be kept between 20% and 50% during the exposure and the average humidity reported to you.
- 4) The radon concentration will be verified at the beginning of exposure and at the end of exposure (and every 72 hours during exposure) by a pair of grab samples read with an EPA inter-compared measuring system.

KSU Radon Chamber is not responsible for any other costs incurred by you or any consequential, indirect or special damages. You, the client, must insure your device prior to shipping or mailing if you are concerned about shipping damage.

Further, KSU Radon Chamber cannot guarantee that you will pass every performance test and spike test. KSU Radon Chamber is not liable in any way for losses you may suffer as a result of failing a performance test or a spiking test, except that we will redo a spike or performance test if the failure is ours (as discussed in the first paragraph above) at no cost to you.

Robert Burns



5/13/19

(Client's Printed Name)

(Client's Signature)

(Date)

AARST-NRPP Due Date

1st Time Tester

This disclaimer must have a printed name, a signature and a date, and be returned to KSU Radon Chamber before spiking or performance testing will begin.

APPENDIX B
SITE PLAN

