

# Coleman Creek Consulting, Inc.

## **INITIAL RADON AIR SAMPLING OF MAZAMA HIGH SCHOOL FOR KLAMATH COUNTY SCHOOL DISTRICT 2845 GREENSPRINGS DRIVE, KLAMATH FALLS, OREGON**

### **INTRODUCTION**

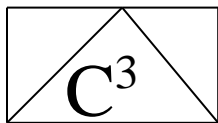
Coleman Creek Consulting, Inc. (CCC) was retained by Klamath County School District (KCSD) to perform radon air sampling as required by State Statute ORS 332.166-167. KCSD is required to perform complete radon air testing of District owned and occupied facility buildings by January 1, 2021. The purpose of the initial radon air sampling was to collect radon air samples from all regularly occupied rooms within school buildings, with the exception of storage, restrooms, kitchen, locker rooms, and compare analytical results with the EPA recommended “Action Level” concentration for radon. Short-term radon air sampling was selected for this project.

### **RADON INFORMATION AND HEALTH EFFECTS**

Radon is a naturally occurring radioactive gas that is produced by natural deposits of uranium in soil, and is found world-wide. Uranium naturally decays into Radium, and Radium can produce Radon gas. Radon gas can travel up through soil and enter buildings in contact with soil. Radon gas entering a building may become concentrated in the lowest part of the building in areas with little fresh air mixing. If radon is inhaled into lungs, particle decay processes can release radiation, potentially damaging lung tissue, and over time leading to lung cancer. The Environmental Protection Agency (EPA) has estimated that Radon is the primary cause of lung cancer among non-smokers. EPA recommends reducing the concentration of Radon in indoor environments to below the Action Level of 4.0 pCi/L (pico-curies per Liter of air).

### **INITIAL RADON AIR SAMPLING**

David W. Fawcett of CCC trained KCSD employees, including school custodians in radon sampling procedures December 4, 2020. Jimmy Yoder, Mazama High School (MHS) Custodian placed radon air test kits in the MHS buildings at the beginning of the day, December 7, 2020. A total of 94 locations were sampled according to guidelines established in the Oregon Health Authority (OHA) “Testing for Elevated Radon in Oregon Schools, A Protocol and Plan”, dated 2016. Mr. Yoder returned to MHS December 10, 2020, at the beginning of the day, and collected all radon test kits placed for sampling. See Radon Air Sample Record Sheets (pages 4-9) for locations of all areas sampled. All samples collected were packaged by Mr. Fawcett, and sent overnight to Air Chek, Inc., in Mills River, North Carolina for analysis.



## LABORATORY ANALYSIS RESULTS

The radon air test kit samples collected from MHS buildings were reported ranging from <0.3 to 2.0 pCi/L (picocuries per liter of air). A complete listing of laboratory results and locations is found in the Air Chek, Inc. Laboratory Analysis Report in Appendix A.

## QUALITY ASSURANCE

To ensure that test results are reliable and accurate, quality assurance samples, including duplicate test kits (placed in same room), blank test kits (not sampled at all), and spike sampling (exposing test kits to a measured amount of radon prior to laboratory submission) were all employed during Radon sampling. The number of duplicate, blank, and spike test kits utilized during sampling followed OHA testing protocol guidelines.

## DUPLICATE TEST KITS

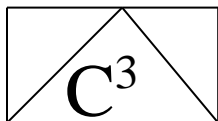
A total of nine duplicate test kits were placed during initial test kit sampling. See duplicate designation on the Radon Air Sample Record Sheets. The nine duplicate test kit sets were reported with paired concentrations of 1.2/0.8 pCi/L, <0.3/<0.3 pCi/L, <0.3/<0.3 pCi/L, 0.9/0.7 pCi/L, <0.3/0.7 pCi/L, 0.8/1.0 pCi/L, <0.3/<0.3 pCi/L, <0.3/<0.3 pCi/L, and 1.3/0.6 pCi/L. The Relative Percent Difference for each pair was 0%, 72%, 0% and 0%. Six of the pairs were within the expected range of 0-25% Relative Percent Difference, with the other three pairs reported with a concentration <2.0 pCi/L, indicating Radon concentrations were too low to apply the Relative Percent Difference test.

