



Testing, Mitigation, System Design
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Radon Survey Analysis
Job# 19-C110R

for

Eagle Point School District
Shady Cove School
c/o Angie Hamilton

property located at

37 School House Ln

Shady Cove, OR 97539

December 18th 2019



STATE OF OREGON
CERTIFIED
EMERGING SMALL BUSINESS

ESB#10782

Introduction

The following report documents a study of radon levels for the property located at 37 School house Ln Shady Cove OR 97539. The goal of this study is to determine indoor radon levels for all areas in contact with the ground. Testing was performed per Oregon Health Authority School Testing Protocols.

Analysis assumes that the buildings tested were maintained under “closed-building” conditions (windows closed and exterior doors shut immediately after entering and exiting), as well as normal indoor temperatures, for the duration of the testing period. The H-VAC system for each building was set to normal occupied settings for the entirety of the testing period.

Conclusions and Recommendations

Test was a “Short-Term” test, with minimum duration of 72 hours. See the chart below of areas in buildings that were tested, and the corresponding levels found. All current test results are provided in Table 1. Maps of the test levels are provided in Appendix A. Note that all fifty (50) locations tested had results below the USEPA Action Level of 4.0 pCi/L.

No mitigation action is recommended at this time. While the USEPA recommends buildings be fixed if the radon level is 4.0 pCi/L or more, because there is no known safe level of exposure to radon, the US EPA also suggests individuals consider fixing buildings for radon levels between 2.0 pCi/L and 4.0 pCi/L.

This report represents the average radon concentration for the period that testing was and at the specific location(s) within the building. The concentration of radon gas in indoor air can vary widely; it fluctuates daily, seasonally, and with weather conditions. Indoor radon levels may be affected by barometric pressure, strong winds, rain-soaked ground, snow cover, heating and A/C systems, building construction, open windows, and the like. For further confirmation of average, long-term radon levels, it is suggested that long-term, Alpha-Track type radon testing be performed.

NOTE: It is recommended that any building indicating low radon values be retested at least every 5 years. In areas where mitigation has been performed, it is recommended to test using long-term testing at least every 2 years.

Radon Level Measurements

The building tested was assumed occupied during testing. The measurement technique used (60) AirChek activated charcoal kits.

Test Start Date: 11/20/2019

Test End Date: 11/23/2019

Measurements of radon levels were made in the following areas:

Table 1: Results

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
5	1	9315902	10:42 AM	10:01 AM	0.8

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Librarian office	1	9315903	10:52 AM	10:07 AM	1.9
Speech pathologist room	1	9315904	10:51 AM	10:08 AM	1.4
Middle school office	1	9315905	11:13 AM	10:40 AM	1.5
Library	1	9315906	10:50 AM	10:06 AM	2.3
Conference room	1	9315907	10:48 AM	10:04 AM	1.5
Family resource office	1	9315908	10:44 AM	10:02 AM	1.2
6	1	9315910	10:54:18	10:06 AM	0.9
Health room	1	9315914	10:31 AM	09:55 AM	0.9
Principals office	1	9315915	10:35 AM	09:56 AM	1.0
Principal secretary	1	9315916	10:32 AM	09:56 AM	1.1
Staff lounge	1	9315917	10:47 AM	10:03 AM	1.2
3 conference	1	9315918	10:40 AM	10:00 AM	0.3
Main office	1	Duplicate Avg*	10:28 AM	09:54 AM	1.0
Supply room	1	Duplicate Avg*	10:45 AM	10:02 AM	1.6
3	1	9315921	10:39 AM	09:58 AM	0.5
2	1	9316235	12:12 AM	09:51 AM	1.5
Cafeteria	1	9316552	11:53 AM	10:19 AM	1.0
It portable 1	1	9316553	11:29 AM	10:34 AM	0.7
It potable 2 office	1	9316554	11:28 AM	10:35 AM	0.3
7	1	9316555	11:00 AM	10:10 AM	1.6
8	1	9316556	11:01 AM	10:11 AM	0.8
It portable 1	1	9316558	11:27 AM	10:35 AM	0.7
103	1	Duplicate Avg*	11:18 AM	10:38 AM	1.5
Staff portable	1	Duplicate Avg*	11:34 AM	10:32 AM	0.6
Kitchen food storage/office	1	9316564	11:56 AM	No Access	-
Music room	1	9316565	12:03 PM	10:23 AM	1.0
1	1	9316570	12:09 PM	09:50 AM	1.3
Sw gym	1	9316573	11:42 AM	10:28 AM	1.6
Middle school pod area	1	9316574	11:23 AM	10:42 AM	1.3

