



June 18, 2018

Mr. Albert Tijerina  
East Aurora School District 131  
Buildings and Grounds  
411 Hill Avenue  
Aurora, Illinois 60505

**RE: Radon Measurement Surveys – East Aurora School District 131  
Carnow Conibear Project No.: A146000137**

Dear Mr. Tijerina:

Carnow, Conibear, & Assoc., Ltd. (Carnow Conibear) was contracted by East Aurora School District 131 (EASD #131) to perform radon measurement surveys at twenty-five (25) EASD #131 schools and facilities located in Aurora, Illinois. The surveys were conducted from April 30, 2018 thru May 18, 2018 by Illinois Emergency Management Agency (IEMA) licensed Radon Measurement Professionals. The scope of work included short term (two to four day) radon measurements in frequently occupied rooms with substantial ground contact. All radon sampling was performed following IEMA and the United States Environmental Protection Agency (USEPA) testing protocols for commercial and school radon measurements, the radon device manufacturer's recommendations, and Carnow Conibear's Quality Assurance Plan.

A total of 1,614 radon samples were collected in both occupied and unoccupied areas. Activated radon charcoal devices manufactured by Air Chek Inc. were utilized. The initial radon testing identified eight (8) EASD #131 facilities with results greater than the EPA recommended radon action level of 4.0 PicoCuries per liter (pCi/L). Per USEPA recommended radon testing protocol, follow-up radon measurements shall be performed in every room with a short-term, initial measurement result of 4.0 pCi/L or greater. Carnow Conibear recommends follow-up radon testing in the following schools:

- Gates Elementary School
- Krug Elementary School
- Johnson Elementary School
- Waldo Middle School
- School Service Center
- Oak Park Elementary School
- Rollins Elementary School
- Fred Rodgers Magnet Academy

A comprehensive radon survey report in accordance with Carnow Conibear's proposal and the Radon Testing RFP will be issued for each EASD #131 facility tested. See Attachment A for the Radon Measurement Professionals license and Attachment B for the Quality Assurance Project Plan.

We appreciate the opportunity to assist EASD #131 on this important project. After you have reviewed the report, please do not hesitate to contact me at (312) 762-2956 if you have any questions or need additional information.

Sincerely,

**CARNOW, CONIBEAR & ASSOC., LTD.**



Derek Lantry  
Director, Technical Services

## ATTACHMENT A

Radon Measurement Professionals License

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*Bruce Rauner*  
Governor

**State of Illinois**  
**IEMA Division of Nuclear Safety**

*James K. Joseph*  
Director

Pursuant to the Radon Industry Licensing Act, 420 ILCS 44 et seq. and 32 Illinois Administrative Code 422, Licensing of Radon Detection and Mitigation Services, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued.

This is to certify that **Nicole Bennett**

License Number **RNI2016213**

has met the requirements for **Radon Measurement Professional**

Issued - Expires **05/18/2016 - 05/31/2021**

Limited to **Radon measurements of residential real estate, home environment, school and commercial buildings only.**



161391001

*Patrick I. Daniels*

Patrick I. Daniels, Radon Program

Bruce Rauner  
Governor

James K. Joseph  
Director

# State of Illinois

## IEMA Division of Nuclear Safety

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License Number **RNI2004213**

has met the requirements for **Radon Measurement Professional**

Issued - Expires **04/26/2017 - 12/31/2021**

Limited to **Radon measurements of residential real estate, home environment, school and commercial buildings only.**



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Patrick I. Daniels, Radon Program

DETACH CERTIFICATE

DETACH CERTIFICATE

State of Illinois  
IEMA Division of Nuclear Safety

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License Number **RNI2004213**

has met the requirements for **Radon Measurement Professional**

Issued - Expires **04/26/2017 - 12/31/2021**

Limited to **Radon measurements of residential real estate, home environment, school and commercial buildings only.**

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PEEL CARD HERE

**Derek Lantry**  
7850 Kilbourn Ave  
Skokie, IL 60076

Questions / Address Changes - Please contact the Agency at 217/782-1325.