## BLANK TEST KITS

Five blank test kits were submitted to Air Chek with the other MHS Radon test kits. All five blank test kits were reported with <0.3 pCi/L. All blank tests were reported none detected for Radon.

## SPIKE TEST KIT ANALYSIS

One test kit was submitted to Bowser-Morner for Radon Spike processing. The test kit was exposed to 25.7 pCi/L for three days from December 4 through December 7, 2020. See Appendix B for the Bowser-Morner Radon Exposure test information. The “Spiked” test kit was submitted to Air Chek for analysis along with the other CHS Radon test kits. The Spike samples were reported with 15.9 pCi/L, 14.6 pCi/L, and 16.7 pCi/L. The relative percentage error for each of the three Spike samples was calculated to be -38%, -43%, and -35%, all in the out of control range (greater than -30%). The Spike lab Bowser-Moerner was contacted, and did not report any unusual occurrence during Spike activities. The analytical lab (Air Chek) was contacted, and no unusual occurrences were noted during test kit analysis. Spike test kits were shipped twice during cold temperatures, and that may have had an effect on the Spike sample results. In addition, the complete KCS D Spike sample results exhibit a rather uniform grouping, with results ranging from 13.0 to 17.3 pCi/L, all below the Spiked concentration of 25.7 pCi/L. The Spike sample is identified as Serial #9418096 on the Laboratory Analysis Report in Appendix A.



## **RADON RESULTS AND FUTURE ACTIONS**

The 2016 OHA Testing of Elevated Radon in Oregon Schools Protocol and Plan describes future steps to take based on initial Radon sample results. The following is a description of recommended actions based on Radon concentrations reported.

1. If <2.0 pCi/L Radon is reported, ORS 332.166-167 requires Radon re-test every 10 years.
2. If 2.0 pCi/L to 4.0 pCi/L Radon is reported, consider lowering the Radon concentration in the room.
3. If 4.0 pCi/L to 8.0 pCi/L Radon is reported, perform follow-up Radon measurement in the affected room(s) using a long-term test. Conduct over the school year as much as possible. If that result is equal to or greater than 4.0 pCi/L, Radon concentration in the room should be lowered.
4. If equal to or greater than 8.0 pCi/L Radon is reported, conduct a second short-term test and average the result with the initial Radon result. If the average result of the two short-term tests is equal to or greater than 4.0 pCi/L, Radon concentration in the room should be lowered.

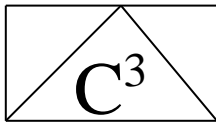
## **DISCUSSION OF INTIAL RADON SAMPLING RESULTS**

The initial Radon short-term sampling in Mazama High School buildings were reported with Radon concentrations ranging from <0.3 to 2.0 pCi/L. All Radon test kit samples were reported < 4.0 pCi/L, indicating that a re-test should be performed in 10 years.

CCC appreciates the opportunity to provide initial radon air testing and consulting to Klamath County School District.

Sincerely,

David W. Fawcett  
Director of Consulting Operations



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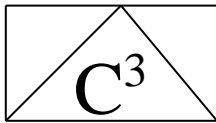
## RADON AIR SAMPLE RECORD SHEET

