

RADON INVESTIGATION REPORT

**JOHN F. KENNEDY MIDDLE SCHOOL
500 BROADWAY
BETHPAGE, NEW YORK 11714**

**PREPARED FOR:
BETHPAGE UNION FREE SCHOOL DISTRICT
10 CHERRY AVENUE
BETHPAGE, NEW YORK 11714**

**JCB PROJECT #: 19-42644
MAY 2019**

**J.C. BRODERICK & ASSOCIATES, INC.
Environmental Consulting & Testing**

**1775 Expressway Drive North
Hauppauge, New York 11788
631-584-5492 Fax: 631-584-3395**



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Section No. 1.0: Introduction

J.C. Broderick and Associates (JCB) was retained by the Bethpage Union Free School District (Bethpage) to perform an indoor air survey for radon gas as a result of identifying radium in the local groundwater by the Bethpage Water District and by JCB during our annual groundwater investigation at the Bethpage High School. The sampling protocol was performed essentially in accordance with the requirements of the United States Environmental Protection Agency (EPA) *Radon Measurement in Schools Revised Edition* (EPA 402-R-92-014), dated July 1993.

Section No. 2.0: Site Description and Location

The Subject Site is located at 500 Broadway Bethpage, New York 11714. The Subject Site is located on the east side of Broadway between Michael Court to the north and Gateway Street to the south. According to the United States Geological Survey (USGS) *Huntington, New York, 1992 7.5 Minute Series Topographical Map*, the Subject Site is situated at an approximate elevation of 112 feet (ft) above mean sea level. The location of the Subject Site is shown on the Site Location Map, Appendix-A Figure 1.

Section No. 3.0: Radon Sampling and Analysis

The detection of Radium 226 and 228 in the local groundwater prompted the sampling and analysis of Radon within the middle school building. On February 15, 2019, JCB set up short term Radon in Air test kits in nine (9) rooms and spaces within the basement of the middle school building that were in contact with the ground. The sampling devices were collected on February 19, 2019 after at least three days of exposure.

The following table summarizes the Radon samples submitted for laboratory analysis:

Table No. 1: Summary of Radon Samples Submitted for Laboratory Analysis				
Sample ID#	Sample Start Date	Sample End Date	Description of Sample	Analysis Method
Rm 0004	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0004 Blank	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0005	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0006	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0008	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0009	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0009 Dup	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0010	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0010 Dup	02/15/19	02/19/19	Storage Room	Radon in Air
Rm 0012	02/15/19	02/19/19	Storage Room	Radon in Air
Hall 0016	02/15/19	02/19/19	Basement Hallway	Radon in Air
Hall 0017	02/15/19	02/19/19	Basement Hallway	Radon in Air
Notes: Rm = Room Blank = Field Blank Dup = Duplicate Sample				

Section No. 4.0: Radon Laboratory Analytical Summary

The short-term Radon in Air sampling was performed by laboratory supplied test kits, assigned individual identification numbers and secured. Chain of Custody documents were prepared, and the samples were then delivered to an independent New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory for analysis of Radon in Air.

EMSL Analytical Inc. (EMSL) of Cinnaminson, New Jersey provided laboratory analytical services. Copies of EMSL's NYSDOH certifications are available upon request.

The laboratory analytical results for the Radon in Air samples were reviewed and compared to the United States Environmental Protection Agency (EPA) recommended action level of 4 pCi/L as reported in *Radon Measurement in Schools Revised Edition* (EPA 402-R-92-014), dated July 1993.

