June 15, 2018

Jason Tremblay
State of NH Dept. of Transportation
Sr. Project Engineer
7 Hazen Drive
PO Box 483
Concord, NH 03302-0483

Re: Durham - Bridge 16236
US Route 4 over Bunker Creek (Bridge No. 145/116)
Bridge Core Sampling
RPF File No. 188478

Dear Mr. Tremblay:

On April 12, 2018, RPF Environmental, Inc. (RPF) conducted limited core sampling of Bridge No. 145/116 on US Route 4 over Bunker Creek in Durham, New Hampshire. Below is a summary of findings, discussion of the results and preliminary recommendations for proper management of the identified asbestos containing material. Attached to this report are the survey data tables, laboratory results, drawings, survey methodologies and limitations.

Discussion of Findings

Bridge No. 145/116 is a two-lane bridge on US Route 4 spanning Bunker Creek in Durham, New Hampshire. The specific areas tested included the sample locations designated by the NH DOT. The number of samples and sample locations were as reviewed at the site with NHDOT. Once collected, samples were placed in sealed, labeled sample containers and submitted, under chain of custody for laboratory analysis using polarized light microscopy (PLM) with gravimetric-reduction preparation. Appendix A includes an inventory of the samples collected, description, and laboratory results. Appendix B includes pictures of the area tested.

The asphaltic concrete layers of the bridge deck material ranged from 4” to 6” in thickness. The samples extracted consisted of 2” cores advanced through the various layers of asphalt and the bottom waterproofing membranes by RPF personnel. Core samples included all layers down to the concrete bridge deck. Field drawings should be referenced for exact coring locations.

A total of four (4) core samples were extracted from the bridge deck by RPF personnel starting at the north bridge curb progressing directly south across the bridge to the south curb as designated by the DOT. Each core sample underwent layered analysis and based on the laboratory analysis, asbestos was not detected in any of the samples collected.

As part of this sampling activity, RPF performed personal breathing zone exposure monitoring on the sampling personnel for total airborne fibers. Two personal breathing zone air sample was collected on Allan Mercier and Ryan Daly during the core drilling along with the requisite

analytical field blanks for a total of four air samples. These samples were collected on 0.8 micrometer pore size mixed cellulose esther (MCE) cassettes at an approximate flow rate of 2.32 liters per minute using low-volume sample pumps calibrated before and after sampling utilizing secondary calibration standards. The samples were analyzed by phase contrast microscopy (PCM) by NIOSH method 7400. The results of this testing were well below the OSHA Permissible Exposure Limit of 0.10 fibers per cubic centimeter (f/cc) and are included with this report at Appendix C.

Conclusions

Based on the testing performed during this project, asbestos was not detected in the core samples collected. It should also be noted that due to the size of the cores, observations of specific layers were limited. It is recommended that further assessment of the materials be made using larger test cuts as part of the project design process, if more definitive stratification is required. Testing was limited to the specific locations and materials indicated herein.

A full inspection of the entire bridge structure, approaches, structural members and associated systems was not completed. With the exception of the specific testing and analysis detailed herein, no other samples of materials, oil, water, ground water, air, or other suspect hazardous materials were collected in the course of this inspection that supports or denies these conclusions. No additional services beyond those explicitly stated herein were performed and none should be inferred or implied. The summary and conclusions are based on reasonably ascertainable information as described in this report. RPF Environmental, Inc. makes no guarantees, warranties, or references regarding this property or the condition of the property after the period of this report.

If you have any questions at this time, or if you would like to discuss the remediation process, please call our office.

Sincerely,
RPF Environmental, Inc.