SCHOOL: Mazama High School  
ADDRESS: 3009 Summers Lane  
Klamath Falls, Oregon

DATE: 12-07-20/12-10-20  
SAMPLER: Jimmy Yoder

SERIAL #	BUILDING	Duplicate	LOCATION	START TIME	STOP TIME
9418532	Main		<b>1 – Reception</b>	0600	0600
9418533	Main		<b>2 – Karen Office</b>	0601	0601
9418534	Main		<b>3 – V Lease Office</b>	0602	0602
9418535	Main		<b>4 – Office</b>	0615	0603
9418536	Main		<b>5 – Losce Office</b>	0616	0604
9418537	Main		<b>6 – Hawkins Office</b>	0617	0605
9418538	Main		<b>7 – Rooney Office</b>	0621	0606
9418539	Main		<b>8 – Ojeda Office</b>	0623	0607
9418540	Main		<b>9 – SRO</b>	0622	0608
9418541	Main		<b>10 – Nurse</b>	0626	0609
9418542	Main	Yes	<b>10 – Nurse</b>	0627	0610
9418543	Main		<b>11 – Yancey</b>	0632	0730
9418544	Main		<b>12 – Schaefer</b>	0633	0611
9418545	Main		<b>13 – Library East</b>	0635	0613
9418546	Main		<b>14 – Library West</b>	0639	0614
9418547	Main		<b>15 – Library Office</b>	0641	0615
9418548	Main		<b>16 – Library Computers</b>	0643	0616
9418549	Main		<b>17 – Room 32</b>	0645	0617
9418550	Main		<b>18 – Room 31</b>	0647	0617
9418551	Main		<b>19 – Room 14</b>	0648	0618
9418552	Main		<b>20 – Room 33</b>	0651	0619
9418553	Main	Yes	<b>20 – Room 33</b>	0651	0620

Comments: **Spike Sample =**  
**Blank Sample = 9418554**



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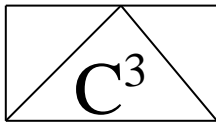
## RADON AIR SAMPLE RECORD SHEET

SCHOOL: Mazama High School  
ADDRESS: 3009 Summers Lane  
Klamath Falls, Oregon

DATE: 12-07-20/12-10-20  
SAMPLER: Jimmy Yoder

SERIAL #	BUILDING	Duplicate	LOCATION	START TIME	STOP TIME
9418555	Main		<b>21 – Room 35</b>	0654	0621
9418556	Main		<b>22 – Computer Room</b>	0655	0623
9418557	Main		<b>23 – Room 37</b>	0658	0622
9418558	Main		<b>24 – Room 34</b>	0659	0624
9418559	Main		<b>25 – Room 46</b>	0700	0625
9418560	Main		<b>26 – Room 12</b>	0705	0626
9418561	Main		<b>27 – SAP Room</b>	0706	0627
9418562	Main		<b>28 – Room 11</b>	0708	0628
9418563	Main		<b>29 – Room 9</b>	0711	0629
9418564	Main		<b>30 – Room 7</b>	0712	0630
9418565	Main	Yes	<b>30 – Room 7</b>	0713	0630
9418567	Main		<b>31 – Room 5</b>	0714	0631
9418568	Main		<b>32 – Room 51</b>	0717	0632
9418569	Main		<b>33 – Room 53</b>	0720	0633
9418570	Main		<b>34 – Room 52</b>	0721	0634
9418571	Main		<b>35 – Room 54</b>	0722	0635
9418572	Main		<b>36 – Room 56</b>	0723	0636
9418573	Main		<b>37 – Staff Room</b>	0724	0637
9418574	Main		<b>38 – Room 55</b>	0726	0638
9418575	Main		<b>39 – Room 57</b>	0728	0638
9418576	Main		<b>40 – Room 58</b>	0729	0639
9418577	Main	Yes	<b>40 – Room 58</b>	0729	0639

Comments: **Spike Sample = 9418566**  
**Blank Sample = 9418578**



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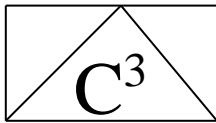
## RADON AIR SAMPLE RECORD SHEET

