

Preliminary
Environmental Characterization Report

**Remediation and Deconstruction of
Fiterman Hall, 30 West Broadway
New York, New York**

Prepared for:

Dormitory Authority of the State of New York
&
The City University of New York

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Introduction

Airtek Environmental Corp. (Airtek) has been retained by Pei Cobb Freed & Partners, Architects, LLP (PCFP) on behalf of the Dormitory Authority of the State of New York (DASNY) and The City University of New York (CUNY) to conduct an environmental characterization study of the Fiterman Hall Building located at 30 West Broadway, New York, NY (Fiterman Hall, the Building, or 30 West Broadway). The Building is a 15-story, 370,000 (SF) classroom building owned by CUNY and operated prior to 9/11 by CUNY/Borough of Manhattan Community College. For purposes of the environmental decontamination and deconstruction of Fiterman Hall, DASNY is acting as and for the Building owner. The Building was physically damaged by the collapse of the 7 World Trade Center building, and impacted by the well-documented environmental effects of the entire World Trade Center (WTC) collapse of September 11, 2001.

Based upon the extent of the façade damage, its location on the south side of the Building facing the WTC site, and the documented incursion of WTC dust and debris, DASNY/CUNY and the Regulatory community have jointly concluded that the Building is contaminated and requires extensive environmental remediation prior to demolition. To ensure that this work is conducted in a manner that maximizes the protection of human health and the environment, project planning is based on the conservative assumption that the entire structure is contaminated.

This investigation was focused on environmental conditions within Fiterman Hall as they relate to the planning and specification of the environmental remediation and subsequent deconstruction of the structure (the Project). The investigation included review of data and observations recorded by previous environmental investigations conducted both prior and subsequent to the WTC collapse. The investigation also included focused site environmental investigations and testing designed to provide specific information germane to the remediation and deconstruction of Fiterman Hall.

1.0 Executive Summary:

The decision to approach the project on the assumption that the entire Building is contaminated obviated

the need to expend time and resources delineating contaminated versus uncontaminated materials and spaces. The investigation therefore focuses on the nature of the Building materials, other materials and objects that remain within the Building and the structure and lay-out of the Building as it relates to the remediation and deconstruction process.

This investigation concludes that an environmental remediation involving the removal of all non-structural components remaining within the building, followed by a thorough cleaning and encapsulation of all remaining structural components is the safest and most efficient means to prepare the building for deconstruction.

In brief, other conclusions of note include the following:

Asbestos Monitoring: Testing conducted as required by the New York State Department of Labor under Industrial Code Rule 56 (56-17), indicates that the installation and operation of the site access facility at the northwest corner of the building has not resulted in the release of asbestos to the outside of the building. All sample results are within acceptable limits.

Personal Exposure Testing: The results of personal exposure sampling conducted to date indicate that the personal protective equipment specified in the original site Health & Safety Plan is sufficient personal protection for the contaminants tested for during the activities conducted to date.

Exterior Façade: Cleaning of the exterior façade of the Building (including the ballast and membrane on roof and setbacks) conducted by the NYC DEP as a part of its WTC response was effective, and re-cleaning of the majority of the façade is neither necessary nor advisable. Cleaning of the lower two floors where urban background road dust has accumulated will be conducted, cleaning of the entire gash area of the south and west façades where debris has been noted, and focused cleaning of limited façade components that exhibit residual dust will be conducted as a part of the remediation/deconstruction Project. The inspection was necessarily conducted from the interior of the building, except where roof setbacks could be accessed. As

such, it is the intent of the Owner to have the façade re-inspected by the Environmental Consultant as the project scaffolding is erected to ensure the accuracy of the preliminary conclusions, and/or to identify any additional areas requiring focused cleaning. In the event that additional areas are identified for focused cleaning, the contractor will conduct HEPA-vacuuming and wet-wiping of any façade components that require cleaning at the direction of the site hygienist. This is in addition to the first floor, second floor, and gash area, which will be cleaned in their entirety. A more detailed discussion of façade conditions and their impact on the Project can be found in a companion document, *Preliminary Façade Characterization Report, December 23, 2005*.

