BUILDING 201 INDOOR AIR SAMPLING RESULTS
FOR

REMEDIAL ACTION AT
THE DEFENSE NATIONAL STOCKPILE CENTER SCOTIA DEPOT
GLENVILLE, NEW YORK

Prepared For:

U.S. Army Corps of Engineers

Prepared By:

AECOM Technical Services

January 2017

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Table of Contents

List of Figures

List of Tables

List of Appendices

1 INTRODUCTION

This report has been prepared by AECOM at the request of the United States Army Corps of Engineers (USACE) to present the laboratory results of the indoor air samples collected in Building 201 at the Scotia Industrial Park on December 14, 2016. The purpose of this sampling event was to monitor the performance of the recently installed sub-slab depressurization systems (SSDS) that were installed to mitigate the potential for impacted soil vapor intrusion into the building.

In addition, an outdoor ambient air sample was collected concurrently with the indoor air samples to determine the background levels and extent to which outdoor sources may be influencing indoor air quality within the sampling area. Figures 1 and 2 provide the locations of the outdoor and indoor air samples, as well as the building layout. The outdoor air sample location was placed upwind of the buildings in the vicinity of the previous (Stone Environmental) outdoor air sample locations. At the time of this sampling event Building 201 was being used to store beverages.

2 SAMPLE COLLECTION METHODS

The December 2016 monitoring event was conducted in accordance with the *Draft Site Management Plan* (SMP) (AECOM 2017) and in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006; updated September 2013 and August 2015). A New York State Department of Health Indoor Air Quality Questionnaire and Building Inventory form was completed prior to sample collection. A copy of this questionnaire and the weather data at the time of sample collection is provided in Appendix A. Questionnaire findings did not indicate any substances or activities in building 201 that would impact the air sample results. The building HVAC system was not in use during the sampling event. Prior to indoor air sample collection, readings were taken at each confirmation testing vacuum monitoring point and manometers throughout the building (see locations on Figure 2) to monitor the system operation. Results of these readings are provided in Table 1 and measurements indicate that the SSDSs were functioning as designed. All samples were collected in a certified pre-evacuated 6-L Summa canister with a 24-hour regulator provided by the laboratory. Sample canisters were set up in designated locations consistent with previous sampling events and allowed to collect the sample for a 24-hour period. Samples canisters were set up with flexible tubing attached to a stand extending approximately 4 ft. to allow for sample collection within the breathing zone. After the allotted sample collection period the sample canisters were packaged and shipped to ALS Laboratory in Simi Valle, CA for analysis.

3 RESULTS

Laboratory results for the indoor air samples are presented in Table 2. The laboratory results were validated by an AECOM chemist and it was determined that all data were usable. Results obtained from the AECOM 2016 sampling event were compared to the Stone Environmental sample data that was collected in 2014 (Stone 2014) prior to the SSDS installation. As shown in Table 2 chlorinated volatile organic compound (CVOC) concentrations are lower in the AECOM 2016 results indicating that the SSDS are functioning as designed. The 2016 sampling event data

results show that the current indoor air CVOC concentrations are similar to those measured in the concurrent outdoor air sample.

The 2016 indoor air results and the 2014 sub slab results were compared to the New York State Department of Health Decision Matrix outcome in Table 3. The New York State Department of Health Decision Matrices are provided in Appendix B. Evaluation of the data using the decision matrix indicates that the required appropriate actions are currently being taken within the building for the protection of human health. The entire building is mitigated by the SSDS as a precautionary measure.

4 SUMMARY AND CONCLUSIONS

Overall, data indicate that the SSDSs appear to be functioning as designed. Sampling will continue to be conducted on an annual basis and the next round of indoor air sampling is scheduled to be conducted in December 2017. The SSDSs will be inspected according to the schedule outline in the Site Management Plan and the next routine system inspection is scheduled for June 2017.

