

# KELSAY

## Environmental Consulting

June 22, 2020

Mr. Kevin Strong  
Business Manager  
Sweet Home School District Office  
1920 Long Street  
Sweet Home, Oregon 97386

RE: Long-Term Radon Sampling at Little Promises School

Kelsay Environmental performed a long-term radon survey at Little Promises School located at 28028 Pleasant Valley Road, Sweet Home, Oregon. Sampling began on November 20, 2019 as a screening for potential Radon concerns in compliance with Oregon Revised Statute (ORS) 332.116-167. *Long-term sampling* is defined by a minimum of 90 days which helps account for normal fluctuations in building conditions over time.

Under ORS 332.166-167, radon testing in Oregon Schools must be performed by January 1<sup>st</sup>, 2021. The sampling protocol was derived from a document produced by the Oregon Health Authority called "Testing for Elevated Radon in Oregon Schools, A Protocol and Plan". The screening was performed to determine if radon levels in the building were above the Environmental Protection Agency's (EPA) action level of 4.0 pCi/L (picocuries per liter). If levels exceed the action level, a remediation process must be enacted to mitigate exposure levels. This survey would be the basis of that remediation plan.

Testing locations included every occupied room on the first floor of the structure. According to ORS 332.166-167, it specifies that "at a minimum, any frequently-occupied room in contact with the ground or located above a basement or crawlspace" should be tested.

### **Sampling Procedures**

Kelsay Environmental conducted sampling for radon gas in all occupied rooms that were bordered by ground or soil. Little Promises School consists of a concrete foundation with one floor. Samples were collected using Alpha Track AT-100 diffusion-based track radon monitors from Accustar Labs. A total of 11 rooms were tested (see attached table for locations). In addition, two duplicates, one spike and a blank were submitted to the lab to ensure quality control. A total of 17 detector kits were used.

Radon detectors were placed in each occupied space, particularly within the height of the normal breathing zone (between 2 and 6 feet in height) on November 20, 2019. The conditions of the building were such that the HVAC system was operating under normal occupancy conditions and the building was occupied as usual on a day-to-day basis. Samples were retrieved on March 27, 2020, providing for 128 total days of sampling, and then submitted to the Accustar Laboratory for analysis, a NELAP accredited lab, using electrochemical etching to process its alpha track foils

which are subsequently counted with computer-aided image analysis equipment.

Samples to be spiked for quality control are sent to the Bowser-Morner Radon Reference Laboratory. Samples are exposed to specific concentrations of radon in a radon reference chamber and are then submitted to the Accustar Labs for analysis. The results are compared to the known spike concentration to ensure quality control.

**Results and Discussion**

Radon gas is generally always present in varying quantities, inside and outside of buildings. According to the EPA, radon gas averages 1.3 pCi/L inside buildings across the country, with 0.4 pCi/L generally considered background level. The background level is also the analytical level of detection for AccuStar Labs, levels below which cannot be accurately measured.

**Laboratory results indicate all measured radon gas concentrations were below the action level of 4.0 pCi/L.**

**Spiked samples** were within acceptable parameters for quality assurance based on the Relative Percentage Error (RPE). 6.1 pCi/L is the analytical result for the spikes from Bowser-Morner.

$$((\text{Measured Value} - \text{Reference Value}) / \text{Reference Value}) \times 100\%$$

**Duplicate and blank samples** were as well within acceptable parameters based on the Relative Percent Difference:

$$((\text{Initial Result} - \text{Duplicate Result}) / \text{Average of Both Results}) \times 100\%$$

**TABLE 1  
 SPIKE/DUPLICATE/BLANK SAMPLE RESULTS  
 LITTLE PROMISES SCHOOL**

Sample No.	Sample Variety	Location	Results (pCi/L)	Relative Percentage Error/Difference	Acceptance
4327093	Spike	NA	6.2	1.63 %	Yes
4326988/ 4326987	Duplicate/Original	Break Room	2.1 – 2.2	4.65 %	Yes
4326879/ 4326876	Duplicate/Original	Gym Stage	1.0 – 0.9	10.52 %	Yes
ADD #	Blank				TBD

\*Blanks should be close to 0.00 pCi/L or near the laboratory analytical level of detection  
 \*A trend in RPE values over +/-30 pCi/L should be investigated  
 \*RPD values of >27% should be questioned for results over 4.0 pCi/L  
 \*RPD values of >49% should be questioned for results between 2.0-3.9 pCi/L

June 22, 2020  
Mr. Kevin Strong  
Long-Term Radon Sampling at Pleasant Valley School

## Recommendations

Radon levels throughout the structure were all below the EPA Action Level of 4.0 pCi/L and therefore remediation procedures are not required now. Oregon Health Authority (ORS 332.166-167) requires schools to re-test for radon every 10 years regardless of initial testing results or whether mitigation was done.