Asbestos-Containing Building Materials: While extensive abatement of asbestos-containing building materials (ACMs) was conducted as a part of the prior renovations to the facility, some ACMs remain that will be abated during the environmental Remediation Phase of the project. Non-friable ACM spandrel flashing and associated paper flashing within the façade and ACM roofing material at the 14th floor roof will be abated during the Deconstruction Phase of the Project.

Lead-Based Paint: A survey for lead-based paint (LBP) conducted throughout the facility has determined that the Building is essentially lead-paint free. Only very limited lead-painted materials remain in the facility. This includes testing of structural steel where it is accessible for testing. XRF testing confirmed the positive presence of lead based paint on one metal fender post located in the loading dock of the building, one ceramic sink in the basement and a portion of a plaster-covered column on the 4th floor. Details on the removal and disposal of these items will be presented in *Regulatory Submittal Part I - Work Plan*. Due to the limited quantity of these materials, the material will be assumed to be regulated lead waste. At the Contractor's option, the limited components that have tested positive for lead-based paint will be removed and disposed as lead waste, or will have the paint removed by chemical means. The paint removed and the materials used for removal will be handled, packaged and disposed as lead waste.

Contaminants of Potential Concern: Visual inspection and limited testing for the residual impact of WTC Contaminants of Potential Concern (CoPCs) was conducted within the Building. This testing was intended to be illustrative of conditions, and useful in verification of some aspects of the HASP for the site. The Building is assumed to be contaminated based on the nature of the WTC impact, and the results of prior investigations.

Waste Characterization: Preliminary testing of WTC dust within the building was conducted to identify areas of the building where concentrations of RCRA – regulated contaminants within WTC dust may exist. All test results indicate that the dust that impacted the Building is not regulated under RCRA. Results are included in Attachment IX. By extension, building materials that would not normally be considered to be regulated waste (“conventional building materials”) are not considered suspect RCRA waste due to their assumed contact with the WTC dust. Further testing of conventional building materials will not be conducted for materials that would not normally be suspected to be regulated waste. Testing will be conducted of PPE and other miscellaneous categories of waste that have not been categorized to date. The preliminary results were used to guide decisions on testing and management of building contents and components impacted by the dust. Waste characterization for purposes of informing decisions on waste handling, packaging, transport and disposal is to be addressed in a companion document, *Regulatory Submittal Part IV - Waste Sampling and Management Plan (WSMP)*, to be submitted with the regulatory submittals for the project. Waste characterization is an aspect of the project to be very closely monitored by the regulatory community, and is work that will be subject to a Quality Assurance Project Plan (QAPP).

Microbiological Contamination: Visual inspections for mold impact were conducted, and are ongoing as conditions change within the building over time. In general, mold impact is limited to the upper floors, and is most prevalent on the south side of the building where the façade was destroyed. While limited visible mold does exist, it will have little or no impact on the planning and execution of the environmental remediation and deconstruction of the building.

2.0 Previous Environmental Investigations

2.1 Pre-9/11 Asbestos and Lead Reports

In support of the gut renovation that was conducted and nearly completed at Fiterman Hall from 2000 through September 11, 2001, limited ACBM & LBP surveys were conducted. These surveys identified materials that were then subject to abatement during the gut renovation. For the purpose of this study, records of the survey reports and records of the abatement projects conducted in support of the renovations were reviewed. The primary focus of the pre 9/11 abatement projects was ACBM piping insulation on thermal systems. Extensive abatement of these materials was conducted.