## **ATTACHMENT B**

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Quality Assurance Project Plan

# QUALITY ASSURANCE PROJECT PLAN

## RADON MEASUREMENT SURVEYS

East Aurora School District 131  
411 Hill Avenue  
Aurora, Illinois 60505

PROJECT NUMBER: A146000137

CARNOW, CONIBEAR, & ASSOC., LTD.  
600 WEST VAN BUREN STREET, SUITE 500  
CHICAGO, IL 60607  
PHONE: (312) 782-4486  
FAX: (312) 782-5145



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Derek Lantry  
Carnow, Conibear, & Assoc., Ltd.  
Radon Measurement Professional



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T. Rodman Harvey, P.E., CIH, CSP  
Carnow, Conibear & Assoc., Ltd  
QA/QC Officer

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### A3 Distribution List

Name	Organization	Title	Contact Information
T. Rodman Harvey	Carnow Conibear	QA/QC Officer	(312) 762-2904
Nicole Bennett	Carnow Conibear	RMP	(312) 762-2939
Derek Lantry	Carnow Conibear	RMP	(312) 762-2956

### A4 Project Task List

Task/ Responsibility	Name	Title	Contact Information	Note
Director	Derek Lantry	RMP	(312) 762-2956	Carnow Conibear
Project Manager	Derek Lantry	RMP	(312) 762-2956	Carnow Conibear
Field Technician	Nicole Bennett	RMP	(312) 762-2939	Carnow Conibear
Field Technician	Derek Lantry	RMP	(312) 762-2956	Carnow Conibear
Laboratory Analysis	Air Chek	Lab	(800) 247-2435	Vendor
QA/QC data review	T. Rodman Harvey	QA/QC	(312) 762-2935	Carnow Conibear
QA/QC Report Review	T. Rodman Harvey	QA/QC	(312) 762-2935	Carnow Conibear
Client Contact	Albert Tijerina	Buildings and Grounds	(630) 299-5550	Client
Site Contact	Albert Tijerina	Buildings and Grounds	(630) 299-5500	Client

### A5 Background

East Aurora School District 131 (EASD #131) has retained Carnow Conibear to conduct radon testing at twenty-five (25) EASD #131 facilities in Aurora, Illinois.

#### Project objective

The objective of this project is to conduct short term radon measurements at the project locations.

#### Reason for Project

The project is being conducted to verify radon levels in frequently occupied rooms with substantial ground contact.

This radon measurement project is being conducted in accordance with the Illinois Emergency Management Agency regulations part 422.

### A6 Project Description

Carnow, Conibear, & Assoc., Ltd. was contracted by EASD #131 to perform a radon survey at twenty-five (25) , EASD #131 facilities in Aurora, Illinois. The scope of work includes short term

(two to four day) radon measurements in all frequently occupied rooms and common areas having at least one wall with substantial ground contact. The radon survey shall be performed in accordance with the Illinois Emergency Management Agency (IEMA) and the United States Environmental Protection Agency (USEPA) testing protocols for commercial and school radon measurements, the radon device manufacturer's recommendations, and the Carnow Conibear Quality Assurance Plan.

Project Schedule

<b>Task</b>	<b>Responsibility</b>	<b>Due Date</b>
Site Assessment	RMP	March 2, 2018
AC Canister set out	RMP	April 30 thru May 16, 2018
AC Canister Collection	RMP	May 2, 2018 thru May 18, 2018
Sample Shipment	RMP	May 2, 2018 thru May 18, 2018
Laboratory Analysis	RMP	May 4, 2018 thru May 21, 2018
Laboratory data review	RMP, QA/QC Officer	May 7, 2018 thru May 22, 2018
Draft Reports	RMP	May 29, 2018 thru June 22, 2018
Report QAQC	QA/QC Officer	May 29, 2018 thru June 22, 2018
Final Reports	RMP	June 22, 2018 thru June 29, 2018
Project Closeout	RMP, Administration	July 29, 2018

Project Locations

East Aurora School District 131 Facilities – Aurora, Illinois

<b>School</b>	<b>Address</b>
O.C. Allen School	700 S. Farnsworth Ave., Aurora
Fred Rodgers Magnet Academy	501 College Ave., Aurora
C.M. Bardwell School	550 South Lincoln Ave., Aurora
W.S. Beaupre School	954 E. Benton St., Aurora
N.A. Hermes School	100 Jungles Ave., Aurora
L.D. Brady School	600 Columbia St., Aurora
C.I. Johnson School	1934 Liberty St., Aurora
G.N. Dieterich School	1141 Jackson St., Aurora
R.E. Krug School	240 Melrose Ave., Aurora
J.W. Gates School	800 Seventh Avenue, Aurora
Oak Park School	1200 Front Street, Aurora
H.W. Cowherd Middle School	441 N. Farnsworth Ave., Aurora
M. O'Donnell School	1640 Redkinger Rd., Aurora
C.F. Simmons Middle School	1130 Scheffer Rd., Aurora
K.D. Waldo Middle School	56 Jackson St., Aurora
East High School	500 Tomcat Ln., Aurora
School Service Center	417 Fifth St., Aurora
Building & Grounds Center	411 Hill Avenue., Aurora
Benavides Kindergarten Center	954 E. Benton Street, Aurora