Allan D. Mercier
Licensed Inspector AI000316

Enclosures:
Appendix A: Sample Listing and Laboratory Results
Appendix B: Sketch and Survey Pictures
Appendix C: Air Monitoring Results
Appendix D: Summary of Methodology and Limitations

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APPENDIX A

TABLE 1

SAMPLE IDENTIFICATION

NH DEPARTMENT OF TRANSPORTATION
Durham 16236, Bridge 145/116
US Route 4 over Bunker Creek, Durham, NH

Sample Identification	Sample Location	Description of Material	Asbestos Content
Core Sample #1	North curb	4” thick asphaltic cement with no apparent membrane on concrete deck	No Asbestos Detected
Core Sample #2	Eastbound Travel Lane	6” thick asphaltic cement with thin, black, non-fibrous membrane on concrete deck	No Asbestos Detected
Core Sample #3	Westbound Travel Lane	5” thick asphaltic cement with thin, black, non-fibrous membrane on concrete deck	No Asbestos Detected
Core Sample #4	South Curb	5” thick asphaltic cement with thin, black, non-fibrous membrane on concrete deck	No Asbestos Detected

Please reference the full report for discussions and additional information and limitations pertaining to these results.

TABLE 2

BULK MATERIAL LABORATORY RESULTS

NH DEPARTMENT OF TRANSPORTATION
Durham 16236, Bridge 145/116
US Route 4 over Bunker Creek, Durham, NH

Samples Collected: April 12, 2018

Core Sample Location	Sample ID	Sample Description	Organic Weight Percent	Acid Soluble Weight Percent	Other Non-Asbestos Weight Percent	Asbestos Weight Percent
North Curb	041218HG1a	Asphalt, black, top layer	7.1	-	92.9	None Detected
	041218HG1b	Asphalt, black, middle layer	9.0	-	91.0	None Detected
	041218HG1c	Asphalt, black, bottom layer	15.7	-	84.3	None Detected
Eastbound Travel Lane	041218HG2a	Asphalt, black,	8.4	-	91.6	None Detected
	041218HG2b	Asphalt, black	7.0	-	93.0	None Detected
	041218HG2c	Asphalt, black	10.8	-	89.2	None Detected
	041218HG2d	Asphalt, black	10.3	-	89.7	None Detected
	041218HG2e	Membrane layer, black	12.0	-	88.0	None Detected
Westbound Travel Lane	041218HG3a	Asphalt, black	8.8	-	91.2	None Detected
	041218HG3b	Asphalt, black	7.7	-	92.3	None Detected
	041218HG3c	Asphalt, black	11.0	-	89.0	None Detected
	041218HG3d	Asphalt, black	5.6	-	94.4	None Detected
	041218HG3e	Membrane layer, black	13.2	-	86.8	None Detected
South Curb	041218HG4a	Asphalt, black	16.6	-	83.4	None Detected
	041218HG4b	Asphalt, black	10.6	-	89.4	None Detected
	042118HG4c	Membrane layer, black	15.1	-	84.9	None Detected

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Notes:

- Polarized Light Microscopy with Gravimetric Reduction. EPA 600/R-93/116 and 600/M4-82-020 Method.
- Please reference the full report for discussions and additional information and limitations pertaining to these results.