2.2 Post 9/11 Environmental Investigations

Following 9/11/01, several consultants were engaged to conduct testing to gauge the environmental impact to Fiterman Hall. Sampling conducted by Applied Technology Services (“ATS”), Howard Bader Consultants (“Bader”), and Tiffany-Bader Environmental, Inc. (“TBE”) (“the Environmental Consultants”), confirmed the presence of a wide array of contaminants throughout the Building. The contaminants detected included asbestos, lead, dioxin, heavy metals, mercury, fungi, bacteria, and particulate dust. Other contaminants known to be associated with the WTC dust that can be presumed to exist in areas of Fiterman Hall include polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). The results of these efforts support the conclusion that the entire structure should be assumed to be contaminated.

In 2002, Airtek was engaged to gather and format the environmental data generated and to review the type and extent of contamination reported by the Environmental Consultants. Airtek also conducted representative confirmatory sampling throughout Fiterman Hall for comparison to data from other WTC sites, and to published contaminant reference points. As an additional point of reference, Airtek reviewed WTC-

specific human health risk assessment findings for the levels and types of contamination detected in the Building. The assessments determined that the potential impact of this contamination on healthy occupants and sensitive sub-populations including, but not limited to, pregnant women, children, the elderly, and immuno-compromised individuals was significant. The primary drivers of risk in the reviewed data were dioxin and lead. These are two of the contaminants of potential concern detected at elevated levels at Fiterman Hall.

Figure 1
CoPC Data from Previous Investigations
At 30 West Broadway-Fiterman Hall

Asbestos	Micro-vacuum	to 1,677,624 s/cm2
Mercury	Wipe Samples	0.68 to 27 ng/sf
Dioxin/Furans	Wipe Samples	0.65 to 64.69 ng/m2
PCBs	Wipe samples	23 samples - None Detected
Antimony	Wipe samples	<0.9 to 37 ug/sf
Arsenic	Wipe samples	<0.45 to 22 ug/sf
Beryllium	Wipe samples	0.038 to 0.14 ug/sf
Cadmium	Wipe samples	<0.19 to 14.7 ug/sf
Chromium	Wipe samples	<0.45 to 140 ug/sf
Copper	Wipe samples	<1.0 to 1,630 ug/sf
Iron	Wipe samples	<10 to 132,000 ug/sf
Lead	Wipe samples	<1.4 to 1226 ug/sf
Manganese	Wipe samples	0.20 to 1,140 ug/sf
Nickel	Wipe samples	<0.6 to 132 ug/sf
Zinc	Wipe samples	<3.3 to 15,900 ug/sf
Cadmium	Bulk Samples	1.45 to 30.3 mg/kg
Chromium	Bulk Samples	11.5 to 271 mg/kg
Copper	Bulk Samples	198 to 838 mg/kg
Iron	Bulk Samples	7,150 to 27,800 mg/kg
Lead	Bulk Samples	68.7 to 744 mg/kg
Manganese	Bulk Samples	0.20 to 1,140 mg/kg
Nickel	Bulk Samples	8.07 to 101 mg/kg
Zinc	Bulk Samples	486 to 13,400 mg/kg

3.0 Purpose and Objectives of Current Investigation

DASNY/CUNY is committed to ensuring that appropriate safeguards are put in place at 30 West Broadway during the deconstruction process to protect workers and to prevent release of the contaminants that may be present into the surrounding community and the environment. The Characterization Study was conducted as the first step in the remediation and deconstruction process for this building.

An Asbestos Building Inspection and Material Survey was required to facilitate the proposed deconstruction of the Building and to comply with: (1) the New York City Department of Buildings (NYC DOB) permitting requirements, and (2) the pre-demolition requirements promulgated by the New York City Department of Environmental Protection (NYCDEP), Section I-53; the New York State Department of Labor (NYSDOL) Industrial Code, Rule 56: Asbestos Regulation, Title 15, Sections 56-1.4 and 56-1.9(e); and the U.S. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) for asbestos-containing materials (ACM). The asbestos survey was conducted prior to the effective date of the new NYS Code Rule (9/5/06).