The following table summarized the Radon in Air analytical results:

Table No. 2: Summary of Radon Samples Analysis Results		
Sample ID#	Sample Device Number	Radon Activity pCi/L
Rm 0004	327127	2.1
Rm 0004 Blank	327128	0.04
Rm 0005	327071	1
Rm 0006	327188	1.1
Rm 0008	327224	0.5
Rm 0009	327171	0.5
Rm 0009 Dup	327134	0.4
Rm 0010	327168	0.1
Rm 0010 Dup	327098	0.04
Rm 0012	327083	0.4
Hall 0016	327121	0.4
Hall 0017	327137	0.4
Notes: Rm = Room Dup = Duplicate		

The laboratory analysis results from the Radon in Air samples and duplicates submitted did not reveal any elevated concentrations of Radon exceeding 4.0 pCi/L, the referenced guidance value established by the EPA.

Section No. 5.0: Quality Assurance and Quality Control (QA/QC) Procedures

To ensure that measurement results are reliable, JCB performed unexposed control detectors (blanks) side-by-side with the sampling device at each sampling location.

The field sampling team-maintained Radon sampling chain of custody records used to track samples from sampling point to analysis which summarized the following:

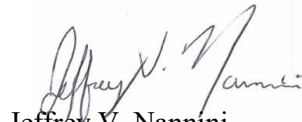
- Sample identification;
- Test Kit ID number;
- Device ID number;
- Sampling beginning date and time;
- Sampling ending date and time;
- Temperature, °F;
- Humidity, %;

Section No. 6.0: Conclusions and Recommendations

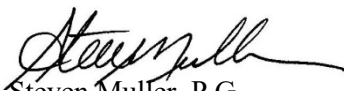
Based upon the sampling results reported, the USEPA decision matrix does not recommend any mitigation for Radon.

Due to the detection of Radium 226 and 228 in the local groundwater, JCB does recommend that continued monitoring for Radon in Air within the school building be performed to confirm the effectiveness of the isolation barrier.

Sincerely,
J.C. Broderick & Associates, Inc.



Jeffrey V. Nannini
Environmental Scientist



Steven Muller, P.G.
Project Manager

Appendix A

Figures



J.C. BRODERICK

& Associates

Environmental Consulting and
Testing

1775 Express Drive North

Hauppauge, NY 11788

Phone: (631).584.5492

Fax: (631).584.3395

Notes:

John F. Kennedy
Middle School
500 Broadway
Bethpage, NY 11714

Drawing Title

Figure No. 1

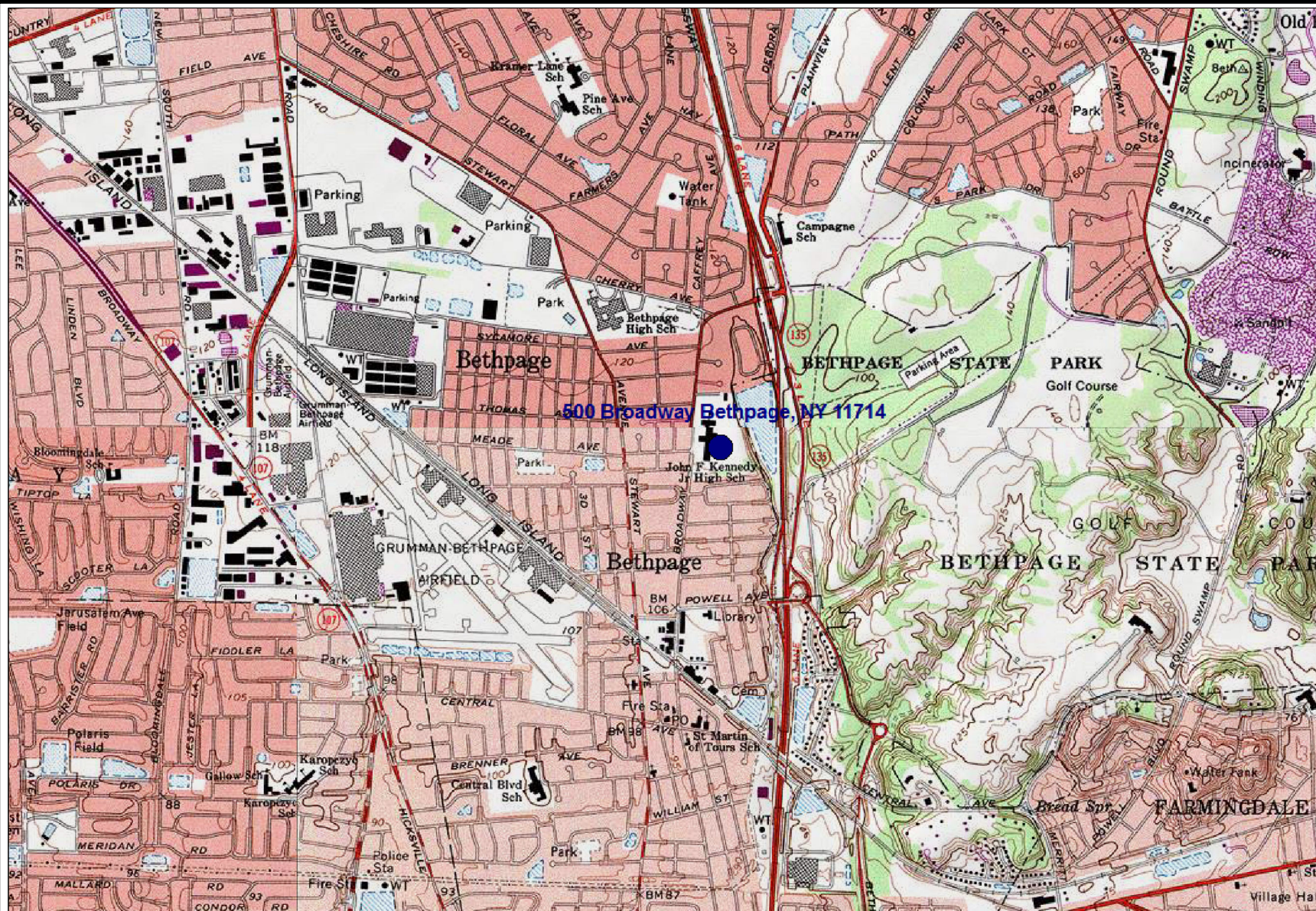
Site Location Map

Scale As Noted	Project No. 19-42644	Date 02-19-19
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Drawn By J.V.N.	Checked By S.W.M.	Page No. 1 of 2
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Drawing No.

