



December 21, 2021

Adam Stewart
Hillsboro School District
4901 SE Witch Hazel Road
Hillsboro, Oregon 97123

Via email: stewart@hsd.k12.or.us

Regarding: Short-Term Radon Testing Report
 Atfalati Ridge Elementary School
 29174 NW King Street
 North Plains, OR 97133
 PBS Project 23440.148

Dear Mr. Stewart:

From December 6 to December 9, 2021, PBS Engineering and Environmental Inc. (PBS) performed short term radon testing at the newly-constructed Atfalati Ridge Elementary School in Hillsboro, Oregon.

The Environmental Protection Agency (EPA) and Oregon Health Authority (OHA) recommend that buildings be tested for radon and that any radon concentrations be maintained below 4.0 picocuries per liter (pCi/L) of air. PBS used Radonova, Inc. brand single-use, short-term radon test kits to measure radon levels in frequently occupied rooms that are in contact with the ground or above unoccupied basements or crawlspaces.

Laboratory results indicate all short-term radon tests at Atfalati Ridge Elementary School were below 4.0 pCi/L.

The attached Laboratory Analysis Report includes the results of a "spike" sample (detector RB104900), with an analytical result of 21.9 pCi/L. This is a quality control sample and was not collected from the school. Spike samples are test kits that are sent to an independent laboratory where there are exposed to a known amount of radon, returned to the sender, then shipped to the analyzing laboratory along with the actual test kits that were deployed in the field. Spike samples ensure that the radon detector kits are working properly. Blanks and duplicates were also submitted to the analyzing laboratory for quality control purposes.

In addition to the EPA recommendation that radon concentrations do not exceed 4.0 pCi/L, OHA recommends the following steps be conducted based on the results of a room's initial short-term test:

- **If the result is less than 2.0 pCi/L**, school districts are required to test again every 10 years, per Oregon Revised Statute 332.166-167.
- **If the result is between 2.0 pCi/L and 4.0 pCi/L**, consider fixing (i.e., lowering) the radon in that room.
- **If the result is from 4.0 pCi/L to 8.0 pCi/L**, perform a follow-up measurement of that room using a long-term test. This test should be conducted over as much of a nine-month school year as possible,

when the room is likely to be occupied. If that result is equal to or greater than 4.0 pCi/L, the radon in the room should be fixed (i.e., lowered).

- **If the initial short-term test result is equal to or greater than 8.0 pCi/L**, conduct a second short-term test and average its result with the initial short-term test result. If the average of the two is equal to or greater than 4.0 pCi/L, radon in the room should be fixed (i.e., lowered).

Note: A great difference in the results of the short-term tests may indicate a flaw in the testing process. Investigate and consider retesting. For situations in which one of the test results is equal to or greater than 4.0 pCi/L, if the higher result is two or more times the lower result, repeat the test.

LIMITATIONS OF SCOPE

This study was limited to the tests and locations as previously indicated. The site as a whole may have other environmental concerns that will not be characterized by this study. The findings and conclusions of this work are not scientific certainties, but probabilities based on professional judgment concerning the significance of the data gathered during the course of this investigation. PBS is not able to represent conditions on the site or adjoining sites beyond those detected or observed by PBS.

Please feel free to contact me at 503.935.5484 or dale.voeller@pbsusa.com with any questions or comments.

Sincerely,

Dale Voeller, CHMM, CSP
Senior Project Manager

Attachment: Laboratory Analysis Report

PBS Engineering
Stefan Rankin

OWN ID
N/A
BY
PBS Engineering & Environmental
REPORT RECEIVER(S)
PBS Engineering & Environmental
PBS Engineering

RADON MONITORING REPORT

Description of the measurement

The measurement was performed with an Activated Charcoal Adsorption detector (QuickScreen) and was analyzed by Alpha Energy Laboratories (NRPP ID: 101132 AL).

The detector(s) arrived to Alpha Energy Laboratories, Inc. **12/10/2021**. They were measured **12/10/2021**.

Test data have been given by PBS Engineering

Property data and address

MEASURE SITE ADDRESS
Atfalati Elementary School
29174 NW King Street
North Plains OR 97133

BUILDING ID
23440.148

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
RB104907 [QuickScreen]	12/06/2021 09:05 AM – 12/09/2021 09:21 AM	Blank, BLANK		< 1.2 pCi/L
RB104722 [QuickScreen]	12/06/2021 09:05 AM – 12/09/2021 09:21 AM	Main Office		< 0.8 pCi/L
RB104908 [QuickScreen]	12/06/2021 09:06 AM – 12/09/2021 09:22 AM	Health Room		< 1.1 pCi/L
RB104898 [QuickScreen]	12/06/2021 09:08 AM – 12/09/2021 09:23 AM	Work Room		< 1.0 pCi/L
RB104871 [QuickScreen]	12/06/2021 09:08 AM – 12/09/2021 09:24 AM	Work Room, Duplicate		< 1.2 pCi/L
RB104879 [QuickScreen]	12/06/2021 09:09 AM – 12/09/2021 09:25 AM	Principles Office		< 1.2 pCi/L
RB104854 [QuickScreen]	12/06/2021 09:10 AM – 12/09/2021 09:26 AM	Multipurpose room		< 1.4 pCi/L

Comment to the results

Trygve Rönqvist (Electronically signed)

Signature Radonova Laboratories AB Laboratory Measurement Specialist

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PBS Engineering
Stefan Rankin

OWN ID
N/A
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DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
RB104876 [QuickScreen]	12/06/2021 09:10 AM – 12/09/2021 09:27 AM	Conference Room		< 1.3 pCi/L
RB104868 [QuickScreen]	12/06/2021 09:10 AM – 12/09/2021 09:28 AM	Staff Lounge		< 1.1 pCi/L
RB104860 [QuickScreen]	12/06/2021 09:11 AM – 12/09/2021 09:29 AM	Counselor Room		< 1.2 pCi/L
RB104939 [QuickScreen]	12/06/2021 09:14 AM – 12/09/2021 09:30 AM	103		< 0.7 pCi/L
RB104600 [QuickScreen]	12/06/2021 09:15 AM – 12/09/2021 09:31 AM	104		0.7 ± 0.5 pCi/L
RB104623 [QuickScreen]	12/06/2021 09:16 AM – 12/09/2021 09:46 AM	Mothers Room		< 0.6 pCi/L
RB104648 [QuickScreen]	12/06/2021 09:17 AM – 12/09/2021 09:33 AM	105		< 0.8 pCi/L
RB104615 [QuickScreen]	12/06/2021 09:18 AM – 12/09/2021 09:34 AM	134		< 0.9 pCi/L

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DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
RB104681 [QuickScreen]	12/06/2021 09:19 AM – 12/09/2021 09:35 AM	Specialist Room		0.8 ± 0.4 pCi/L
RB104689 [QuickScreen]	12/06/2021 09:20 AM – 12/09/2021 09:36 AM	Speech Room		< 0.8 pCi/L
RB104672 [QuickScreen]	12/06/2021 09:22 AM – 12/09/2021 09:36 AM	Library		< 0.9 pCi/L
RB104916 [QuickScreen]	12/06/2021 09:22 AM – 12/09/2021 09:37 AM	Library, Duplicate		< 0.6 pCi/L
RB104688 [QuickScreen]	12/06/2021 09:23 AM – 12/09/2021 09:38 AM	Library Storage		0.9 ± 0.4 pCi/L
RB104697 [QuickScreen]	12/06/2021 09:24 AM – 12/09/2021 09:39 AM	Library Meeting Room		< 0.8 pCi/L
RB104865 [QuickScreen]	12/06/2021 09:25 AM – 12/09/2021 09:40 AM	Steam Lab		< 0.9 pCi/L
RB104857 [QuickScreen]	12/06/2021 09:27 AM – 12/09/2021 09:41 AM	Music Room		< 0.8 pCi/L

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DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
RB104707 [QuickScreen]	12/06/2021 09:29 AM – 12/09/2021 09:41 AM	Gym		< 0.8 pCi/L
RB104859 [QuickScreen]	12/06/2021 09:29 AM – 12/09/2021 09:42 AM	Gym, Duplicate		< 0.7 pCi/L
RB104715 [QuickScreen]	12/06/2021 09:31 AM – 12/09/2021 09:43 AM	Cafeteria		< 0.6 pCi/L
RB104723 [QuickScreen]	12/06/2021 09:32 AM – 12/09/2021 09:44 AM	Kitchen		< 0.9 pCi/L
RB104720 [QuickScreen]	12/06/2021 09:34 AM – 12/09/2021 09:48 AM	Custodial Office		< 0.9 pCi/L
RB104636 [QuickScreen]	12/06/2021 09:36 AM – 12/09/2021 09:49 AM	115		< 0.5 pCi/L
RB104628 [QuickScreen]	12/06/2021 09:37 AM – 12/09/2021 09:50 AM	114		0.8 ± 0.5 pCi/L
RB104691 [QuickScreen]	12/06/2021 09:38 AM – 12/09/2021 09:51 AM	Circulation Room		< 0.6 pCi/L