In addition to the asbestos survey, the specific objectives of this Characterization Study include:

- Conducting monitoring of the impact to the outside environment of entry to the building (per NYS DOL approved variance);
- Gathering the necessary exposure data related to the types and levels of air contaminants present prior to building cleaning and deconstruction that may be encountered by workers carrying out activities at the site during deconstruction and Providing data that may be applied to choosing the appropriate levels of worker protection at the site;
- Determining the physical and environmental condition of the façade and its components, as the façade is an integral part of the engineering control systems that will be used to safeguard the surrounding community and the environment;

- Providing pre-demolition background data for the site and surrounding environment;
- Providing site-specific reference data to aid in determining what air contaminant measurements will be necessary in order to verify control of offsite emissions and safe working conditions during the deconstruction project;
- Providing data related to waste characterization efforts.

The study findings will assist in determining what measures and protocols may be required in support of the Fiterman Building cleaning and deconstruction plan. In particular, the results of the Study are intended to provide reference information allowing for informed decisions to be made by the project team regarding appropriate cleaning and deconstruction methods. These decisions include the development and implementation of engineering controls to contain the work zone (i.e., to ensure no exposure to the surrounding community during the cleaning and deconstruction) and appropriate methods for the disposal or recycling of materials generated by the cleaning and deconstruction activities. Using the available characterization results, DASNY/CUNY its consultants, and the selected deconstruction contractor can develop and implement appropriate deconstruction protocols and safety precautions for the cleaning and deconstruction process to ensure the health and safety of workers and the residents of the surrounding community.

4.0 Investigation Procedures and Analytical Methodologies

4.1 Site Access Monitoring

Daily area air monitoring for asbestos was conducted in accordance with ICR-56-17 and the site-specific conditions of NYSDOL-approved Variance Petition, File No. 05-0919. The variance conditions required that all analyses be conducted by Transmission Electron Microscopy (TEM). Air samples were collected from each decontamination facility clean room, within 10 feet from the termination of each negative air exhaust air duct, within 10 feet from the entrance to each decontamination unit, and within 10 feet of the building envelope barrier. Daily air monitoring was consistent with ICR-56-17.3 requirements.

4.2 Personal Exposure Testing

Personal exposure monitoring was conducted in strict accordance with published sampling and analytical methodologies. These included National Institute for Occupational Safety & Health (NIOSH) and Occupation Safety & Health Administration (OSHA) sampling protocols. Analytes included Asbestos and the Contaminants of Potential Concern (CoPCs), as defined by the U.S. EPA's COPC Committee. These include asbestos, MMVF (man-made vitreous fibers), silica, dioxin, PAH (polycyclic aromatic hydrocarbons), and lead. Airtek has also conducted personal exposure monitoring for Polychlorinated Biphenyls (PCBs), Heavy Metals (Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, and Zinc), and Mercury.

To measure personnel exposure to airborne contaminants workplace air is sampled over an 8-hour period, or for the full work shift. Data from this sampling is calculated into an 8-hour time weighted average (TWA) for comparison to established worker exposure guidelines. An Airtek Industrial Hygienist observed and recorded general information about personnel work processes conducted during the sampling. Site workers were asked to voluntarily wear personal monitors to assess COPC exposure during site characterization field work.

4.3 Exterior Dust Investigation

As further described in the companion document *Façade Characterization Report*, a close visual inspection was conducted of the building façade as a part of an assessment of the need for exterior cleaning of the façade. In addition to visual inspection, wipe sampling of façade surfaces was conducted to assess residual heavy metals surface concentrations as an illustration of overall conditions.

Airtek environmental technicians collected heavy metals wipe samples from representative exterior surfaces at the 14th Floor Setback, the 5th floor setback, and at ground level. Samples were collected in accordance with the NIOSH 9100 dust wipe protocol for lead sampling. Wipe

sampling was carried out in a carefully controlled manner in order to ensure the validity of the results. The samples were taken with commercially available “ghost-wipes.” The area sampled was a precisely measured surface area. Careful precautions were taken in order to avoid cross contamination of samples and to keep track of sampling locations. The measurements and locations of the samples collected were recorded on a chain-of-custody form and submitted to a laboratory accredited by NYS DOH NELAC and the American Industrial Hygiene Association (“AIHA”) to perform analysis for metals in dust wipes according to the NIOSH 7300 (modified) analysis methodology.