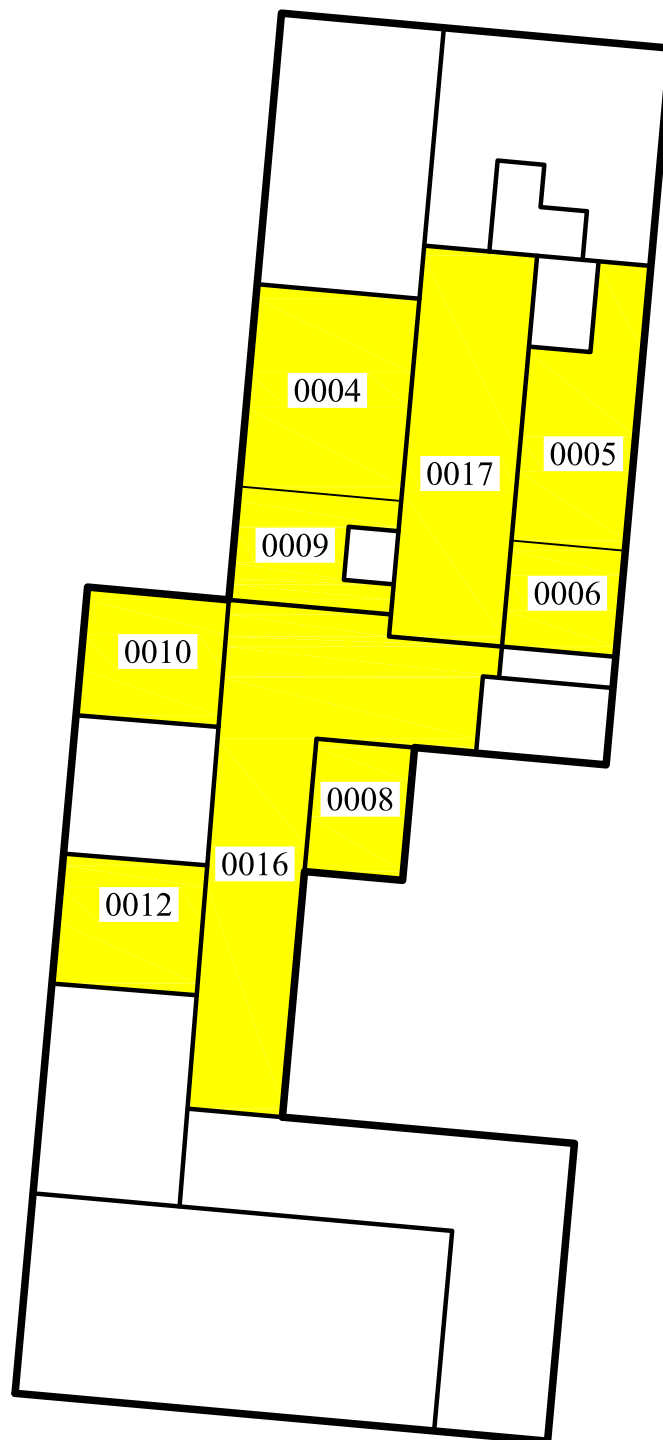
1



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

JCB LEGEND

● SUBJECT SITE



PROJECT	
JCB LEGEND	
	RADDN SAMPLE LOCATION



J.C. BRODERICK
& Associates
 Environmental Consulting and
 Testing
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 Hauppauge, New York 11788
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Notes:

 John F. Kennedy
 Middle School
 500 Broadway
 Bethpage, NY 11714

Drawing Title

Figure No. 2

**Basement
 Radon
 Sampling
 Locations**

Scale N.T.S.	Project No. 19-42644	Date 02-19-19
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Drawn By J.V.N.	Checked By S.W.M.	Page No. 2 of 2
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Drawing No.

 2

Appendix B

Field Photograph Logs

**Radon Sampling Location
Middle School Basement Hallway**



Field Photograph Log

Radon Investigation Report

**John F. Kennedy Middle School
500 Broadway
Bethpage, New York 11714**

Photo No. 01

JCB#: 19-42644

**Radon Sampling Location
Middle School Basement Storage Room**



Field Photograph Log

Radon Investigation Report

**John F. Kennedy Middle School
500 Broadway
Bethpage, New York 11714**

Photo No. 02

JCB#: 19-42644

**Radon Sampling Location
Middle School Basement Storage Room**



Field Photograph Log

Radon Investigation Report

**John F. Kennedy Middle School
500 Broadway
Bethpage, New York 11714**

Photo No. 03

JCB#: 19-42644

**Radon Sampling Location
Middle School Basement Office**



Field Photograph Log

Radon Investigation Report

**John F. Kennedy Middle School
500 Broadway
Bethpage, New York 11714**

Photo No. 04

JCB#: 19-42644

Appendix C

Laboratory Analysis Reports

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (800) 220-3675 / (856) 786-0327

<http://www.EMSL.com>cinnaminsonradonlab@emsl.com

EMSL Order: 381901803

CustomerID: JCBR50

CustomerPO: 19-42655

ProjectID:

Attn: **Steven Muller**
J.C. Broderick & Associates
1775 Expressway Drive North, Suite 1
Hauppauge, NY 11788

Phone: (631) 584-5492
Fax:
Received: 02/21/19 3:15 PM
Analysis Date: 2/22/2019
Collected: 2/15/2019

