



Cascade Environmental LLC

4346 NE 73rd Avenue
Portland, OR 97218

Phone 503 984 9737

www.cascadenviro.com

June 11, 2018

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

**Re: Radon Testing & Analysis Report
Antonia Crater Elementary
203 Foothills Drive
Newberg, Oregon 97132
Cascade Environmental Project No. 01292018-01Rev-1**

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 twenty-nine rooms were tested from January 29, 2018 through February 1, 2018. 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, five duplicate samples, three blank samples and two 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 forty-two 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 samples were submitted to Bowser Morner in Dayton, Ohio 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 Antonia Crater Elementary 203 Foothills Drive Newberg, Oregon 97132 Radon Survey Results 2018			
Sampler Number	Location	Floor	Results (pCi/L)
01	Office	Main	0.6
02	Office (Duplicate)	Main	0.9
03	Conference Room	Main	0.6
04	Principal's Office	Main	0.6
05	Principal's Office (Blank)	Main	<0.4
06	PTO	Main	0.9
07	Work Room	Main	0.6
08	Health Room	Main	0.6
09	Staff Room	Main	0.7
10	Staff Room (Duplicate)	Main	0.6
11	A101	Main	0.4
12	A102	Main	0.5
13	A103	Main	0.4
14	A104	Main	0.4
15	A105	Main	<0.4
16	Library	Main	0.6
17	Library	Main	0.5
18	Computer Lab	Main	0.6
19	Counselor Office	Main	0.7
20	Speech Office	Main	0.7
21	B104	Main	1.0
22	B103	Main	0.7
23	B102	Main	0.9



Table 1 Antonia Crater Elementary 203 Foothills Drive Newberg, Oregon 97132 Radon Survey Results 2018			
Sampler Number	Location	Floor	Results (pCi/L)
24	B101	Main	1.0
25	LRC	Main	0.7
26	LRC Support	Main	0.9
27	LRC Support (Blank)	Main	<0.4
28	Music	Main	0.5
29	Gym	Main	0.5
30	Gym	Main	0.5
31	Gym	Main	0.5
32	Gym	Main	<0.4
33	Cafeteria	Main	0.8
34	Cafeteria	Main	0.6
35	Cafeteria	Main	0.6
36	Cafeteria Office		1.8
37	Custodial Office	Main	0.9
38	Custodial Office (Duplicate)	Main	1.1
39	Gym Office	Main	0.6
40	B105	Main	0.7

Table 2 Antonia Crater Elementary 203 Foothills Drive Newberg, Oregon 97132 Spike Results		
Device Number	Spike Value (pCi/L) (Bowser Morner)	Results (pCi/L) (AccuStar Labs)
3674734	26.8	23.8
3674771	26.8	24.6



CONCLUSION

The short-term radon sample results for Antonia Crater Elementary School, located at 203 Foothills Drive 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

A handwritten signature in black ink, appearing to read "R. Burns", written over a faint circular stamp or watermark.

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

APPENDIX B

SITE PLAN

APPENDIX A

LABORATORY RESULTS &
CHAIN OF CUSTODY DOCUMENTATION

NELAC NY 11769
NRPP 101193 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


Antonia Crater Elementary
203 Foothills Drive
Newberg OR 97132


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
2227142	3672287	01/29/2018 7:12 am 02/01/2018 7:05 am	Main Floor Office	0.6
2227143	3672293	01/29/2018 7:12 am 02/01/2018 7:05 am	Main Floor Office Duplicate	0.9
2227144	3672324	01/29/2018 7:13 am 02/01/2018 7:05 am	Main Floor Conference Room	0.6
2227145	3672289	01/29/2018 7:14 am 02/01/2018 7:06 am	Main Floor Principals Office	0.6
2227146	3672276	01/29/2018 7:14 am 02/01/2018 7:06 am	Main Floor Principals Office Field Blank	< 0.4
2227147	3674717	01/29/2018 7:15 am 02/01/2018 7:07 am	Main Floor PTO	0.9
2227148	3674713	01/29/2018 7:17 am 02/01/2018 7:07 am	Main Floor Work Room	0.6
2227149	3674718	01/29/2018 7:18 am 02/01/2018 7:08 am	Main Floor Health Room	0.6
2227150	3674703	01/29/2018 7:18 am 02/01/2018 7:09 am	Main Floor Staff Room	0.7
2227151	3674714	01/29/2018 7:18 am 02/01/2018 7:09 am	Main Floor Staff Room	0.6