SCHOOL: Mazama High School  
ADDRESS: 3009 Summers Lane  
Klamath Falls, Oregon

DATE: 12-07-20/12-10-20  
SAMPLER: Jimmy Yoder

SERIAL #	BUILDING	Duplicate	LOCATION	START TIME	STOP TIME
9418579	Main		<b>41 – Room 61</b>	0732	0640
9418580	Main		<b>42 – Wrestling Gym East</b>	0733	0641
9418581	Main		<b>43 – Wrestling Gym North</b>	0734	0641
9418582	Main		<b>44 – Wrestling Gym West</b>	0735	0641
9418583	Main		<b>45 – Room 49</b>	0742	0644
9418584	Main		<b>46 – Room 47</b>	0744	0645
9418585	Main		<b>47 – Room 48</b>	0746	0646
9418586	Main		<b>48 – Room 46</b>	0750	0647
9418587	Main		<b>49 – Room 44</b>	0752	0648
9418588	Main		<b>50 – Room 42</b>	0753	0649
9418589	Main	Yes	<b>50 – Room 42</b>	0754	0649
9418590	Main		<b>51 – Room 45</b>	0755	0650
9418591	Main		<b>52 – Room 43</b>	0756	0651
9418592	Main		<b>53 – Main Gym North</b>	0800	0651
9418593	Main		<b>54 – Main Gym South</b>	0801	0652
9418594	Main		<b>55 – Main Gym South</b>	0803	0652
9418595	Main		<b>56 – Main Gym North</b>	0805	0653
9418596	Main		<b>57 – Upper Gym North</b>	0807	0656
9418597	Main		<b>58 – Upper Gym West</b>	0808	0657
9418598	Main		<b>59 – Upper Gym East</b>	0809	0657
9418599	Main		<b>60 – Room 65</b>	0817	0700
9418600	Main	Yes	<b>60 – Room 65</b>	0818	0700

Comments: **Spike Sample = 9418601**  
**Blank Sample = 9418602**



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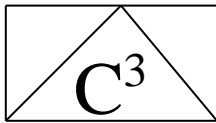
## RADON AIR SAMPLE RECORD SHEET

SCHOOL: Mazama High School  
ADDRESS: 3009 Summers Lane  
Klamath Falls, Oregon

DATE: 12-07-20/12-10-20  
SAMPLER: Jimmy Yoder

SERIAL #	BUILDING	Duplicate	LOCATION	START TIME	STOP TIME
9418603	Main		<b>61 – Cafeteria South</b>	0822	0702
9418604	Main		<b>62 – Cafeteria East</b>	0824	0703
9418605	Main		<b>63 – Cafeteria North</b>	0826	0704
9418606	Main		<b>64 – Band Room</b>	0827	0707
9418607	Main		<b>65 – Stage</b>	0829	0707
9418608	Main		<b>66 – Choir Room</b>	0830	0708
9418609	Main		<b>67 – Office at Boiler Room</b>	0831	0713
9418610	Main		<b>68 – Wood Shop East</b>	0845	0715
9418611	Main		<b>69 – Wood Shop North</b>	0846	0715
9418612	Main		<b>70 – Wood Shop Office</b>	0848	0716
9418613	Main	Yes	<b>70 – Wood Shop Office</b>	0849	0716
9418614	Main		<b>71 – Auto Shop East</b>	0853	0718
9418615	Main		<b>72 - Auto Shop Office</b>	0854	0718
9418616	Main		<b>73 – Room 27</b>	0857	0719
9418617	Main		<b>74 – Room 25</b>	0859	0720
9418618	Main		<b>75 – Room 23</b>	0900	0721
9418619	Main		<b>76 – Science Lab East</b>	0906	0722
9418620	Main		<b>77 – Room 22</b>	0907	0723
9418621	Main		<b>78 – Room 16</b>	0909	0724
9418622	Main		<b>79 – Conference Room</b>	0911	0725
9418623	Main		<b>80 – Room 15</b>	0913	0726
9418624	Main	Yes	<b>80 – Room 15</b>	0914	0727