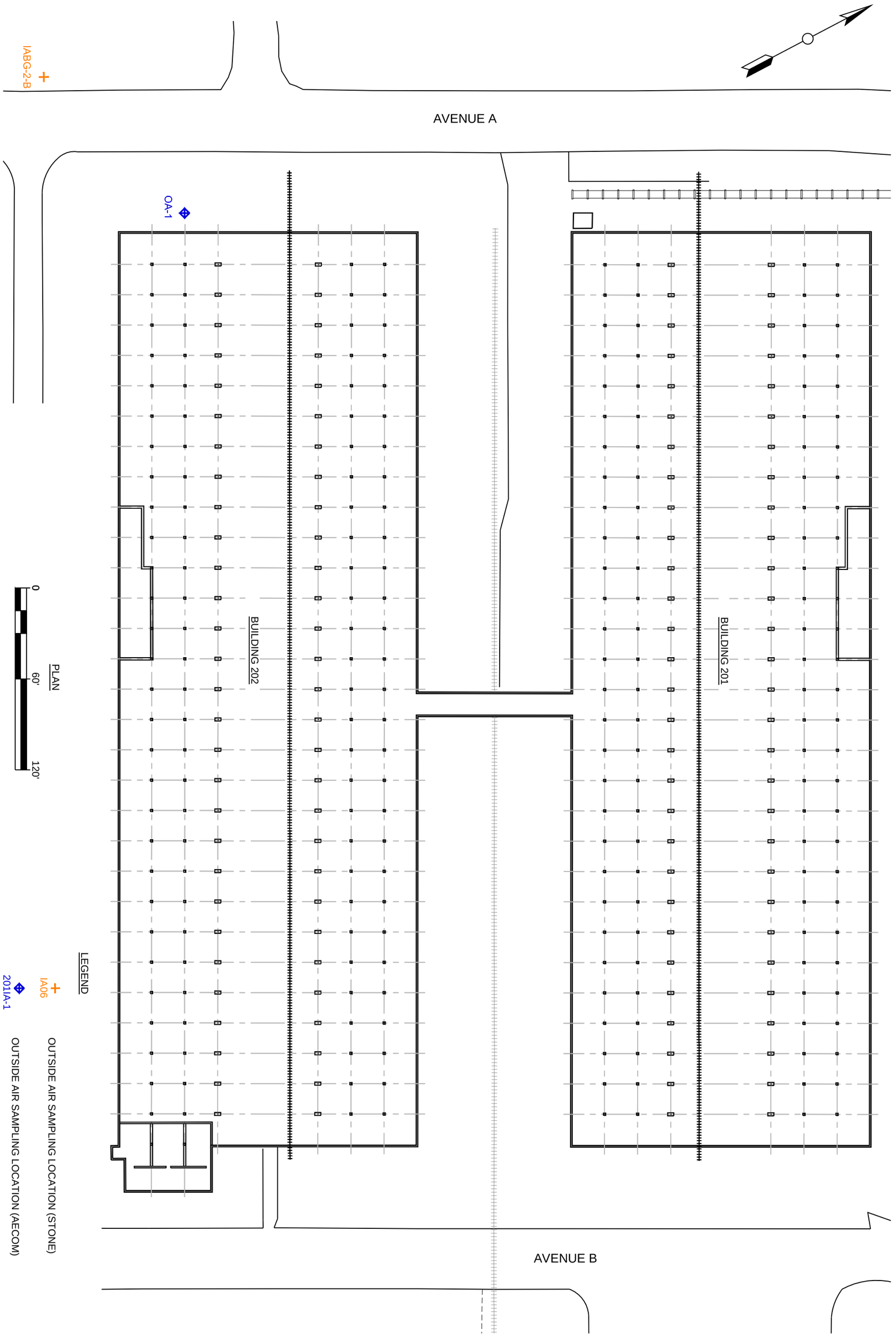
5 REFERENCES

AECOM, 2017. Site Management Plan for the Defense National Stockpile Center Scotia Depot, Town of Glenville, NY, March.

NYSDOH, 2006. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October.

Stone Environmental, 2014. Letter Report, Soil Vapor Intrusion Investigation, Second Round, Defense Nation Stockpile Center Scotia Depot Site, Town of Glenville, NY, May.