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

Distributed by: Cascade Environmental

Date Received: 02/06/2018 Date Logged: 02/06/2018 Date Analyzed: 02/07/2018 Date Reported: 02/07/2018

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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Portland OR 97218


Antonia Crater Elementary
203 Foothills Drive
Newberg OR 97132


Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
2227172	3674724	01/29/2018 7:29 am 02/01/2018 7:15 am	Main Floor Gym	0.5
2227173	3674738	01/29/2018 7:26 am 02/01/2018 7:14 am	Main Floor Gym	< 0.4
2227174	3674728	01/29/2018 7:24 am 02/01/2018 7:13 am	Main Floor Cafertia	0.8
2227175	3674725	01/29/2018 7:23 am 02/01/2018 7:12 am	Main Floor Cafertia	0.6
2227176	3674742	01/29/2018 7:20 am 02/01/2018 7:11 am	Main Floor Custodial Office	0.6
2227177	3674743	01/29/2018 7:18 am 02/01/2018 7:09 am	Main Floor Custodial Office	1.8
2227178	3674721	01/29/2018 7:17 am 02/01/2018 7:08 am	Main Floor Custodial Office	0.9
2227179	3674732	01/29/2018 7:17 am 02/01/2018 7:08 am	Main Floor Custodial Office	1.1
2227180	3674740	01/29/2018 7:40 am 02/01/2018 7:20 am	Main Floor Gym Office	0.6
2227181	3674702	01/29/2018 7:35 am 02/01/2018 7:25 am	Main Floor Room B105	0.7

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4346 North East 73rd Avenue
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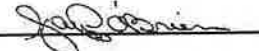
Antonia Crater Elementary
203 Foothills Drive
Newberg OR 97132

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
2227162	3674708	01/29/2018 7:36 am	02/01/2018 7:22 am	Main Floor B104 Room	1.0
2227163	3674709	01/29/2018 7:37 am	02/01/2018 7:23 am	Main Floor B103 Room	0.7
2227164	3674715	01/29/2018 7:38 am	02/01/2018 7:24 am	Main Floor B102 Room	0.9
2227165	3674710	01/29/2018 7:39 am	02/01/2018 7:25 am	Main Floor B101 Room	1.0
2227166	3674730	01/29/2018 7:50 am	02/01/2018 7:25 am	Main Floor LRC Room	0.7
2227167	3674741	01/29/2018 7:45 am	02/01/2018 7:24 am	Main Floor Support Room	0.9
2227168	3674735	01/29/2018 7:45 am	02/01/2018 7:24 am	Main Floor Support Room	< 0.4
2227169	3674723	01/29/2018 7:42 am	02/01/2018 7:22 am	Main Floor Music Room	0.5
2227170	3674736	01/29/2018 7:34 am	02/01/2018 7:18 am	Main Floor Gym	0.5
2227171	3674726	01/29/2018 7:30 am	02/01/2018 7:17 am	Main Floor Gym	0.5

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Newberg OR 97132

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
2227152	3674719	01/29/2018 7:20 am 02/01/2018 7:10 am	Main Floor A101 Room	0.4
2227153	3674706	01/29/2018 7:21 am 02/01/2018 7:11 am	Main Floor A102 Room	0.5
2227154	3674712	01/29/2018 7:22 am 02/01/2018 7:12 am	Main Floor A103 Room	0.4
2227155	3674720	01/29/2018 7:23 am 02/01/2018 7:12 am	Main Floor A104 Room	0.4
2227156	3674701	01/29/2018 7:25 am 02/01/2018 7:13 am	Main Floor A105 Room	< 0.4
2227157	3674707	01/29/2018 7:26 am 02/01/2018 7:14 am	Main Floor Libaray	0.6
2227158	3674704	01/29/2018 7:26 am 02/01/2018 7:14 am	Main Floor Libaray	0.5
2227159	3674711	01/29/2018 7:27 am 02/01/2018 7:15 am	Main Floor Computer Lab	0.6
2227160	3674705	01/29/2018 7:28 am 02/01/2018 7:16 am	Main Floor Counselor Office	0.7
2227161	3674716	01/29/2018 7:33 am 02/01/2018 7:20 am	Main Floor Speech Office	0.7

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Distributed by: Cascade Environmental

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Report Reviewed By: 

Report Approved By: 

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Antonia Crater
 203 Foothills Drive
 Newberg, Oregon 97132
 Radon Testing 2018