4.4 Asbestos Containing Materials (ACBM) Survey

The asbestos inspection and bulk sampling procedures implemented were based on the guidelines established by the U.S. EPA in the *Guidance for Controlling Asbestos Containing Materials in Buildings*, Office of Pesticides and Toxic Substances, DOC #560/5-85-024 and 40 CFR Part 763, Asbestos Hazard Emergency Response Act (AHERA). Field information was organized according to the AHERA concept of Homogeneous Area (HA). A HA is defined as a suspect material of similar age, appearance, function, and texture. Each material was grouped together as a specific HA, sampled, and then assessed for condition.

Every accessible area and space of the Building, including the Roof, was physically inspected to determine the presence or absence of suspect ACM. Representative interstitial spaces were accessed to confirm the information contained in the reports of previous asbestos abatement projects.

4.5 Lead-Based Paint Survey

Where inspection revealed the presence of painted older building components, a portable battery powered X-Ray Fluorescence (XRF) scanner was used to read and analyze lead concentration of dried paint on surfaces. Readings equal to or in excess of 1.0 mg/cc if lead based on XRF analysis would be reported as lead-based paint. When the reading classification obtained from a surface has been determined to be within the inconclusive range, confirmation testing would be carried out by collecting a sample for laboratory analysis.

4.6 WTC COPC Impact Characterization Testing

4.6.1 Surface Sampling

Surface wipe sampling was conducted on a variety of surfaces regardless of dust loading. This sampling was intended to provide both comparative data to the previous sampling conducted at the site, and to provide data related to potential exposure from direct contact with building materials. Wipe sampling methods were employed to collect PCBs, PAHs, and metals (including mercury). Microvacuum sampling for asbestos was conducted. Sample locations were selected by dividing each floor into quadrants (North, East, West & South) and then sampling one quadrant per floor in a spiral down the building (16-North, 15-East, 14 South, 13-West, etc.). This sampling provides illustrative data results for each quadrant of the building for both higher, middle, and lower floors without oversampling.

PCBs and PAHs were collected on sterile gauze pads treated with a 4:1 acetone/hexane mixture, while metals were collected on ghost wipes. Samples were placed in sealed bags/jars and kept cold during transport and submittal to the approved analytical laboratory.

Preliminary testing of WTC dust within the building was conducted to identify areas of the building where concentrations of RCRA – regulated contaminants within WTC dust may exist. Dust was collected with HEPA vacuums from at least five distinct areas of each floor of the building. As the sampling team moved down through the building, a geographic zone was selected for each floor (east, north, south, west, center, or throughout), and sampling as concentrated in that zone. The purpose of this bias was to allow geographic trends to be identified for further investigation in the event of detections and/or exceedances of RCRA/TSCA criteria. Samples (including the HEPA

vacuum bag used to collect the samples, were submitted for full TCLP, total PCB and RCRA characteristic analyses. Based on observation of site conditions and the number of samples taken, the sampling conducted is considered to be representative of the site dust loading conditions.

4.6.2 Mercury Vapor

Direct reading samples for mercury vapor taken using a Lumex RA 915+ portable mercury analyzer. Tours of accessible spaces were conducted with this handheld instrument throughout the building. Sampling was performed on all floors of the building.

4.6.3 Air Sampling

Personal air monitoring was conducted to gather CoPC data related to the impact to ambient air of work activity in the building, as discussed in Section 4.2 above.