APPENDIX B

RPF ENVIRONMENTAL, INC.
Environmental Health & Safety

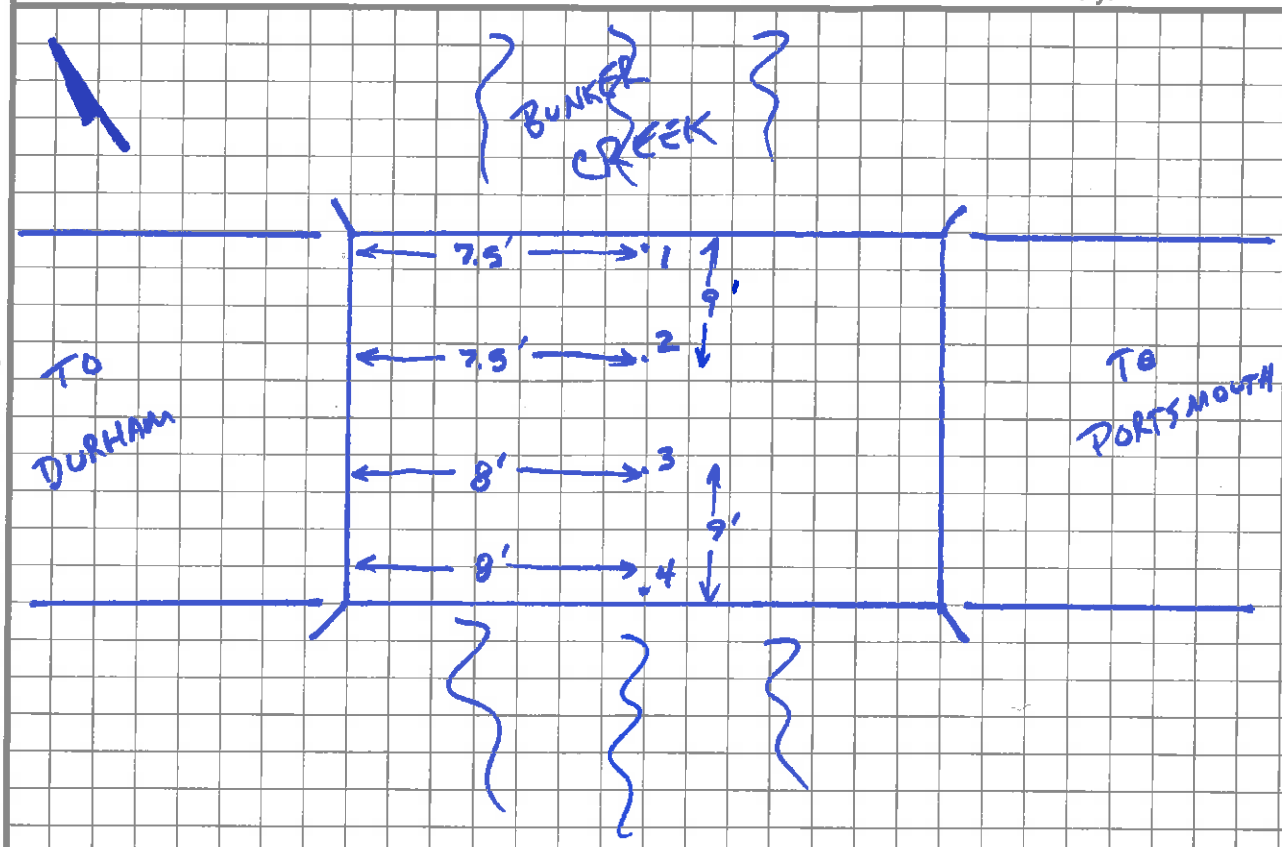
Page No. 1

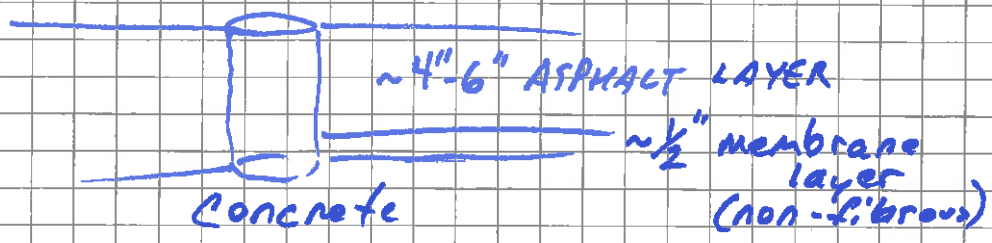
Project: NH DOT - DURHAM 16236 File No. 188478

Location: RT 4 OVER BUNKER CREEK Date: 4-12-18 By: AM

Subject: CORE SAMPLING FOR ASB. Checked: By:

Based on: Revised: By:





- NOT TO SCALE -

1. Core hole one work area set-up

2. Core hole one - no asbestos detected

3. Core hole two work area set-up

4. Core hole two - no asbestos detected

5. Core hole three active sampling

6. Core hole three - no asbestos detected

EXAMPLE PICTURES		RPF Environmental TESTING & CONSULTING SERVICES
Site Address: NHDOT Durham- Bridge 16236 US Route 4 over Bunker Creek (Bridge No. 145/116)		www.airpf.com **888-SAFE AIR** **File No. 188478**