Comments: **Spike Sample =**  
**Blank Sample = 9418625**



# Coleman Creek Consulting, Inc.

## RADON AIR SAMPLE RECORD SHEET

SCHOOL: Mazama High School  
ADDRESS: 3009 Summers Lane  
Klamath Falls, Oregon

DATE: 12-07-20/12-10-20  
SAMPLER: Jimmy Yoder

SERIAL #	BUILDING	Duplicate	LOCATION	START TIME	STOP TIME
9418626	Main		<b>81 – Room</b>	0916	0728
9418627	Main		<b>82 – Room</b>	0918	0729
9418628	Main		<b>83 – Room</b>	0919	0730
9418629	Child Care		<b>84 - Office</b>	0924	0736
9418630	Child Care		<b>85 – Waiting Area</b>	0925	0737
9418631	Child Care		<b>86 – Staff Lounge</b>	0926	0738
9418632	Child Care		<b>87 – Office</b>	0927	0738
9418871	White Ho.		<b>88 – Waiting Area</b>	0928	0740
9418872	White Ho.		<b>89 – Family Room</b>	0933	0741
9418873	White Ho.		<b>90 – Living Room</b>	0934	0743
9418874	White Ho.	Yes	<b>90 – Living Room</b>	0935	0743
9418876	White Ho.		<b>91 – Nurse Office</b>	0940	0745
9418877	White Ho.		<b>92 – Staff Lounge</b>	0941	0746
9418878	White Ho.		<b>93 – Deanna Office</b>	0942	0747
9418879	White Ho.		<b>94 – Office</b>	0943	0748

Comments: **Spike Sample = 941875**  
**Blank Sample = 941880**



## **APPENDIX A**

### **AIR CHEK LABORATORY ANALYSIS REPORT**

Radon test result report for:**MAZAMA HS****20572000**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9418532	RECEP.	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.6 ± 0.4	2020-12-15
9418533	KAREN	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.8 ± 0.4	2020-12-15
9418534	LEASE	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	1.0 ± 0.4	2020-12-15
9418535	OFFICE	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.9 ± 0.4	2020-12-15
9418536	OFFICE	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	1.1 ± 0.4	2020-12-15
9418537	HAWKINS	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.7 ± 0.4	2020-12-15
9418538	ROONEY	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.8 ± 0.4	2020-12-15
9418539	OSEDA	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	1.1 ± 0.4	2020-12-15
9418540	SRO	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.9 ± 0.4	2020-12-15
9418541	NURSE	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	1.2 ± 0.4	2020-12-15
9418542	NURSE	2020-12-07 @ 6:00 am	2020-12-10 @ 6:00 am	0.8 ± 0.4	2020-12-15
9418543	YANCY	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	1.1 ± 0.4	2020-12-15
9418544	SCHAEFER	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	1.1 ± 0.4	2020-12-15
9418545	LIBRARY E	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418546	LIBRARY W	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418547	LIB OFFICE	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418548	LIB COMP	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418549	32	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	0.6 ± 0.4	2020-12-15
9418550	31	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418551	14	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	0.9 ± 0.4	2020-12-15
9418552	33	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418553	33	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418554	33	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418555	35	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	0.7 ± 0.4	2020-12-15
9418556	COMPUTER	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	0.7 ± 0.4	2020-12-15
9418557	37	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	0.7 ± 0.4	2020-12-15
9418558	34	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418559	36	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418560	12	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418561	SAFE RM	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418562	11	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418563	9	2020-12-07 @ 7:00 am	2020-12-10 @ 6:00 am	< 0.3	2020-12-15
9418564	7	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418565	7	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418566	7	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	15.9 ± 1.0	2020-12-15
9418567	5	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418568	51	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	0.5 ± 0.4	2020-12-15

Radon test result report for:**MAZAMA HS****20572000**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9418569	53	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418570	52	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418571	54	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	0.6 ± 0.4	2020-12-15
9418572	56	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	0.5 ± 0.4	2020-12-15
9418573	LOUNGE	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	0.7 ± 0.4	2020-12-15
9418574	55	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418575	57	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418576	58	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	0.9 ± 0.4	2020-12-15
9418577	58	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	0.7 ± 0.4	2020-12-15
9418578	58	2020-12-07 @ 7:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418579	61	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.6 ± 0.4	2020-12-15
9418580	WREST. E	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418581	WREST. N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418582	WREST. W	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418583	49	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418584	47	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.7 ± 0.5	2020-12-15
9418585	48	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.7 ± 0.4	2020-12-15
9418586	46	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418587	44	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.6 ± 0.4	2020-12-15
9418588	42	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418589	42	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.7 ± 0.4	2020-12-15
9418590	45	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.5 ± 0.4	2020-12-15
9418591	43	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418592	GYM N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418593	GYM S	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418594	GYM S	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418595	GYM N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418596	U GYM N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418597	U GYM W	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418598	U GYM E	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418599	65 S	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.8 ± 0.4	2020-12-15
9418600	65 N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	1.0 ± 0.4	2020-12-15
9418601	65 N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	14.6 ± 0.9	2020-12-15
9418602	65 N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418603	CAFé S	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418604	CAFé E	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418605	CAFé N	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15