4.7 Waste Characterization

Dust Characterization:

Preliminary testing of WTC dust within the building was conducted to identify areas of the building where concentrations of RCRA – regulated contaminants within WTC dust may exist. Dust was collected with HEPA vacuums from at least five distinct areas of each floor of the building. As the sampling team moved down through the building, a geographic zone was selected for each floor (east, north, south, west, center, or throughout), and sampling as concentrated in that zone. The purpose of this bias was to allow geographic trends to be identified for further investigation in the event of detections and/or exceedances of RCRA/TSCA criteria. Samples (including the HEPA vacuum bag used to collect the samples, were submitted for full TCLP, total PCB and RCRA characteristic analyses. Based on observation of site conditions and the number of samples taken, the sampling conducted is considered to be representative of the site

dust loading conditions.

Roof Ballast Fines (Sands):

Roof ballast fines were collected and submitted for the same analyses to assist in determinations of waste characterization of materials associated with the cleaning and handling of the stone roof ballast. Four samples of ballast fines were collected from geographically distinct areas (north, east, south, west) of each roof and roof setback. Each set of four samples was composited in the laboratory to form one sample for each roof and roof setback. Based on observation of site conditions and the number of samples taken, the sampling conducted is considered to be representative of the site conditions.

Miscellaneous Materials:

Window Caulk: Three samples of first floor window caulk were composited in the field to form one sample for analysis. Three samples of bulkhead roof window caulk were composited in the field to form one sample for analysis. Both samples were submitted for Total PCB analysis.

Façade Marble Caulk: Three samples of black façade marble caulk were composited in the field to form one sample for analysis. Three samples of grey façade marble caulk were composited in the field to form one sample for analysis. Three samples of dark grey column caulk were composited in the field to form one sample for analysis. The three samples were submitted for Total PCB analysis.

Sprayed-on Fireproofing: Samples of sprayed-on fireproofing were collected from the 1st, 5th and 12th Floors of the building. The three grab samples were composited in the field and submitted for analysis for full TCLP, total PCB and RCRA characteristics.

Cleaning Process Liquids: Cleaning liquids from the decontamination unit and the cleaning operations conducted under a variance from the NYS DOL were collected and drummed. Liquid in the drums was agitated through stirring and one grab sample was collected from each of five drums. The five grab

samples were composited in the field and one sample for each set of five drums was submitted for analysis for full TCLP, total PCB and RCRA characteristics.

PPE and Process Consumables: PPE and process consumables from the cleaning operations conducted under a variance from the NYS DOL were sampled for waste characterization. One grab sample was collected from each of five drums. The five grab samples were composited in the field and one sample for each set of five drums was submitted for analysis for full TCLP, total PCB and RCRA characteristics.

Further waste characterization, as required, will be conducted upon review and approval of *Regulatory Submittal Part IV – Waste Sampling & Management Plan*, and its associated QAPP document.

As a part of the environmental characterization effort, an inventory of building contents other than building construction components was conducted. Particular attention was paid to the following categories of potential waste:

Universal Wastes:

40 CFR Part 273 and 6 NYCRR Section 374.3 establishes requirements for managing wastes referred to as, “Universal Wastes.” These are materials that would be classified as hazardous wastes, but due to their universal use in commercial, industrial, and residential properties, have been so categorized to reduce the regulatory burden on generators of these wastes.

Universal wastes include the following waste types:

- (1) Batteries as described in 40 CFR section 273.2 and 6 NYCRR Section 374-3.1(b)
- (2) Pesticides as described in 40 CFR section 273.3 and 6 NYCRR Section 374-3.1(c)
- (3) Thermostats as described in 40 CFR section 273.4 and 6 NYCRR Section 374-3.1(d)
- (4) Lamps as described in 40 CFR section 273.5 and 6 NYCRR Section 374-3.1(e)

Refrigerant-containing Equipment:

Non-hazardous construction and demolition materials may contain regulated refrigerant including, but not limited to, possible refrigerant in the air conditioning and refrigeration systems. Potentially refrigerant-containing equipment will be catalogued and identified for special handling and refrigerant capture.

Flammables/Caustics:

An inventory of materials requiring special handling and/or expedited removal was generated by visible inspections of materials left within the building.