7. Core hole three - no asbestos detected

8. Core hole four - no asbestos detected

EXAMPLE PICTURES		RPF Environmental TESTING & CONSULTING SERVICES
Site Address: NHDOT Durham- Bridge 16236 US Route 4 over Bunker Creek (Bridge No. 145/116)		www.airpf.com **888-SAFE AIR** **File No. 188478**

APPENDIX C

Client: NH Department of Transportation **Site Address:** Durham 16236, US Route 4 over Bunker Creek (Bridge No. 145/116) **RPF File #:** 188478 **Date:** 4/12/2018

Abatement Contractor: N/A **RPF Tech:** RD **Submitted by/date/time:** 04/12/18 RD **Received by/date/time:** 04/12/18 RD

Date Analyzed: 4/13/18 **Microscopist:** RD **Verbal Results to:** AM **Scope Constant:** 49.02

Field No.	Sample Description: Type, Inside or Outside Containment (if applicable), Location (floor, specific area), Activity During Sampling, Other.	Start:		Stop:		Total Time: (min)	Pre Cal (lpm)	Post Cal (lpm)	Pump #	Volume (Liters)	Detection Limit	Fibers	Fields	Blank	Concentration (fiber/CC)
		hr	min	hr	min										
041218 PO1	Personal Breathing zone air sample, RPF Consultant Allan Mercier. No respiratory protection, during sampling of suspect asbestos asphalt bridge components	09	18	10	39	81	2.3	2.3	333	186.3	0.026	5	100	1	<0.026
041218 PO2	Personal Breathing zone air sample, RPF Consultant Ryan Daly. No respiratory protection, during sampling of suspect asbestos asphalt bridge components	09	17	10	40	83	2.3	2.3	336	190.9	0.026	4.5	100	1	<0.026
041218 BO3	Analytical field blank	-	-	-	-	-	-	-	-	-	-	1	100	1	1 fiber
041218 BO4	Analytical field blank	-	-	-	-	-	-	-	-	-	-	1	100	1	1 fiber

Notes:

* Detection Limit - Means lower limit of reliable quantitation based on 10 fibers per 100 fields and is volume dependent. Per applicable State rules and regulations, the air clearance criteria for asbestos abatement projects is 0.01 f/cc. The OSHA 8-hour time weighted average is 0.1 f/cc and the 30 minute short term exposure limit is 1.0 f/cc.
* T.D.T.A. indicates the filter was overloaded and analysis was terminated
* Please reference the full report for discussions and additional information and limitations pertaining to these results.

Analyzed By: Ryan Daly

Reviewed By:

APPENDIX D

Summary of Methodology: Asbestos-Containing Building Materials Survey

EPA accredited inspector(s) surveyed accessible space in the building or site areas included within the RPF Scope of Work (SOW) to identify suspect asbestos-containing building material (ACBM). Suspect ACBM was inventoried and categorized into homogeneous groups of materials. To the extent indicated in the report, samples were then extracted from the different groups of homogeneous materials in accordance with applicable State and federal rules and regulations. For surveys in which the SOW included full inspections of the affect space, sampling methodologies were based on the requirements set forth in 40 CFR Part 763 (EPA) and 29 CFR Part 1926.1101 (OSHA). For preliminary or limited surveys, findings apply to only the affected material or space as indicated in the RPF SOW and Report and additional inspection and testing will be required to satisfy regulatory obligations associated with renovation, demolition, maintenance and other occupational safety and health requirements.

Collected samples were individually placed into sealed containers, labeled, and submitted with proper chain of custody forms to the RPF NVLAP-accredited vendor laboratory. Sample containers and tools were cleaned after each sample was collected. Samples were analyzed for asbestos content using polarized light microscopy (PLM). Although PLM is the method currently recognized in State and federal regulations for asbestos identification in bulk samples, PLM may not be sensitive enough to detect all of the asbestos fibers in certain types of materials, such as floor tile and other nonfriable ACBM. In the event that more definitive results are requested in cases of with negative or trace results of asbestos are detected, RPF recommends that confirmation testing be completed using transmission electron microscopy.