Radon test result report for:**MAZAMA HS****20572000**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9418606	BAND	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	0.8 ± 0.4	2020-12-15
9418607	STAGE	2020-12-07 @ 8:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418608	CHOIR	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418609	OFFICE BO	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	0.8 ± 0.4	2020-12-15
9418610	WOOD E	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418611	WOOD W	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418612	WOOD OFF	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418613	WOOD OFF	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418614	AUTO	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418615	AUTO	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418616	27	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	0.6 ± 0.4	2020-12-15
9418617	25	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	1.1 ± 0.4	2020-12-15
9418618	23	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418619	LAB	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418620	22	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418621	16	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	1.2 ± 0.4	2020-12-15
9418622	CONFER	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	1.4 ± 0.4	2020-12-15
9418623	15	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418624	15	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418625	15	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15
9418626	17	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	0.6 ± 0.4	2020-12-15
9418627	18	2020-12-07 @ 9:00 am	2020-12-10 @ 7:00 am	< 0.3	2020-12-15

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December 24, 2020

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**CHILD CARE**

**20572004**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9418628	19	2020-12-07 @ 9:00 am	2020-12-10 @ 8:00 am	< 0.3	2020-12-15
9418629	CL. OFFICE	2020-12-07 @ 9:00 am	2020-12-10 @ 8:00 am	2.0 ± 0.5	2020-12-15
9418630	CL. SOUTH	2020-12-07 @ 9:00 am	2020-12-10 @ 8:00 am	2.0 ± 0.4	2020-12-15
9418631	CL. STAFF	2020-12-07 @ 9:00 am	2020-12-10 @ 8:00 am	1.9 ± 0.5	2020-12-15

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Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

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December 24, 2020

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**WHITE HOUSE**

**20572002**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9418632	CL. KITCHEN	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	1.3 ± 0.5	2020-12-15
9418871	KITCHEN	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	0.5 ± 0.4	2020-12-15
9418872	FAMILY	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	1.4 ± 0.4	2020-12-15
9418873	LIVING	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	1.3 ± 0.4	2020-12-15
9418874	LIVING	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	0.6 ± 0.4	2020-12-15
9418875	LIVING	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	16.7 ± 1.0	2020-12-15
9418876	NURSE	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	0.6 ± 0.4	2020-12-15
9418877	LOUNGE	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	0.8 ± 0.4	2020-12-15
9418878	DEANNA	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	< 0.3	2020-12-15
9418879	STORAGE	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	0.7 ± 0.4	2020-12-15
9418880	STORAGE	2020-12-07 @ 10:00 am	2020-12-10 @ 8:00 am	< 0.3	2020-12-15

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## **APPENDIX B**

### **BOWSER-MORNER RADON SPIKE EXPOSURE**

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Coleman Creek Consulting, Inc. Job Number 198582

NOMINAL Conditions: Radon Conc 25.7 pCi/L Rel. Hum 50.0 % Temp. 70.3 F

Date Start: 12/4/20 Date Stop: 12/7/20

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0923 Time Stop: 0923  
(Group 1)

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

Device No.'s: (12) Char Bags -  
9417935, 9417970, 9418007,  
9418060, 9418096, 9418127,  
9418163, 9418190, 9418226,  
9418250, 9418286, 9418321

Device No.'s: \_\_\_\_\_

R5 Left

<sup>rem</sup>  
Date Start: 12/4/20 Date Stop: 12/7/20

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0927 Time Stop: 0927  
(Group 2)

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

Device No.'s: (13) Char Bags -  
9418370, 9418418, 9418465, 9418500,  
9418566, 9418601, 9418660,  
9418695, 9418771, 9418747,  
9418806, 9418846, 9418875

Device No.'s: \_\_\_\_\_

R5 Right

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  $\mu$ R/h Elevation = 820 ft



## **APPENDIX C**

### **RADON SAMPLING LOCATION DIAGRAM**

# MAZAMA HIGH SCHOOL

## Radon Sample Locations

Upper Gym:  
Wrestling

42 43 44