FIGURES



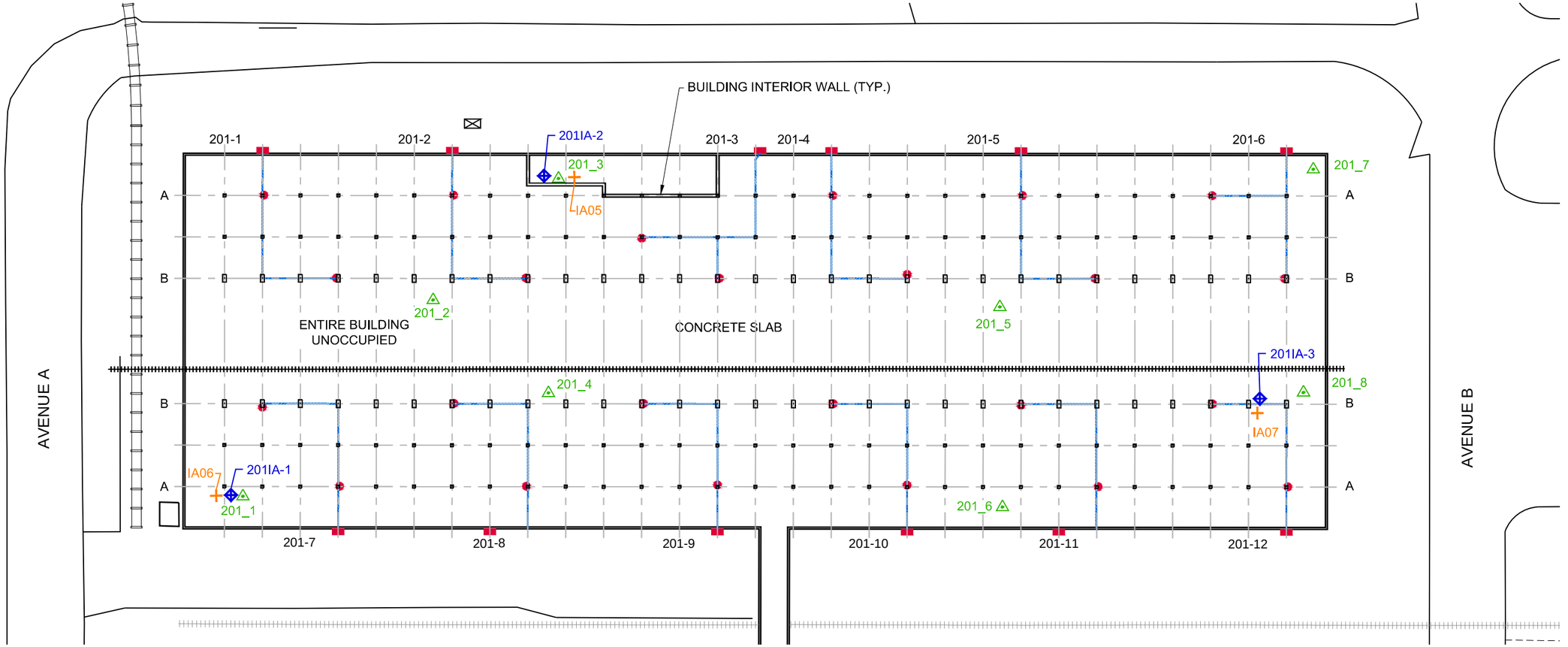
PROPERTY OWNER MEMO
DEFENSE NATIONAL STOCKPILE CENTER
SCOTIA DEPOT SITE - SCOTIA, NY
Project No.: 60440641 Date: January, 2017

US ARMY Corps of Engineers

OUTSIDE AIR MONITORING LOCATIONS

AECOM

Figure: 1



BUILDING 201
PLAN

LEGEND

- SINGLE VACUUM EXTRACTION POINT
- BLOWER LOCATION
- PIPE ROUTING
- CONFIRMATION TESTING VACUUM MONITORING POINT
- ELECTRICAL SUPPLY PEDESTAL
- IA06 — AIR SAMPLING LOCATION (STONE)
- 201IA-1 — AIR SAMPLING LOCATION (AECOM)

0 60' 120'

AECOM

Figure: 2

BUILDING 201
AIR MONITORING LOCATIONS

US ARMY Corps
of Engineers

PROPERTY OWNER MEMO
DEFENSE NATIONAL STOCKPILE CENTER
SCOTIA DEPOT SITE - SCOTIA, NY
Project No.: 60440641 Date: January, 2017