For each homogeneous group of suspect material, a “stop at first positive” (SFP) method may have been employed during the analysis. The SFP method is based on current EPA sampling protocols and means that if one sample within a homogeneous group of suspect material is found to contain >1% asbestos, then further analysis of that specific homogenous group samples is terminated and the entire homogeneous group of material is considered to be ACBM regardless of the other sample results. This is based on the potential for inconsistent mix of asbestos in the product yielding varying findings across the different individual samples collected from the same homogeneous group. Unless otherwise noted in the report, sample groups found to have 1% to <10% asbestos content are assumed to be ACBM; to rebut this assumption further analysis with point count methods are required.

Inaccessible and hidden areas, including but not limited to wall/floor/ceiling cavity space, space with obstructed access (such as fiberglass insulation above suspended ceilings), sub floors, interiors of mechanical and process equipment, and similar spaces were not included in the inspection and care should be used when accessing these areas in the future. Unless otherwise noted in the RPF Report, destructive survey techniques were not employed during this survey.

In the event that additional suspect materials are encountered that are not addressed in this report, the materials should be properly tested by an accredited inspector. For example, during renovation and demolition it is likely that additional suspect material will be encountered and such suspect materials should be assumed to be hazardous until proper inspection and testing occurs.

RPF followed applicable industry standards; however, various assumptions and limitations of the methods can result in missed materials or misidentification of materials due several factors including but not limited to: inaccessible space due to physical or safety constraints, space that is difficult to reach to fully inspection, assumptions regarding the determination of homogenous groups of suspect material, assumptions regarding attempts to conduct representative sampling, and potential for varying mixtures and layers of material sampled not being representative of all areas of similar material. Also reference the Limitations document attached to the report.

LIMITATIONS

1. The observations and conclusions presented in the Report were based solely upon the services described herein, and not on scientific tasks or procedures beyond the RPF Environmental, Inc. Scope of Work (SOW) as discussed in the proposal and/or agreement. The conclusions and recommendations are based on visual observations and testing, limited as indicated in the Report, and were arrived at in accordance with generally accepted standards of industrial hygiene practice and asbestos professionals. The nature of this survey or monitoring service was limited as indicated herein and in the report or letter of findings. Further testing, survey, and analysis is required to provide more definitive results and findings.

2. For site survey work, observations were made of the designated accessible areas of the site as indicated in the Report. While it was the intent of RPF to conduct a survey to the degree indicated, it is important to note that not all suspect ACBM material in the designated areas were specifically assessed and visibility was limited, as indicated, due to the presence of furnishings, equipment, solid walls and solid or suspended ceilings throughout the facility and/or other site conditions. Asbestos or hazardous material may have been used and may be present in areas where detection and assessment is difficult until renovation and/or demolition proceeds. Access and observations relating to electrical and mechanical systems within the building were restricted or not feasible to prevent damage to the systems and minimize safety hazards to the survey team.

3. Although assumptions may have been stated regarding the potential presence of inaccessible or concealed asbestos and other hazardous material, full inspection findings for all asbestos and other hazardous material requires the use of full destructive survey methods to identify possible inaccessible suspect material and this level of survey was not included in the SOW for this project. For preliminary survey work, sampling and analysis as applicable was limited and a full survey throughout the site was not performed. Only the specific areas and /or materials indicated in the report were included in the SOW. This inspection did not include a full hazard assessment survey, full testing or bulk material, or testing to determine current dust concentrations of asbestos in and around the building. Inspection results should not be used for compliance with current EPA and State asbestos in renovation/demolition requirements unless specifically stated as intended for this use in the RPF report and considering the limitations as stated therein and within this limitations document.