School	Address
Early Childhood Center	278 E. Indian Trail, Aurora
East Aurora Extension	1685 N. Farnsworth Avenue, Aurora
Rollins Elementary School	950 Kane Street, Aurora
Administrative Service Center	231 E. Indian Trail, Aurora
Welcome Center/Child Service Center	254 E. Indian Trail, Aurora

## **A7 Quality Objectives and Criteria**

The objective for the precision of the measurements of indoor ambient radon concentrations measured with Air Chek samplers at or above 4 pCi/L is an average ten percent relative difference between duplicates. (This is the warning level, necessitating an investigation into the cause of the discrepancy between duplicates.)

The objective for accuracy of the measurements of indoor ambient radon concentrations measured with Air Chek samplers is ten percent at concentrations of 4 pCi/L or greater. This value is the average percent accuracy, or the ratio of the measured to the known (chamber) value.

All measurements of radon gas or shall report the value to no more than 1 decimal place, e.g., 4.3 pCi/L. Any measurements passed on radon progeny shall be reported to no more than three decimal places, e.g., 0.033 WL.

All measurement activities shall conform to CCA SOPs and QA/QC documents.

Sample devices shall be located in accordance with IEMA requirements and CCA's SOPs. Sample locations shall be indicated on a field sketch of the project site.

Duplicate and blank samples shall be collected in accordance with the requirements of this document and the results of those samples shall be included in the final report.

All field forms, chain of custody forms, etc., shall be filled out in their entirety.

All field sketches, drawings etc., shall be dated and labeled with the name of the person preparing the sketch, the project name and any other information required, e.g., sample locations, building foundations, floor drains, slabs, crawl spaces, major HVAC components.

## **A8 Special Training/Certifications**

Name	License/ Certification	Number	Expiration Date
Nicole Bennett	Radon Measurement professional license	RNI2016213	5/31/2021
Derek Lantry	Radon Measurement professional license	RNI2004213	12/31/2021

Copies of all licenses and certifications shall be kept in the project file.

## **A9 Documentation and Records**

The RPM or the QAQC Officer will create a new QA project Plan for each new radon measurement project. It will be the RPM's responsibility to make sure that the latest versions of the appropriate documents are used. In the event that the QA project Plan, Standard Operating Procedures or other documents are updated during the course of an active radon measurement project, the new version of the affected document will be distributed to the appropriate project personnel along with a sign off sheet stating that the new document was received. The old versions of the affected documents shall be collected at this time, and any extra (non-file) copies will be destroyed.

The project data package shall include, but not be limited to the following information:

- The project proposal;
- A copy of the QA Project Plan;
- Field Logs and data sheets;
- Copies of training certificates and or licenses;
- Field sketches, drawings or other graphical data;
- Chain of Custody Forms;
- Laboratory Reports;
- Sample shipment logs or receipts
- Correspondence
- Local weather data
- Final Reports

Documents and records shall be filed and retained in accordance with SOP #2.

## **B1 Sampling Process Design (Experimental Design)**

Sampling strategy shall be planned and executed in accordance with SOP #1.

## **B2 Sampling Methods**

Activated Charcoal Absorption Devices (ACs) shall be used. Refer to SOP #1.

## **B3 Sample Handling and Custody**

The samples shall be collected in accordance with to SOP #1.

The samples shall be labeled with a unique sample identifier.

The samples shall be shipped to the laboratory immediately after retrieval. Sample packaging and shipment shall conform to the laboratories requirements.

A complete chain of custody shall be maintained with the sample set and the sample set shall remain in the possession and control of the RPM until it is transferred to the laboratory or a delivery service. A copy of the chain of custody shall be retained whenever the samples are transferred to another individual or organization.

A copy of delivery service tickets shall be retained when samples are shipped via overnight service to a vendor laboratory.

#### **B4 Analytical Methods**

ASTM D6327-98, Standard Test Method for Determination of Radon Decay Product Concentration and Working Level in Indoor Atmospheres by Active Sampling on a Filter

EPA Indoor Radon and Radon Decay Product Measurement Protocols, EPA 520-1/89-009, issued by the Office of Radiation Programs

#### **B5 Quality Control**

In order to assure the quality of testing duplicate samples are taken. For school and commercial building testing duplicate samples shall represent 10 percent of all the detectors deployed, or a maximum of 50 detectors, whichever is less. Two (2) canisters are set side by side at the selected site.