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
1/2 office	1	9316576	12:10 PM	09:51 AM	1.6
Se gym	1	9316577	11:41 AM	10:27 AM	1.3
Maintenance	1	9316578	11:51 AM	10:17 AM	1.3
9	1	9316581	11:03 AM	10:13 AM	0.8
Community health room	1	Duplicate Avg*	10:58 AM	09:59 AM	0.6
104	1	9316583	11:22 AM	10:37 AM	1.2
Kitchen office	1	Duplicate Avg*	11:56 AM	10:21 AM	0.7
East gym	1	9316586	11:38 AM	10:27 AM	1.6
102	1	9316588	11:16 AM	10:39 AM	1.4
Server security	1	9316590	11:12 AM	10:41 AM	1.7
10	1	9316591	11:04 AM	10:15 AM	2.4
101	1	9316592	11:15 AM	10:39 AM	1.6
West gym	1	9316593	11:43 AM	10:28 AM	1.1
Girls locker room	1	9316594	11:49 AM	10:32 AM	1.6
Boys locker room	1	9316595	11:47 AM	10:29 AM	1.6
Kitchen	1	9316599	11:57 AM	10:20 AM	1.0
It portable 1 office	1	9316600	11:29 AM	10:34 AM	0.8

Duplicate measurements were conducted as a means to assess the precision of the test measurements. The criteria of acceptance is that the average relative percent difference (ARPD) of the results of the two measurement results for results whose averages are greater than 4.0pCi/L, should be within 25%. The results of the collated duplicates are provided in Table 2. The applicable ARPD for this survey was not applicable and is thus in compliance.

*Table 2: *Duplicate Table*

Room	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD %
Main Office	9315919	10:28 AM	09:54 AM	1.0	0.9	No	N/A
	9315912	10:28:21	09:54 AM	0.9			

Room	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD %
Community Health Room	9316582	10:58 AM	09:59 AM	0.5	0.6	No	N/A
	9315922	10:59 AM	09:59 AM	0.7			
103	9316561	11:18 AM	10:38 AM	1.3	1.5	No	N/A
	9315923	11:20 AM	10:38 AM	1.6			
Staff Portable	9316562	11:34 AM	10:32 AM	0.3	0.6	No	N/A
	9316566	11:34 AM	10:32 AM	0.8			
Kitchen Office	9316585	11:56 AM	10:21 AM	0.7	0.7	No	N/A
	9316569	11:56 AM	10:21 AM	0.6			
Supply Room	9315920	10:45 AM	10:02 AM	1.5	1.6		
	9315909	10:45 AM	10:02 AM	1.6			
Average RPD for Duplicate Averages more than 3.9 pCi/L:							No
In Compliance:							Yes

As a means to determine any biases in the results, detectors were deployed but not opened. At the time of test retrieval of the regular test, the devices were removed from their packaging and sent to the laboratory for blind analysis. The results of these unexposed devices are shown in Table 3. As can be seen, the laboratory reported these at the lower level of detection, indicating that no biases were introduced in handling and shipping of the devices.

Table 3: Blanks

Room	Blank #	Kit ID #	Result (pCi/L)	In Compliance?
Principal	1	9315913	0.3	Yes
Middle School Office	2	9316557	0.3	Yes
Music Room	3	9316568	0.3	Yes

A device was also selected from the lot of detectors that were utilized for exposure to a known radon environment at a spiking chamber (Bowser-Morner, NEHANRPP ID# 101 TC). After exposure, the device was submitted as a blind measurement to the laboratory. A comparison of the reported reading from the lab and the known concentration in the chamber is as follows:

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	24.1
Relative percent difference (RPD):	8.3

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	24.4
Relative percent difference (RPD):	7.1

The RPD between the reported and spiking concentration is well within normal limits.