TABLES

Table 1
Field Readings December 2016 Sampling Event
Former Scotia Naval Depot

SUBSLAB VACUUM READINGS	
BUILDING 201	
MP	Reading (In WC)
1	-0.009
2	-0.033
3	-0.007
4	-0.064
5	*
6	-0.004
7	-0.021
8	-0.022

MONOMETER READINGS	
BUILDING 201	
Point	Reading (In WC)
1A	2.9
1B	2.7
2A	3.0
2B	3.0
3A	3.3
3B	3.5
4A	2.9
4B	4.4
5A	3.5
5B	3.1
6A	3.2
6B	3.4
7A	3.2
7B	2.8
8A	3.4
8B	3.7
9A	3.6
9B	3.3
10A	3.3
10B	3.6
11A	2.9
11B	2.3
12A	3.5
12B	3.5

Notes:

* Point damaged, unable to take reading at time of sampling.

Table 2
Building 201 Air Sample Results December 2016 Sampling Event
Former Scotia Naval Depot

Stone 3/2014	AECOM 12/2016	Carbon Tetrachloride (µg/m^3)		1,1,1-Trichloroethane (µg/m^3)		Tetrachloroethene (µg/m^3)		Trichloroethene (µg/m^3)		Vinyl Chloride (µg/m^3)		1,1-Dichloroethene (µg/m^3)		cis-1,2-Dichloroethene (µg/m^3)	
		Stone	AECOM	Stone	AECOM	Stone	AECOM	Stone	AECOM	Stone	AECOM	Stone	AECOM	Stone	AECOM
Sample ID	Sample ID														
IA06-1-B	201IA-1	0.692	0.49 J	0.038 J	0.015 J	0.068 J	0.054 J	0.107 U	0.037 J	0.051 U	0.025 UJ	0.079 U	0.012 J	0.079 U	0.043 J
IA05-1-B	201IA-2	0.673	0.51	0.109 U	0.014 J	0.136	0.050	0.107 U	0.023 J	0.051 U	0.027 U	0.079 U	0.029 U	0.079 U	0.029 U
IA07-1-B	201IA-3	2.64	0.59	0.109 U	0.015 J	0.258	0.094	0.107 U	0.046	0.051 U	0.030 U	0.079 U	0.031 U	0.079 U	0.031 U
IABG-1-B	NS	0.447	-	0.109 U	-	0.054 J	-	0.107 U	-	0.051 U	-	0.079 U	-	0.079 U	-
IABG-2-B	OA-1	0.434	0.490 J	0.109 U	0.014 J	0.075 J	0.054 J	0.107 U	0.011 J	0.051 U	0.023 UJ	0.079 U	0.024 UJ	0.079 U	0.024 UJ

Notes:
NS - No equivalent sample at this location
IA - Indoor Air
IABG - Stone 2014 Outdoor Air Sample
OA - Outdoor Air
U - Qualifier denotes non-detect.
J - Qualifier denotes estimated value.
UJ - Qualifier denotes the analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be imprecise.

Table 3
Health Guidance Decision Matrix Outcomes - Building 201
Former Scotia Naval Depot

Location ID Stone/AECOM	Analyte	Soil Vapor Concentration 2014 (µg/m^3)	Indoor Air Concentration 2014 (µg/m^3)	Indoor Air Concentration 2016 (µg/m^3)	New York State Department of Health Guidance/Decision Matrix Outcome[1]
IA05 - SV05 / 201IA-2	1,1,1-Trichlorethane	0.737	0.109 U	0.014 J	No Further Action
	Carbon Tetrachloride	122	0.673	0.51	Monitor Only / Mitigate
	Tetrachloroethene	0.542 J	0.136	0.05	No Further Action
	Trichloroethene	1.05	0.107 U	0.023 J	No Further Action
IA06 - SV06 / 201IA-1	1,1,1-Trichlorethane	27.3	0.038 J	0.015 J	No Further Action
	Carbon Tetrachloride	10.1	0.692	0.49 J	Monitor Only
	Tetrachloroethene	3.44	0.068 J	0.054 J	No Further Action
	Trichloroethene	2.82	0.107 U	0.037 J	No Further Action
IA07 - SV07 / 201IA-3	1,1,1-Trichlorethane	1.39	0.109 U	0.015 J	No Further Action
	Carbon Tetrachloride	1,120	2.64	0.59	Mitigate
	Tetrachloroethene	0.868	0.258	0.094	No Further Action
	Trichloroethene	0.349	0.107 U	0.046	No Further Action

Note:

[1] - Matrix outcome determined by 2014 sub-slab vapor concentrations and 2016 indoor air concentrations.