Sincerely,



Industrial Hygienist

Attachments: Long-Term Radon Sampling Table  
Lab Results/Chain of Custody  
Exposure in Bowser-Morner Radon Chamber

**Radon Sampling Table**  
**Little Promises**  
**28028 Pleasant Valley Rd.**  
**Sweet Home, Oregon**

DEVICE NUMBER	START DATE	STOP DATE	Total Days	LOCATION	RADON pCi/L
4326964	11/20/2019	3/27/2020	129	Office	1.1
4326965	11/20/2019	3/27/2020	129	Principal	0.8
4326975	11/20/2019	3/27/2020	129	Health Room	0.9
4326963	11/20/2019	3/27/2020	129	Nursery	0.8
4326962	11/20/2019	3/27/2020	129	Wobblers	0.7
4326961	11/20/2019	3/27/2020	129	Room 2	1.2
4326990	11/20/2019	3/27/2020	129	Room 3	1.1
4326989	11/20/2019	3/27/2020	129	Room 4	1.2
4326987	11/20/2019	3/27/2020	129	Break Room	2.2
426988	11/20/2019	3/27/2020	129	Break Room Duplicate	2.1
4326986	11/20/2019	3/27/2020	129	Room 5	1.8
4326878	11/20/2019	3/27/2020	129	Gym	1.1
4326880	11/20/2019	3/27/2020	129	Gym	0.9
4326876	11/20/2019	3/27/2020	129	Gym Stage	0.9
4326879	11/20/2019	3/27/2020	129	Gym Stage Duplicate	1.0
4327093	11/20/2019	3/27/2020	129	Spike	6.2
4326999				BLANK	TBD

**Bold** - Indicates Exceeds Action Level  
EPA Action Level: 4.0 pCi/L  
"<": Below the level of detection

Kelsay Environmental  
833 SE Main St., Suite 410  
Portland, Oregon 97214

NELAC NY 11769  
NRPP 103216 AL  
NRSB ARL0017

EPA Method #402-R-92-004  
Alpha Track  
NRPP Device Code 8205  
NRSB Device Code 12001

Laboratory Report for:

Property Tested:

Kelsay Environmental  
833 Southeast Main Street 410  
Portland OR 97214

Little Promises  
28028 Pleasant Valley Road  
Sweet Home OR 97386

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
2673812	4326964	11/20/2019	03/27/2020	Office	1.1
2673813	4326965	11/20/2019	03/27/2020	Principle	0.8
2673814	4326975	11/20/2019	03/27/2020	Health Room	0.9
2673815	4326963	11/20/2019	03/27/2020	Nursey	0.8
2673816	4326962	11/20/2019	03/27/2020	Wobblers	0.7
2673817	4326961	11/20/2019	03/27/2020	Room 2	1.2
2673818	4326990	11/20/2019	03/27/2020	Room 3	1.1
2673819	4326989	11/20/2019	03/27/2020	Room 4	1.2
2673820	4326987	11/20/2019	03/27/2020	Break Room	2.2
2673821	4326988	11/20/2019	03/27/2020	Break Room Duplicate	2.1
2673822	4326986	11/20/2019	03/27/2020	Room 5	1.8

**Comment:** Confidential: Release results to client only. Kelsay Environmental was emailed a copy of this report.

Test Performed By: Placed: Lisa Janik Retrieved: Lisa Janik

Distributed by: Kelsay Environmental

Date Received: 04/07/2020 Date Logged: 04/22/2020 Date Analyzed: 05/05/2020 Date Reported: 05/19/2020

Report Reviewed By: 

Report Approved By: 

**Disclaimer:**

Shawn Price, Director of Laboratory Operations, AccuStar Labs

The uncertainty of this radon measurement is ~+/- 15 %. 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.