The inventory is included in Attachment VII.

4.8 Visual Inspection for Mold

Periodic visual inspections for microbiological growth have been conducted.

5.0 Investigation Results

5.1 Site Access Monitoring

Testing conducted as required by the New York State Department of Labor under Industrial Code Rule 56 (56-17), indicates that the installation and operation of the site access facility at the northwest corner of the building has not resulted in the release of asbestos to the outside of the building. Daily sampling for asbestos has been conducted, samples have been analyzed by TEM (AHERA), and all sample results are within acceptable limits ($70\text{s}/\text{mm}^2$). A data summary is included Attachment I.

5.2 Personal Exposure Testing

The results of personal exposure sampling conducted to date indicate that the personal protective equipment specified in the original site Health & Safety Plan is sufficient personal protection for the contaminants tested for during the activities conducted to date:

Asbestos: All results < OSHA PEL (0.1 f/cc)

Metals:	All results < OSHA PELs (Various – Attachment II)
Mercury Vapor:	All results < OSHA PEL (50ug/m ³)
Respirable Dust:	All results < OSHA PEL (5mg/m ³)
Silica:	All results below OSHA PEL (10mg/m ³ /%quartz+2)

5.3 Exterior Dust Investigation

Cleaning of the exterior façade of the Building (including the ballast and membrane on roof and setbacks) conducted by the NYCDEP as a part of its WTC response was effective, and re-cleaning of the majority of the façade is neither necessary nor advisable. Cleaning of the lower two floors where urban background road dust has accumulated will be conducted, cleaning of the entire gash area of the south and west façades where debris has been noted, and focused cleaning of limited façade components that exhibit residual dust will be conducted as a part of the remediation/deconstruction Project. The inspection was necessarily conducted from the interior of the building, except where roof setbacks could be accessed. As such, it is the intent of the Owner to have the façade re-inspected by the Environmental Consultant as the project scaffolding is erected to ensure the accuracy of the preliminary conclusions, and/or to identify any additional areas requiring focused cleaning. In the event that additional areas are identified for focused cleaning, the contractor will conduct HEPA-vacuuming and wet-wiping of any façade components that require cleaning at the direction of the site hygienist. This is in addition to the first floor, second floor, and gash area, which will be cleaned in their entirety. A data summary is included in Attachment III. A more detailed discussion of façade conditions and their impact on the Project can be found in a companion document, *Preliminary Façade Characterization Report*.

5.4 Asbestos Containing Materials Survey

While extensive abatement of asbestos-containing building materials (ACMs) was conducted as a part of the prior renovations to the facility, some ACMs remain that will be abated as a part of the Project. These materials include:

1. Tar vapor barrier on perimeter walls
2. Paper materials on perimeter walls (Contaminated by contact with tar)
3. Fiberglass materials on perimeter walls 2nd – 15th floors (Contaminated by contact with tar)
4. Felt materials on perimeter walls – 1st floor (Contaminated by contact with tar)

5. Flashing mastic on spandrel beams
6. Black cloth materials on spandrel beams (Contaminated by contact with spandrel mastic)
7. Side window caulking (Bulkhead & New Elevator Room)
8. Top window caulking (Bulkhead & New Elevator Room)
9. Roof membrane, Tar & Roof Paper – 14th floor North Setback Roof
10. Window frame caulking – first floor SE Corner
11. All Floor covering materials and associated adhesives/mastics (assumed ACM)
12. Pipe Insulation (5th Floor Column)
13. Roof Shingles and Tar – Chiller Roof

As detailed in the companion document *Regulatory Submittal Part I – Work Plan*, these materials will be abated during the Remediation Phase of the Project. The exceptions to this are the 14th floor ACM roofing which must be left in place for building protection during the project and must be abated during the Deconstruction Phase of the project, and the spandrel flashing and associated paper flashing, which must be abated as the façade is deconstructed, and therefore must be addressed during the Deconstruction Phase of the Project. The locations and quantities of these materials are detailed in Attachment IV.