APPENDICIES

APPENDIX A: New York State Department of Health Indoor Air Quality Questionnaire and Building Inventory

Building 201

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Kelly Lurie/Gerlinde Wolf Date/Time Prepared 12/12/2016; 1200

Preparer's Affiliation AECOM Phone No. 518-951-2200

Purpose of Investigation SVI monitoring

1. OCCUPANT:

Interviewed: Y / (N)

Last Name: Adirondack Beverages First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants >18

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / (N)

Last Name: Ahl First Name: David

Address: 695 Rotterdam Industrial Park, Schenectady, NY 12306

County: Schenectady

Home Phone: _____ Office Phone: 518-356-4445

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
(Industrial)	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) Storage for beverage distributor

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many? _____

Other characteristics:

Number of floors 1 Building age 1940s

Is the building insulated? (Y) / N How air tight? Tight / (Average) / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: NA (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

When the SVI systems were installed, crack sealing in the cement floor was completed; however, there could be limited cracks remaining that could not be accessed.

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: None

Boiler/furnace located in: Basement Outdoors Main Floor Other None

Air conditioning: Central Air Window units Open Windows None

In the unoccupied office area

Are there air distribution ducts present? (Y) / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

There are air ducts in the unoccupied office for the AC and heat. The AC unit is located on the roof.

7. OCCUPANCY

Is basement/lowest level occupied? (Full-time) Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	
1st Floor	Office, storage for beverage distributor
2nd Floor	
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / (N)

b. Does the garage have a separate heating unit? Y / N / (NA)

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / (NA) Please specify_____

Fork lift stored and used in warehouse area.

d. Has the building ever had a fire? Y / (N) When?_____

e. Is a kerosene or unvented gas space heater present? Y / (N) Where? _____

f. Is there a workshop or hobby/craft area? Y / (N) Where & Type? _____

g. Is there smoking in the building? Y / (N) How frequently? _____

h. Have cleaning products been used recently? Y / (N) When & Type? _____

i. Have cosmetic products been used recently? Y / (N) When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented? Not in use

n. Is there a bathroom exhaust fan? Y / N If yes, where vented? Not in use

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

NA

First Floor:

See attached map

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

See attached map

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ppbRAE PID

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N
Warehouse	Striping paint	18 oz. can	U	Toluene, xylene	0 ppb	N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Location of striping paint can

201IA-2-121416

Unoccupied Office Area

BUILDING INTERIOR WALL (TYP.)

201-1 201-2 201-3 201-4 201-5 201-6

201_3 201_7

A B

201_2

ENTIRE BUILDING UNOCCUPIED

UNOCCUPIED

CONCRETE SLAB

ADIRONDACK BEVERAGES

201_5

201IA-3-121416

201_4 201_8

AVENUE A

AVENUE B

201_1 201_6

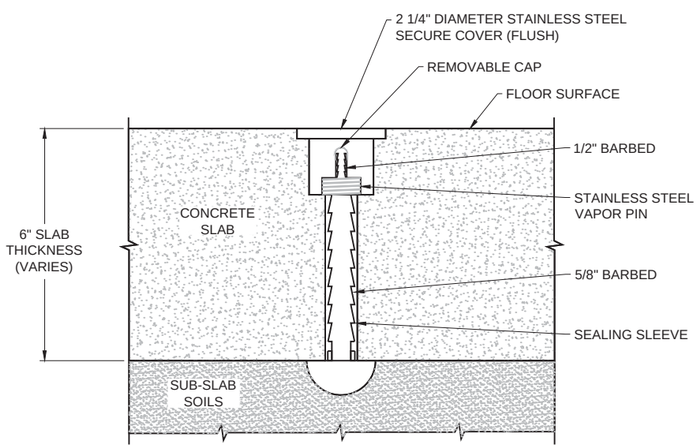
201-7 201-8 201-9 201-10 201-11 201-12

201IA-1-121416

There appeared to be no activity in the unoccupied side of the building during sample collection.