Project: **Bethpage JFK Middle School**

Test Site: **Bethpage JFK Middle School**
500 Broadway
Hauppauge, NY 11788

Test Report: Radon in Air Test Results**Samples for EMSL Kit 188500**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327188	Rm 0006	1.1	2/15/2019	2/19/2019	86	10	Customer
381901803-0001			6:10:00 PM	9:26:00 AM			

Sample Notes:**Samples for EMSL Kit 188501**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327083	Rm 0012	0.4	2/15/2019	2/19/2019	68	20	Customer
381901803-0002			6:11:00 PM	9:27:00 AM			

Sample Notes:**Samples for EMSL Kit 188502**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327171	Rm 0009	0.5	2/15/2019	2/19/2019	78	10	Customer
381901803-0003			6:12:00 PM	9:28:00 AM			

Sample Notes:

327134	Rm 0009	0.4	2/15/2019	2/19/2019	78	10	Duplicate
381901803-0004			6:12:00 PM	9:28:00 AM			

Sample Notes:**Duplicate RPD = 22.2%****Samples for EMSL Kit 188503**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327121	Hall 0016	0.4	2/15/2019	2/19/2019	74	20	Customer
381901803-0005			6:14:00 PM	9:28:00 AM			

Sample Notes:**Samples for EMSL Kit 188504**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327137	Hall 0017	0.4	2/15/2019	2/19/2019	80	10	Customer
381901803-0006			6:15:00 PM	9:31:00 AM			

Sample Notes:

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (800) 220-3675 / (856) 786-0327

<http://www.EMSL.com>cinnaminsonradonlab@emsl.com

EMSL Order: 381901803

CustomerID: JCBR50

CustomerPO: 19-42655

ProjectID:

Attn: **Steven Muller**
J.C. Broderick & Associates
1775 Expressway Drive North, Suite 1
Hauppauge, NY 11788

Phone: (631) 584-5492
Fax:
Received: 02/21/19 3:15 PM
Analysis Date: 2/22/2019
Collected: 2/15/2019

Project: **Bethpage JFK Middle School**

Test Site: **Bethpage JFK Middle School**
500 Broadway
Hauppauge, NY 11788

Test Report: Radon in Air Test Results**Samples for EMSL Kit 188505**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327127 381901803-0007	Rm 0004	2.1	2/15/2019 7:21:00 PM	2/19/2019 9:25:00 AM	78	20	Customer

Sample Notes:

327128 381901803-0008	Rm 0004	0.04	2/15/2019 7:21:00 PM	2/19/2019 9:25:00 AM	78	20	Blank
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Sample Notes:**Samples for EMSL Kit 188506**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327071 381901803-0009	Rm 0005	1	2/15/2019 7:23:00 PM	2/19/2019 9:24:00 AM	78	20	Customer

Sample Notes:**Samples for EMSL Kit 188507**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327224 381901803-0010	Rm 0008	0.5	2/15/2019 7:25:00 PM	2/19/2019 9:27:00 AM	80	10	Customer

Sample Notes:**Samples for EMSL Kit 188508**

Liquid Scintillation ID	Location	Radon Activity pCi/L	Start	Stop	Temperature F	Humidity %	Sample Type
327168 381901803-0011	Rm 0010	0.1	2/15/2019 7:26:00 PM	2/19/2019 9:28:00 AM	68	10	Customer

Sample Notes:

327098 381901803-0012	Rm 0010	0.04	2/15/2019 7:26:00 PM	2/19/2019 9:28:00 AM	68	10	Duplicate
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Sample Notes:**Duplicate RPD = 85.7%**



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (800) 220-3675 / (856) 786-0327

<http://www.EMSL.com>

cinnaminsonradonlab@emsl.com

EMSL Order: 381901803

CustomerID: JCBR50

CustomerPO: 19-42655

ProjectID:

Attn: **Steven Muller**
J.C. Broderick & Associates
1775 Expressway Drive North, Suite 1
Hauppauge, NY 11788