4. Where access to portions of the surveyed area was unavailable or limited, RPF renders no opinion of the condition and assessment of these areas. The survey results only apply to areas specifically accessed by RPF during the survey. Interiors of mechanical equipment and other building or process equipment may also have asbestos and other hazardous material present and were not included in this inspection. For renovation and demolition work, further inspection by qualified personnel will be required during the course of construction activity to identify suspect material not previously documented at the site or in this survey report. Bordering properties were not investigated and comprehensive file review and research was not performed.

5. For lead in paint, observations were made of the designated accessible areas of the site as indicated in the Report. Limited testing may have been performed to the extent indicated in the text of the report. In order to conduct thorough hazard assessments for lead exposures, representative surface dust testing, air monitoring and other related testing throughout the building, should be completed. This type of in depth testing and analysis was beyond the scope of services for the initial inspection. For lead surveys with XRF readings, it is recommended that surfaces found to have LBP or trace amount of lead detected with readings of less than 4 mg/cm^2 be confirmed using laboratory analysis if more definitive results are required. Substrate corrections involving destructive sampling or damage to existing surfaces (to minimize XRF read-through) were not completed. In some instances, destructive testing may be required for more accurate results. In addition, depending on the specific thickness of the paint films on different areas of a building component, differing amounts of wear, and other factors, XRF readings can vary slightly, even on the same building component. Unless otherwise specifically stated in the scope of services and final report, lead testing performed is not intended to comply with other state and federal regulations pertaining to childhood lead poisoning regulations.

6. Air testing is to be considered a "snap shot" of conditions present on the day of the survey with the understanding that conditions may differ at other times or dates or operational conditions for the facility. Results are also limited based on the specific analytical methods utilized. For phase contrast microscopy (PCM) total airborne fiber testing, more sensitive asbestos-specific analysis using transmission electron microscopy (TEM) can be performed upon request.

7. For asbestos bulk and dust testing, although polarize light microscopy (PLM) is the method currently recognized in State and federal regulations for asbestos identification in bulk samples, some industry studies have found that PLM may not be sensitive enough to detect all of the asbestos fibers in certain nonfriable material, vermiculate type insulation, soils, surface dust, and other materials requiring more sensitive analysis to identify possible asbestos fibers. In the event that more definitive results are requested, RPF recommends that confirmation testing be completed using TEM methods or other analytical methods as may be applicable to the material. Detection of possible asbestos fibers may be made more difficult by the presence of other non-asbestos fibrous components such as cellulose, fiber glass, etc., by binder/matrix materials which may mask or obscure fibrous components, and/or by exposure to conditions capable of altering or transforming asbestos. PLM can show significant bias leading to false negatives and false positives for certain types of materials. PLM is limited by the visibility of the asbestos fibers. In some samples the fibers may be reduced to a diameter so small or masked by coatings to such an extent that they cannot be reliably observed or identified using PLM.

8. For hazardous building material inspection or survey work, RPF followed applicable industry standards; however, RPF does not warrant or certify that all asbestos or other hazardous materials in or on the building has been identified and included in this report. Various assumptions and limitations of the methods can result in missed materials or misidentification of materials due to several factors including but not limited to: inaccessible space due to physical or safety constraints, space that is difficult to reach to fully inspect, assumptions regarding the determination of homogenous groups of suspect material, assumptions regarding attempts to conduct representative sampling, and potential for varying mixtures and layers of material sampled not being representative of all areas of similar material.

9. Full assessments often requires multiple rounds of sampling over a period of time for air, bulk material, surface dust and water. Such comprehensive testing was beyond the scope of RPF services. In addition clearance testing for abatement, as applicable, was based on the visual observations and limited ambient area air testing as indicated in the report and in accordance with applicable state and federal regulations. The potential exists that microscopic surface dust remains with contaminant present even in the event that the clearance testing meets the state and federal requirements. Likewise for building surveys, visual observations are not sufficient alone to detect possible contaminant in settled dust. Unless otherwise specifically indicated in the report, surface dust testing was not included in the scope of the RPF services.

