SHIVEHATTERY
ARCHITECTURE + ENGINEERING

March 10, 2023

Clear Creek Amana Community School District
ATTN: Mr. Maury Gallagher
1486 Hwy 6 NW, P.O. Box 487
Oxford, IA 52322

RE: CCA High School – Radon Testing

Dear Mr. Gallagher:

Per your request and authorization, Shive-Hattery, Inc. assembled a short-term radon testing plan and completed the testing for the High School in Tiffin, Iowa. The intent of the testing was to determine the level of radon within all ground contact, occupied areas of the building.

Methods and Procedures

The testing procedure for this project was performed by personnel trained and certified under the National Radon Proficiency Program (NRPP) and State of Iowa Department of Public Health. On May 24, 2022, House File 2412 was signed into law in the State of Iowa. This legislation calls for:

- Establish a radon testing plan.
- Preform short-term testing of all attendance centers by July 1, 2027.
- All buildings will have to be retested once every five years following.
- Radon plans and test results will need to be published to the district website.
- All new school construction must incorporate radon-resistant construction techniques.

The American Association of Radon Scientists and Technologists (AARST) Consortium on National Radon Standards (ANSI/AARST MALB 2014) “Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings” is the reference standard for this project, which is the recommended protocol in the State of Iowa for schools.

Available drawings were utilized to determine a testing strategy. Samples were collected from each defined testing area, including but not limited to classrooms, offices, gyms, libraries, cafeterias, and other areas of normal occupancy. Pertinent information such as location, date, time, thermostat settings, active mitigation systems, tamper controls, and weather conditions were recorded for each sample. The tests were started after a minimum of 12 hours of closed building conditions.

It is recommended that the testing period represent normal conditions when the building is significantly occupied during the active heating season. The operating condition for this building represents active heating with outdoor temperatures less than or equal to 30°F. Clear characterization of a radon hazard is most likely to be observed under this normal operating condition. Therefore, the test should reasonably characterize radon hazards.

There will be some uncertainty with any measurement result due to statistical variations and other factors such as daily and seasonal variations in radon concentrations. Variations may be due to changes in weather, operation of the building, or possible interference with the necessary test conditions.

Rad Elec E-PERM short-term measurement chambers and electrets were utilized in all tests. The electrets were analyzed for radon using an electron voltage reader (Serial #: E0747) by:

Analyst: Sam Becker
License: RNTST10096
Address: Shive-Hattery
2839 Northgate Drive
Iowa City, Iowa 52245
Phone: (319) 354-3040

Summary of Findings

Short-term testing was completed on March 4-8, 2023, in all ground contact, occupied areas of the building. Blank and duplicate samples were used as a means of quality control. All quality control devices were in normal ranges. The following table summarizes the sample ID, location, and result from the initial testing for locations found to be above 4.0 pCi/L. All results are located at the end of this report.

Sample ID/Location	Result
1. SKE822/SNL378 – E109 Green Room	5.6 pCi/L

Recommendations

Radon was found to be over the action level of 4.0 pCi/L in E109, Green Room. It is in the Owner's best interest to retest these areas using another short-term test prior to making any mitigation decisions. The HVAC system may need to be investigated in this space. It is recommended that any adjustments be made before follow-up testing.

If the average of both short-term tests is greater than 4.0 pCi/L, mitigation is recommended. Remedial action can also be considered in areas with results greater than 2.0 pCi/L. This eliminates future liability from exposure to building occupants.

The owner may consider this room a non-occupied space and retesting may not be required. Generally, a space is considered occupied if people normally spend more than one hour of continuous occupancy per person per day in a space.

Radon was found in most rooms tested to some degree. It is important to understand that no level of radon is safe and can cause lung cancer with long exposure. Radon is the second leading cause of lung cancer.

Once all requirements of the state radon testing in schools law are complete and high radon levels found have been mitigated, it is recommended that this building be retested in 5 years according to CCACSD's radon testing program. Retesting is also recommended after a new addition or significant renovation occurs, additional ground floor rooms not previously tested are occupied, heating or cooling systems are significantly altered, natural disasters, or the installation of ground water control or radon mitigation systems.

Please call our office if you should have any questions or comments.

Sincerely,

SHIVE-HATTERY, INC.



Samuel S. Becker
Residential Measurement Provider
IA License Number: RNTST10096
NRPP License Number: 108001 RT
Expiration Date: April 30, 2023

SSB/mas

Enc.