On the Adirondack Beverage side, a forklift was being operated to move pallets of beverages. There are also semi-trucks that back up to the warehouse and idle. The canister for sampling was set back out of the way of these sources as much as possible. The large loading door was open during some of the monitoring activities. It's uncertain how long it was open during the full sample duration, although it should be expected to be consistent with a typical day.

BUILDING 201 PLAN



SOIL VAPOR SAMPLING POINT DETAIL

NTS

TION POINT

CONFIRMATION TESTING VACUUM MONITORING POINT

ELECTRICAL SUPPLY PEDESTAL

0 60' 120'

AECOM

Figure: 4-2

BUILDING 201
SVI MONITORING LOCATIONS

US ARMY Corps of Engineers

SITE MANAGEMENT PLAN
DEFENSE NATIONAL STOCKPILE CENTER
SCOTIA DEPOT SITE - SCOTIA, NY
Project No.: 60440641 Date: April, 2016

FSND Weather Data for SVI Monitoring 12/14/16
Source: Weather Underground

Date	Time (EST)	Temp.	Windchill	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12/14/2016	7:48 AM	28.4 °F	18.0 °F	19.4 °F	69%	29.99 in	10.0 mi	NW	12.7 mph	18.4 mph	N/A		Mostly Cloudy
12/14/2016	10:49 AM	28.4 °F	15.8 °F	8.6 °F	43%	30.00 in	10.0 mi	WNW	18.4 mph	26.5 mph	N/A		Clear
12/14/2016	11:51 AM	28.4 °F	16.2 °F	10.4 °F	47%	29.99 in	10.0 mi	WNW	17.3 mph	23.0 mph	N/A		Clear
12/14/2016	3:47 PM	26.6 °F	16.2 °F	8.6 °F	47%	29.94 in	10.0 mi	WNW	11.5 mph	-	N/A		Clear
12/14/2016	6:58 PM	19.4 °F	-	8.6 °F	63%	29.89 in	10.0 mi	Calm	Calm	-	N/A		Scattered Clouds
12/14/2016	6:59 PM	21.2 °F	-	8.6 °F	58%	29.90 in	10.0 mi	Calm	Calm	-	N/A		Clear
12/14/2016	9:50 PM	21.2 °F	-	10.4 °F	63%	29.79 in	10.0 mi	Calm	Calm	-	N/A		Mostly Cloudy
12/15/2016	10:48 AM	17.6 °F	3.2 °F	12.2 °F	79%	-	1.2 mi	WNW	15.0 mph	29.9 mph	N/A	Snow	Light Snow

APPENDIX B: New York State Department of Health Guidance Decision Matrices

Appendix B

Building 201 Air Sample Results December 2016 Sampling Event

Former Scotia Naval Depot

NYSDOH Decision Matrix 1

Sub-Slab Vapor ($\mu g/m^3$)	Indoor Air ($\mu g/m^3$)			
	<0.25	**0.25 to <1**	**1 to <5**	**5 and above**
<5	NFA	IR	IR	IR
5 to <50	NFA	MO	MO	MI
50 to <250	MO	MO/MI	MI	MI
250 and above	MI	MI	MI	MI

NFA – No Further Action
IR – Identify and Reduce
MO – Monitor Only
MI – Mitigate

NYSDOH Decision Matrix 2

Sub-Slab Vapor ($\mu g/m^3$)	Indoor Air ($\mu g/m^3$)			
	<3	**3 to <30**	**30 to <100**	**100 and above**
<100	NFA	IR	IR	IR
100 to <1,000	MO	MO/MI	MI	MI
1,000 and above	MI	MI	MI	MI

See Table 2-1 for explanation of abbreviations

Chlorinated Compounds Regulated by NYSDOH

Chlorinated Compound	Decision Matrix
Carbon Tetrachloride	Matrix 1
1,1-Dichloroethene	Matrix 2
Cis-1,2-Dichloroethene	Matrix 2
Tetrachloroethene	Matrix 2
1,1,1-Trichloroethane	Matrix 2
Trichloroethene	Matrix 1
Vinyl Chloride	Matrix 1