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DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
RB105320 [QuickScreen]	12/06/2021 09:39 AM – 12/09/2021 09:51 AM	113		< 0.7 pCi/L
RB105328 [QuickScreen]	12/06/2021 09:39 AM – 12/09/2021 09:52 AM	113, Duplicate		< 0.9 pCi/L
RB105271 [QuickScreen]	12/06/2021 09:41 AM – 12/09/2021 09:53 AM	112		< 0.8 pCi/L
RB104745 [QuickScreen]	12/06/2021 09:44 AM – 12/09/2021 09:54 AM	111		< 1.1 pCi/L
RB104742 [QuickScreen]	12/06/2021 09:46 AM – 12/09/2021 09:55 AM	110		< 1.0 pCi/L
RB104735 [QuickScreen]	12/06/2021 09:47 AM – 12/09/2021 09:56 AM	109		< 0.8 pCi/L
RB104727 [QuickScreen]	12/06/2021 09:48 AM – 12/09/2021 09:57 AM	Learning Area		0.7 ± 0.4 pCi/L

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DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	FLOOR	RADON RESULT
RB104698 [QuickScreen]	12/06/2021 09:49 AM – 12/09/2021 09:57 AM	Blank, Blank		< 0.8 pCi/L
RB104900 [QuickScreen]	12/06/2021 09:49 AM – 12/09/2021 09:57 AM	Gym	Spike Sample	21.9 ± 0.8 pCi/L

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Measurement method: Activated Charcoal Adsorption

For this method using the QuickScreen detector, the airtight container with activated charcoal is opened in the area to be sampled and radon in the air adsorbs onto the charcoal granules. At the end of the sampling period, the container is sealed and may be sent to a laboratory for analysis.

The gamma decay from the radon adsorbed to the charcoal is counted on a scintillation detector and a calculation based on calibration information is used to calculate the radon concentration at the sample site.

Measured radon concentrations

For each detector, the measured value of the radon concentration is provided. For each value an uncertainty associated with the measurement to a 95% confidence level is also provided. For example a measurement result of 4.0 ± 0.5 pCi/L means that the radon concentration is most likely contained in the range 3.5 - 4.5 pCi/L. If the start or end date of the measurement has not been provided, the radon concentration cannot be calculated. In such cases, the total exposure in pCi*days/L will be reported. The reported measured values are related to the detectors as received by Radonova Laboratories AB. Detector deployment is not performed by Radonova Laboratories AB. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories AB by the end user.

Codes on non-reportable detectors

DNR Not Reported – Detector Not Returned
ERR Not Reported – See comment

Radon measurements in Multifamily Buildings, Schools and Large Buildings

The United States Environmental Protection Agency (EPA) recommends remediation if the results of one long-term test or the average of two short-term tests conducted in an occupied room are 4.0 pCi/L or higher. The average yearly residential indoor radon level in the US is estimated to be around 1.3 pCi/L. Long-term tests are conducted for more than 90 days. Short-term tests are conducted between 2 and 90 days and should be performed under closed building conditions.

If an initial short-term test result is less than 4 pCi/L, a follow-up measurement is probably not needed.

If an initial short-term test result is between 4 pCi/L and 8 pCi/L, a long-term or a short-term follow-up measurement is recommended.

If an initial short-term test result is greater than 8 pCi/L, a short term follow-up measurement is recommended in order to get a fast result.

More information about radon measurements and mitigation can be found in the AARST and EPA publications:

- ANSI/AARST Protocol for Conducting Measurements of Radon and Radon-Decay Products in Schools and Large Buildings.
- ANSI/AARST Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings.
- ANSI/AARST Radon Mitigation Standards for Schools and Large Buildings.
- ANSI/AARST Radon Mitigation Standards for Multifamily Buildings.
- EPA Radon Measurements in Schools, EPA 402-R-92-014, July 1993.

For more information about the interpretation of your test results or about other radon related issues we suggest contacting your state radon office.

Signature on the report

With the signature on the report, the Measurement specialist at Radonova certifies that the quality control procedures follows the guidance in accordance with EPA 402-R-95-012.

Measurement information displayed in italics on report has been provided by the customer.

Certification no:

101132-AL, 107830-RT, NY ELAP ID: 11430

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