Key:

pCi/L: Picocuries per liter – units of radon concentration.

Average (Avg): Cumulative average of the entire period since the test started.

Please contact me if you have any questions.

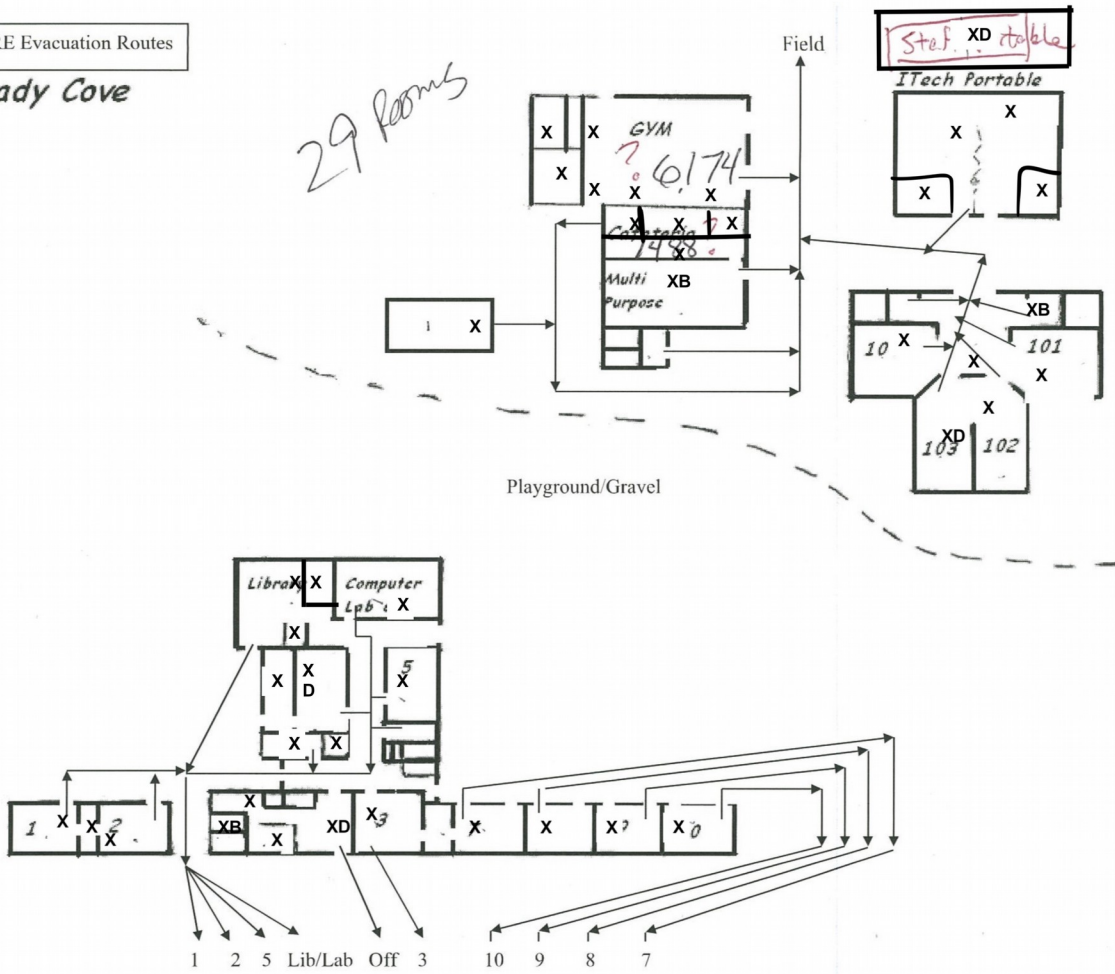
Thank you,
Rachell Meyers
NRPP 110320 RT

Appendix A: Test Placement Map

FIRE Evacuation Routes

Shady Cove

29 rooms



Appendix B: Test Results Map

FIRE Evacuation Routes

Shady Cove