Blank samples or unopened canisters@ (sample not taken) are submitted. For residential home testing, blank measurements shall be performed 1 for every 20 samples collected. For school and commercial building testing, blank measurements shall be performed and shall represent 5 percent of all the detectors deployed, or a maximum of 25 detectors, whichever is less, within the building.

Radon measuring devices are spiked 3 per 100 canisters or a minimum of 3 per year. Spiked Radon measuring devices are obtained from an approved laboratory supplier.

	<b>NUMBER</b>
Estimated total number of samples to be collected:	1,614
Estimated number of duplicate samples to be collected	161
Estimated number of blanks to be collected	81
Estimated number of spike samples to be submitted for this project	9

#### **B6 Instrument/Equipment Testing, Inspection, and Maintenance**

Carnow Conibear will use Activated Charcoal Absorption Devices (ACs). The devices will be inspected prior to deployment for physical damage. The devices come from the laboratory in sealed bags which must remain sealed until they are actually deployed.

#### **B7 Instrument/Equipment Calibration and Frequency**

Carnow Conibear controls the use of instruments and testing equipment. Documentation of calibration is maintained as a quality record. Calibration is performed in accordance with SOP #1 – Measurements, Section 4.00 - Calibration Requirements.

Air Chek contracts with commercial radon chambers and maintains an in-house chamber to conduct batch calibrations. Each batch calibration includes at least 64 samplers. At least 8 of each are exposed for periods of two days through seven days at specified humidity and

temperature. A minimum of three different (low, medium and high) humidity levels are specified for each production type. The results from these batch exposures are used to generate calibration tables for each batch of charcoal used in the samplers. These calibrations are performed whenever the activated charcoal type used in the samplers changes, and/or at least every twelve months.

### **B8 Inspection/Acceptance of Supplies and Consumables**

AC devices will be inspected for physical damage prior to use on a project. The AC devices from Air Check come in a sealed plastic bag. The bag shall be checked to be sure that it is still sealed.

No other supplies or consumables have been deemed critical for a radon measurement project.

### **B9 Non-Direct Measurements**

Radon background information for the project location shall be obtained from either the USEPA, or the applicable local or state agencies. The final report shall include this data and its source. Since this information will be used as a general baseline or background, it will not be necessary to critically evaluate the quality of this data.

### **B10 Data Management**

Data management shall be in accordance with SOP #1.

### **C1 Assessments and Response Actions**

The designated QAQC officer for the project shall review the project data, forms, logs, and documentation to ensure that the proper SOPs were followed in collecting, submitting, and analysis of the data.

Any deficiencies shall be reported to management in accordance with SOP #3.

### **C2 Reports to Management**

Due to the short-term nature of the radon measurement projects, interim project status reports will not be required. Management will review the final project reports and any QAQC deficiency reports upon completion of the project.

### **D1 Data Review, Verification, and Validation**

Due to the straightforward nature of the data generated in a radon measurement project, the review, verification and validation of the data is also simple and straightforward.

The RPM, the designated QAQC officer and any other individual involved in the review process for the project report shall endeavor to ensure that the report data meets all of the required quality criteria.

### **D2 Verification and Validation Methods**

The QA/QC check of the draft report shall include a cross check of the final laboratory reports with any report summary tables to ensure that the tables are accurate.

The laboratory report shall be reviewed to ensure that the data meets the required precision as listed in section A7 Quality Objectives and Criteria.

The duplicate samples shall be compared as follows:

The Relative Percent Difference of the two sample results is calculated as the difference between the two results divided by the average of the two results.

If both of the test results are less than 4.0 pCi/L, they must agree with a Relative Percent Difference (RPD) of less than 67 percent.

If both of the test results are either equal to or greater than 4.0 pCi/L, they must agree with a RPD of less than 36 percent.

If the RPD is greater than the above values, the RMP investigates documents and corrects the source(s) of the error.

When one of the measurements is equal to or greater than 4.0 pCi/L and one is less than 4.0 pCi/L, and the higher result is greater than twice the lower result, the client is informed of the large discrepancy and the simultaneous tests repeated.

### **D3 Reconciliation with User Requirements**

The final review of the project report shall include a determination of whether the information presented in the report meets the project scope of work and the needs of the client.