Start Date: 1.29.18

Stop Date: 2.1.18

Tester Name(s): Robert Brown
 Larry Keup

Lab Use Only	Sample #	Device #	Floor	Room	Start Time	Stop Time	Comments	Lab Use
	1	3672 287	Main	Office	07:12	07:05		
	2	3672 293	Main	Office	07:12	07:05	Duplicate	
	3	3672 324	Main	Conference Room	07:13	07:05		
	4	3672 289	Main	Principals Office	07:14	07:06		
	5	3672 276	Main	Principals Office	07:14	07:06	Blank	
	6	3674 717	Main	PTO	07:15	07:07		
	7	3674 713	Main	Work Room	07:17	07:07		
	8	3674 718	Main	Health Room	07:18	07:08		
	9	3674 703	Main	Staff Room	07:18	07:09		
	10	3674 714	Main	Staff Room	07:18	07:09	Duplicate	
	11	3674 719	Main	A101	07:20	07:10		
	12	3674 706	Main	A102	07:21	07:11		

Antonia Crater
 203 Foothills Drive
 Newberg, Oregon 97132
 Radon Testing 2018

Lab Use Only	Sample #	Device #	Floor	Room	Start Time	Stop Time	Comments	Lab Use
	13	3674 712	Main	A103	07:22	07:12		
	14	3674 7120	Main	A104	07:23	07:12		
	15	3674 701	Main	A105	07:25	07:13		
	16	3674 707	Main	Library	07:26	07:14	Between 2000 and 4000 SF	
	17	3674 704	Main	Library	07:26	07:14		
	18	3674 711	Main	Computer Lab	07:27	07:15		
	19	3674 705	Main	Counselor Office	07:28	07:16		
	20	3674 716	Main	Speech Room office	07:33	07:20		
	21	3674 708	Main	B104	07:36	07:20		
	22	3674 709	Main	B103	07:37	07:23		
	23	3674 715	Main	B102	07:38	07:24		
	24	3674 710	Main	B101	07:39	07:25		
	25	3674 730	Main	LRC	07:50	07:25		
	26	3674 741	Main	LRC office Support	07:45	07:24		
	27	3674 735	Main	LRC office Support	—	—	Blank	

3674 702 Main B105 07:35 07:21 RB (on last page)
 Page 2 of 3

Antonia Crater
 203 Foothills Drive
 Newberg, Oregon 97132
 Radon Testing 2018

Lab Use Only	Sample #	Device #	Floor	Room	Start Time	Stop Time	Comments	Lab Use
	28	3674723	Main	Music	0742	0722		
	29	3674736	Main	Gym	0751	0718	Between 6000 & 8000 SF	
	30	3674726	Main	Gym	0730	0717	Alarm Rpt	
	31	3674724	Main	Gym	0729	0715	Stress test	
	32	3674738	Main	Gym	0726	0714	Stress test	
	33	3674728	Main	Cafeteria	0724	0715	Between 4000 & 6000 SF	
	34	3674725	Main	Cafeteria	0723	0712	count	
	35	3674742	Main	Cafeteria	0720	0711	Filler	
	36	3674793	Main	Cafeteria Office	0718	0709	37 days later	
	37	3674721	Main	Custodial Office	0717	0708		
	38	3674732	Main	Custodial Office	0717	0708	Duplicate	
	39	3674740	Main	Gym office	0740	0720		
	40	3674702	Main	5105	07:35	0725		

Gym office

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Cascade Environmental Job Number 183576

NOMINAL Conditions: Radon Conc 26.8 pCi/L Rel. Hum 59.8 % Temp. 70.0 F

Date Start: 2/23/18 Date Stop: 2/26/18 Date Start: _____ Date Stop: _____

Time Start: 0807 Time Stop: 0807 Time Start: _____ Time Stop: _____

Device No.'s: (6) LS Vials - Device No.'s: _____

3674785, 3674734, 3674771,

3674781, 3674782, 3674776

24

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

NELAC NY 11769
NRPP 101193 AL
NRSB ARL0017

EPA Method #402-R-92-004
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Antonia Crater Elementary School
203 W Foothills Drive
Newberg OR 97132


Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
2237626	3674734	02/23/2018 8:07 am	02/26/2018 8:07 am	First Floor Room 1B	23.8
2237627	3674771	02/23/2018 8:08 am	02/26/2018 8:08 am	First Floor Room 2B	24.6

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

Test Performed By: Bob Burnis

Distributed by: Cascade Environmental

Date Received: 02/28/2018 Date Logged: 02/28/2018 Date Analyzed: 03/01/2018 Date Reported: 03/01/2018

Report Reviewed By: 

Report Approved By: 

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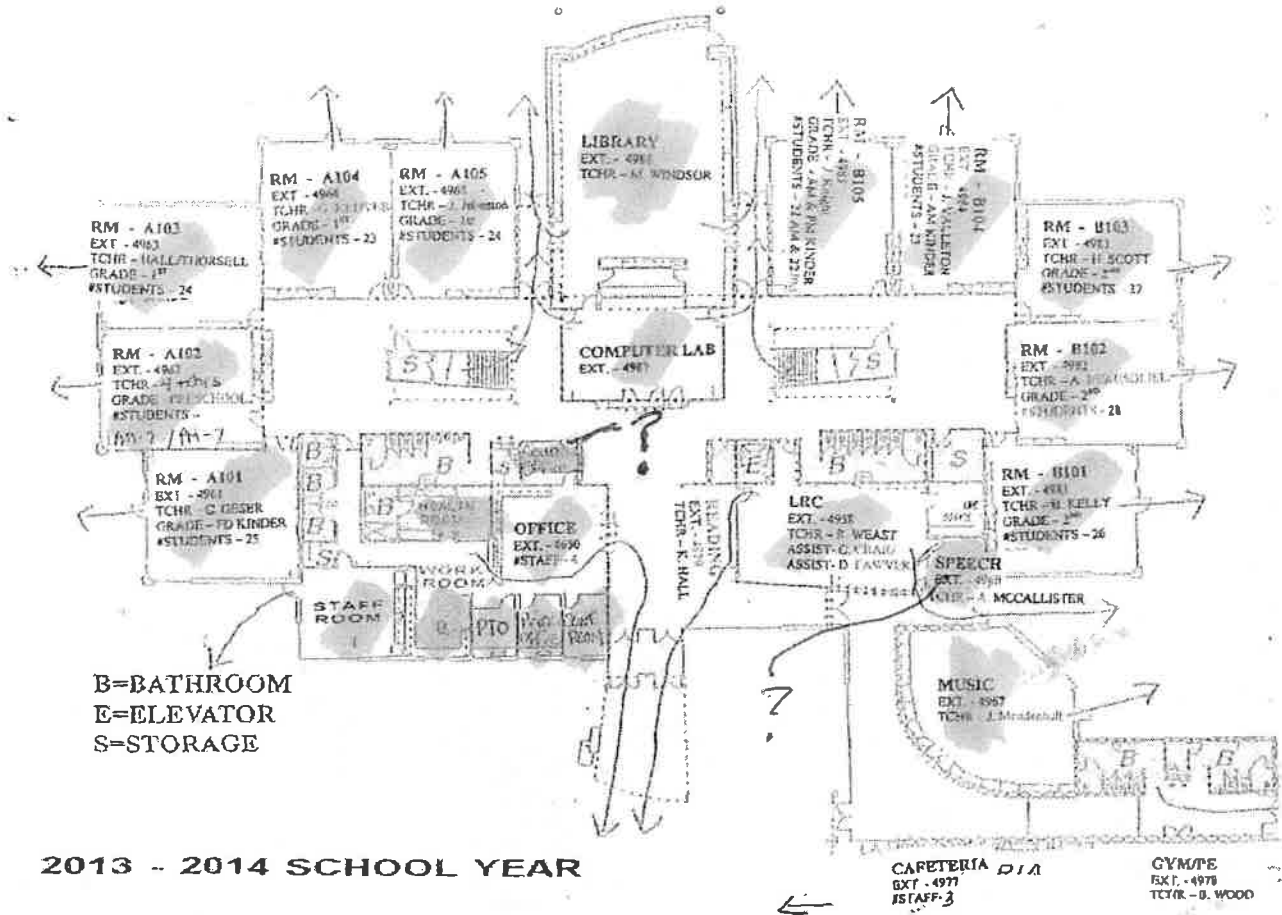
APPENDIX B

SITE PLAN

BUILDING MAP- PEOPLE

Rooms, Phone Extensions, Students (each level), Teacher Names, # of People Per Room, Lockdown and Lockout Details, Evaluation Routes

ANTONIA CRATER ELEMENTARY 1ST FLOOR



SCHOOL NAME

CRATER ELEMENTARY + AUSTIN = Similar plan
Gym & Cafeteria
Senior Center (shaded area)