10. For abatement or remediation monitoring services: RPF is not responsible for observations and test for specific periods of work that RPF did not perform full shift monitoring of construction, abatement or remediation activity. In the event that problems occurred or concerns arouse regarding contamination, safety or health hazards during periods RPF was not onsite, RPF is not responsible to provide documentation or assurances regarding conditions, safety, air testing results and other compliance issues. RPF may have provided recommendations to the Client, as needed, pertaining to the Client's Contractor compliance with the technical specifications, schedules, and other project related issues as agreed and based on results of RPF monitoring work. However, actual enforcement, or waiving of, contract provisions and requirements as well as regulatory liabilities shall be the responsibility of Client and Client's Contractor(s). Off-site abatement activities, such as waste transportation and disposal, were not monitored or inspected by RPF.

11. For services limited to clearance testing following abatement or remediation work by other parties: The testing was limited to clearance testing only and as indicated in the report and a site assessment for possible environmental health and safety hazards was not performed as part of the scope of this testing. Client, or Client's abatement contractor as applicable, was responsible for performing visual inspections

of the work area to determine completeness of work prior to air clearance testing by RPF.

12. For site work, including but not limited to air clearance testing services, in which RPF did not provide full site safety and health oversight, abatement design, full shift monitoring of all site activity, RPF expresses no warranties, guarantees or certifications of the abatement work conducted by the Client or other employers at the job site(s), conditions during the work, or regulatory compliance, with the exception of the specific airborne concentrations as indicated by the air clearance test performed by RPF during the conditions present for the clearance testing. Unless otherwise specifically noted in the RPF Report, visual inspections and air clearance testing results apply only to the specific work area and conditions present during the testing. RPF did not perform visual inspections of surfaces not accessible in the work area due to the presence of containment barriers or other obstructions. In these instances, some contamination may be present following RPF clearance testing and such contamination may be exposed during and after removal of the containment barriers or other obstructions following RPF testing services. Client or Client's Contractor is responsible for using appropriate care and inspection to identify potential hazards and to remediate such hazards as necessary to ensure compliance and a safe environment.

13. The survey was limited to the material and/or areas as specifically designated in the report and a site assessment for other possible environmental health and safety hazards or subsurface pollution was not performed as part of the scope of this site inspection. Typically, hazardous building materials such as asbestos, lead paint, PCBs, mercury, refrigerants, hydraulic fluids and other hazardous product and materials may be present in buildings. The survey performed by RPF only addresses the specific items as indicated in the Report.

14. For mold and moisture survey services, RPF services did not include design or remediation of moisture intrusion. Some level of mold will remain at the site regardless of RPF testing and Contractor or Client cleaning efforts. RPF testing associated with mold remediation and assessments is limited and may or may not be representative of other surfaces and locations at the site. Mold growth will occur if moisture intrusion deficiencies have not been fully remedied and if the site or work areas are not maintained in a sufficiently dry state. Porous surfaces in mold contaminated areas which are not removed and disposed of will likely result in future spore release, allergen sources, or mold contamination.

15. Existing reports, drawings, and analytical results provided by the Client to RPF, as applicable, were not verified and, as such, RPF has relied upon the data provided as indicated, and has not conducted an independent evaluation of the reliability of these data.

16. Where sample analyses were conducted by an outside laboratory, RPF has relied upon the data provided, and has not conducted an independent evaluation of the reliability of this data.

17. All hazard communication and notification requirements, as required by U.S. OSHA regulation 29 CFR Part 1926, 29 CFR Part 1910, and other applicable rules and regulations, by and between the Client, general contractors, subcontractors, building occupants, employees and other affected persons were the responsibility of the Client and are not part of the RPF SOW.

18. The applicability of the observations and recommendations presented in this report to other portions of the site was not determined. Many accidents, injuries and exposures and environmental conditions are a result of individual employee/employer actions and behaviors, which will vary from day to day, and with operations being conducted. Changes to the site and work conditions that occur subsequent to the RPF inspection may result in conditions which differ from those present during the survey and presented in the findings of the report.