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NRPP 103216 AL  
NRSB ARL0017

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Alpha Track  
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Laboratory Report for:

Property Tested:

Kelsay Environmental  
833 Southeast Main Street 410  
Portland OR 97214

Little Promises  
28028 Pleasant Valley Road  
Sweet Home OR 97386

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result pCi/L
2673823	4326878	11/20/2019	03/27/2020	Gym	1.1
2673824	4326880	11/20/2019	03/27/2020	Gym	0.9
2673825	4326876	11/20/2019	03/27/2020	Gym-Stage	0.9
2673826	4326879	11/20/2019	03/27/2020	Gym-Stage Duplicate	1.0
2673827	4327093	11/20/2019	03/27/2020	Spike	6.2

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1/2

Send Written Report To: (omit clearly)

Kelsay Environmental  
833 SE Main St Suite 410  
Portland, OR 97214

Contact: \_\_\_\_\_ Tel: 503-995-2557

E-Mail Address: LJANK.KES@gmail.com

B.Kelsay.KES@gmail.com

Start your test before the expiration date shown on your device or your test results will be invalid.

Project Number: \_\_\_\_\_

Site Name

Address

City State Zip

Technician Name:

Technician Signature:

(if required)

Tech Certification #: \_\_\_\_\_

(if required)

Little Promise S  
2808 Pleasant Valley Rd.  
Sweet Home, OR 97386  
Lisa Jank

Lab Use Only	Device Number	Building #	Unit #	Floor	Name of Room	Start Date	Stop Date	Lab Use
	<del>4328984</del>		1		Office	11/20/19	3/8/20	
	<del>4328985</del>		2		Principle			
	<del>4328975</del>		3		Health Rm			
	<del>4328983</del>		4		Nursery			
	<del>4328982</del>		5		Cushions			
	<del>4328981</del>		6		Room 2			
	<del>4328990</del>		7		Room 3			
	<del>4328989</del>		8		Room 4			
	<del>4328987</del>		9		Break Rm			
	<del>4328988</del>		10		Fr. Rm Devices			

Place up to 10 devices together with the matching datasheet in a plastic "zip lock" bag. Please see the back of this datasheet for test instructions.

Send Written Report To: (print clearly)

Project Number: \_\_\_\_\_  
 Site Name: Little Premises  
 Address: \_\_\_\_\_  
 City State Zip: \_\_\_\_\_

\_\_\_\_\_

Technician Name: \_\_\_\_\_

Contact: \_\_\_\_\_ Tel: \_\_\_\_\_

Technician Signature: \_\_\_\_\_ (if required)

Tech Certification #: \_\_\_\_\_ (if required)

E-Mail Address: \_\_\_\_\_

**Start your test before the expiration date shown on your device or your test results will be invalid.**

Lab Use Only	Device Number	Building #	Unit #	Floor	Name of Room	Start Date <small>Month/Day/Year</small>	Stop Date <small>Month/Day/Year</small>	Lab Use
	*4328886*		11		Room 5			
	*4328878*		12		Gym			
	*4328890*		13		Gym			
	*4328876*		14		Gym <sup>store</sup>			
	*4328879*		15		Gym <sup>store</sup> duplicate			
	*4327093*		16		SPRINK			

Place up to 10 devices together with the matching datasheet in a plastic "zip lock" bag. Please see the back of this datasheet for test instructions.



# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Kelsay Environmental Job Number 194065

NOMINAL Conditions: Radon Conc 25.9 pCi/L Rel. Hum 50.1 % Temp. 70.2 F  
777.2 pCi/L

Date Start: 2/9/20 Date Stop: 3/10/20 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0817 Time Stop: 0817 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (24) Alpha Tracks - Device No.'s: \_\_\_\_\_  
4326967, 4326968, 4327065, 4326966,  
4327143, 4326953, 4327142, 4326955,  
4327063, 4327061, 4327064, 4327141,  
4327092, 4327093, 4327094, 4327091,  
4326970, 4327095, 4326954, 4327059,  
ms right 4327060, 4327062, 4326969, 4327144

128 Day Conversion:  $30 \times 25.9 =$   
128