Shive-Hattery

2839 Northgate Drive
Iowa City IA 52445
319-354-3040 / 319-248-3405 / 319-530-2456 (cell)
http://www.shive-hattery.com/ / sbecker@shive-hattery.com

Radon Test Report

March 09, 2023
Batch #: 030923-2

Customer:

Clear Creek Amana Community School District
1486 Hwy 6 NW
Oxford IA 52322

Test Site:

Maury Gallagher
551 W Marengo Road Bldg.- High School
Tiffin IA 52340

E-PERM® Electret Ion Chambers were used for short-term radon screening measurements that were conducted at the above referenced test site by: Shive-Hattery

The Results are as follows:

Serial No.	Type	Location	Test Start Date		Test End Date		Results (pCi/L)
SIE643	SST	D101	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.0
SML367	SST	C102	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.2
SML385	SST	C115	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.5
SML447	SST	B201.2 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
SML465	SST	C135	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.0
SML512	SST	B112.2	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.0
SML545	SST	C112	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNE829	SST	C118	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.8
SNE899	SST	C144	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	2.2
SNF023	SST	C116	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.5
SNF027	SST	C136	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	2.1
SNK324	SST	C113	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNL296	SST	C135.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.2
SNL305	SST	B104	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.2
SNL331	SST	B102.2	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL337	SST	C123	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.6
SNL376	SST	B111.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
SNL379	SST	A110.5	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.7
SNL385	SST	D107	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNL409	SST	C120	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.7
SNL439	SST	C204 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.9
SNL447	SST	B102.4	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL456	SST	C133	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNL465	SST	C228 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL467	SST	C107	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.4
SNL468	SST	B102.8	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNL473	SST	C128	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	2.5
SNL474	SST	B102.6	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
SNL477	SST	C134	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.7
SNL485	SST	C239 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.5
SNL489	SST	C117	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.9
SNL494	SST	B112	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL498	SST	C242 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL503	SST	B102.10	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNL505	SST	C108	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.2
SNL509	SST	B102.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.5
SNL510	SST	A113	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.2
SNL513	SST	C221 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	<LLD
SNL515	SST	B107.3	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.7
SNL524	SST	B112.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.6
SNL535	SST	C105	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.4

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Radon Test Report

March 09, 2023
Batch #: 030923-2

Customer:
Clear Creek Amana Community School District
1486 Hwy 6 NW
Oxford IA 52322

Test Site:
Maury Gallagher
551 W Marengo Road Bldg.- High School
Tiffin IA 52340

Serial No.	Type	Location	Test Start Date		Test End Date		Results (pCi/L)
SNL553	SST	C107.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.9
SNL563	SST	C111	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.4
SNL567	SST	C110	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL580	SST	C248.3 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.7
SNL680	SST	A104.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNM751	SST	B201 - 2nd Floor	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNM817	SST	D103	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNM860	SST	A109	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
SNM865	SST	C125	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.9
SNL319	SST	B102	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.9
SNL575	SST	B102	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
Average Radon Concentration in:		**B102**					**0.8 pCi/L**
SKE822	SST	E109	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	5.9
SNL378	SST	E109	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	5.3
Average Radon Concentration in:		**E109**					**5.6 pCi/L**
SNL455	SST	C108.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.4
SNL540	SST	C108.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.6
Average Radon Concentration in:		**C108.1**					**1.5 pCi/L**
SNK501	SST	C114	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.5
SNL483	SST	C114	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
Average Radon Concentration in:		**C114**					**0.8 pCi/L**
SNL329	SST	C138	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.6
SNL501	SST	C138	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.6
Average Radon Concentration in:		**C138**					**1.6 pCi/L**
SNL497	SST	C119	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.7
SNL554	SST	C119	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.9
Average Radon Concentration in:		**C119**					**1.8 pCi/L**
SNL495	SST	C102.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.1
SNL558	SST	C102.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.5
Average Radon Concentration in:		**C102.1**					**1.3 pCi/L**
SNL551	SST	C109	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.8
SNM776	SST	C109	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
Average Radon Concentration in:		**C109**					**0.7 pCi/L**

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Oxford IA 52322

Test Site:
Maury Gallagher
551 W Marengo Road Bldg.- High School
Tiffin IA 52340

Serial No.	Type	Location	Test Start Date		Test End Date		Results (pCi/L)
SNL484	SST	A106.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	1.3
SNL605	SST	A106.1	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.7

Average Radon Concentration in: A106.1 — 1.0 pCi/L

SNK478	SST	D108	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	0.6
SNL490	SST	D108	04-Mar-2023	5:00 PM	08-Mar-2023	4:00 PM	<LLD

Average Radon Concentration in: D108 — <LLD pCi/L

Deployed By: Sam Becker 108001 RT
Retrieved By: Sam Becker 108001 RT
Analyzed By: Sam Becker 108001 RT **Reader S/N:** E0747 **Reader Calibration Due:** 01-Nov-2023

Conditions: Requirements for Closed-Building Met
Weather: No Abnormal Weather Conditions
Vents: Open / Fan Auto
Mitigation: No System Installed

Note: <LLD = Less than the Lower Limit of Detection (LLD) of the Radon Detector.

Radon Health Risk Information

Radon is the second leading cause of lung cancer after smoking. The U.S. Environmental Protection Agency (EPA) and the Surgeon General strongly recommend that further action be taken when a home's radon test results are 4.0 pCi/L or greater. The national average indoor radon level is about 1.3 pCi/L. The higher the home's radon level, the greater the health risk to you and your family. Reducing your radon levels can be done easily, effectively and fairly inexpensively. Even homes with very high radon levels can be reduced below 4.0 pCi/L. Please refer to the EPA website at www.epa.gov/radon for further information to assist you in evaluating your test results or deciding if further action is needed.

Signature: _____ **Date:** _____