5.5 Lead-Based Paint Survey

A survey for lead-based paint (LBP) conducted throughout the facility has determined that only very limited lead-painted materials remain in the facility (one loading dock fender post, one basement ceramic sink, and one section of a building column). The survey included testing of structural steel where it was accessible for testing. Details of this testing are included in Attachment V. Details on the removal and disposal of these items will be presented in *Regulatory Submittal Part I – Work Plan*.

5.6 WTC COPC Impact Characterization Testing

Visual inspection and limited testing for the residual impact of WTC Contaminants of Potential Concern (CoPCs) was conducted within the Building. This testing was intended to be illustrative of conditions, and useful in verification of some aspects of the HASP for the site. A data summary of results of surface wipe sampling conducted for WTC CoPCs is included in Attachment VI.

5.7 Waste Characterization Testing

Preliminary testing of WTC dust within the building was conducted to identify areas of the building where concentrations of RCRA – regulated contaminants within WTC dust may exist. Results of dust samples collected with HEPA vacuums from each floor of the building and submitted for full TCLP, total PCB and RCRA characteristic analyses revealed that none of the dust tested is regulated under RCRA. The waste characterization results for the dust note that some of the samples will “ignite.” “Ignitability” as defined in 40 CFR Section 261.21 applies to liquid wastes. The sample referenced included a paper vacuum bag that was used for sample collection. While the paper components of the sample will “ignite” because they are paper, the material does **not** meet the definition of “Ignitable” according to 40 CFR 261.21, as the material is not liquid, and does not contain liquid.

Results of samples of roof ballast fines collected and submitted for the same analyses indicate that the roof ballast fines are not regulated under RCRA. Additional materials tested included window caulk from the first floor and the roof bulkhead, cleaning water from the existing decontamination facility, sprayed-on fireproofing, and PPE and process consumables from the cleaning operations conducted under a variance from the NYS DOL. Test results indicate that none of these materials are regulated under RCRA. Window caulk was sampled and analyzed for PCB content and is not PCB-regulated. Results discussed in *Regulatory Submittal Part IV – Waste Sampling and Management Plan*. Further testing for waste characterization for purposes of informing decisions on waste handling, packaging, transport and disposal is to be addressed in a companion document, *Regulatory Submittal Part IV - Waste Sampling and Management Plan*, to be submitted with the regulatory submittals for the project.

The existing protective netting on the exterior of the gash area at the south end of the building was tested for waste characterization purposes. The two netting samples that were analyzed were composite samples. The composite samples consisted of samples from three locations for both the orange and black netting: 1st floor, 5th floor and 12th floor, all on the south side of the building.

5.8 Visual Inspection for Mold

Visual inspections for mold impact were conducted, and are ongoing as conditions change within the building over time. In general, mold impact was limited to the upper floors, but little new mold growth has been noted. The project is to be conducted in basic accordance with the procedures recommended in the *New York City Department of Health and Mental Hygiene Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. Any mold contaminated materials will be disposed of during the gut strip operations while the work areas are under negative pressure. Mold spores are controlled with particulate engineering controls, which are the primary controls to be utilized for all remediation phase interior work. PPE for mold abatement is likewise the same as is proposed for this project, so the existence of mold has no practical impact on either engineering controls or personal protection components of the plans.

6.0 Standards of Care

Airtek's work was performed in a professional manner. Our objective was to perform our work with care, exercising the customary skills and competence of consulting professionals. Conclusions presented in this report are professional opinions based upon visual observations of the site and laboratory results provided for review. These conclusions reflect only the results obtained and analyzed from specific sample locations. The opinions and recommendations presented herein apply to site conditions existing at the time of our observations. Airtek cannot act as insurers, and no expressed or implied representation or warrant is included or intended in our report except that our work was performed within the limits prescribed by our clients, and with the customary thoroughness and competence of our profession at the time and place the services were rendered.