Phone: (631) 584-5492
Fax:
Received: 02/21/19 3:15 PM
Analysis Date: 2/22/2019
Collected: 2/15/2019

Project: **Bethpage JFK Middle School**

Test Site: **Bethpage JFK Middle School**
500 Broadway
Hauppauge, NY 11788

Test Report: Radon in Air Test Results

The radon test was performed using a liquid scintillation radon detector/s and counted on a liquid scintillation counter using approved EPA testing protocols for Radon in Air testing. The EPA recommends fixing your home if the average of two short-term tests taken in the lowest lived-in level of the home show radon levels that are equal to or greater than 4.0pCi/L.

The EPA recommends retesting your home every two years.

Please contact EMSL Analytical, Inc. or your State Health Department for further information.

All procedures used for generating this report are in complete accordance with the current EPA protocols for the analysis of Radon in Air.

Report Note

Analyst(s)

Drew Bush (12)

Laura Freeman, 10872 & Michael Menz, CIH

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. In no event shall EMSL be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder. The test results meets all NELAC requirements unless otherwise specified.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ Accreditations: NRSB ARL6006, NJ DEP 03036, MEB 92525, PA 2573, IN 00455, IA L00032, ME 20200C, NE RMB-1083, NY ELAP 10872, NM 885-10L, FL RB2034, OH RL-39, NRPP #109000AL, KS-LB-0005, IL RNL2008202.

Initial report from 02/27/2019 13:53:32

Please visit www.radontestinglab.com



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CINNAMINSON, N.J.

CHAIN OF CUSTODY
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EMSL Job #: 381901803

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: 800-220-3675
www.emsl.com

EMSL ANALYTICAL 2019 FEB 21 P 3:15

Company Information:

EMSL Acct #: JCBR50

Company Name: JCBRODERICK & ASSOC.

Contact: STEVEN MULLER

Address: 1775 EXPRESSWAY DR. N

City: HAUPPAGUE

State: N.Y. Zip: 11788

Phone: 631-584-5492 Fax: 631-584-3390

Email: Smullen@JCBRODERICK.COM

Technician Certification #:

Tech Name: STEVEN MULLER

Tech Signature: *[Signature]*

Project/Site Information:

Project Name: BETHPAGE JFK MIDDLE SCHOOL

Project # / PO: 19-42655

*Address: 500 BROADWAY

*City: BETHPAGE *State: NY *Zip: 11714

*Building type? ☐ Residential ☐ Non-Residential

☒ School ☐ Other:

*Building foundation type? ☐ Basement ☒ Crawlspace

☐ Slab on Grade ☐ Other:

Special Notes / Instructions:

*Turnaround Time (TAT) Options

☐ 1 Day

☐ 2 Day

☐ 3 Day

☒ 4 Day

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Box#	(S) Sample (B) Blank (D) Duplicate	Device Number	Location	Room #	Exposure Period		Exposure Period		Temp, °F	Humidity, %
					Date	Time	Date	Time		
188500	(S) Sample	327188		Rm 0006	2/15/19	1810	2/19/19	926	86	10
188501	S	327083		Rm 0012	2/15/19	1811	2/19/19	927	68	20
188502	S	327171		Rm 0009	2/15/19	1812	2/19/19	928	78	10
188503	(D)	327134-DUP		Rm 0009 DUP	2/15/19	1812	2/19/19	928	78	10
188504	S	327121		HALL 0016	2/15/19	1814	2/19/19	928	74	20
188505	S	327137		HALL 0017	2/15/19	1815	2/19/19	931	80	10
188506	S	327127		Rm 0004	2/15/19	1921	2/19/19	925	78	20

Relinquished by (Sign):

Date:

Time:

Received by EMSL (Sign): *[Signature]*

Date: 2-19-19

Time:

Page of

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CHINA TOWNSHIP, N.J.
2019 FEB 21 PM 3:15

Time: