February 7, 2025

Joe Crelier
Director of Risk Management
Portland Public Schools

Via email: jcrelier@pps.net

Regarding: Short Term Radon Testing
Boise-Eliot Elementary School
620 North Fremont
Portland, Oregon 97227

Mr. Crelier:

From January 14 to 17, 2025, PBS Engineering and Environmental Inc. (PBS) performed short-term radon testing at Boise-Eliot Elementary School in Portland, Oregon. PBS understands that the District completed initial radon testing in the building in 2016/2017 and has requested this sampling because the facility is due for the next round of testing.

METHODOLOGY

The Environmental Protection Agency (EPA) recommends, and the Oregon Health Authority (OHA) requires, that school 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. These rooms include classrooms, offices, break rooms, conference rooms, gyms, and cafeterias. Bathrooms, hallways, stairwells, storage rooms, and closets are not tested. Testing is conducted during the winter heating season and during the school week when building uses and operations are normal.

PBS endeavored to use sample location names based on existing room numbers or common-sense descriptions, but in buildings where no room number or other designation was available, PBS assigned names or numbers to the rooms. In some circumstances, small numbers of test kits go missing during the testing period and those locations are not tested. PBS will evaluate whether or not the missing area should be retested based on the results of surrounding areas.

RESULTS

Laboratory results found concentrations below the EPA action level in all tested locations in the building. See the attached laboratory analysis report for more details and the attached informal sample location map approximate locations of where samples were collected.

In addition to the EPA recommendation that radon concentrations not exceed 4.0 pCi/L, OHA recommends that 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 503.515.7489 or james.mastanduno@pbsusa.com with any questions or comments.

Sincerely,

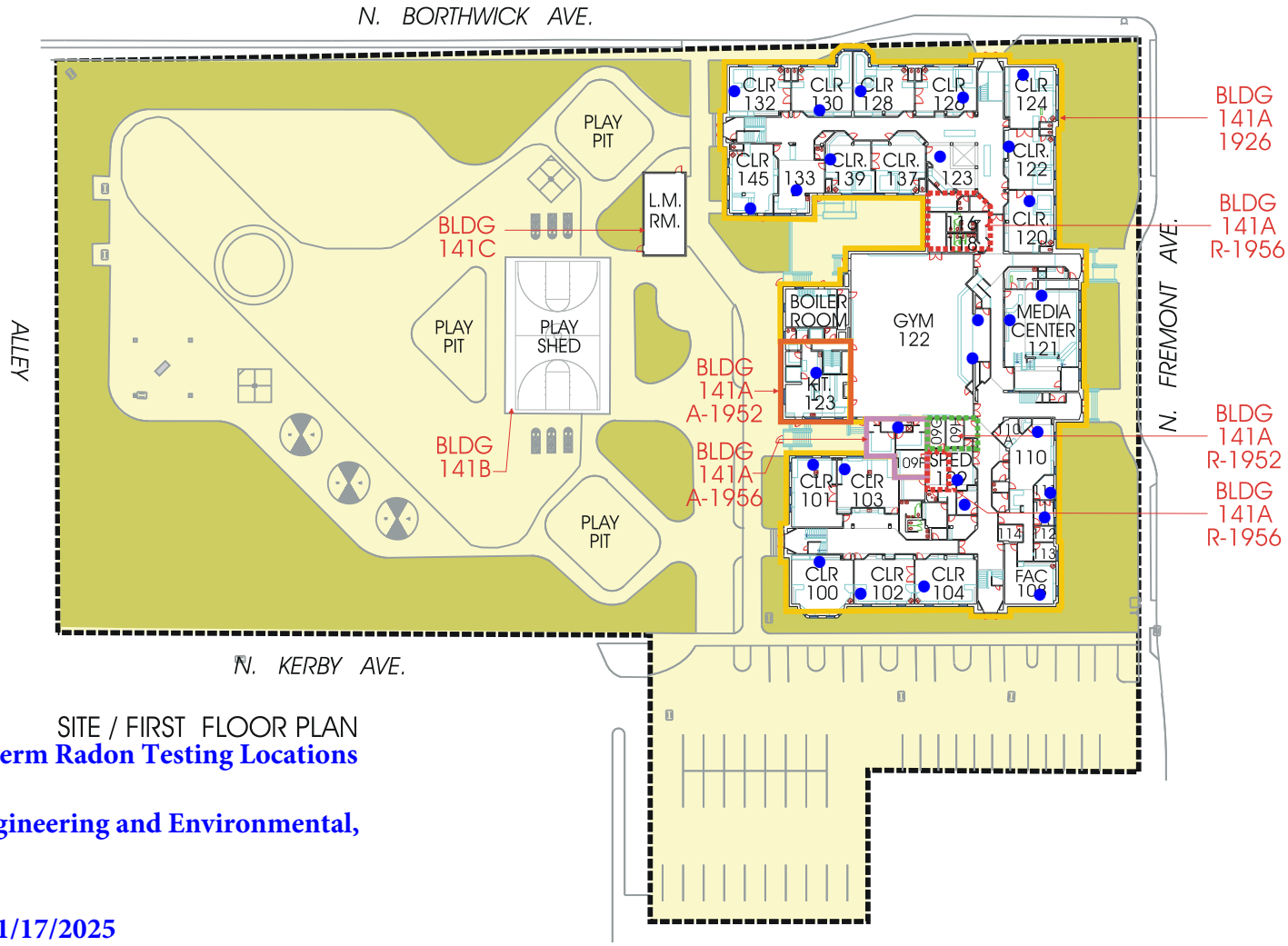
James Mastanduno
Project Manager

Attachment: Informal Sample Location Map
Radonova Laboratory Analysis Report

Portland Public Schools

FACILITIES AND ASSET MANAGEMENT

BoiseEliot Elementary School
620 N Fremont 97227
Facility Plan



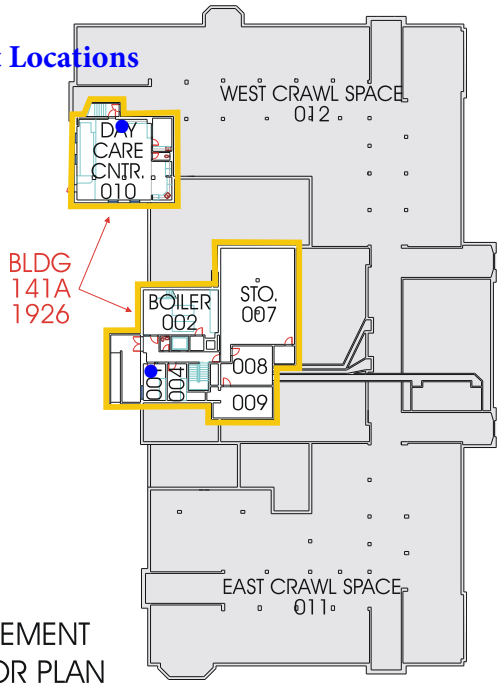
SITE / FIRST FLOOR PLAN

Short-Term Radon Testing Locations

PBS Engineering and Environmental, Inc.

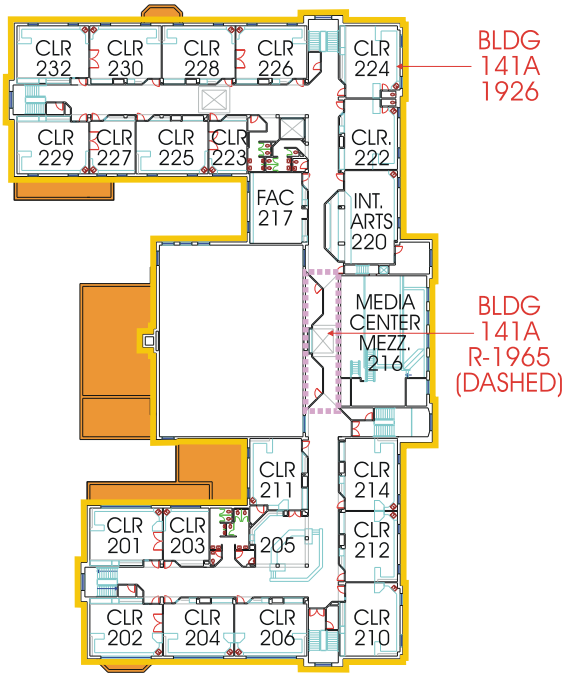
01/14-01/17/2025

• - Test Locations



BASEMENT FLOOR PLAN

TOTAL SF	61,379
ACRES	3.97
1/4 SECT.	2729



SECOND FLOOR PLAN

radonova
The global leader in radon measurement

REPORT NUMBER
6689277:2

REPORT PAGE

REPORT DATE
02/03/2025

PRINT DATE
02/03/2025

OWN ID
24012957 Task 06

BY
Apex Companies LLC (Portland)

RADON MONITORING REPORT

Description of the measurement

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

The detector(s) arrived to Alpha Energy Laboratories, Inc. **01/23/2025**.
They were measured **01/23/2025**.

Test data have been given by James Mastanduno

Property data and address

MEASURE SITE ADDRESS
Boise-Eliot Elementary School
620 N Fremont
97227

BUILDING ID

Test results

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	ROOM	FLOOR	RADON RESULT
RK108991 [QuickScreen]	*01/14/2025 03:05 PM – 01/17/2025 03:15 PM*	*Floor 1 faculty workroom, Standard*			3.3 ± 1.2 pCi/L
RK109043 [QuickScreen]	*01/14/2025 03:06 PM – 01/17/2025 03:16 PM*	*Floor 1 106 main office, Standard*			< 1.1 pCi/L
RK109057 [QuickScreen]	*01/14/2025 03:07 PM – 01/17/2025 03:17 PM*	*Floor 1 106 main office DUP, Duplicate*			< 0.9 pCi/L
RK109015 [QuickScreen]	*01/14/2025 03:08 PM – 01/17/2025 03:18 PM*	*Floor 1 110 principal, Standard*			**DNR**
RK108985 [QuickScreen]	*01/14/2025 03:09 PM –*	*Floor 1 110 conference, Standard*			**ERR**
RK110737 [QuickScreen]	*01/14/2025 03:10 PM – 01/17/2025 03:20 PM*	*Floor 1 104, Standard*			< 1.4 pCi/L
RK110721 [QuickScreen]	*01/14/2025 03:11 PM – 01/17/2025 03:21 PM*	*Floor 1 102, Standard*			1.8 ± 0.9 pCi/L

Comment to the results

Missing Stop Date for detector RK108985. Analysis is complete, but results cannot be calculated without this missing information.
This report replaces 6689277:1. Reason: new or corrected measurement information has been received.

Steve Leslie (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

DISCLAIMER
Radonova Inc. makes no warranty of any kind, express or implied, as regard to the use, operation or analysis of any Radonova Inc. monitor. Radonova Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Radonova Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com

RADON MONITORING REPORT

Description of the measurement

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

The detector(s) arrived to Alpha Energy Laboratories, Inc. **01/23/2025**.
They were measured **01/23/2025**.

Test data have been given by James Mastanduno

Property data and address

MEASURE SITE ADDRESS
Boise-Eliot Elementary School
620 N Fremont
97227

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	ROOM	FLOOR	RADON RESULT
RK109046 [QuickScreen]	*01/14/2025 03:12 PM – 01/17/2025 03:22 PM*	*Floor 1 100, Standard*			< 1.2 pCi/L
RK108970 [QuickScreen]	*01/14/2025 03:13 PM – 01/17/2025 03:23 PM*	*Floor 1 101, Standard*			< 1.1 pCi/L
RK108960 [QuickScreen]	*01/14/2025 03:14 PM – 01/17/2025 03:24 PM*	*Floor 1 103, Standard*			< 1.3 pCi/L
RK110060 [QuickScreen]	*01/14/2025 03:15 PM – 01/17/2025 03:25 PM*	*Floor 1 111, Standard*			1.6 ± 1.0 pCi/L
RK109995 [QuickScreen]	*01/14/2025 03:16 PM – 01/17/2025 03:26 PM*	*Floor 1 109, Standard*			< 1.6 pCi/L
RK110013 [QuickScreen]	*01/14/2025 03:17 PM – 01/17/2025 03:27 PM*	*Floor 1 109 DUP, Duplicate*			< 1.4 pCi/L
RK110017 [QuickScreen]	*01/14/2025 03:18 PM – 01/17/2025 03:28 PM*	*Floor 1 kitchen, Standard*			< 1.3 pCi/L
RK110037 [QuickScreen]	*01/14/2025 03:19 PM – 01/17/2025 03:29 PM*	*Floor 1 gym office, Standard*			< 1.5 pCi/L
RK110016 [QuickScreen]	*01/14/2025 03:20 PM – 01/17/2025 03:30 PM*	*Floor 1 gym, Standard*			2.2 ± 0.9 pCi/L

Comment to the results

Missing Stop Date for detector RK108985. Analysis is complete, but results cannot be calculated without this missing information.
This report replaces 6689277:1. Reason: new or corrected measurement information has been received.

Steve Leslie (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

DISCLAIMER
Radonova Inc. makes no warranty of any kind, express or implied, as regard to the use, operation or analysis of any Radonova Inc. monitor. Radonova Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Radonova Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com

RADON MONITORING REPORT

Description of the measurement

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

The detector(s) arrived to Alpha Energy Laboratories, Inc. **01/23/2025**.
They were measured **01/23/2025**.

Test data have been given by James Mastanduno

Property data and address

MEASURE SITE ADDRESS
Boise-Eliot Elementary School
620 N Fremont
97227

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	ROOM	FLOOR	RADON RESULT
RK110752 [QuickScreen]	*01/14/2025 03:21 PM – 01/17/2025 03:31 PM*	*Floor 1 gym, Standard*			1.6 ± 0.9 pCi/L
RK110760 [QuickScreen]	*01/14/2025 03:22 PM – 01/17/2025 03:32 PM*	*Floor 1 library, Standard*			1.9 ± 1.1 pCi/L
RK110777 [QuickScreen]	*01/14/2025 03:23 PM – 01/17/2025 03:33 PM*	*Floor 1 library, Standard*			2.1 ± 1.0 pCi/L
RK110717 [QuickScreen]	*01/14/2025 03:24 PM – 01/17/2025 03:34 PM*	*Floor 1 120, Standard*			< 1.7 pCi/L
RK110684 [QuickScreen]	*01/14/2025 03:25 PM – 01/17/2025 03:35 PM*	*Floor 1 122, Standard*			< 1.3 pCi/L
RK108979 [QuickScreen]	*01/14/2025 03:26 PM – 01/17/2025 03:36 PM*	*Floor 1 124, Standard*			< 2.2 pCi/L
RK108434 [QuickScreen]	*01/14/2025 03:27 PM – 01/17/2025 03:37 PM*	*Floor 1 123, Standard*			< 1.6 pCi/L
RK109003 [QuickScreen]	*01/14/2025 03:28 PM – 01/17/2025 03:38 PM*	*Floor 1 126, Standard*			< 1.1 pCi/L
RK110766 [QuickScreen]	*01/14/2025 03:29 PM – 01/17/2025 03:39 PM*	*Floor 1 126 DUP, Duplicate*			1.0 ± 0.7 pCi/L

Comment to the results

Missing Stop Date for detector RK108985. Analysis is complete, but results cannot be calculated without this missing information.
This report replaces 6689277:1. Reason: new or corrected measurement information has been received.

Steve Leslie (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

DISCLAIMER
Radonova Inc. makes no warranty of any kind, express or implied, as regard to the use, operation or analysis of any Radonova Inc. monitor. Radonova Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Radonova Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com

RADON MONITORING REPORT

Description of the measurement

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

The detector(s) arrived to Alpha Energy Laboratories, Inc. **01/23/2025**.
They were measured **01/23/2025**.

Test data have been given by James Mastanduno

Property data and address

MEASURE SITE ADDRESS
Boise-Eliot Elementary School
620 N Fremont
97227

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	ROOM	FLOOR	RADON RESULT
RK110012 [QuickScreen]	*01/14/2025 03:30 PM – 01/17/2025 03:40 PM*	*Floor 1 128, Standard*			< 1.1 pCi/L
RK109000 [QuickScreen]	*01/14/2025 03:31 PM – 01/17/2025 03:41 PM*	*Floor 1 137, Standard*			< 1.6 pCi/L
RK108988 [QuickScreen]	*01/14/2025 03:32 PM – 01/17/2025 03:42 PM*	*Floor 1 139, Standard*			0.9 ± 0.9 pCi/L
RK109970 [QuickScreen]	*01/14/2025 03:33 PM – 01/17/2025 03:43 PM*	*Floor 1 130, Standard*			< 1.6 pCi/L
RK109978 [QuickScreen]	*01/14/2025 03:34 PM – 01/17/2025 03:44 PM*	*Floor 1 133, Standard*			< 1.5 pCi/L
RK109992 [QuickScreen]	*01/14/2025 03:35 PM – 01/17/2025 03:45 PM*	*Floor 1 133 DUP, Duplicate*			< 1.4 pCi/L
RK109981 [QuickScreen]	*01/14/2025 03:36 PM – 01/17/2025 03:46 PM*	*Floor 1 145, Standard*			< 1.8 pCi/L
RK110039 [QuickScreen]	*01/14/2025 03:37 PM – 01/17/2025 03:47 PM*	*Floor 1 132, Standard*			< 1.7 pCi/L
RK110761 [QuickScreen]	*01/14/2025 03:38 PM – 01/17/2025 03:48 PM*	*Floor 0 daycare 010, Standard*			< 0.9 pCi/L

Comment to the results

Missing Stop Date for detector RK108985. Analysis is complete, but results cannot be calculated without this missing information.
This report replaces 6689277:1. Reason: new or corrected measurement information has been received.

Steve Leslie (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

DISCLAIMER
Radonova Inc. makes no warranty of any kind, express or implied, as regard to the use, operation or analysis of any Radonova Inc. monitor. Radonova Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Radonova Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com

RADON MONITORING REPORT

Description of the measurement

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

The detector(s) arrived to Alpha Energy Laboratories, Inc. **01/23/2025**.
They were measured **01/23/2025**.

Test data have been given by James Mastanduno

Property data and address

MEASURE SITE ADDRESS
Boise-Eliot Elementary School
620 N Fremont
97227

BUILDING ID

DETECTOR	MEASUREMENT PERIOD	DESCRIPTION / LOCATION	ROOM	FLOOR	RADON RESULT
RK127882 [QuickScreen]	*01/14/2025 03:39 PM – 01/17/2025 03:49 PM*	*Floor 0 custodial office, Standard*			< 1.1 pCi/L
RK109058 [QuickScreen]	*01/14/2025 03:39 PM – 01/17/2025 03:49 PM*	*BLANK, Blank*			< 1.0 pCi/L
RK137562 [QuickScreen]	*01/14/2025 03:39 PM – 01/17/2025 03:49 PM*	*BLANK, Blank*			< 0.8 pCi/L

Comment to the results

Missing Stop Date for detector RK108985. Analysis is complete, but results cannot be calculated without this missing information.
This report replaces 6689277:1. Reason: new or corrected measurement information has been received.

Steve Leslie (Electronically signed)

Signature Radonova Laboratories Laboratory Measurement Specialist

This report may only be reproduced in full, unless issuing laboratory has given prior written approval.

DISCLAIMER

Radonova Inc. makes no warranty of any kind, express or implied, as regard to the use, operation or analysis of any Radonova Inc. monitor. Radonova Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Radonova Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com

What Does My Result Mean?

The United States Environmental Protection Agency (EPA) recommends remediation if the results of one long-term test (greater than 90 days) or one short-term test with a continuous monitor or the average of two passive short-term (less than 90 days) tests* conducted in the lowest lived-in level of the home report at or above 4.0 pCi/L. *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. For more information, or to find a certified mitigation professional, contact your state radon office, the National Radon Proficiency Program (**www.nrpp.info**) or the National Radon Safety Board (**www.nrsb.org**).

Result (pCi/L)	Recommended Action
Less than 2.0	Retest the building at least every 5 years
2.0 - 3.9	Consider Mitigation, retest the building at least every 5 years
4.0 or Higher	Mitigate, test again at least every 2 years to ensure that the system remains effective

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. Detector deployment is not performed by Radonova Laboratories. Measurement information such as monitoring period (dates) and placement location is provided to Radonova Laboratories by the end user. The presented result applies only to the sample tested as received by the laboratory.

Codes on non-reportable detectors

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

Measurement method versions used when the report was created

ANSI/AARST MAH-2023, Protocol for Conducting Measurements of Radon and Radon Decay Products in Homes
ANSI/AARST MA-MFLB-2023, Protocol for Measurements of Radon in Multifamily, School, Commercial and Mixed-Use Buildings

Radon measurements in the US

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 the lowest lived-in level of the home report at or above 4.0 pCi/L. 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 per-formed 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 greater than 10 pCi/L, a short-term follow-up measurement is recommended in order to get a fast result. If an initial short-term test result is between 4 pCi/L and 10 pCi/L, a long-term or a short-term follow-up measurement is recommended. For more information about the interpretation of your test results or about other radon related issues we suggest contacting your state radon office.

Your state radon office should have the available EPA publications:

- A Citizen's Guide to Radon
- Home Buyer's and Seller's Guide to Radon
- Consumer's Guide to Radon Reduction

Signature on the report

With the signature on the report, the Measurement specialist at Radonova Laboratories certifies that the quality control procedures follows the guidance in accordance with the AARST/ANSI Measurement Protocols. Measurement information displayed in italics on report has been provided by the customer.

Certification no:

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

APPEND_US_EN_002_REPORT_v250116:1.ppcd

DISCLAIMER
Radonova Inc. makes no warranty of any kind, express or implied, as regard to the use, operation or analysis of any Radonova Inc. monitor. Radonova Inc. specifically disclaims implied warranties of merchantability and fitness for a particular purpose. Radonova Inc. is not responsible for any damage, including consequential damages, to persons or property resulting from the use of the monitor or the resulting data.

RADONOVA INC.
1 EAST 22nd STREET, SUITE 200
LOMBARD, IL 60148
331.814.2200, help@radonova.com